Tank Waste Remediation System Multi-Year Work Plan

Date Published
September 1994

Prepared for the U.S. Department of Energy
Office of Environmental Restoration and
Waste Management

Westinghouse
Hanford Company

P.O. Box 1970
Richland, Washington

Hanford Operations and Engineering Contractor for the
U.S. Department of Energy under Contract DE-AC06-87RL10930

Approved for Public Release

MASTER

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

878

LEGAL DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

This report has been reproduced from the best available copy.
Available in paper copy and microfiche.

Available to the U.S. Department of Energy
and its contractors from
Office of Scientific and Technical Information
P.O. Box 62
Oak Ridge, TN 37831
(615) 576-8401

Available to the public from the U.S. Department of Commerce
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650

Printed in the United States of America

DISCLM-1.CHP (1-91)

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

RELEASE AUTHORIZATION

Document Number: WHC-SP-1101, Volume 1 - 5

Document Title: Tank Waste Remediation System Multi-Year Work Plan

Release Date: September 29, 1994

* * * * *

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

* * * * *

WHC Information Release Administration Specialist:

Kara Broz

(Signature)

September 29, 1994

(Date)

APPENDIX A
WBS INDEX AND DICTIONARY

WBS Number	Description	ADS/TDD	Page
1.1	Tank Waste Remediation System		A-1
1.1.1	Tank Waste Remediation System Program		A-3
1.1.1.1	Manage Program		A-5
1.1.1.1.01	Program Management and Administration	1200	A1-1
1.1.1.1.01.01	Formulation	1200-0-AA	A1-5
1.1.1.1.01.01.01	Program Planning/Integration/Baseline Management	1200-0-AA	A1-9
1.1.1.1.01.01.02	Systems Engineering	1200-0-AA	A1-13
1.1.1.1.01.01.03	External interface	1200-0-AA	A1-21
1.1.1.1.01.01.04	Public Involvement	1200-0-AA	A1-25
1.1.1.1.01.02	Execution	1200-0-AB	A1-29
1.1.1.1.01.02.01	Program Administration	1200-0-AB	A1-33
1.1.1.1.01.02.02	Technology Development Program Office -Pacific Northwest Laboratories	1200-0-AB	A1-37
1.1.1.1.01.02.03	Project Business Management/Site Integration	1200-0-AB	A1-41
1.1.1.1.01.02.04	Tank Waste Remediation System Environmental Impact Statement	1200-0-AB	A1-45
1.1.1.1.01.02.05	Permit Implementation	1200-0-AB	A1-49
1.1.1.1.01.02.06	Number Used During Planning Process - Canceled		N/A
1.1.1.1.01.02.07	Communications and Administration	1200-0-AB	A1-53
1.1.1.1.01.02.08	Quality Assurance	1200-0-AB	A1-57
1.1.1.1.01.02.09	Safety and Health and Environmental Compliance	1200-0-AB	A1-63

WBS Number	Description	ADS/TDD	Page
1.1.1.1.01.02.10	Reengineering	1200-0-AB	A1-71
1.1.1.1.01.02.11	Qualification and Training	1200-0-AB	A1-75
1.1.1.1.01.02.12	Information Resources Management	1200-0-AB	A1-79
1.1.1.1.01.02.13	Acquisition Management	1200-0-AB	A1-85
1.1.1.01.03	Evaluation	1200-0-AC	A1-89
1.1.1.1.01.03.01	Program Analyses	1200-0-AC	A1-91
1.1.1.1.01.03.02	Program Data	1200-0-AC	A1-95
1.1.1.1.01.03.03	Customer Support (CSSC)	1200-0-AC	A1-99
1.1.1.1.01.03.04	Engineering Assessment	1200-0-AC	A1-103
1.1.1.1.01.04	Program Management Systems	1200-0-AD	A1-107
1.1.1.1.01.04.01	Program Documentation Development	1200-0-AD	A1-111
1.1.1.2	Manage Tank Waste	1200-0-AD	A-7
1.1.1.2.01	Tank Farm Operations and Maintenance	1100	A2-1
1.1.1.2.01.01	Technical Management and Administration	1100-0-ND	A2-7
1.1.1.2.01.01.01	Program Element and Baseline Management	1100-0-ND	A2-13
1.1.1.2.01.01.02	Tank Farm Utilities And Services	1100-0-ND	A2-17
1.1.1.2.01.01.03	Planning And Administration	1100-0-ND	A2-21
1.1.1.2.01.01.04	Tank Farm Training	1100-0-ND	A2-25
1.1.1.2.01.01.05	Quality Assurance/Quality Control Support	1100-0-ND	A2-41

WBS Number	Description	ADS/TDD	Page
1.1.1.2.01.01.06	Configuration Management	1100-0-ND	A2-47
1.1.1.2.01.01.07	Tank Farm Security	1100-0-ND	A2-55
1.1.1.2.01.01.08	Tank Farm Operations Procedures	1100-0-ND	A2-59
1.1.1.2.01.01.09	Nuclear Safety Oversight	1100-0-ND	A2-63
1.1.1.2.01.01.10	Program PassBacks	1100-0-ND	A2-71
1.1.1.2.01.01.11	CASS/TMACS/SACS Maintenance and Development	1100-0-ND	A2-73
1.1.1.2.01.02	Tank Farm Compliance and Corrective Activities	1100-0-NC	A2-85
1.1.1.2.01.02.01	Double-Shell Tank Integrity Assessment	1100-0-NC	A2-91
1.1.1.2.01.02.02	Permitting and Regulatory Compliance	1100-0-NC	A2-97
1.1.1.2.01.02.03	Environmental Engineering	1100-0-NC	A2-101
1.1.1.2.01.02.04	Solid Waste Shipping Support	1100-0-NC	A2-107
1.1.1.2.01.02.05	Radiological/Hazardous Solid Waste Characterization	1100-0-NC	A2-111
1.1.1.2.01.02.06	Criticality Engineering	1100-0-NC	A2-115
1.1.1.2.01.02.07	Double-Shell Tank Emergency Pumping Preparations	1100-0-NC	A2-119
1.1.1.2.01.02.08	Interim Operating Safety Review Implementation	1100-0-NC	A2-125
1.1.1.2.01.02.09	Safety Documentation Upgrades	1100-0-NC	A2-131
1.1.1.2.01.02.10	Compliance Programs and ALARA	1100-0-NC	A2-141
1.1.1.2.01.02.11	TWRS Industrial Hygiene and Safety	1100-0-NC	A2-147
1.1.1.2.01.02.12	Radiological Support	1100-0-NC	A2-155

WBS Number	Description	ADS/TDD	Page
1.1.1.2.01.03	Tank Farm 200 East Storage Facility	1100-0-NF	A2-163
1.1.1.2.01.03.01	200 East Preventive Maintenance	1100-0-NF	A2-177
1.1.1.2.01.03.02	200 East Corrective Maintenance	1100-0-NF	A2-181
1.1.1.2.01.03.03	Tank Farm East Facility Operations	1100-0-NF	A2-187
1.1.1.2.01.03.04	Tank Farm East Routine Surveillance	1100-0-NF	A2-199
1.1.1.2.01.03.05	Number Used During Planning Process - Canceled	1100-0-NF	N/A
1.1.1.2.01.03.06	East System Engineering	1100-0-NF	A2-207
1.1.1.2.01.03.07	New 200 East Tank Farm	1100-0-NF	Outside FY 95,96,97
1.1.1.2.01.03.08	Number Used During Planning Process - Canceled	1100-0-NF	N/A
1.1.1.2.01.04	Tank Farm 200 West Storage Facilities	1100-0-NG	A2-217
1.1.1.2.01.04.01	200 West Preventive Maintenance	1100-0-NG	A2-231
1.1.1.2.01.04.02	200 West Corrective Maintenance	1100-0-NG	A2-235
1.1.1.2.01.04.03	Tank Farm West Facility Operations	1100-0-NG	A2-241
1.1.1.2.01.04.04	Tank Farm West Routine Surveillance	1100-0-NG	A2-251
1.1.1.2.01.04.05	Number Used During Planning Process - Canceled	1100-0-NG	N/A
1.1.1.2.01.04.06	West System Engineering and Analysis	1100-0-NG	A2-259
1.1.1.2.01.04.07	New 200 West Tank Farm	1100-0-NG	Outside FY 95,96,97
1.1.1.2.01.04.08	Number Used During Planning Process - Canceled	1100-0-NG	N/A

WBS Number	Description	ADS/TDD	Page
1.1.1.2.01.05	Tank Farm Single-Shell Tank Stabilization	1100-0-NE	A2-269
1.1.1.2.01.05.01	Interim Stabilization	1100-0-NE	A2-273
1.1.1.2.01.05.02	Intrusion Prevention	1100-0-NE	A2-281
1.1.1.2.01.05.03	Single-Shell Tank Emergency Pumping Preparation	1100-0-NE	A2-285
1.1.1.2.01.05.04	Single-Shell Tank Stabilization Support	1100-0-NE	A2-291
1.1.1.2.01.05.05	Single-Shell Tank Emergency Pumping	1100-0-NE	A2-297
1.1.1.2.01.05.06	Light Duty Utility Arm	1100-0-NE	A2-301
1.1.1.2.01.05.07	Single-Shell Tank Monitoring Improvements	1100-0-NE	A2-311
1.1.1.2.01.05.08	Number Used During Planning Process - Canceled	1100-0-NE	N/A
1.1.1.2.01.06	Tank Farm Evaporator/AW and AP Tank Farm Operations	1100-0-NA	A2-319
1.1.1.2.01.06.01	Number Used During Planning Process - Canceled	1100-0-NA	N/A
1.1.1.2.01.06.02	242-A Evaporator/AP and AW Tank Farm Preventative Maintenance	1100-0-NA	A2-323
1.1.1.2.01.06.03	242-A Evaporator/AP and AW Tank Farm Corrective Maintenance	1100-0-NA	A2-327
1.1.1.2.01.06.04	Tank Farm Evaporator/AW and AP Tank Farm Base Operations	1100-0-NA	A2-333
1.1.1.2.01.06.05	Tank Farm Evaporator/AW and AP Tank Farm Routine Surveillance and Operations	1100-0-NA	A2-339
1.1.1.2.01.06.06	Number Used During Planning Process - Canceled	1100-0-NA	N/A
1.1.1.2.01.06.07	242-A/AW and AP Tank Farm Engineering and Analysis	1100-0-NA	A2-345
1.1.1.2.01.07	Tank Farm Retired Facilities	1100-0-NH	Outside FY 95, 96, 97

WBS Number	Description	ADS/TDD	Page
1.1.1.2.01.07.01	Retired Facilities Surveillance	1100-0-NH	Outside FY 95, 96, 97
1.1.1.2.01.07.02	Retired Facilities Maintenance	1100-0-NH	Outside FY 95, 96, 97
1.1.1.2.01.07.03	Retired Facilities Plant Engineering	1100-0-NH	Outside FY 95, 96, 97
1.1.1.2.01.07.04	Retired Facility Preparation for Turnover to R&R Operations	1100-0-NH	Outside FY 95, 96, 97
1.1.1.2.02	Waste Tank Safety Program	1110	A3-1
1.1.1.2.02.01	Technical Integration and Planning	1110-0-AA	A3-7
1.1.1.2.02.01.01	Integration and Planning	1110-0-AA	A3-9
1.1.1.2.02.01.02	Waste Tank Safety Quality Assurance	1110-0-AA	A3-13
1.1.1.2.02.02	Hydrogen Mitigation	1110-0-AB	A3-17
1.1.1.2.02.02.01	Mitigation Program/Project Management	1110-0-AB	A3-21
1.1.1.2.02.02.02	101-SY Mitigation	1110-0-AB	A3-25
1.1.1.2.02.02.03	103-SY Mitigation	1110-0-AB	A3-29
1.1.1.2.02.02.04	101-AW Mitigation	1110-0-AB	A3-33
1.1.1.2.02.02.05	104-AN Mitigation	1110-0-AB	A3-37
1.1.1.2.02.02.06	103-AN Mitigation	1110-0-AB	A3-41
1.1.1.2.02.02.07	105-AN Mitigation	1110-0-AB	A3-43
1.1.1.2.02.03	Waste Tank Ferrocyanide Safety Program	1110-0-AC	A3-47

WBS Number	Description	ADS/TDD	Page
1.1.1.2.02.03.01	Evaluate and Define Technology Development for 18 Ferrocyanide Tanks	1110-0-AC	A3-51
1.1.1.2.02.03.02	Number Used During Planning Process - Canceled	1110-0-AC	N/A
1.1.1.2.02.03.03	Ferrocyanide Safety Issue Resolved	1110-0-AC	A3-57
1.1.1.2.02.03.04	Evaluate and Define for 18 Ferrocyanide Tanks	1110-0-AC	A3-61
1.1.1.2.02.04	Waste Tank Flammable Gas Safety Program	1110-0-AD	A3-66
1.1.1.2.02.04.01	Evaluate and Define Technology Development for Flammable Gas Tanks	1110-0-AD	A3-70
1.1.1.2.02.04.02	Evaluate and Define Flammable Gas Tanks	1110-0-AD	A3-74
1.1.1.2.02.04.03	Close Unreviewed Safety Questions for Flammable Gas Tanks	1110-0-AD	A3-78
1.1.1.2.02.04.04	Store and Monitor Flammable Gas Tanks	1110-0-AD	A3-82
1.1.1.2.02.04.05	Integrated Field Support for Flammable Gas Tanks	1110-0-AD	A3-86
1.1.1.2.02.05	Waste Tank Organic Safety Program	1110-0-AE	A3-90
1.1.1.2.02.05.01	Technology for Evaluating Organic Tanks	1110-0-AE	A3-94
1.1.1.2.02.05.02	Evaluate and Define Organic Tanks	1110-0-AE	A3-98
1.1.1.2.02.05.03	Number Used During Planning Process - Canceled	1110-0-AE	N/A
1.1.1.2.02.05.04	In-Tank Resolution of Organic Tanks Without Treatment	1110-0-AE	A3-102
1.1.1.2.02.05.05	Resolve Unreviewed Safety Questions for Organic Tanks	1110-0-AE	A3-106
1.1.1.2.02.05.06	Resolve Safety Issue Organic Tanks	1110-0-AE	A3-110
1.1.1.2.02.05.07	Pump and Dispose C-103 Organic Layer/Resolve Issue	1110-0-AE	A3-114
1.1.1.2.02.06	Waste Tank High-Heat Safety Program	1110-0-AF	A3-118

WBS Number	Description	ADS/TDD	Page
1.1.1.2.02.06.01	Evaluate and Define High Heat Tanks	1110-0-AF	A3-122
1.1.1.2.02.07	Miscellaneous Underground Storage Tanks	1110-0-AG	A3-126
1.1.1.2.02.07.01	Evaluate Miscellaneous Underground Tanks	1110-0-AG	A3-130
1.1.1.2.02.08	Waste Tank Vapor Resolution	1110-0-AH	A3-134
1.1.1.2.02.08.01	Evaluate and Define for Tank Vapor Safety	1110-0-AH	A3-138
1.1.1.2.02.08.02	Resolve Internal Tank Vapor Issues	1110-0-AH	A3-142
1.1.1.2.02.08.03	Mitigate-Technology Development for Tank Vapor Safety	1110-0-AH	A3-146
1.1.1.2.02.09	Waste Tank Nuclear Criticality	1110-0-AJ	A3-150
1.1.1.2.02.09.01	Store and Monitor Waste for Criticality	1110-0-AJ	A3-154
1.1.1.2.02.10	Other Waste Tank Safety Issues	1110-0-AK	A3-158
1.1.1.2.02.11	Waste Tank Hydroxide Control	1110-0-AL	A3-160
1.1.1.2.02.11.01	Mitigate Hydroxide Consumption	1110-0-AL	A3-164
1.1.1.2.03	Tank Farm Upgrades	1120	A4-1
1.1.1.2.03.01	Technical Integration and Planning	1120-0-OC	A4-7
1.1.1.2.03.01.01	Technical Planning and Integration	1120-0-OC	A4-9
1.1.1.2.03.02	Configuration Management	1120-0-OC	A4-13
1.1.1.2.03.02.01	Configuration Management	1120-0-OC	A4-17
1.1.1.2.03.02.02	Tank Farm Procedure Upgrades	1120-0-OC	A4-61
1.1.1.2.03.03	Life Management	1120-0-OR	N/A

WBS Number	Description	ADS/TDD	Page
1.1.1.2.03.03.01	Double-Shell Tank Qualification Life Extension	1120-0-OR	A4-65
1.1.1.2.03.03.02	Number Used During Planning Process - Canceled	1120-0-OR	N/A
1.1.1.2.03.04	Multi-Function Waste Tank Facility, W-236A	1280-0-AA	A4-69
1.1.1.2.03.04.01	Multi-Waste Tank Facility	1280-0-AA	A4-73
1.1.1.2.03.05	Number Used During Planning Process - Canceled		N/A
1.1.1.2.03.06	Instrumentation and Control/Electrical Upgrades	1120-0-OA	A4-77
1.1.1.2.03.06.01	Instrument/Electrical Upgrades	1120-0-OA	A4-81
1.1.1.2.03.06.02	Site Electrical Assessments	1120-0-OA	A4-85
1.1.1.2.03.06.03	In-Tank Instrumentation	1120-0-OA	A4-87
1.1.1.2.03.06.04	Number Used During Planning Process - Canceled	1120-0-OA	N/A
1.1.1.2.03.06.05	Electrical/Instrumentation and Control General Plant Projects	1120-0-OA	N/A
1.1.1.2.03.07	Tank Farm Restoration and Safe Operation Major System Acquisition, Project W-314	1120-6-AA	A4-91
1.1.1.2.03.07.01	Project W-314, Restoration and Safe Operations Major System Acquisition	1120-6-AA	A4-95
1.1.1.2.03.08	Number was used during planning process - canceled		N/A
1.1.1.2.03.09	Mechanical Upgrades	1120-0-OA	A4-105
1.1.1.2.03.09.01	Number Used During Planning Process - Canceled	1120-0-OA	N/A
1.1.1.2.03.09.02	Long Length Contaminate Equipment Storage Facility (W-373)	1120-0-OA	A4-109
1.1.1.2.03.09.03	Number Used During Planning Process - Canceled	1120-0-OA	N/A

WBS Number	Description	ADS/TDD	Page
1.1.1.2.03.09.04	Long Length Contaminated Equipment/Empty Container Storage Facility (W-374)	1120-0-OA	A4-113
1.1.1.2.03.09.05	Mechanical Upgrades	1120-0-OA	A4-117
1.1.1.2.03.09.06	Number Used During Planning Process - Canceled	1120-0-OA	N/A
1.1.1.2.03.09.07	Long Length Contaminated Equipment Disposal	1120-0-OA	A4-121
1.1.1.2.03.09.08	Engineered Tank Farm Hardware	1120-0-OA	A4-127
1.1.1.2.03.09.09	Number Used During Planning Process - Canceled	1120-0-OA	N/A
1.1.1.2.03.09.10	Single-Shell Tank Ventilation, Project W-230	1120-0-OA	A4-131
1.1.1.2.03.10	W-030, Ventilation Upgrades	1120-2-OG	A4-135
1.1.1.2.03.10.01	W-030, Ventilation Upgrades	1120-2-OG	A4-139
1.1.1.2.03.11	W-058 of Cross-Site Transfer System	1120-4-OH	A4-143
1.1.1.2.03.11.01	W-058, Replacement of Cross-Site Transfer System	1120-4-OH	A4-147
1.1.1.2.03.12	W-028, Aging Waste Transfer Lines	1120-7-OM	A4-151
1.1.1.2.03.12.01	W-028, Aging Waste Transfer Lines	1120-7-OM	A4-155
1.1.1.2.03.13	Number Used During Planning Process - Canceled		N/A
1.1.1.2.03.14	Number Used During Planning Process - Canceled		N/A
1.1.1.2.03.15	Number Used During Planning Process - Canceled		N/A
1.1.1.2.03.16	Facility Upgrades	1120-0-OA	A4-159
1.1.1.2.03.16.01	Number Used During Planning Process - Canceled	1120-0-OA	N/A
1.1.1.2.03.16.02	General Plant Projects (GPP) Definition Support	1120-0-OA	A4-161

WBS Number	Description	ADS/TDD	Page
1.1.1.2.03.16.03	209E Septic Tank Upgrade (W-364) (GPP)	1120-0-OA	A4-165
1.1.1.2.03.16.04	SY & C Tank Farm Lighting (W-280) (GPP)	1120-0-OA	Not Funded FY 95,96,97
1.1.1.2.03.16.05	Facility Upgrades General Plant Projects	1120-0-OA	A4-169
1.1.1.2.03.16.06	W-226, Centralized Maintenance Facility	1120-0-OA	Not Funded FY 95,96,97
1.1.1.2.03.16.07	Radiation Zone Lighting	1120-0-OA	A4-175
1.1.1.2.03.17	W-188, Radiological Support Facility	1120-1-OJ	A4-177
1.1.1.2.03.17.01	Radiological Support Facility, Project W-188	1120-1-OJ	A4-181
1.1.1.2.04	Characterization	1130	A5-1
1.1.1.2.04.01	Technical Integration and Planning	1130-0-OA	A5-5
1.1.1.2.04.01.01	Program Management and Administration	1130-0-OA	A5-9
1.1.1.2.04.02	Technology Development and Applied Engineering	1130-0-OB	A5-13
1.1.1.2.04.02.01	Activity Program Management	1130-0-OB	A5-17
1.1.1.2.04.02.02	Hot Cell Instrumentation Development	1130-0-OB	A5-21
1.1.1.2.04.02.03	Analytical Procedures Development	1130-0-OB	A5-25
1.1.1.2.04.02.04	IN-SITU Methods Development	1130-0-OB	N/A
1.1.1.2.04.02.05	Field Sampling Improvements	1130-0-OB	A5-29
1.1.1.2.04.02.06	Direct Bit Temperature Monitor Development (Sandia)	1130-0-OB	A5-33
1.1.1.2.04.02.07	Characterization Methods Development Pacific Northwest Laboratories	1130-0-OB	A5-37

WBS Number	Description	ADS/TDD	Page
1.1.1.2.04.02.08	Analytical Procedures Development Los Alamos National Laboratories	1130-0-OB	A5-41
1.1.1.2.04.02.09	Technology Development Program Office Pacific Northwest Laboratories	1130-0-OB	A5-45
1.1.1.2.04.02.10	Hot Cell Instrumentation Development (CENRTC)	1130-0-OB	A5-49
1.1.1.2.04.02.11	Analytical Procedures Development (CENRTC)	1130-0-OB	A5-53
1.1.1.2.04.02.12	Number Used During Planning Process - Canceled	1130-0-OB	N/A
1.1.1.2.04.02.13	Characterization Methods Developed Pacific Northwest Laboratories (CENRTC)	1130-0-OB	A5-57
1.1.1.2.04.02.14	Number Used During Planning Process - Canceled	1130-0-OB	N/A
1.1.1.2.04.02.15	Technology Development Program Office (TDPO) (CENRTC)	1130-0-OB	A5-61
1.1.1.2.04.03	Field Sampling and Measurement	1130-0-OC	A5-65
1.1.1.2.04.03.01	Activity Program Management	1130-0-OC	A5-69
1.1.1.2.04.03.02	Core Sampling	1130-0-OC	A5-73
1.1.1.2.04.03.03	Auger Sampling	1130-0-OC	A5-77
1.1.1.2.04.03.04	Vapor Sampling	1130-0-OC	A5-81
1.1.1.2.04.03.05	Supernate Sampling	1130-0-OC	A5-85
1.1.1.2.04.03.06	Riser Preparation	1130-0-OC	A5-89
1.1.1.2.04.03.07	Equipment Replacement	1130-0-OC	A5-91
1.1.1.2.04.03.08	Field Sampling Readiness	1130-0-OC	A5-95
1.1.1.2.04.03.09	3rd and 4th Sampling Trucks	1130-0-OC	A5-97
1.1.1.2.04.03.10	Instrumented Casks - CENRTC	1130-0-OE	A5-101

Tank Waste Remediation System Program Work Breakdown Structure Index

WBS Number	Description	ADS/TDD	Page
1.1.1.2.04.03.11	3rd and 4th Sampling Trucks (Expense)	1130-0-OC	A5-103
1.1.1.2.04.04	Analytical Integration	1130-0-OD	A5-107
1.1.1.2.04.04.01	Activity Program Management	1130-0-OD	A5-111
1.1.1.2.04.04.02	Lab Readiness	1130-0-OD	A5-115
1.1.1.2.04.04.03	Safety Screening Data Quality Objective Analysis	1130-0-OD	A5-119
1.1.1.2.04.04.04	Safety Resolution Data Quality Objective Analysis	1130-0-OD	A5-123
1.1.1.2.04.04.05	Compatibility Data Quality Objectives Analysis	1130-0-OD	A5-127
1.1.1.2.04.04.06	Operations Data Quality Objectives Analysis	1130-0-OD	A5-131
1.1.1.2.04.04.07	Disposal Data Quality Objectives Analysis	1130-0-OD	A5-135
1.1.1.2.04.04.08	Vapor Analysis Pacific Northwest Laboratories	1130-0-OD	A5-139
1.1.1.2.04.04.09	Off-Site Laboratory	1130-0-OD	A5-147
1.1.1.2.04.04.10	300 Area Waste Assessment	1130-0-OD	A5-151
1.1.1.2.04.04.11	222-S Laboratory Upgrades/LIMS Development	1130-0-OD	A5-155
1.1.1.2.04.04.12	325 Laboratory Upgrades	1130-0-OD	A5-159
1.1.1.2.04.04.13	Off-Site Repackaging and Shipping	1130-0-OD	A5-163
1.1.1.2.04.04.14	Organic Analysis Support Oak Ridge National Laboratories	1130-0-OD	A5-167
1.1.1.2.04.04.15	Number Used During Planning Process - Canceled	1130-0-OD	N/A
1.1.1.2.04.04.16	Oak Ridge National Laboratories CENRTC Plan Activity (Enhance Trap Lab)	1130-0-OD	A5-173
1.1.1.2.04.05	Data Evaluation and Reporting	1130-0-0E	A5-179

WBS Number	Description	ADS/TDD	Page
1.1.1.2.04.05.01	Activity Program Management	1130-0-OE	A5-183
1.1.1.2.04.05.02	Data Definition Planning	1130-0-OE	A5-185
1.1.1.2.04.05.03	Historical Data Development Los Alamos National Laboratories	1130-0-OE	A5-189
1.1.1.2.04.05.04	Tank Characterization Reports	1130-0-OE	A5-193
1.1.1.2.04.05.05	Data Dissemination	1130-0-OE	A5-197
1.1.1.2.04.05.06	Data Access Improvement Pacific Northwest Laboratories	1130-0-OE	A5-201
1.1.1.2.04.05.07	Tank Characterization Planning	1130-0-OE	A5-205
1.1.1.2.04.05.08	Data Definition Support Pacific Northwest Laboratories	1130-0-OE	A5-209
1.1.1.2.04.05.09	Historical Data Development	1130-0-OE	A5-213
1.1.1.2.05	Waste Retrieval	1210	A6-1
1.1.1.2.05.01	Technical Integration and Planning	1210-0-OA	A6-9
1.1.1.2.05.01.01	Program Element Management	1210-0-OA	A6-13
1.1.1.2.05.01.02	Retrieval System Engineering	1210-0-OA	A6-17
1.1.1.2.05.02	Technology Development and Applied Engineering	1210-0-OB	A6-21
1.1.1.2.05.02.01	Double-Shell Tanks	1210-0-OB	A6-25
1.1.1.2.05.02.02	Single-Shell Tanks	1210-0-OB	A6-29
1.1.1.2.05.02.03	Number Used During Planning Process - Canceled	1210-0-OB	N/A
1.1.1.2.05.02.04	Leak Detection	1210-0-OB	A6-33
1.1.1.2.05.02.05	Barriers	1210-0-OB	A6-35

WBS Number	Description	ADS/TDD	Page
1.1.1.2.05.03	Facility Operations	1210-0-OC	A6-39
1.1.1.2.05.03.01	Double-Shell Tanks	1210-0-OC	A6-43
1.1.1.2.05.03.02	Single-Shell Tanks	1210-0-OC	A6-47
1.1.1.2.05.03.03	Number Used During Planning Process - Canceled	1210-0-OC	N/A
1.1.1.2.05.04	System Definition	1210-0-OD	A6-49
1.1.1.2.05.04.01	Double-Shell Tanks	1210-0-OD	A6-53
1.1.1.2.05.04.02	Single-Shell Tanks	1210-0-OD	A6-57
1.1.1.2.05.04.03	Number Used During Planning Process - Canceled	1210-0-OD	N/A
1.1.1.2.05.04.04	Tank Closure	1210-0-OD	A6-61
1.1.1.2.05.05	W-151 101 AZ Retrieval	1210-2-OE	A6-63
1.1.1.2.05.05.01	Project Management	1210-0-OE	A6-67
1.1.1.2.05.05.02	Detail Design	1210-0-OE	A6-71
1.1.1.2.05.05.03	Field Engineering and Inspection	1210-0-OE	A6-75
1.1.1.2.05.05.04	Procurement	1210-0-OE	A6-79
1.1.1.2.05.05.05	Construction	1210-0-OE	A6-83
1.1.1.2.05.05.06	Start-up	1210-0-OE	A6-85
1.1.1.2.05.06	W-211 Initial Retrieval System	1210-3-OF	A6-89
1.1.1.2.05.06.01	Project Management/Integration	1210-0-OF	A6-93
1.1.1.2.05.06.02	Design	1210-0-OF	A6-97

WBS Number	Description	ADS/TDD	Page
1.1.1.2.05.06.03	Procurement	1210-0-OF	A6-101
1.1.1.2.05.06.04	Construction	1210-0-OF	A6-105
1.1.1.2.05.06.05	Start-up	1210-0-OF	A6-107
1.1.1.2.05.07	Final Double-Shell Tank Retrieval System	1210-0-OG	Outside FY 95, 96, 97
1.1.1.2.05.07.01	Project Management	1210-0-OG	Outside FY 95, 96, 97
1.1.1.2.05.07.02	Engineering	1210-0-OG	Outside FY 95, 96, 97
1.1.1.2.05.07.03	Procurement	1210-0-OG	Outside FY 95, 96, 97
1.1.1.2.05.07.04	Construction	1210-0-OG	Outside FY 95, 96, 97
1.1.1.2.05.07.05	Start-up	1210-0-OG	Outside FY 95, 96, 97
1.1.1.2.05.08	W-315 Pilot Scale Retrieval	1210-0-OH	A6-115
1.1.1.2.05.08.01	Project Management	1210-0-OH	A6-119
1.1.1.2.05.08.02	Engineering	1210-0-OH	A6-123
1.1.1.2.05.08.03	Procurement	1210-0-OH	A6-127
1.1.1.2.05.08.04	Construction	1210-0-OH	A6-131
1.1.1.2.05.08.05	Start-up and Operation	1210-0-OH	A6-133
1.1.1.2.05.09	W-320 106-C Sluicing	1210-4-OJ	A6-137

WBS Number	Description	ADS/TDD	Page
1.1.1.2.05.09.01	Project management	1210-4-OJ	A6-141
1.1.1.2.05.09.02	Engineering	1210-4-OJ	A6-145
1.1.1.2.05.09.03	Capital Equipment Not Related to Construction	1210-4-OJ	A6-149
1.1.1.2.05.09.04	Construction	1210-4-OJ	A6-153
1.1.1.2.05.09.05	Start-up	1210-4-OJ	A6-157
1.1.1.2.05.10	Single-Shell Tank Training and Test Facility	1210-0-OK	Outside FY 95, 96, 97 A6-161
1.1.1.2.05.10.01	Project Management	1210-0-OK	Outside FY 95, 96, 97
1.1.1.2.05.10.02	Engineering	1210-0-OK	Outside FY 95, 96, 97
1.1.1.2.05.10.03	Procurement	1210-0-OK	Outside FY 95, 96, 97
1.1.1.2.05.10.04	Construction	1210-0-OK	Outside FY 95, 96, 97
1.1.1.2.05.10.05	Start-up	1210-0-OK	Outside FY 95, 96, 97
1.1.1.2.05.11	W-340 Long Reach Arm	1210-0-OL	A6-165
1.1.1.2.05.11.01	Project Management	1210-0-OL	A6-169
1.1.1.2.05.11.02	Engineering	1210-0-OL	A6-171
1.1.1.2.05.11.03	Regulatory/Compliance	1210-0-OL	A6-175

WBS Number	Description	ADS/TDD	Page
1.1.1.2.05.11.04	LRM Procurement	1210-0-OL	A6-179
1.1.1.2.05.11.05	Construction	1210-0-OL	A6-183
1.1.1.2.05.11.06	Start-up	1210-0-OL	A6-187
1.1.1.2.05.12	Single-Shell Tank Closure Demonstration	1210-0-OM	A6-191
1.1.1.2.05.12.01	Project Management	1210-0-OM	A6-195
1.1.1.2.05.12.02	Engineering	1210-0-OM	A6-199
1.1.1.2.05.12.03	Procurement	1210-0-OM	A6-203
1.1.1.2.05.12.04	Construction	1210-0-OM	A6-207
1.1.1.2.05.12.05	Start-up	1210-0-OM	A6-211
1.1.1.2.05.13	Single-Shell Tank Closure	1210-0-ON	Outside FY 95, 96, 97
1.1.1.2.05.13.01	Project management	1210-0-ON	Outside FY 95, 96, 97
1.1.1.2.05.13.02	Engineering	1210-0-ON	Outside FY 95, 96, 97
1.1.1.2.05.13.03	Procurement	1210-0-ON	Outside FY 95, 96, 97
1.1.1.2.05.13.04	Construction	1210-0-ON	Outside FY 95, 96, 97
1.1.1.2.05.13.05	Start-up	1210-0-ON	Outside FY 95, 96, 97

WBS Number	Description	ADS/TDD	Page
1.1.1.2.05.14	Miscellaneous Underground Storage Tanks Retrieval Systems	1210-0-OP	Outside FY 95, 96, 97 A6-219
1.1.1.2.05.14.01	Project Management	1210-0-OP	Outside FY 95, 96, 97
1.1.1.2.05.14.02	Engineering	1210-0-OP	Outside FY 95, 96, 97
1.1.1.2.05.14.03	Procurement	1210-0-OP	Outside FY 95, 96, 97
1.1.1.2.05.14.04	Construction	1210-0-OP	Outside FY 95, 96, 97
1.1.1.2.05.14.05	Start-up	1210-0-OP	Outside FY 95, 96, 97
1.1.1.3	Process Tank Waste	1210-0-OP	N/A
1.1.1.3.01	Waste Pretreatment	1220	A7-1
1.1.1.3.01.01	Technical Integration and Planning	1220-0-AA	A7-9
1.1.1.3.01.01.01	Pretreatment Program Management	1220-0-AA	A7-13
1.1.1.3.01.01.02	Pretreatment Program Management Accounting Adjustments	1220-0-AA	A7-19
1.1.1.3.01.02	Technology Development and Applied Engineering	1220-0-AB	A7-21
1.1.1.3.01.02.01	Low-Level Waste Pretreatment Development for Reference Process	1220-0-AB	A7-27
1.1.1.3.01.02.02	Low-Level Waste Pretreatment Development for Enhancement and Alternatives	1220-0-AB	A7-31
1.1.1.3.01.02.03	High-Level Waste Pretreatment Development for Reference Process	1220-0-AB	A7-35

WBS Number	Description	ADS/TDD	Page
1.1.1.3.01.02.04	High-Level Waste Pretreatment Development for Enhancement and Alternatives	1220-0-AB	A7-39
1.1.1.3.01.03	Facility Operations	1220-0-AC	A7-45
1.1.1.3.01.04	System Definition	1220-0-AD	A7-49
1.1.1.3.01.04.01	NEPA and Regulatory Compliance	1220-0-AF	A7-53
1.1.1.3.01.04.02	Engineering Studies and Functions and Requirements (F&R)	1220-0-AF	A7-57
1.1.1.3.01.04.03	Develop Flowsheets and Applied Technology Evaluation	1220-0-AF	A7-63
1.1.1.3.01.05	W-236B Pretreatment Facility Initial Pretreatment Module	1280-0-AB	A7-69
1.1.1.3.01.05.01	Project Management	1280-0-AB	N/A
1.1.1.3.01.05.01.01	Management and Integration	1280-0-AB	N/A
1.1.1.3.01.05.01.01.01	Initial Pretreatment Module Management	1280-0-AB	A7-75
1.1.1.3.01.05.01.01.02	Initial Pretreatment Module Management (Capital)	1280-0-AB	A7-79
1.1.1.3.01.05.01.01.03	Project Control and Administration	1280-0-AB	A7-83
1.1.1.3.01.05.01.01.04	Project Control and Administration (Capital)	1280-0-AB	A7-87
1.1.1.3.01.05.01.01.05	Resource Management	1280-0-AB	A7-91
1.1.1.3.01.05.01.01.06	Design/Construction Oversight	1280-0-AB	A7-95
1.1.1.3.01.05.01.01.07	Design/Construction Oversight (Capital)	1280-0-AB	A7-99
1.1.1.3.01.05.01.01.08	Resource Management (Capital)	1280-0-AB	A7-103
1.1.1.3.01.05.01.02	Engineering Support	1280-0-AB	N/A
1.1.1.3.01.05.01.02.01	System Engineering Interface	1280-0-AB	A7-107

WBS Number	Description	ADS/TDD	Page
1.1.1.3.01.05.01.02.02	System Engineering Interface (Capital)	1280-0-AB	A7-111
1.1.1.3.01.05.01.02.03	Cognizant System Engineer	1280-0-AB	A7-115
1.1.1.3.01.05.01.02.04	Cognizant Systems Engineering (Capital)	1280-0-AB	A7-119
1.1.1.3.01.05.01.03	Quality Assurance	1280-0-AB	N/A
1.1.1.3.01.05.01.03.01	Quality Assurance	1280-0-AB	A7-125
1.1.1.3.01.05.02	Applied Technology	1280-0-AB	N/A
1.1.1.3.01.05.02.01	Engineering Equipment	1280-0-AB	N/A
1.1.1.3.01.05.02.01.01	Equipment Testing	1280-0-AB	A7-129
1.1.1.3.01.05.02.01.02	Sludge Sampler Truck (CENRTC)	1280-0-AB	A7-135
1.1.1.3.01.05.02.01.03	Transuranic Monitor (CENRTC)	1280-0-AB	A7-139
1.1.1.3.01.05.02.01.04	Laboratory Automation and Analysis (CENRTC)	1280-0-AB	A7-143
1.1.1.3.01.05.02.02	Process	1280-0-AB	N/A
1.1.1.3.01.05.02.02.01	Applied Process Testing	1280-0-AB	A7-147
1.1.1.3.01.05.02.02.02	Laboratory Automation and Analysis	1280-0-AB	A7-151
1.1.1.3.01.05.03	Design Engineering	1280-0-AB	N/A
1.1.1.3.01.05.03.01	Conceptual Design	1280-0-AB	N/A
1.1.1.3.01.05.03.01.01	Design Engineering - Conceptual Design (Expense)	1280-0-AC	A7-155
1.1.1.3.01.05.03.02	Title I	1280-0-AB	N/A
1.1.1.3.01.05.03.02.01	Design Engineering - Title I	1280-0-AB	A7-159

WBS Number	Description	ADS/TDD	Page
1.1.1.3.01.05.03.03	Title II	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.03.04	Title III	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.04	Construction	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.04.01	Construction	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.04.02	Procurement	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.04.03	Construction Management	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.05	Start-up	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.05.01	Start-up Testing	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.05.02	Operational Preparation	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.05.03	Operational Readiness Review	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.06	Regulatory Compliance and Safety	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.06.01	Compliance	1280-0-AB	Outside FY 95, 96, 97

WBS Number	Description	ADS/TDD	Page
1.1.1.3.01.05.06.01.01	Regulatory Permits	1280-0-AB	A7-163
1.1.1.3.01.05.06.02	Safety Documentation	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.06.02.01	Preliminary Safety Evaluation	1280-0-AC	A7-167
1.1.1.3.01.05.06.02.02	Safety Analysis Reports	1280-0-AB	A7-171
1.1.1.3.01.05.07	Technology Demonstration	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.05.08	Hot Pilot Plant	1280-0-AB	Outside FY 95, 96, 97
1.1.1.3.01.06	High Level Waste Pretreatment	1220-0-AF	A7-175
1.1.1.3.01.06.01	Project Management	1220-0-AC	N/A
1.1.1.3.01.06.01.01	Management and Integration	1220-0-AC	N/A
1.1.1.3.01.06.01.01.01	High Level Waste Pretreatment Management	1220-0-AC	A7-179
1.1.1.3.01.06.01.02	Engineering Support	1220-0-AC	N/A
1.1.1.3.01.06.01.02.01	Number Used During Planning Process - Canceled	1220-0-AC	N/A
1.1.1.3.01.06.01.03	Quality Assurance	1220-0-AC	N/A
1.1.1.3.01.06.01.03.01	Number Used During Planning Process - Canceled	1220-0-AC	N/A
1.1.1.3.01.06.02	Applied Technology	1220-0-AC	N/A
1.1.1.3.01.06.02.01	Equipment	1220-0-AC	N/A
1.1.1.3.01.06.02.01.01	Number Used During Planning Process - Canceled	1220-0-AC	N/A
1.1.1.3.01.06.03	Design Engineering	1220-0-AC	N/A

WBS Number	Description	ADS/TDD	Page
1.1.1.3.01.06.03.01	Concept Design	1220-0-AC	N/A
1.1.1.3.01.06.03.01.01	Design Engineering - Conceptual Design (High Level Waste)	1220-0-AC	A7-183
1.1.1.3.01.06.04	Construction	1220-0-AC	outside FY 95, 96, 97
1.1.1.3.01.06.05	Start-up	1220-0-AC	outside FY 95, 96, 97
1.1.1.3.01.06.06	Regulatory Compliance and Safety	1220-0-AC	outside FY 95, 96, 97
1.1.1.3.01.06.06.01	Compliance	1220-0-AC	outside FY 95, 96, 97
1.1.1.3.01.06.06.02	Safety Documentation	1220-0-AC	outside FY 95, 96, 97
1.1.1.3.01.06.06.02.01	Number Used During Planning Process - Canceled	1200-0-AC	N/A
1.1.1.3.02	Low Level Waste	1230	
1.1.1.3.02.01	Technical Integration and Planning	1230-0-AA/AC	A8-1
1.1.1.3.02.01.01	Program Management: Business Plans	1230-0-AA/AC	A8-9
1.1.1.3.02.01.02	Program Management: Management Plans/Guidance	1230-0-AA/AC	A8-13
1.1.1.3.02.01.03	Number Used During Planning Process - Canceled	1230-0-AA/AC	N/A
1.1.1.3.02.01.04	Program Management: Systems Engineering	1230-0-AC	A8-17
1.1.1.3.02.01.05	Program Management: Program Administration	1230-0-AC	A8-21
1.1.1.3.02.01.06	Program Management: Public Involvement	1230-0-AC	A8-23

WBS Number	Description	ADS/TDD	Page
1.1.1.3.02.02	Technology Development and Applied Engineering	1230-0-AC	A8-27
1.1.1.3.02.02.01	Melter Selection	1230-0-AC	A8-29
1.1.1.3.02.02.02	Low-Level Waste Simulant Development and Specifications	1230-0-AC	A8-35
1.1.1.3.02.02.03	Integrated Process System	1230-0-AC	A8-39
1.1.1.3.02.02.04	Product Quality Verification	1230-0-AC	A8-43
1.1.1.3.02.02.05	Miscellaneous Technology Studies	1230-0-AC	A8-47
1.1.1.3.02.02.06	Low-Level Waste Pilot Scale System	1230-0-AC	A8-51
1.1.1.3.02.02.07	Low-Level Waste Packaging and Materials	1230-0-AC	A8-55
1.1.1.3.02.02.08	Non-Vitrifiable Waste	1230-0-AC	A8-59
1.1.1.3.02.02.09	Materials Property Handbook/Database	1230-0-AC	N/A
1.1.1.3.02.02.10	Disposal Systems	1230-0-AC	N/A
1.1.1.3.02.02.11	Oversite and Planning	1230-0-AC	A8-67
1.1.1.3.02.03	Facility Operations	1230-0-AC	A8-71
1.1.1.3.02.03.01	Project Definition Support	1230-0-AC	A8-75
1.1.1.3.02.03.02	Preparation of Low Level Waste Operations	1230-0-AC	A8-79
1.1.1.3.02.04	System Definition	1230-0-AC	A8-83
1.1.1.3.02.04.01	Define Functions and Requirements	1230-0-AC	A8-87
1.1.1.3.02.04.02	Prepare Low Level Waste Performance Assessment	1230-0-AC	A8-91
1.1.1.3.02.04.03	Define Low Level Waste Technical Baseline	1230-0-AC	A8-95

WBS Number	Description	ADS/TDD	Page
1.1.1.3.02.04.04	Number Used During Planning Process - Canceled	1230-0-AC	N/A
1.1.1.3.02.04.05	Maintain Low Level Waste Technical Basis Documentation	1230-0-AC	A8-99
1.1.1.3.02.04.06	Engineering Reviews and Program Support	1230-0-AC	A8-103
1.1.1.3.02.04.07	Compliance	1230-0-AC	A8-107
1.1.1.3.02.05	Low Level Waste Vitrification Facility	1230-0-AC	A8-111
1.1.1.3.02.05.01	Project Management	1230-0-AC	A8-115
1.1.1.3.02.05.01.01	Project Management and Integration	1230-0-AC	N/A
1.1.1.3.02.05.01.01.01	Management - Expense	1230-0-AC	A8-117
1.1.1.3.02.05.01.01.02	Management - Capital	1230-0-AC	A8-119
1.1.1.3.02.05.01.01.03	Engineering Administration - Expense	1230-0-AC	A8-121
1.1.1.3.02.05.01.01.03	Engineering Administration - Capital	1230-0-AC	A8-123
1.1.1.3.02.05.01.02	Business Management	1230-0-AC	N/A
1.1.1.3.02.05.01.02.01	Project Administration - Expense	1230-0-AC	A8-125
1.1.1.3.02.05.01.02.02	Project Administration - Capital	1230-0-AC	A8-127
1.1.1.3.02.05.01.02.03	Resource Management - Expense	1230-0-AC	A8-129
1.1.1.3.02.05.01.02.04	Automated Data Processing Equipment - Expense	1230-0-AC	A8-131
1.1.1.3.02.05.01.03	Quality Assurance	1230-0-AC	N/A
1.1.1.3.02.05.01.03.01	Quality Assurance - Expense	1230-0-AC	A8-133
1.1.1.3.02.05.02	Safety Analysis Report/Permitting	1230-0-AC	A8-137

Tank Waste Remediation System Program Work Breakdown Structure Index

WBS Number	Description	ADS/TDD	Page
1.1.1.3.02.05.02.01	Safety / Health	1230-0-AC	N/A
1.1.1.3.02.05.02.01.01	Safety Documentation Planning and Coordination - Expense	1230-0-AC	A8-139
1.1.1.3.02.05.02.01.03	Project Safety Documentation - Expense	1230-0-AC	A8-141
1.1.1.3.02.05.02.02	Permitting	1230-0-AC	N/A
1.1.1.3.02.05.02.02.01	Permit Documentation Planning and Coordination - Expense	1230-0-AC	A8-143
1.1.1.3.02.05.02.02.02	Site Baseline Characterization and Environmental Studies - Expense	1230-0-AC	A8-145
1.1.1.3.02.05.02.02.03	NEPA Permitting - Expense	1230-0-AC	A8-147
1.1.1.3.02.05.02.02.04	RCRA Permitting - Expense	1230-0-AC	A8-149
1.1.1.3.02.05.02.02.05	Air and Water Permitting - Expense	1230-0-AC	A8-151
1.1.1.3.02.05.03	Design Engineering	1230-0-AC	A8-153
1.1.1.3.02.05.03.01	Conceptual	1230-0-AC	N/A
1.1.1.3.02.05.03.01.01	Design Liaison - Expense	1230-0-AC	A8-155
1.1.1.3.02.05.03.01.02	Conceptual Design (Architect-Engineer) - Expense	1230-0-AC	A8-157
1.1.1.3.02.05.03.02	Preliminary	1230-0-AC	N/A
1.1.1.3.02.05.03.02.01	Design Support - Expense	1230-0-AC	A8-161
1.1.1.3.02.05.03.02.02	Design Liaison - Capital	1230-0-AC	A8-163
1.1.1.3.02.05.03.02.03	Preliminary Design (Architect-Engineer) - Capital	1230-0-AC	A8-165
1.1.1.3.02.05.04	Construction	1230-0-AC	Outside FY 95, 96, 97

WBS Number	Description	ADS/TDD	Page
1.1.1.3.02.05.05	Startup	1230-0-AC	Outside FY 95, 96, 97
1.1.1.3.02.05.06	Applied Engineering	1230-0-AC	Outside FY 95, 96, 97
1.1.1.3.02.06	Grout Facilities	1230-0-AA	A8-167
1.1.1.3.02.06.01	Number Used During Planning Process - Canceled	1230-0-AA	N/A
1.1.1.3.02.06.02	Grout Facility Two Year Restart Compliance Activities	1230-0-AA	A8-171
1.1.1.3.02.06.03	Maintain Grout Facility in Cold Standby (FY 96, 97)	1230-0-AA	A8-175
1.1.1.3.02.06.04	Number Used During Planning Process - Canceled	1230-0-AA	N/A
1.1.1.3.02.06.05	Fabricate Container for Failed AP102 Mixer Pump	1230-0-AA	A8-179
1.1.1.3.03	High-Level Waste	1240	A9-1
1.1.1.3.03.01	Technical Integration and Planning	1240-0-AA	A9-7
1.1.1.3.03.01.01	Program Planning, Integration and Management	1240-0-AA	A9-11
1.1.1.3.03.01.02	Program Business Management	1240-0-AA	A9-15
1.1.1.3.03.01.03	Pre-Project Documentation and Support	1240-0-AA	A9-19
1.1.1.3.03.02	Technology Development and Applied Engineering	1240-0-AB	A9-23
1.1.1.3.03.02.01	Vitrification Technology Development Management	1240-0-AB	A9-29
1.1.1.3.03.02.02	High-Level Waste Process/Product Development	1240-0-AB	A9-33
1.1.1.3.03.02.03	High-Level Waste Process/Equipment Development and Testing	1240-0-AB	A9-37
1.1.1.3.03.02.04	Technology Development Requirements and Evaluation	1240-0-AB	A9-41

WBS Number	Description	ADS/TDD	Page
1.1.1.3.03.02.05	Process/Equipment Evaluation	1240-0-AB	A9-45
1.1.1.3.03.02.06	Feed/Process Evaluation	1240-0-AB	A9-49
1.1.1.3.03.02.07	Plant/Process Engineering Design Support	1240-0-AB	A9-53
1.1.1.3.03.03	Facility Operations	1240-0-AC	A9-57
1.1.1.3.03.03.01	Operations Support High-Level Waste Project Definition	1240-0-AC	A9-61
1.1.1.3.03.03.02	High-Level Waste Operation Preparation	1240-0-AC	Outside FY 95, 96, 97
1.1.1.3.03.03.03	High-Level Waste Radioactive Operations	1240-0-AC	Outside FY 95, 96, 97
1.1.1.3.03.03.04	Prepare High-Level Waste Facility for Decontamination and Decommissioning	1240-0-AC	Outside FY 95, 96, 97
1.1.1.3.03.04	System Definition	1240-0-AD	A9-65
1.1.1.3.03.04.01	Define Feed Basis for System Definition	1240-0-AE	A9-69
1.1.1.3.03.04.02	Define Product for System Definition	1240-0-AE	A9-73
1.1.1.3.03.04.03	Define Process System Requirements and Concepts	1240-0-AE	A9-77
1.1.1.3.03.05	High-Level Waste Facility	1240-0-AE	A9-81
1.1.1.3.03.05.01	High-Level Waste Project Management	1240-0-AE	A9-85
1.1.1.3.03.05.02	Safety Analysis/Permitting	1240-0-AE	A9-89
1.1.1.3.03.05.03	Waste Form Qualification	1240-0-AE	A9-93
1.1.1.3.03.05.04	Conceptual Design/Advanced Conceptual Design	1240-0-AE	A9-97

WBS Number	Description	ADS/TDD	Page
1.1.1.3.03.05.05	Design	1240-0-AE	Outside FY 95, 96, 97
1.1.1.3.03.05.06	Construction/Procurement	1240-0-AE	Outside FY 95, 96, 97
1.1.1.3.03.05.07	Startup	1240-0-AE	Outside FY 95, 96, 97
1.1.1.3.03.06	Hanford Waste Vitrification Plant Project Closeout	1240-1-XX	A9-101
1.1.1.3.03.06.01	Project Management	1240-1-XX	N/A
1.1.1.3.03.06.01.01	Project Management and Integration	1240-1-XX	N/A
1.1.1.3.03.06.01.01.01	Project Management	1240-1-XX	A9-103
1.1.1.3.03.06.01.01.02	Number Used During Planning Process - Canceled		N/A
1.1.1.3.03.06.01.01.03	Number Used During Planning Process - Canceled		N/A
1.1.1.3.03.06.01.01.04	Construction Management	1240-1-XX	A9-105
1.1.1.3.03.06.01.02	Business Management	1240-1-XX	N/A
1.1.1.3.03.06.01.02.01	Project Integration	1240-1-XX	A9-107
1.1.1.3.03.06.01.03	Systems Engineering Management	1240-1-XX	N/A
1.1.1.3.03.06.01.03.01	Systems Engineering Management	1240-1-XX	A9-109
1.1.1.3.03.06.02	Number Used During Planning Process - Canceled		N/A
1.1.1.3.03.06.03	Plant		N/A
1.1.1.3.03.06.03.01	Field Engineering and Inspection	1240-1-XX	N/A
1.1.1.3.03.06.03.01.01	Number Used During Planning Process - Canceled		N/A

WBS Number	Description	ADS/TDD	Page
1.1.1.3.03.06.03.01.02	Number Used During Planning Process - Canceled		N/A
1.1.1.3.03.06.03.01.03	Number Used During Planning Process - Canceled		N/A
1.1.1.3.03.06.03.01.04	Field Engineering and Inspection	1240-1-XX	A9-111
1.1.1.3.03.06.03.02	Construction	1240-1-XX	N/A
1.1.1.3.03.06.03.02.01	Construction	1240-1-XX	A9-113

This page intentionally left blank.

Tank Waste Remediation System
Work Breakdown Structure Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1 Tank Waste Remediation System	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930																		
4. WBS ELEMENT CODE/LEVEL 1.1/I	5. WBS ELEMENT TITLE Tank Waste Remediation System																			
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994																		
9. APPROVED CHANGES N/A	10. ADS ID- ADS SUFFIX - SUBACTIVITY NUMBER See Level III WBS dictionary sheets.																			
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENT DOCUMENT (DOE/RL-92-60 REV. 1) 4.2 Remediate Tank Waste	12. BUDGET AND REPORTING NUMBER <table> <thead> <tr> <th>Expense</th><th>Capital</th><th>Line Item</th></tr> </thead> <tbody> <tr> <td>EW3120071</td><td>35EW31207</td><td>39EW31301</td></tr> <tr> <td>EW3120072</td><td>35EW31301</td><td></td></tr> <tr> <td>EW3120074</td><td></td><td></td></tr> <tr> <td>EW3120075</td><td></td><td></td></tr> <tr> <td>EW3130010</td><td></td><td></td></tr> </tbody> </table>		Expense	Capital	Line Item	EW3120071	35EW31207	39EW31301	EW3120072	35EW31301		EW3120074			EW3120075			EW3130010		
Expense	Capital	Line Item																		
EW3120071	35EW31207	39EW31301																		
EW3120072	35EW31301																			
EW3120074																				
EW3120075																				
EW3130010																				

13. ELEMENT DESCRIPTION

The total Program cost is 39,726,961,000.

The mission of the Tank Waste Remediation System is "to store, treat, and immobilize highly radioactive Hanford waste* in an environmentally sound, safe, and cost-effective manner."

- * Current and future tank waste and strontium/cesium capsules.

This page intentionally left blank.

Tank Waste Remediation System
Work Breakdown Structure Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.TWRS	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930																		
4. WBS ELEMENT CODE/LEVEL 1.1.1/II	5. WBS ELEMENT TITLE TWRS Program																			
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994																		
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER See Level II WBS dictionary sheets.																			
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENT DOCUMENT (DOE/RL-9D2-60 REV.1) 4.2 Remediate Tank Waste	12. BUDGET AND REPORTING NUMBER <table> <thead> <tr> <th>Expense</th><th>Capital</th><th>Line Item</th></tr> </thead> <tbody> <tr> <td>EW3120071</td><td>35EW31207</td><td>39EW31301</td></tr> <tr> <td>EW3120072</td><td>35EW31301</td><td></td></tr> <tr> <td>EW3120074</td><td></td><td></td></tr> <tr> <td>EW3120075</td><td></td><td></td></tr> <tr> <td>EW3130010</td><td></td><td></td></tr> </tbody> </table>		Expense	Capital	Line Item	EW3120071	35EW31207	39EW31301	EW3120072	35EW31301		EW3120074			EW3120075			EW3130010		
Expense	Capital	Line Item																		
EW3120071	35EW31207	39EW31301																		
EW3120072	35EW31301																			
EW3120074																				
EW3120075																				
EW3130010																				

13. ELEMENT DESCRIPTION

The total cost of this WBS element is \$39,726,961,000.

The Tank Waste Remediation System (TWRS) Program scope includes project and program activities for receiving, safely storing, maintaining, treating, and disposing onsite, or packaging for offsite disposal, all tank waste. Tank waste includes the current contents of 149 single-shell tanks, 28 double-shell tanks, 51 miscellaneous tanks, plus any new waste added to these facilities, and all encapsulated cesium and strontium stored onsite and returned from offsite users.

The scope of the TWRS Program encompasses existing facilities such as waste storage tanks, evaporators, pipelines, and the low-level radioactive waste treatment and disposal facilities. It includes support facilities that comprise the total TWRS infrastructure, including upgrades to existing facilities or equipment and the addition of new facilities.

Closure of the SST and DST sites and final decontamination and disposal of facilities are not included in this program. Tank closure will be addressed in the Hanford Mission Plan. Closure interface responsibilities for the TWRS Program will be negotiated on a case-by-case basis.

This page intentionally left blank.

Tank Waste Remediation System
Work Breakdown Structure Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1 Tank Waste Remediation System Mission 1.1.1 TWRS Program/M&O Contractor	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1/III	5. WBS ELEMENT TITLE Manage Program	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID-ADS SUFFIX-SUBACTIVITY NUMBER 1200-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENT DOCUMENT (DOE/RL-92-60 REV. 1) N/A	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION

The total cost of this WBS element is \$1,422,828,000.

The Manage Program element is synonymous with Program Management and Administration (WBS 1.1.1.1.01) because it is comprised of only one program. The Manage Program element is responsible for the following functions:

1. Formulate Program. Define the Program's parameters (i.e., technical, resource, and time); develop Program functions and requirements, strategies and alternatives, and work breakdown structure; establish Program baseline, acquisition of resources, and preparation and validation of short- and long-term plans.
2. Execute Program. Implement, status, and control the Program's baseline and manage program funds.
3. Evaluate Program. Analyze completed and ongoing work, provide information to the decision process, and assess compliance with applicable requirements.
4. Management Systems. Provide the structure and processes needed to fulfill the requirements under the Formulate, Execute, and Evaluate functions. The management systems are described in the following hierarchical documents: Program Implementation Plan, Multi-Year Work Plan, and the Program Management System Description.

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program (M&O Contractor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01/IV	5. WBS ELEMENT TITLE Program Management and Administration	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOED/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION

A. COST CONTENT

Total cost of Program Management and Administration is \$1,422,828,000.

B. TECHNICAL BASES

Goals & objectives:

The Program Management and Administration WBS element product results from a systems engineering type process to identify and define the functional, architectural, and interface requirements for the Tank Waste Remediation System (TWRS) physical system. The Functions and Requirements document (DOE/RL-92-60) and architecture are the basis for the currently established TWRS product tree. Systems engineering analysis of TWRS functions and requirements is ongoing for the life of the Program to identify emerging requirements for products other than those currently known.

In direct support of the WBS element 1.1.1, Manage Program, Program Management and Administration provides management structure and processes for the systematic direction and financial control of the TWRS Program. This WBS element includes specific work toward a Program Implementation Plan (PIP), intended to improve the management system that effectively comprises current Program Management and Administration structure and processes. Significant products required of the operative management system involve discharge of fiscal responsibilities and the formalized planning, execution, and evaluation of work.

1.1.1.1.01

A1-1

To ensure that the TWRS remediation activities will conform to applicable environmental, safety, and industrial health laws and regulations and to ensure that such activities will be performed in a Total Quality Management environment, a series of annexes and lower tier compliance plans will be developed. These annexes and lower tier compliance plans will be directed toward full satisfaction of the requirements of DOE Order 4700.1.

The risks associated with Program Management and Administration are major changes in programmatic direction or necessary adjustments to established schedules. These types of changes affect products and require rework of the planning and budgeting elements of the program. Risks of this nature may develop from evolving technologies, legislative actions, or from particular situations arising from the stakeholder/public involvement processes. The Program maintains flexibility to respond and adapt to the anticipated evolution of TWRS.

Major end-item deliverables: N/A

Acceptance criteria: N/A

C. STATEMENT OF WORK

Required activities over lifetime:

The work of Program Management and Administration is accomplished through formulation, execution, and evaluation of the TWRS programmatic activities through a system of management structures and processes.

Formulation of the TWRS Program defines the program's parameters (i.e., technical bases, resource requirements, time constraints) and provides for the definition of the program functions, requirements, and products from strategies and alternatives.

Execution of the TWRS Program provides implementation of authorized baselines. Execution also provides status periodically and acquires data pertaining to the actual progress of the programmatic work, applies that data to an analysis of the actual versus the baseline, and reports that information and the resultant baseline status. Because of the direct relationship with program work-in-progress, the management responsibilities for stakeholder interests and external interfaces are assigned as "execution." This assignment is expected to provide a direct and credible connection between the TWRS Program and various external interests. Reporting program status and trends disseminates the Program's collected progress data and identifies the potential impacts to the baseline. The Program manages impacts to the baseline through change control procedures, including changes directed by DOE.

Evaluation of the TWRS Program provides analysis of completed and ongoing work, recommendations for decision analysis, assessments of compliance with applicable requirements, measurements of baseline performance and resource consumption, assessments of impacts of proposed changes to program activities, and management of commitments. Full evaluation reporting is provided through the Site Management System (SMS) and the Progress Tracking System (PTS), modified to meet the needs of TWRS.

The Management Systems component provides the structure and processes needed to fulfill the requirements under the Formulate, Execute, and Evaluate components. Through these management systems, the programmatic work may be effectively defined, planned, scheduled, budgeted, assigned, performed, measured, and controlled. The Management Systems are described in the following hierarchical documents: Program Implementation Plan, Multi-Year Work Plan, and the Program Management System Description.

Interfaces:

#	From This WBS To	Item Provided
1	DOE-RL and DOE-HQ	Multi-Year Work Plan
2	DOE-RL and DOE-HQ	Activity Description Sheet (ADS)
3	Appropriate Program Elements	Functions and Requirements Document
4	DOE, WHC, Others	Monthly, Quarterly, Annual Reports
5	DOE, WHC, Other	Change Control Documentation
6	DOE, WHC, Other	Funds Management Data
7	DOE, WHC, Other	Technical Development Data
8	DOE, WHC, Other	EIS Development Data
9	DOE, WHC, Other	RCRA Permitting Data
10	DOE, WHC, Other	Public Involvement Management Data
11	Other Program Elements	Engineering Analyses
12	Other Program Elements	Findings of External Audit Teams
13	All Program Elements	Configuration Management Plan, Acquisition Management Plan, Public Involvement Management Plan, Business Management Plan, Building Management Plan, Systems Engineering Management Plan, Test/Evaluation Management Plan, Training and Qualification Plan, ESH & QA Support Management Plan, IRM Support Plan
	To This WBS From	
1	All Program Elements	Financial Schedule Information
2	All Program Elements	Program-Related Technical Information
3	DOE, WHC, Other	Programmatic Direction
4	DOE, WHC, Other	Requests for Programmatic Information
5	External Audit Teams	Audit Findings
6	DOE-RL	Record of Decision of TWRS EIS
7	All Program Elements	Information to support TWRS TSD Unit Permit Applications
8	All Program Elements	Information to support modifications to TWRS RCRA Permit

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- DOE Order 4700.1
- DOE Order 5700.6C
- *National Environmental Policy Act (NEPA)*
- *Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)*
- *Resource Conservation and Recovery Act (RCRA)*
- Washington Administrative Code (WAC)
- Program Management System Description Annexes
 - Business Management Plan
 - Systems Engineering Plan
 - Acquisition Management Plan
 - Configuration Management Plan
 - Test and Evaluation Plan
 - Total Quality Management Plan
 - Environmental Compliance Management Plan
 - Health and Safety Management Plan
 - Information Resources Management Plan
 - Integrated Communications Plan
 - Qualifications and Training Plan

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt and Admin (M&O Contractor)	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.01/V	5. WBS ELEMENT TITLE Formulation	
6. WBS INDEX LINE NO. N/A	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	14,445	15,061	15,544				
CENRTC							
GPP							
LINE ITEM							
TOTAL	14,445	15,061	15,544				

B. TECHNICAL BASES

Goals and objectives:

- Provide Program planning and baselining services.
- Develop programmatic strategies and alternatives.
- Develop TWRS work breakdown structure and supporting documents.
- Provide logic-oriented, resource-loaded schedules.

- Develop technical, cost, and schedule baselines.
- Provide performance-based, out-year fiscal year planning and forecasts

Major end-item deliverables:

- Multi-Year Work Plan
- Program Management System Description
- Management implementing procedures
- Fiscal year work plan (indirect)
- Consolidated management reports (monthly, quarterly, annually)

Acceptance criteria:

- Verification that the products and processes meet established quality standards and are delivered on a timely basis as established by the respective schedules.

C. STATEMENT OF WORK

Required activities over lifetime:

- Segregate goals and objectives into strategies and alternatives.
- Define functional needs, mandated requirements, and developmental needs.
- Quantify programmatic uncertainty through risk analysis.
- Utilize logic diagrams to determine programmatic functions/requirements.
- The logic process will be TWRS integrated to ensure linkage of key interfaces and data transfers.
- Develop integrated schedules from the integrated logics.
- Document strategy/alternative selection process to establish technical baseline.
- Develop the schedule baseline using integrated logics and schedules.
- Summarize cost estimating data into the cost baseline.
- Utilize the "Wagner" priority system in the fiscal year planning cycle.

Interfaces:

#	From This WBS To	Item Provided
1	DOE-RL and DOE-HQ	<u>Multi-Year Work Plan (MYWP)</u>
2	DOE-RL and DOE-HQ	Activity Description Sheet (ADS)
3	Appropriate Program Elements	Functions and Requirements Document
	To This WBS From	
1	All Program Elements	Financial Schedule Information
2	All Program Elements	Program-Related Technical Information

Technologies to be assessed: N/A

Options to be considered:

- Maintain all administrative systems in a configuration compatible with DOE reporting and planning conventions

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- DOE Order 4700.1
- Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program 1.1.1.1.01 Program Management & Admin. 1.1.1.1.01.01 Formulation	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.01.01/VI	5. WBS ELEMENT TITLE Program Planning, Integration, and Baseline Management							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	2,883	3,238	3,336
CENRTC			
GPP			
LINE ITEM			
TOTAL	2,883	3,238	3,336

B. TECHNICAL BASES

Goals & objectives:

Provide TWRS Program planning guidance and related integrated products to all participants as the basis for developing and maintaining the Program baseline. Develop and maintain the TWRS Program baseline and document in the TWRS Program Multi-Year Work Plan and supporting documents. Ensure that the TWRS Program baseline is fully integrated and maintained through controlled configuration management processes. Prepare and submit annual budget requests in the form of Activity Data Sheets to match the approved Program baseline, utilizing the 3 year/7 year rolling wave planning cycle. Provide TWRS Program Office focal point for customer and regulatory interface and coordination, TWRS Program Element interface and coordination, Program impacts of risk management assessments, and systems engineering and external interface integration. Provide for a total TWRS Program cost estimate database which will be updated as work scope estimates are better defined. Compare cost estimates with Program baseline activities, assessing potential programmatic impacts, and assigning priorities to competing work activities. Compare resource loaded activities against cost estimates and resolve programmatic issues.

Status of Design Documentation:

The TWRS Program management and baseline documents are in draft form, are or currently being developed. Validation and approval will continue until all products have been completed.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- TWRS Program Multi-Year Work Plan
- TWRS Program Activity Data Sheets
- Selected documents supporting baseline development

C. STATEMENT OF WORK

Required activities:

The following activities are required to fully perform the required scope of this Cost Account:

- Provide Baseline Management Systems/Enhanced Systems and Tools
- Line Management Interfaces/Communications Related to Baseline
- Integration Across TWRS Program Elements (Real time and during document production).
- Production/maintenance of TWRS Program Multi-Year Work Plan/Activity Data Sheets
- Production support/review of other TWRS Program Baseline documents/products
- Provide Cost Estimating methodology and maintain TWRS Program Cost Estimate Database
- Provide support of pre-validation/validation reviews and comment resolution
- Maintain interface and consistency with DOE and Hanford Site Strategic Plans

This scope supports the development and coordination of: (1) the TWRS Program Multi-Year Work Plan including all chapters and annexes. The TWRS Program Multi-Year Work Plan summarizes how the TWRS Program will be managed, including roles and responsibilities; Management Systems definitions and integration flows; Schedule/Cost Baselines including assumptions, constraints, deliverables, logics, Master Summary and Operating Schedules, multi-year cost baselines, key crosscut information, WBS Dictionaries, Milestone Logs, etc. The TWRS Multi-Year Program Plan detailed policies and procedures will be contained in the TWRS Program Management System Description; (2) the TWRS Program Management System Description including policies associated with specifics such as QA Plan, Environmental Plan, Safety Plan, Qualifications and Training, Information Resources Management, Data Management, Procedure Plan, System Engineering,

Business Management Plan, Property Management, etc. This TWRS Program Management Systems Description provides the detailed management plans summarized in the TWRS Program Multi-Year Work Plan; (3) the Management Integrating Procedures which document RL direction on key management systems outlined primarily in the TWRS Program Management System Description Annexes; (4) the WHC TWRS Implementing Procedures documenting specific approaches to Management Integrating Procedures; and (5) Subcontract support from SAIC, LANL, etc. supporting development of estimating systems, Business Management System development, procedures development, etc.

Provide program management planning for the TWRS Integrated Baseline and planning for ADS 1200, Management and Administration. Ensure integration in program planning. Update ADS 1200 annually. Assure the development of baseline management tools. Plan for updating the baseline following approved changes and update program documents as required. Develop cost reduction plans. Review management trade study analyses. Review resource allocation plans and forecasts generated by TWRS Business Management and the Program Elements. Review plans for Public Involvement Integration, Compliance integration, QTP Requirements, and Critical Path Analysis. Present critical path analysis to DOE and the regulators to comply with Tri-Party Agreement requirements.

Technologies to be assessed:

Enhanced software/hardware tools to interface TWRS Program tools with Hanford Site/Company Level tools will continue to be explored.

Options to be considered:

Separation of Performance Measurement Database from Financial Data System

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	J. E. Irvin	
Cost Account Manager	D. C. Frick	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>K. N. Jordan</i>	9/26/94
Activity Manager	J. E. Irvin <i>James E. Irvin</i>	9/26/94
Cost Account Manager	D. C. Frick <i>D. C. Frick</i>	9/26/94
Business Management Representatives	M. A. Broska <i>M. A. Broska</i> R. S. Claeson <i>RS Claeson</i>	9/22/94 9/22/94

FDS Number

1.1.1.1.01.01.01

A1-12

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program 1.1.1.01 Program Mgmt and Admin 1.1.1.01.01 Formulation	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.01.02/VI	5. WBS ELEMENT TITLE Systems Engineering							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-00-AA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	10,889	11,216	11,552
CENRTC			
GPP			
LINE ITEM			
TOTAL	10,889	11,216	11,552

For Initial planning, tie to repriced baseline.

1.1.1.1.01.01.02

A1-13

B. TECHNICAL BASES

Goals & objectives:

The goal of this element is to define and implement the system engineering process to be applied within TWRS.

WBS element objectives include the following:

Implement a systems engineering process within the TWRS program consistent with DOE 4700 as specified by DOE to develop the program technical basis. Provide the systems engineering tools, hardware and software to facilitate implementing systems engineering within the program and projects.

Establish the TWRS technical baseline as the foundation for all program planning.

Define the physical system requirements that must be satisfied by TWRS in accomplishing the mission.

Define the technical basis and associated baselines for the TWRS Program by the identification of all applicable technical functions, requirements, and constraints.

Define the program system architectures that satisfy the program functions and requirements.

Implement the systems engineering discipline within all program elements.

Ensure that program mission changes and/or changes in functions or requirements are assessed and traced down through the system architectures.

Verify that the system that is designed, built and operated satisfies all requirements.

Status of Design Documentation:

At this time the system engineering effort has produced the TWRS program functions and requirements and issued this document (DOE/RL 92-60, Rev 1, March, 1994) to DOE-RL. This represents the first time that a program wide technical baseline has been established that is traceable back to external requirements. Ongoing activities include the development of program level interface control documents (ICD's), technical requirement specifications, and the further expansion of the initial field of functions and requirements.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

This element will produce many system engineering products over the life of the TWRS program. Major deliverables for the FY95-97 time frame include the following:

Approved Program F&R Baseline document

Technical Requirement Specifications

Interface Control Documents

Baseline System Description

A Program Technical Requirements Review

Develop and approve the program system architectures

Issue all Design Requirements Documents to program elements based on system architectures.

Issue all system engineering products and review guidance procedures.

Integrated set of computer tools to facilitate application of systems engineering in TWRS.

Definition and implementation of the core systems engineering management tasks (e.g. risk management, decision management, configuration management)

C. STATEMENT OF WORK

Required activities:

1.0 TECHNICAL BASELINE DEVELOPMENT:

1.1 Functional Requirements Baseline:

Provide the technical basis for the TWRS Functional Requirements Baseline. The technical bases will be contained in the TWRS: Mission Analysis Report, Functions and Requirements Document, Interface Control Documents, and Baseline System Description (PMS Activity AAA 600).

Ensure the issues and enabling assumptions in the above documents are resolved by completion of the associated required analyses (PMS Activity AAA 800).

The required analyses will provide information to decision makers to allow for informed decision making. Establishing performance requirements and analyzing alternative architectures require engineering analyses to help define program direction.

The analyses will be reviewed and documented in a manner that will allow the documents to be referenced in the TWRS baseline documents. The documents will contain the technical analyses and "pedigree" of the data and assumptions used to complete the analyses.

Each required analysis will be planned separately. The planning will include: the area(s) of concern, scope, resources to be applied and type of document to be issued. The analyses that apply across the program will be funded by TWRS Systems Engineering. Analyses that apply to specific functions (e.g. High Level Waste Vittrification) will be funded by the program elements.

Maintain the Functional Requirements Baseline information in an approved database under configuration control. Re-issue the above documents after completion of key technical reviews (e.g. Technical Requirements Review, Design Requirements Review)

Present the information using standard Systems Engineering methods and formats (e.g. IDEF diagrams, N² diagrams, Requirement Allocation Tables)

Exercise configuration control using a change control board consisting of the appropriate technical and management personnel.

1.2 Technical Requirements Baseline:

Three TRS documents will be produced during FY 1995. There will be one document for each of the three level three functional areas: Manage Waste; Process Waste, and Manage System Generated Waste and Excess Facilities. These documents will be based on continued application of the TWRS systems engineering process described in the TWRS SEMP. They will also incorporate the results of trade studies completed during FY 1994 and insights gained through the modeling and simulation activities being conducted in the program. The data comprising the TRBL will be a description of the functions their associated requirements and architectures as well as interface requirements. This information will form the basis for formulating the program's mission requirements for the TWRS projects.

The technical requirements baselines will be developed by extending the team approach employed in the development of the F&R. The three teams will expand using personnel from the line technical organizations to provide expertise. Funding for support from the rest of the program will come from the organizations providing support. In addition the analyses will employ contract assets to expand both technical and systems engineering expertise where needed. The analyses will also employ results of ongoing modeling and trade study work. The technical requirements baseline will be subjected to internal and external review through the Technical

Requirements Review prior to its issue for approval.

1.3 Design Requirements Baseline:

The Design Requirements Baseline will form the bridge between the program systems engineering effort and the continuing systems engineering effort by each project. It will consist of the following:

For each project a design requirements document (DRD) will be developed. The DRD will contain the elements of the technical requirements baselines which are applicable to the project. This set of information will include functions allocated to the project, interfaces which the project must maintain (contained in an appropriate set of interface control documents, (ICD's) and architectures applicable to the project. The DRD's will be the primary responsibility of the systems engineering organization.

The project functions and operational requirements (F&OR) will be developed from the DRD. The DRD will contain the program's mission needs for the project. The F&OR will expand on the DRD and bring in infrastructure needs, design standards and other information necessary to begin detailed design by the AE. The F&OR will be the primary responsibility of the projects organizations.

2.0 SYSTEMS ENGINEERING MANAGEMENT

2.1 Systems Engineering Policy & Procedures:

To assure that the TWRS Systems Engineering policies and guidance agree with the site level systems engineering policies and guidance an assessment of the differences will be required. The revisions to the SEMP, SEWP, and related TWRS documents will be necessary based on the differences.

In parallel to the site interface activity, an EM-36 assessment of differences in the TWRS SEMP will be conducted.

2.2 SE Training:

Provide a systems engineering training program for the TWRS organization. Contract staff will provide one-on-one systems engineering training to TWRS employees as requested to ensure that the systems engineering leaders have a common basis for moving the analysis forward.

Manage the training task, coordinate TRW staff support, and market the training within TWRS.

2.3 Systems Engineering Tools:

Provide a set of systems engineering tools that will complement the on-going definition of the technical baseline. Including:

Information maps for an integrated information management system.

A requirements management and assured compliance system. Ensure this system is integrated with other TWRS program requirements management activities.

A dynamic modeling capability to generate responsive representations of system behavior to support trade studies and strategic analyses. Ensure this capability is integrated with other site level and program level models.

Decision analysis tools to present information about the TWRS to the decision makers.

2.4 Systems Engineering Performance Assessment:

This element will provide a performance measurement program that can be used to gauge how well systems engineering is being implemented in the program (process and implemented related) and how well systems engineering is directing the program (results related).

2.5 Decision Management:

Develop a methodology for making programmatic decisions within TWRS that is reproducible, defensible and sufficiently flexible to be applied to a wide range of decisions throughout the program.

1.1.1.1.01.01.02

A1-14

Develop a set of decision values (Criteria) that reflect the interests of the Department of Energy and the stakeholder groups having interests in the program.

Develop a set of programmatic decisions needed to formulate and execute the TWRS program. these decisions will be scheduled, decision teams formulated and supported by people knowledgeable in the decision process. This will be integrated with the TWRS Public Involvement activity.

Decisions, supporting analyses and results will be documented in the programmatic records so that decisions may be understood and reviewed as the program evolves.

2.6 Risk Management:

This element defines the process, procedures, and other products and activities needed to establish an understanding of the overall risk level within the TWRS program. Establishing the risk basis for the program is specified in such documents as 4700.1 and is of key interest to DOE-HQ. Establishing the risk basis for the program will allow the decision making process to make risk based decisions.

Establish a risk management process within the business structure of TWRS.

Provide necessary support tools and systems.

Perform a program level risk assessment and establish a program risk watch list.

Perform specific risk analysis as determined from the risk assessment results.

Integrate the risk information into the decision making process

2.7 Public Involvement:

The TWRS Systems Engineering public involvement program will be an integral part of the TWRS public involvement activity. The TWRS program is still under development. Systems Engineering is developing a public involvement plan which will be centered around opportunities for involvement chosen by the stakeholder representatives. These opportunities will allow presentation of data, exchange of opinion and provide a forum for revision of TWRS program features based on stakeholder interests. The schedule for systems engineering activities will be developed in conjunction with the TWRS program level public involvement schedule.

2.8 Interface Management:

Interface management will result in clearly identified top level interfaces which will require the extra degree of control and monitoring which the Interface Control Process provides.

The initially developed set of Programmatic Interface Control Documents will assign responsibility within the TWRS organization for establishing and maintaining an agreed level of control.

The PICDs will be expanded into a set of technical Interface Control Documents as functional decomposition and development of more detailed interfaces proceeds. The initial set of approximately 50 PICDs is expected to lead to approx. 200 ICDs to be completed with the Design Requirements Baseline.

The ICDs will constitute the baseline set to be delivered to projects for development of detailed system specifications and detailed technical interface documents subsequent to establishment of the Design Requirements baseline.

2.9 Systems Engineering Information Management:

This element will establish and perform the daily management of system engineering generated information. Activities will include operation of RMACS, IDMMS, etc. as production systems, ensuring configuration

control is maintained over these information data bases. This element will ensure that a structured process is established to input new and revised system functions and requirements as generated by external organizations, stakeholders, and DOE.

2.A Program Models:

Provide an integrated plan for all TWRS model activities. Ensure the models are based on an approved list of assumptions and the results are communicated in a consistent format.

Develop models to simulate and provide animation of the technical baseline system architectures.

Collect data to support model development.

Review collected data and model results and document results of review.

Update models to incorporate changes to the technical baseline system as they occur.

Provide a model or set of models to provide an animated simulation of the integrated baseline architectures.

The model(s) shall show:

Assumptions are consistent with the Program requirements.

Potential bottle-necks or logistics problems affecting the technical baselines.

An understanding of the timing sequences of the baseline system architectures.

Provide a consistent set of data that will be used by every program element for developing the technical baselines

2.B Project Strategy:

Provide an integrated TWRS project strategy that clearly defines:

The division of program scope into a workable set of projects based on:

TWRS project funding profile.

Program commitments based on the TPA and other program interfaces.

Operations strategy (logistics, operational scenarios).

Goals, objectives and general scope for each project.

General timing for each project (when the project is needed and when it can be delivered).

Document the project strategy and its basis.

2.C Technical Strategic Analysis:

The primary function of this activity will be the performance of the general TWRS planning studies and analyses which support cost effective management and direction of the TWRS program functions. Generally, any strategic planning studies performed will be of an overall program orientation.

3.0 BASELINE VERIFICATION

This activity specifies the required products and activities that are needed to verify that the physical products delivered satisfy the respective functions and requirements. The work identified in this element is split into three areas. The first being the program related verification activities. These consist of technical reviews, high level modeling and technology assessments. The second area is the project specific verification activities. These are defined by the projects but will include specific systems engineering technical reviews to ensure that the project design media remains consistent with the program requirements and functions compiled in the DRD's. The third area is the test and evaluation area. This includes program and project activities to define test activities, perform analysis and completing physical testing of system components or subsystems.

1.1.1.1.01.01.02

A1-18

3.1 Program Reviews:

This activity defines the review product requirements for all program reviews and establishes a change control system to deal with and track open actions and issues.

3.2 Project Reviews:

This element specifies the activities needed to implement the system engineering project reviews specified in the SEMP, SEWP, and associated system engineering documentation. This element will provide review content guidance, format guidance, entry/exit criteria for these reviews. The project organizations will be responsible for conducting and managing all reviews.

3.3 Test & Evaluation:

This element specifies the activities in the areas of verification, compliance, and reporting. The first area, verification requirements involves identifying where within the TWRS Program Test and Evaluation activities need to be implemented. Integration of these activities is the remaining tasks under this area. The second area, compliance verification, specifies the activities (such as analysis, modeling, bench testing, etc) that need to be implemented within the program to ensure that information is provided into the technical development process as needed. The final area is reporting status of the test and evaluation activities at the program and project level to ensure that information is incorporated into risk and decision management activities.

Technologies to be assessed:

Technologies that the various program elements will assess and apply will have to be traceable back to the system architectures that will be selected to satisfy the program mission. Program activities to develop technologies that are unrelated to the program functions and requirements and selected system architectures will be terminated.

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	J. E. Irvin	
Cost Account Manager	J. O. Honeyman	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>[Signature]</i>	9-22-94
Activity Manager	J. E. Irvin <i>[Signature]</i>	9-22-94
Cost Account Manager	J. O. Honeyman <i>[Signature]</i>	9/22/94
Business Management Representatives	M. A. Broska <i>[Signature]</i> R. S. Claeson <i>[Signature]</i>	9/22/94 9/22/94

FDS Number

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.01 Formulation	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.01.03/VI	5. WBS ELEMENT TITLE External Interface							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Items</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Items	EW3120075		
Expense	Capital	Line Items						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	500	412	424
CENRTC			
GPP			
LINE ITEM			
TOTAL	500	412	424

B. TECHNICAL BASES

Goals & Objectives:

The goal is to provide technical liaison between TWRS and external organizations that provide oversight or advice. In many cases this liaison role is carried out by the TWRS function.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

None identified. Oversight groups will provide findings and recommendations as they are generated. Advisory groups will provide reports, as appropriate, as a result of workshops and technical sessions.

C. STATEMENT OF WORK

Required activities:

Within their respective charters, assure that oversight and advisory groups are provided with the appropriate TWRS technical input. Assure that TWRS commitments are fulfilled, e.g., findings and recommendations are responded to.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	J. E. Irvin	
Cost Account Manager	J. O. Honeyman	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>K. N. Jordan</i>	9-22-94
Activity Manager	J. E. Irvin <i>J. E. Irvin</i>	9-22-94
Cost Account Manager	J. O. Honeyman <i>J. O. Honeyman</i>	9/22/94
Business Management Representatives	M. A. Broska <i>M. A. Broska</i> R. S. Claeson <i>R. S. Claeson</i>	9/22/94 9/22/94

FDS Number

This page intentionally left blank.

A1-24

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Progra Mgmt & Admin 1.1.1.1.01.01 Formulation	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.01.04/VI	5. WBS ELEMENT TITLE Public Involvement	
6. WBS INDEX LINE NO. Not used	7 CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER N/A/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	173	195	232
CENRTC			
GPP			
LINE ITEM			
TOTAL	173	195	232

B. TECHNICAL BASES

Goals & Objectives:

The goal is to assure external review groups meet with the appropriate M&O Contractor staff, receive information requested, and responses are provided to questions and recommendations. Provide clear, professional briefings and tours to visitors, external groups, and the customer.

Additionally, this element is taken to assure TWRS technology is integrated.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Integrated Technology Plan Annual Revision

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity codes ABH 100 and ADD 100.

Required activities:

Provide and coordinate briefings for and responses to review groups. Prepare and present briefings to visitors and other outside groups, provide support to TWRS, DOE, and M&O Contractor senior management in preparing briefing materials and reports. Coordinate and approve Integrated Technology Plan prepared by PNL. Provide advice and support to TWRS management on TWRS strategies, technical issues, foreign waste management plans, and technologies, etc..

Technologies to be assessed:

To be defined as technologies are developed and submitted for assessment.

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	J. E. Irvin	
Cost Account Manager	J. O. Honeyman	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>J. Schleuder</i>	9-22-94
Activity Manager	J. E. Irvin <i>J. Schleuder</i>	9-22-94
Cost Account Manager	J. O. Honeyman <i>J. Schleuder</i>	9/22/94
Business Management Representatives	M. A. Broska <i>M. A. Broska</i> R. S. Claeson <i>RS Claeson</i>	9/22/94 9/22/94

FDS Number

This page intentionally left blank.

A1-28

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt and Admin (M&O Contractor)	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02/V	5. WBS ELEMENT TITLE Execution	
6. WBS INDEX LINE NO. N/A	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS (DOE-RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	26,605	24,388	20,930				
CENRTC							
GPP							
LINE ITEM							
TOTAL	26,605	24,388	20,930				

B. TECHNICAL BASES

Goals and objectives:

Develop and apply an effective management system to execute the TWRS Program to include the following elements:

- Monthly, Quarterly, Annual Reporting Systems
- Change Control System(s)
- Funds Management
- Technical Development Management
- EIS Preparation Management
- RCRA Permit Implementation
- Public Involvement Management
- Information Resource Management

Major end-item deliverables:

- Work Authorizations
- Funds Allocations
- Status Reports and Analyses
- Funds Management
- Manage Cost/Schedule changes through formal processes
- Provide annual logic-based schedule updates for the Program.

Acceptance criteria:

This work will be performed in accordance with the criteria detailed in the Program Management System Description, DOE-RL-93-0106 and annexes and the Management Integration Procedures.

C. STATEMENT OF WORK

Required activities over lifetime:

The M&O contractor will:

- Execute authorized programmatic work using the approved WBS and schedule, as detailed in the annual fiscal year DOE authorization and allocation of funds.
- Provide routine and timely reporting of budget/cost/schedule and technical activity.
- Provide programmatic analysis and make necessary change proposals.

Interfaces:

#	From This WBS To	Item Provided
1	DOE, M&O Contr, Others	Monthly, Quarterly, Annual Reports
2	DOE, M&O Contr, Others	Change Control Documentation
3	DOE, M&O Contr, Others	Funds Management Data
4	DOE, M&O Contr, Others	Technical Development Data
5	DOE, M&O Contr, Others	EIS Development Data
6	DOE, M&O Contr, Others	RCRA Permitting Data
7	DOE, M&O Contr, Others	Public Involvement Management Data
	To This WBS From	
1	DOE, WHC, Others	Programmatic Direction
2	DOE, WHC, Others	Requests for Programmatic Information

Technologies to be assessed: N/AOptions to be considered:

- Maintain all administrative systems in a configuration compatible with DOE reporting and planning conventions

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- DOE Order 4700.1
- *Hanford Federal Facility Agreement and Consent Order*
- *National Environmental Policy Act (NEPA)*
- *Resource Conservation and Recovery Act (RCRA)*
- *Management System Description Annexes*
 - Total Quality Management Plan
 - Configuration Management Plan
 - Health and Safety Management Plan
 - Environmental Compliance Management Plan
 - Information Resources Management Plan
 - Acquisition Management Plan
 - Testing and Evaluation Plan
 - Qualification and Training Plan
 - Business Management Plan
 - Systems Engineering Management Plan
 - Qualification and Training Planning

This page intentionally left blank.

A1-32

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.02 Execution (M&O Contractor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.01/VI	5. WBS ELEMENT TITLE Program Administration							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Items</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Items	EW3120075		
Expense	Capital	Line Items						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	1,879	2,694	1,468
CENRTC	-	-	-
GPP	-	-	-
LINE ITEM	-	-	-
TOTAL	1,879	2,694	1,468

B. TECHNICAL BASES

Goals & Objectives:

The goal is to provide Program Planning & Baseline services. Objectives include integrated guidelines and support to major baseline products development; program roles and responsibilities; cost/schedule/technical interface; development of performance-based multi-year baselines for all fund types, including programmatic strategies and alternatives. Support development of logic-oriented resource loaded schedules; maintain baseline via change management, including establishing management policies; evaluate performance of baseline against objectives, including cost reduction initiatives; cost estimating analysis, resource allocation analysis; develop/evaluate external interfaces; and provide feedback of planning process for continual process improvements.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Multi-year Baseline - Resource Loaded	Annually - August
Program Element Schedule	Annually - August
Change Requests & Updated Baseline Document	As required
Cost Schedule Analysis & Corrective Actions	Continuous
ADS Preparation and Five Year Schedule	
Monthly Performance Measurement	Monthly

C. STATEMENT OF WORK

The following activities are included in the Program Master Schedule under codes ABA100, ABB100, and ADJ100.

Required activities:

Define functional needs, mandated requirements, and developmental needs, as related to schedules.

Develop the schedule baseline using integrated logics and schedules.

Summarize cost estimating data into the cost baseline.

WHC will execute authorized programmatic work using the approved WBS and schedule as detailed in the annual FY DOE authorization and allocation of funds.

Provide programmatic analysis and make necessary change proposals.

Analyze resource utilization, elapsed time factors, and program commitments.

Use trending techniques to forecast success/failure probabilities.

Recommend appropriate recovery strategies/alternatives as necessary.

1.1.1.1.01.02.01

A1-34

Technologies to be assessed: N/AOptions to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	R. M. Black	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>[Signature]</i>	9-22-94
Activity Manager	W. J. Schlauder <i>[Signature]</i>	9-22-94
Cost Account Manager	R. M. Black <i>[Signature]</i> <i>For Rm Black</i>	9/22/94
Business Management Representatives	M. A. Broska <i>[Signature]</i> R. S. Claeson <i>[Signature]</i>	9/22/94 9/22/94

FDS Number

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.02/VI	5. WBS ELEMENT TITLE Technology Development Program Office (TDPO)/PNL							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	7,440	7,123	7,172
CENRTC			
GPP			
LINE ITEM			
TOTAL	7,440	7,123	7,172

B. TECHNICAL BASIS

Goals & Objectives:

The goal is to prepare and manage the TWRS Integrated Technology Planning effort. Objectives include coordination of the TWRS technology needs and priorities; establishment of technology groups for the TWRS functional areas: Pretreatment, Retrieval, and Tank Safety Characterization/Sampling, HLW & LLW. Select, monitor, and coordinate the performance of the annual TWRS technology development activities that have been assigned to DOE national laboratories.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Major Deliverable 1

The primary deliverable from technology development activities are the technology solutions that meet the mission of the TWRS Program. The Integrated Technology Plan (ITP) documents the overall system-level direction of the technology program. The ITP is updated annually to document:

Major changes from the previous year's plan.

Technology development logic which provides a basis for prioritization of TWRS technology needs and activities.

Technology development planning process and document hierarchy.

TWRS functions and requirements that drive technology development needs.

Reference and alternative architectures and how technologies would be deployed.

Top level estimates of scope, schedule, and budget for required technology development.

Key technical uncertainties.

Deliverables/Milestones:

Annual updates of the ITP.

Major Deliverable 2

Annual Technology Development Work Plans will be developed based upon priorities and the technical needs defined in the Integrated Technology Plan (ITP). The Fiscal year Technology Development Work Plan will support the TWRS Program FYWP requirements and will include but not be limited to work scope definition, schedules and budgets for the technology development activities that have been identified and selected for accomplishment during the upcoming fiscal year.

Deliverables/Milestones:

Annual submittal of fiscal year Technology Development work plan.

Annual input to the multi-year program plan.

C. STATEMENT OF WORK

The following required activities are included in the TWRS Program Master Schedule under activities ABE 100 and ABE 200:

Required activities:

Establish PNL TWRS Program organization, including responsibility and authority of PNL staff.

Ensure that the required level of quality, safety, and environmental compliance is applied consistent with applicable requirements.

Provide the technical basis and scientific understanding to support TWRS Program baseline decisions and actions for assigned activities.

Manage the technology in support of TWRS Program requirements and specific project needs.

Interact with industry, universities and other national laboratories performing technology development in support of the TWRS Program.

Prepare a consolidated TWRS Program monthly technology development progress report addressing technical, schedule and cost performance.

Develop and maintain a PNL TWRS Program Management Plan.

Develop and maintain a PNL TWRS Quality Assurance Plan.

Develop and maintain an integrated project management baseline performance measurement system.

Develop and update the Integrated Technology Plan.

Technologies to be assessed:

This task is the management of technologies, therefore no technologies will be assessed under this cost account

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Cost Account Manager	W. J. Schlauder	
Activity Manager	M. M. Mitchell	
Business Management Representatives	J. A. Hansen J. E. Herod	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	W. J. Schlauder <i>W. J. Schlauder</i>	9/26/94
Activity Manager	W. J. Schlauder <i>W. J. Schlauder</i>	9/26/94
Cost Account Manager	G. H. Beeman <i>G. H. Beeman</i>	9/26/94
Business Management Representatives	J. A. Hansen <i>J. A. Hansen</i> J. E. Herod <i>J. E. Herod</i>	Sept. 22, 1994 9-22-94

FDS Number

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.03/VI	5. WBS ELEMENT TITLE Project Business Management/Site Integration							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-00-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	3,572	3,496	2,890
CENRTC			
GPP			
LINE ITEM			
TOTAL	3,572	3,496	2,890

B. TECHNICAL BASES

Goals & objectives:

The goal is to manage and integrate, in a cost effective manner, the TWRS Projects business management functions utilizing baseline management, change control, funds management, and schedule control. Objectives include establishment of management system processes and subsequent documentation including plans and procedures. Providing, developing and maintaining project management systems for all projects and interface with TWRS and site management systems, i.e., SMS and PTS (PMS activity ABD100).

Provide integration of site planning and infrastructure development for the TWRS projects (PMS activity ABD120) by completing a TWRS Master Site Plan, identify infrastructure needs, and then complete yearly updates.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Projects Management and Integration (PMS activity ABD100) produces many individual products some of which are outlined in block C, "Statement of Work". Required interfaces would include RL TWRS Projects, RL Project Management Division (PMD), TWRS Programs, Construction Projects, RL, site contractors and WHC organizations.

The TWRS Site Integration (PMS activity ABD120) deliverables are to complete a TWRS Master Site Plan in FY 1995, update the plan in FY 1995 as well as yearly updates thereafter. Additional deliverables are outlined in block C, "Statement of Work". Also included is the definition of a project to provide overall infrastructure for connection to all TWRS projects (excluding preparation of a conceptual design report). Interface will be required with all Construction Projects, ICF KHZ Site Planning and the TWRS EIS.

C. STATEMENT OF WORK

Required activities:

Project Management and Integration (PMS activity ABD100) provides for the overall integration management of construction projects. It includes the integration of projects cost and schedule to the TWRS Multi-Year Program Plan, and baseline along with submittals and associated reporting requirements. This also provides for the following: 1) TWRS Projects definition and strategic planning support, 2) project administration, 3) management assessments, 4) procedures, 5) project change control, 6) project baseline control, 7) SMS/PTS/MRM reporting, 8) ADS preparation support, 9) projects financial and staffing consolidations /crosscuts, 10) MCS implementation, and 11) project documentation. Includes the management and general administration of TWRS Projects (General Support Projects, Waste Disposal Projects, Tank Farm Projects, Waste Retrieval Projects and future projects). Provides for management integration of all types of projects, including Major System Acquisitions, Major Projects, Line Items, General Plant Projects and Small Projects.

TWRS Site Integration (PMS activity ABD120) is outlined in the six following items: 1) Develop a TWRS Master Site Plan based on known information or best assumptions supplied from individual projects, 2) Identify and plan for integrated infrastructure needs to help minimize such costs for individual projects, 3) Establish methods to assure all projects are aware of proposed additions or changes to land use in the TWRS area so each project can consider any potential impacts, 4) Implement a method to control TWRS site layout drawings, 5) Provide input and assistance to projects in preparing Site Evaluation Reports, 6) Coordinate TWRS site planning with cognizant WHC and ICF KEH groups.

Technologies to be assessed: N/A

Options to be considered:

Project Management & Integration (PMS activity ABD100) is reviewing the current utilization of WHC and Kaiser project management staff to eliminate redundancies and obtain cost savings. This includes elements of process definition, improvement, and consolidation. Construction Projects is reviewing the possibility of direct funding the administrative support organizations which in FY 1994 were funded by department overhead prior to the reorganization into TWRS.

TWRS Site Integration (PMS activity ABD120) is reviewing the possibility of creating a project that would provide for projects infrastructure needs and thus obtain cost savings as opposed to each project having to supply these needs individually, resulting in inefficient construction methods and potential duplication of efforts.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	J. F. Erben	
Business Management Representatives	J. A. Hansen J. E. Herod	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element	K. N. Jordan <i>K. N. Jordan</i>	9/26/94
Activity Manager	W. J. Schauder <i>W. J. Schauder</i>	9/26/94
Cost Account Manager	J. F. Erben <i>J. F. Erben</i>	9/26/94
Business Management Representatives	J. A. Hansen <i>J. A. Hansen</i> J. E. Herod <i>J. E. Herod</i>	Sept. 22, 94 9-22-94

FDS Number

1D1B03

This page intentionally left blank.

A1-44

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Pgm Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.04/VI	5. WBS ELEMENT TITLE TWRS Environmental Impact Statement (TWRS-EIS)	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) N/A	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	6,322	4,299	1,914
CENRTC			
GPP			
LINE ITEM			
TOTAL	6,322	4,299	1,914

1.1.1.1.01.02.04

A1-45

B. TECHNICAL BASES

Background:

A primary goal of the Hanford Facility Agreement and Consent Order - Tri-Party Agreement (TPA) between the US Environmental Protection Agency and the Washington State Department of Ecology (Ecology) is the closure and disposition of the waste contained in the Hanford single-shell and double-shell tanks. The Tank Waste Remediation System (TWRS) was proposed by DOE-RL to provide a program for management of these activities.

The National Environmental Policy Act (NEPA) (42 USC 4321 et.seq.) requires that actions taken by the U.S. Government be evaluated for environmental impacts. In concert with that statute, a NEPA review is required for all proposed actions at the Hanford Site with DOE determining the appropriate levels of the review. For the proposed TWRS, DOE has determined that TWRS activities constitute a major Federal action significantly affecting the environment.

The State Environmental Policy Act (SEPA) (RCW 43.21C) requires a state or local agency evaluation of potential environmental impacts associated with projects under state jurisdiction. Ecology has also determined that the TWRS activities will have significant environmental effects.

In light of these DOE and Ecology determinations, an Environmental Impact Statement (EIS) will be prepared in accordance with NEPA and SEPA. The TWRS EIS will address the DOE's proposal for the management, treatment, storage and disposal of waste currently held in 149 existing single-shell tanks, 28 double-shell tanks, the strontium and cesium capsules as well as other wastes to be generated in future decontamination and decommissioning activities. Specific milestones for conduct of TWRS activities are contained in the TPA and form the basis for the proposed action to be outlined in the EIS.

Statutory and Regulatory Requirements:

- * Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement, TPA)
- * National Environmental Policy Act (NEPA) (42 USC 4321 et.seq.)
- * Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)
- * DOE NEPA Implementing Procedures (10 CFR 1021)
- * Washington State Environmental Policy Act (SEPA), Chapter 43.21 RCW.
- * SEPA Rules (Washington Administrative Code [WAC] 197-11)
- * DOE Order 5440.1E NEPA Compliance Program; RL 5440.01A, Implementation of the National Environmental Policy Act of the Richland Operations Office"

Goals & objectives:

- * Provide Technical Support Document (TSD) for requested technical alternatives.
- * Provide Safety Accident/Reports
- * Provide Emission/Release Data Reports, and Non-Emission Support Data Reports
- * Coordinate WHC review of the Draft Environmental Impact Statement (DEIS).
- * Respond to inquiries, and public comment.

1.1.1.1.01.02.04

A1-46

- * Provide coordination, assistance and responses until the Record of Decision (ROD) has been published and comments have been received.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- * Engineering Data Packages (9 presently identified) addressing technical alternatives delivered to the Environmental Impact Statement contractor [Jacobs Engineering Group Inc.].
 - Inventory Data
 - TPA Preferred Alternative
 - No Action Alternative
 - Extensive Pretreatment
 - Minimal Pretreatment
 - In Situ Disposal
 - Capsule Disposition
 - Other Options and Rejected Alternatives
 - Integrated Document
- * Respond to EIS contractor data needs as enumerated by, "Data Request for TWRS EIS," Jacobs Engineering Group Inc., 94-JE-DOE-010, June 17, 1994.
- * Answer inquiries when the draft EIS is issued for review and comment
- * Coordinate activities during the time the final EIS is issued for review and approval
- * Record of Decision (ROD) issued
- * Coordinate support for the EIS-ROD comments and questions.
- * Coordinate any compliance on engineering efforts needed for the Mitigation Action Plan (MAP)
- * Coordinate any compliance or engineering issues needed to start definitive design work on Low Level Waste (LLW) Vitrification or Pre-Treatment

C. STATEMENT OF WORK

The following required activities are included in the TWRS Program Master Schedule under activity code ABF100.

Required activities:

- * Provide for the preparation of the technical documents needed for the preparation of the TWRS Environmental Impact Statement
- * Issue preliminary data packages for internal reviews and support incorporation of comments.
- * Support issuance of final Engineering Data Report
- * Issue final Engineering Data Report
- * Support issuance of the DEIS
- * Provide coordination of the engineering, safety and regulatory functions to complete the TWRS-EIS, and issuance of the ROD.
- * Provide for Pacific Northwest laboratory (PNL) support for DOE interfaces support reviews and to establish and maintain cognizance of scope, project elements and regulatory compliance.
- * Provide for RL requested "independent" contractor support to RL
- * Provide for RL requested contractor support from Argonne Laboratories

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	L. E. Borneman	
Business Management Representatives	J. A. Hansen J. E. Herod	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>[Signature]</i>	9-22-94
Activity Manager	W. J. Schlauder <i>[Signature]</i>	9-22-94
Cost Account Manager	L. E. Borneman <i>[Signature]</i>	9-22-94
Business Management Representatives	J. A. Hansen <i>[Signature]</i> J. E. Herod <i>[Signature]</i>	Sep. 22, 1994 9-22-94

FDS Number

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Pgm Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.05/VI	5. WBS ELEMENT TITLE Permit Implementation							
6. WBS INDEX LINE NO Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	448	274	88
CENRTC			
GPP			
LINE ITEM			
TOTAL	448	274	88

B. TECHNICAL BASES

Goals & objectives:

- * Implementation of the Hanford Dangerous Waste Permit
- * Development of the Transfer Line Mapping and Marking Plan
- * TWRS input to the Land Disposal Restrictions (LDR) Annual Report (TPA M-26-01E)
- * Review TWRS facility permit plans

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- * Implementation of the Hanford Dangerous Waste Permit. Once the permit is approved, implementation must be completed within 30 days.
- * Included in the Hanford Dangerous Waste Permit, is a request to mark and map the underground transfer lines. A plan for Marking and Mapping of the transfer line outside of the 200 area Tank Farms will be developed.
- * TPA Milestone M-26-01E is for TWRS to provide input into the Land Disposal Restrictions Annual Report. This will be complete by 03/31/95, per the TPA milestone.
- * Implement and maintain permit data base.

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity code ABG100.

Required activities:

- * Implement the Hanford Dangerous Waste Permit
- * Develop a plan for the marking and mapping of the transfer lines outside of the 200 Area Tank Farms.
- * Compile the information for the LDR report. Prepare report for Ecology.
- * Compile monthly updates on the TPA milestones.
- * Review TWRS facility permit plans.

This activity will implement the Hanford Facility Dangerous Waste Permit which was issued for review/comments in 02/94. This activity will encompass the requirements in the site permit which must be directly carried out by TWRS. This includes new requirements pertaining to mapping and marking of underground mixed waste lines, implementing a waste minimization plan and increased inspections of all facilities. This activity includes costs associated with required outyear permit modifications.

The draft permit is subject to public comment and the allocation of budget depends upon when the Permit is issued.

Technologies to be assessed: N/A

Options to be considered: N/A

1.1.1.1.01.02.05

A1-50

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	L. E. Borneman	
Business Management Representatives	J. A. Hansen J. F. Herod	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>[Signature]</i>	9-22-94
Activity Manager	W. J. Schlauder <i>[Signature]</i>	9-22-94
Cost Account Manager	L. E. Borneman <i>[Signature]</i>	9-22-94
Business Management Representatives	J. A. Hansen <i>[Signature]</i> J. F. Herod <i>[Signature]</i>	Sept. 22, 1994 9-22-94

FDS Number

This page intentionally left blank.

A1-52

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt and Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.07/VI	5. WBS ELEMENT TITLE Communications and Administration							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	786	709	734
CENRTC			
GPP			
LINE ITEM			
TOTAL	786	709	734

B. TECHNICAL BASES

Goals & objectives:

The goal is to communicate TWRS objectives and achievements to program organizations. Objectives include the preparation of materials for Reach articles, placard boards, town meetings, all manager meetings, and FYI. Administer the TWRS Employee Recognition Program; coordinate/oversee TWRS United Way Campaign, Sagebrush Games, savings bonds, Great Ideas, ECCEL and Employee Concerns program; coordinate TWRS employee requisitions and maintain organizational charts/charters.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Reach articles
- FYI
- ECCEL coordination
- Employee meetings
- Recognition program
- Organization charts/charters

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity codes ADM 100 and ADF 110:

Required Activities:

Develop and support approximately 150 presentations for TWRS management annually.

Research/develop/publish approximately 100 articles annually.

Chair TWRS Communication Council.

Produce more than 1000 graphic certificates/name tags, special awards annually.

Support TWRS management with walk-in graphics/communication support as required.

Organization/program development/procurement and presentation:

- 12 monthly employee recognition luncheons honoring approximately 250 employee annually.

- 4 quarterly employee recognition breakfasts honoring approximately 85 employees annually.

- 1 annual employee recognition banquet honoring approximately 16 employees annually.

Chair Employee Recognition council and manage nomination/selection process for employee recognition. monthly, quarterly and annually.

Coordinate and plan approximately 52 special recognition activities in support of approx. 1700 employees. annually.

Administer ECCEL program full-time.

Administration support and coordination of all WHC employee involvement programs.

United Way/Sagebrush/March of dimes/Great Ideas/Savings through Sharing/Bond Drive.

Act as TWRS Safety Champion.

Administrative support for reorganizations and updating of organization charts/coordination of student employment/internal/external hiring coordination, analysis and reporting/TWRS charters and job descriptions and New Employee/Secretarial orientations.

Building Administration and reception for 2750 and 2705HV.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	J. P. Menard	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>K. N. Jordan</i>	9-22-94
Activity Manager	W. J. Schlauder <i>W. J. Schlauder</i>	9-22-94
Cost Account Manager	J. P. Menard <i>J. P. Menard</i>	9-22-94
Business Management Representatives	M. A. Broska <i>M. A. Broska</i> R. S. Claeson <i>R. S. Claeson</i>	9-22-94 9/22/94

FDS Number

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Pgm Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.08/VI	5. WBS ELEMENT TITLE Quality Assurance							
6. WBS INDEX LINE NO Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	598	929	942
CENRTC			
GPP			
LINE ITEM			
TOTAL	598	929	942

B. TECHNICAL BASES

Goals and Objectives:

The goal is to actively participate with DOE-RL TWRS in the development and maintenance of a fully integrated system of management controls for TWRS. Objectives include the assumption of a lead role in the development and maintenance of the annexes to the DOE-RL TWRS Program Management System Description related to Environmental, Safety, Health, and Quality Assurance. Modify WHC documents (i.e., policies and procedures) to agree with the ESH&Q annexes and associated DOE-RL TWRS Management Integrating Procedures.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Deliverable 1: Revision 1 of the Total Quality Management Plan. Milestone: [type: DOE] [number: TBD] [date: not yet set by DOE]

Deliverable 2: Formal comments on proposed revision 1 of other ESH&Q annexes (i.e., Environmental Compliance Management Plan and Health and Safety Management Plan). Milestone: [type: WHC internal] [number: TBD] [date: dependent on DOE date for release of revision 1 of annexes]

Deliverable 3: Formal comments on proposed revisions to DOE-RL TWRS Management Integrating Procedures. Milestone: [type: WHC internal] [number: TBD] [date: varies - depends on revision schedule of DOE-RL TWRS MIPs]

Deliverable 4: Revised matrix for correlation of revised DOE-RL TWRS Management Integration Procedures and WHC internal procedures. Milestone: [type: DOE] [number: TBD] [date: not yet set by DOE]

Deliverable 5: Set of WHC TWRS Quality Assurance procedures submitted to DOE-RL TWRS for information upon revision to agree with revised DOE-RL TWRS annexes and Management Integrating Procedures. Milestone: [type: DOE] [number: TBD] [date: not yet set by DOE - depends on schedule for revision of annexes and MIPs]

Deliverable 6: A WHC TWRS QA training plan to define the retraining required for WHC TWRS Quality Assurance personnel as a result of DOE-RL TWRS revising their annexes and Management Integrating Procedures. This training plan shall include a schedule that supports DOE's milestone for the second phase of TWRS program qualification. Milestone: [type: DOE] [number: TBD] [date: depends on DOE's milestone date for phase 2 of TWRS program qualification]

Deliverable 7: Quarterly assessment reports on the status of progress to implement the requirements of the revised DOE-RL TWRS annexes, MIPs, and WHC TWRS QA procedures submitted to DOE-RL TWRS for information. Milestone: [type: WHC internal] [number: TBD] [date: the last day of each calendar quarter]

Deliverable 8: Quarterly reports of quality information analysis (i.e., trending) submitted to DOE-RL TWRS for information. Analysis reports shall identify problems to be corrected and opportunities for quality improvement. Milestone: [type: WHC internal] [number: TBD] [date: the last day of each calendar quarter - first quarterly report due 6/30/95]

Deliverable 9: A copy of a WHC TWRS Self-Assessment report for Phase 2 of TWRS program qualification submitted to DOE-RL TWRS for information. The scope of the self-assessment shall be

affected by the definition for Phase 2 of TWRS program qualification set by DOE-RL TWRS.

Milestone: [type: DOE] [number: TBD] [date: not yet set by DOE]

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity code ADA 100.

Required activities:

Support DOE-RL TWRS efforts to develop and implement a TWRS-wide system of management controls. This support will be accomplished by WHC TWRS QA personnel attending strategy, planning, status, or information exchange sessions on behalf of DOE-RL TWRS. This support also includes the gathering and reporting of status information to DOE-RL TWRS on a weekly and monthly basis. No milestone is associated with this activity. Schedule activity numbers are QA950300 (FY95), QA960300 (FY96), and QA970300 (FY97).

Revise the Total Quality Management Plan (annex 6 of the DOE-RL TWRS Program Management System Description) each fiscal year. Prepare a draft revision based on changed requirements and continuous quality improvement and distribute it for review. Respond to reviewers' comments and incorporate according to merit. Submit a final draft of the revision for DOE-RL TWRS approval. Milestone associated with this activity is described above under Major End-Item Deliverables, element a. Schedule activity numbers are QA950310 (FY95), QA960310 (FY96), and QA970310 (FY97).

Review drafts of revisions to ESH&Q annexes of the DOE-RL TWRS Program Management System Description for their impact on the Total Quality Management Plan. Provide formal comments to DOE-RL TWRS. Milestone associated with this activity is described above in Major End-Item Deliverables, element b. Schedule activity numbers are QA950320 (FY95), QA960320 (FY96), and QA970320 (FY97).

Review drafts of revisions to DOE-RL TWRS Management Integrating Procedures for their impact on WHC TWRS procedures. Provide formal comment to DOE-RL TWRS. Milestone associated with this activity is described above in Major End-Item Deliverables, element c. Schedule activity numbers are QA950330 (FY95), QA960330 (FY96), and QA970330 (FY97).

Correlate revised DOE-RL TWRS Management Integrating Procedures to WHC internal procedures. Provide a matrix to DOE-RL TWRS that relates each revised MIP to one or more WHC internal procedure(s). Milestone associated with this activity is described above in Major End-Item Deliverables, element d. Schedule activity numbers are QA950340 (FY95), QA960340 (FY96), QA970340 (FY97).

Prepare revisions to WHC TWRS QA procedures to react to changes in the DOE-RL TWRS Program Management System Description annexes and Management Integrating Procedures. Provide the set of changed WHC procedures to DOE-RL TWRS for information. Milestone associated with this activity is described above in Major End-Item Deliverables, element e. Schedule activity numbers are QA950350 (FY95), QA960350 (FY96), and QA970350 (FY97).

Prepare revised training modules based on revisions to DOE-RL TWRS annexes and MIPs and WHC internal procedures. Milestone associated with this activity is described above in Major End-Item Deliverables, element f. Schedule activity numbers are QA950360 (FY95), QA960360 (FY96), and QA970360 (FY97).

Conduct quarterly assessments (i.e., audits/surveillances/reviews) of WHC progress in implementing the requirements of the annexes to the DOE-RL TWRS Program Management System Description,

WHC-SP-1101

MIPs, and WHC internal procedures based on the annexes and MIPs. Provide an information copy of the assessment report to DOE-RL TWRS. Milestone associated with this activity is described above in Major End-Item Deliverables, element g. Schedule activity numbers are QA950370 (FY95), QA960370 (FY96), and QA970370 (FY97).

Establish a system for the gathering and analysis of quality information useful in determining adverse trends and opportunities for improvement. Conduct analyses each calendar quarter and provide DOE-RL TWRS with a copy of the resulting report. Milestone associated with this activity is described above in Major End-Item Deliverables, element h. Schedule activity numbers are QA950380 (FY95), QA960380 (FY96), and QA970380 (FY97).

Perform a self-assessment of WHC implementation of the requirements from the DOE-RL TWRS Program Management System Description annexes and MIPs for Phase 2 of TWRS program qualification. Milestone for this activity is described above in Major End-Item Deliverables, element i. Schedule activity numbers are QA950390 (FY95), QA960390 (FY96), and QA970390 (FY97).

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	J. Weber	
Business Management Representatives	J. A. Hansen J. E. Herod	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>[Signature]</i>	9-22-94
Activity Manager	W. J. Schlauder <i>[Signature]</i>	9-22-94
Cost Account Manager	J. Weber <i>[Signature]</i>	9/22/94
Business Management Representatives	J. A. Hansen <i>[Signature]</i> J. E. Herod <i>[Signature]</i>	Sept. 22, 1994 9-22-94

FDS Number

This page intentionally left blank.

**Tank and Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Pgm Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.09/VI	5. WBS ELEMENT TITLE Safety and Health Compliance and Environmental Compliance							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	2,522	2,831	3,232
CENRTC			
GPP			
LINE ITEM			
TOTAL	2,522	2,831	3,232

B. TECHNICAL BASES

Background for Safety and Health Compliance:

The primary objective of Safety and Health Compliance is to support the TWRS Program by implementing appropriate programs and establishing a safety culture which ensures that TWRS Program facilities are managed and operated without undue risk to the general public, onsite workers, facility personnel, and the environment.

Background for Environmental Compliance:

The primary objective of Environmental Compliance is to assure TWRS Program compliance with Federal, State, and local environmental regulations throughout the lifecycle of the program. The DOE vision is to clean up the Hanford Site and become internationally recognized for environmental research and development, science, and operational excellence in everything done at the Hanford Site. The TWRS Environmental Compliance management vision in support of this higher-tier vision is to: (1) be known as an institutional leader for implementing innovative quality environmental processes, and (2) be recognized as a model of excellence in environmental management.

Statutory and Regulatory Requirements for Safety and Health:

- * Title 10, Code of Federal Regulations, "Energy," U.S. Department of Energy, Washington, D.C.: Part 820, "Procedure Rules for DOE Nuclear Facilities;" Part 835, "Radiation Protection."
- * Title 29, Code of Federal Regulations, "Labor," Occupational Safety and Health Administration, Washington, D.C.: Part 1910, Occupational Safety and Health Standards;" Part 1926, "Safety and Health Regulations for Construction."
- * Title 40, Code of Federal Regulations, "Protection of Environment," U.S. Environmental Protection Agency, Washington, D.C.
- * Title 49, Code of Federal Regulations, "Transportation," U.S. Department of Transportation, Washington, D.C.
- * U.S. Department of Energy Orders:
 - DOE, 1986, DOE Order 1540.2, "Hazardous Material Packaging for Transport - Administrative Procedures.
 - DOE, 1993, DOE Order 3790.1A, "Federal Employee Occupational Safety and Health Program."
 - DOE, 1993, DOE Order 5000.3B, "Occurrence Reporting and Processing of Operations Information."
 - DOE, 1993, DOE Order 5480.7A, "Fire Protection."
 - DOE, 1988, DOE Order 5480.11, "Radiation Protection for Occupational Workers."
 - DOE, 1991, DOE Order 5480.21, "Unreviewed Safety Questions."
 - DOE, 1992, DOE Order 5480.23, "Nuclear Safety Analysis Reports."
 - DOE, 1992, DOE Order 5480.24, "Nuclear Criticality Safety."
 - DOE, 1987, DOE Order 5482.1B, "Environmental, Safety, Health and Quality Assurance Appraisal and Surveillance Program."
 - DOE, 1986, DOE Order 5483.1B, "Occupational Safety and Health Program for Department of Energy Operations."
 - DOE, 1991, DOE Order 5500.3A, "Planning and Preparedness for Operational Emergencies.
 - DOE, 1991, DOE Order 5500.1B, "Emergency Management System."
 - DOE, 1991, DOE Order 5500.2B, "Emergency Categories, Classes, and Notification and Reporting Requirements.

- * HSRCM-1, "Hanford Site Radiological Control Manual, Rev 1," U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Statutory and Regulatory Requirements for Environmental Compliance:

- * Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement, TPA)
- * National Environmental Policy Act (NEPA) (42 USC 4321 et.seq.)
- * Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508)
- * DOE NEPA Implementing Procedures (10 CFR 1021)
- * Washington State Environmental Policy Act (SEPA), Chapter 43.21 RCW.
- * SEPA Rules (Washington Administrative Code [WAC] 197-11)
- * DOE Order 5440.1E NEPA Compliance Program; RL 5440.01A, Implementation of the National Environmental Policy Act of the Richland Operations Office"
- * Clean Water Act (CWA) (Title 33 USC 1251)
- * Resource Conservation and Recovery Act (RCRA)
- * Washington Administrative Code (WAC) 173-303, "Dangerous Waste Regulations."
- * DOE Orders, 5400 Series
- * The Clean Air Act (CAA)
- * Toxic Substances Control Act (TSCA)
- * Emergency Planning and Community Right-to-Know Act, Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986
- * Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Goals & objectives for Safety and Health Compliance:

- * Identify resources, funding, and schedules needed to accomplish Safety and Health Compliance Activities.
- * Prepare and issue ADS 1200, Fiscal Year Work Plan (FYWP), and Multi-Year Plan (MYWP).
- * Prepare Work Breakdown Structure (WBS) Dictionaries
- * Monitor expenditures - verify implementation of progress to FYWP
- * Prepare a WHC Implementation Plan (IP) to identify how WHC will implement the policy stated in Revision 0 of the DOE-RL TWRS Program Management System Description Plan. Base the implementation plan on the published Safety Compliance Management Plan (SCMP) and the Management Integrating Procedures (MIPs) associated with it. Submit the IP to DOE-RL TWRS for acceptance.

- * The Implementation plan will address costs and schedules to accomplish the following:
 - Review revisions to Safety and Health annexes of the DOE-RL TWRS Program Management System Description of their impact on the SCMP. Provide formal comments to DOE-RL TWRS.
 - Review DOE-RL TWRS Management Integrating Procedures for their impact on WHC TWRS procedures. Provide formal comment to DOE-RL TWRS.
 - Correlate DOE-RL TWRS Management Integrating Procedures to WHC internal procedures.
 - Provide a matrix to DOE-RL that relates each MIP to one or more WHC internal procedure(s).
 - Prepare revisions to WHC TWRS procedures to reflect guidance/requirements in the DOE-RL TWRS Program Management System Description annexes and Management Integrating Procedures.
 - Provide the set of changed WHC procedures to DOE-RL TWRS for information.
 - Prepare revised WHC training modules based on guidance/requirements DOE-RL TWRS annexes, MIP's and WHC internal procedures.
 - Conduct assessments of WHC progress in implementing the requirements of the annexes to the DOE-RL TWRS Program Management System Description, and MIPs.
 - Perform a self-assessment of WHC implementation of the requirements from the DOE-RL TWRS Program Management System Description annexes and MIPs for Phase 2 of TWRS program qualification.
- * Review Standards and Requirements Identification Documents (S/Rids) for safety and health concerns. Revise the S/RIDS as required to meet current regulations and orders.

Goals & objectives for Environmental Compliance:

- * Identify resources, funding, and schedules needed to accomplish Compliance Activities.
- * Prepare and issue ADS 1200, Fiscal Year Work Plan (FYWP), and Multi-Year Work Plan (MYWP).
- * Prepare Work Breakdown Structure (WBS) Dictionaries
- * Monitor expenditures - verify implementation of progress to FYWP
- * Prepare TWRS Environmental Compliance Document to describe the environmental regulations and order which are required for TWRS Plant.
- * Tri-Party Agreement (TPA) integration for TWRS activities and coordinate TWRS wide environmental compliance issues.
- * Monthly updates of TPA milestones.
- * Prepare a WHC implementation plan to identify how WHC will implement the policy stated in revision 0 of the DOE-RL TWRS Management Plan. Base the implementation plan on the published Environmental Compliance Management Plan (ECMP) and associated procedures. Submit the implementation plan to DOE-RL TWRS for acceptance. Implementation plan to address cost and schedules to accomplish the following:
 - Review revisions to Environmental annex of the DOE-RL TWRS Program Management System Description for their impact on the ECMP. Provide formal comments to DOE-RL TWRS.
 - Review revisions to DOE-RL TWRS procedures for their impact on WHC TWRS procedures. Provide formal comment to DOE-RL TWRS.

WHC-SP-1101

- Prepare revisions to WHC TWRS procedures to reflect guidance/requirements in the DOE-RL TWRS Program Management System Description annexes and procedures. Provide the set of changed WHC procedures to DOE-RL TWRS for information.
 - Prepare revised WHC training modules based on DOE-RL TWRS annexes and procedures and WHC internal procedures.
 - Conduct assessments of WHC progress in implementing the requirements of the annexes to the DOE-RL TWRS Program Management System Description, and WHC internal procedures based on the annexes and procedures.
 - Perform a self-assessment of WHC implementation of the requirements from DOE-RL TWRS Program Management System Description annexes.
- * Prepare plan to integrate environmental concerns and regulations into all of TWRS programs, projects and operations.
 - * Prepare Operational Environmental Requirements (OER) document to assist TWRS Plant in obtaining compliance with Ecology and DOE orders and regulations.
 - * Establish a TWRS-wide self-assessment program to include a program plan, assessment protocol and record keeping.
 - * Conduct comprehensive short- and long-term environmental planning

Status of Design Documentation: N/A

Major end-item deliverables for Safety and Health Compliance (related to milestones and interfaces appropriate to this level of the WBS):

- * Resources, funding and schedules for each Fiscal Year
- * Fiscal Year Work Package and Multi-Year Work Package
- * Implementation plan for the Program Management System for Safety and Health Annexes and associated MIPs that will detail cost and schedule information to establish criteria for a formal change request.
- * Review S/RIDs, and revise accordingly.

Major end-item deliverables for Environmental Compliance (related to milestones and interfaces appropriate to this level of the WBS):

- * Resources, funding and schedules for each Fiscal Year
- * Fiscal Year Work Package and Multi-Year Work Package
- * Develop Environmental Compliance Manual.
- * Develop plan to implement the PMSD Environmental Annex and associated Mins that will detail cost and schedule information to establish criteria for a formal change request.
- * Develop plan to integrate environmental concerns and regulations into TWRS programs, projects and operations.
- * Issue OER Document.

- * Prepare self-assessment program plan.

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity codes ADC100, ADC200, ADC300, ADC400, and ADC500.

Required activities for Safety and Health Compliance:

- * Resources, funding, and schedules
- * FYPD and MYPD
- * Monitor Expenditures
- * Prepare implementation plan for PMSD Annexes and associated MIPs.
- * Review S/RIDs
- * Propose revisions to S/RIDs as needed.

Required activities for Environmental Compliance:

- * Resources, funding, and schedules
- * FYWP and MYWP
- * Monitor Expenditures
- * Prepare TWRS Environmental Compliance Manual.
- * Prepare implementation plan for DOE-RL TWRS Management Plan and Mins.
- * Prepare integration plan for environmental concerns in TWRS.
- * Develop OER document for TWRS Plant.
- * Develop a self assessment program for TWRS.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	L. E. Borneman	
Business Management Representatives	J. A. Hansen J. F. Herod	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>[Signature]</i>	9/22/94
Activity Manager	W. J. Schlauder <i>[Signature]</i>	9/22/94
Cost Account Manager	L. E. Borneman <i>[Signature]</i>	9-22-94
Business Management Representatives	J. A. Hansen <i>[Signature]</i> J. F. Herod <i>[Signature]</i>	Sept. 22, 1994 9-22-94

FDS Number

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.10/VI	5. WBS ELEMENT TITLE Reengineering							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	626	381	401
CENRTC			
GPP			
LINE ITEM			
TOTAL	626	381	401

B. TECHNICAL BASES

Goals & Objectives:

The goal is to seek out and coordinate work process improvements throughout the TWRS organization. Objectives include facilitation and documentation of each improvement.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Identification and completion of workshops and implementation of work process modifications are the responsibility of the performing organizations.

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity code ADF 100.

Required activities:

For fiscal years 1995, 1996, and 1997, Reengineering will offer the following support activities:

Provide facilitators with various skills to program elements and performing organizations.

Investigate training programs for work process improvement techniques.

Maintain an information database of work process improvement.

Coordinate TWRS with site-wide reengineering activities.

Integrate internal TWRS work process improvement actions.

Assist other TWRS organizations develop objectives, goals, and milestones for work process improvement.

Maintain contracts with various consultants, such as PQC, for use by performing organizations in work process improvement.

Coordinate the preparation of an overall TWRS strategy for work process improvement.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	M. K. Mahaffey	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>K. N. Jordan</i>	9/22/94
Activity Manager	W. J. Schlauder <i>W. J. Schlauder</i>	9/22/94
Cost Account Manager	M. K. Mahaffey <i>M. K. Mahaffey</i>	9/22/94
Business Management Representatives	M. A. Broska <i>M. A. Broska</i> R. S. Claeson <i>R. S. Claeson</i>	9/22/94

FDS Number

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1. TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-AC06-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.11/VI	5. WBS ELEMENT TITLE Qualification and Training	
6. WBS INDEX LINE NO. N/A	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	407	247	254
CENRTC			
GPP			
LINE ITEM			
TOTAL	407	247	254

B. TECHNICAL BASES

Goals & Objectives:

The goal is to comply with DNFSB Recommendation 92-4 Implementation Plan.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

WHC approved Position Qualification Standards for middle level manager positions within TWRS whose actions or decisions can affect safety, quality, or the environment.

WHC approved Position Qualification Standards for technical support positions within TWRS whose actions or decisions can affect safety, quality, or the environment.

WHC approved plan identifying the actions required for unqualified individuals to become qualified using the Position Qualification Standards. This plan is individualized for each employee and is called an Individual Qualification and Training Plan.

Annual staffing analysis which compares needs against assets as described the selection process and planned actions to ensure that qualified individuals are available and assigned to specific projects.

WHC approved selection process to ensure that qualified individuals are available and assigned to specific projects.

Completed database containing Qualification Training Plan and Position Standard data retrieval by position, standard requirement and individual.

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity code ADI 100.

Required activities:

Identification of specific positions and personnel within the TWRS Projects and Engineering groups who belong in the technical support training program must be completed.

For the Technical Support training program, resolve the task statements in dispute among the managers and SMEs.

Develop the task data sheets for those tasks in item #2 with input from the SMEs.

Develop the Manager and Technical Support Personnel Position Qualification Standards.

Assist line management in identifying incumbent personnel for each of the programs.

Assist line management in identifying individuals who do not meet Position Qualification Standards.

Develop a selection process for ensuring that qualified individuals are placed in positions.

Perform a staffing analysis considering programmatic needs versus available resources.

WHC-SP-1101

Develop and maintain a database containing Qualification Training Plan and Position Standard data retrievable by position, standard requirement and individual.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	T. Morton	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>[Signature]</i>	9/22/94
Activity Manager	W. J. Schlauder <i>[Signature]</i>	9/22/94
Cost Account Manager	T. Morton <i>[Signature]</i>	9-22-94
Business Management Representatives	M. A. Broska <i>[Signature]</i> R. S. Claeson <i>[Signature]</i>	9-22-94 9/22/94

FDS Number

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.12/VI	5. WBS ELEMENT TITLE Information Resource Management							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	2,005	1,405	1,835
CENRTC			
GPP			
LINE ITEM			
TOTAL	2,005	1,405	1,835

B. TECHNICAL BASES

Goals & Objectives:

The goal of the TWRS Information management activity is to establish a consolidated, national TWRS information resources management (IRM) function that is based on systems engineering principles. The basis of the IRM function is to:

Comply with requirements and DOE strategy.

Maximize interconnectivity in information processing.

Encourage compatible formats, effective interfaces and integrated activities.

Integrate information flow vertically and horizontally.

Achieve consistent information resources management functional process flows that are fully integrated with the Hanford site.

The IRM activity will manage TWRS information resources to support the TWRS mission by meeting the following objectives:

INFORMATION MANAGEMENT - Managing information resources to comply with information system acquisition requirements supporting TWRS program elements while maintaining a continuous quality improvement environment.

INFORMATION SYSTEMS - Establishing a configured and controlled information system utilizing the Hanford Site network and TWRS data systems through a proactive approach to establishing an information system definition with controlled changes/modifications to the information system. Judicious selection and implementation of ADP resources will be applied.

INFORMATION PROCESSES - Enhance information systems that already exist within TWRS program participant organizations by meeting the requirements of the TWRS IRM S/RID and centralization of TWRS records.

Status of Design Documentation:

A TWRS Information System Definition (ISD) Engineering Study Work Plan for Improved Data/Information Flow, WHC-SD-WM-PLN-087, Rev 0, will be issued in June, 1994. This work plan describes the organizations, managerial processes, technical processes, activities, schedule and costs required for development of a TWRS information system definition engineering study and a description of follow on work for implementation activities.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Major milestones for FY95 are:

Completion of the TWRS ISD Engineering Study with implementation requirements and strategies.

A TWRS/IRM transition plan will be finalized to establish a TWRS records management/document services process center, an information systems planning and development center and an information systems operations process center.

Support will be provided to complete TPA milestone 35-03, TWRS Data Management Plan.

Implementing procedures for each of the functional element areas will be initiated.

The TWRS IRM S/RID will be completed.

Initiation of the data management centers.

Establishment of a detailed IRM WBS.

Start of migration effort to fund all TWRS IRM activities out of ADS 1200.

Major milestones for FY96 are:

Completion of the document control, information development and systems centers.

Maintenance of the document control, information development and information systems centers.

Initiation of a distributed access client/server IM system within TWRS.

Major milestones for FY97 are:

Complete migration to a distributed access client/server IM system within TWRS.

Completion of migration efforts to fund IRM funding activities in ADS 1200, or G&A.

Continued maintenance of the document control, information development and information systems centers and added enhancements as they become identified.

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity code ADE 100.

Required activities:

Establish IRM function management/execution - 1st quarter FY95.

Complete the TWRS ISD engineering study - 1st quarter FY95.

Complete the TWRS/IRM transition plan - 1st quarter FY95.

Complete TPA milestone 35-03 - March 30th, 1995.

Start functional element implementation procedures - 1st quarter FY95.

Identify proposed organizational structure for the information centers - 2nd quarter FY95.

Identify staffing and funding requirements for the information centers - 2nd quarter FY95.

Initiate IRM training and staff management - 2nd quarter FY95.

Initiate the TWRS information systems planning and development center - 3rd quarter FY95.

Complete TWRS IRM S/RID - 4th quarter FY95.

WHC-SP-1101

Complete the TWRS information systems planning /development center - 1st quarter FY96.

Initiate the records management center - 1st quarter FY96.

Initiate the information systems operations center - 1st quarter FY96.

Complete records management and operations centers - 4th quarter FY96.

Complete migration of distributed client/server system - 3rd quarter FY97.

Complete funding centralization within ADS 1200 - 4th quarter FY97.

Maintain centers - FY97.

Technologies to be assessed:

The methodology to be used to determine the TWRS ISD is ARCHITECTURE PLUS (A+) (DMR, Inc.). A+ is a specialized program to support the ISD study and is intended to be coordinated with TWRS systems engineering efforts. Other technologies to be assessed are composite document management and related HIMACS technologies, client-server implementations, object oriented definition design and programming.

Options to be considered:

Options to be considered will be identified during the course of the development of the TWRS ISD study. It is planned to identify a TWRS information "AS IS" model and develop a TWRS information "TO BE" model. The final task, one of "CHANGE" will develop and coordinate migration plans from the "AS IS" to the "TO BE" models.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	M. R. Schmidt	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>K. N. Jordan</i>	9/22/94
Activity Manager	W. J. Schlauder <i>W. J. Schlauder</i>	9/22/94
Cost Account Manager	M. R. Schmidt <i>M. R. Schmidt</i>	9-22-94
Business Management Representatives	M. A. Broska <i>M. A. Broska</i> R. S. Claeson <i>R. S. Claeson</i>	9-22-94 9/22/94

FDS Number

This page intentionally left blank.

A1-84

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.02 Execution	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-AC06-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.02.13/VI	5. WBS ELEMENT TITLE Acquisition Management							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-00-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING . . . Funded by Material Procurement Rate. . .			
CENRTC			
GPP			
LINE ITEM			
TOTAL			

B. TECHNICAL BASES

Goals & Objectives:

The goal is to provide acquisition management support to the TWRS Program with an emphasis on effective planning, implementation of acquisition strategies, and integrated efforts of program, technical, and management personnel working together with TWRS-dedicated contracting professionals.

The objectives are:

Provide acquisition management support to TWRS.

Complete a three-year TWRS Procurement Plan.

Develop a TWRS Implementation Procedure compliant with the DOE-RL program direction.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

WHC TWRS Implementing Procedure.

C. STATEMENT OF WORK

The supporting activities of Acquisition Management are included in the TWRS Program Master Schedule under activity code ADG 100.

Required activities:

Compare requirements of Management System Description and associated RL approved directives against WHC company level directives. Prepare necessary WHC Implementing Procedure.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	T. J. Harper	
Business Management Representatives	M. A. Broska R.S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>W. J. Schlauder</i>	9-22-94
Activity Manager	W. J. Schlauder <i>W. J. Schlauder</i>	9-22-94
Cost Account Manager	T. J. Harper <i>T. J. Harper</i>	9-22-94
Business Management Representatives	M. A. Broska <i>M. A. Broska</i> R. S. Claeson <i>R. S. Claeson</i>	9-22-94 9-22-94

FDS Number

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt and Admin (M&O Contractor)	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.03/V	5. WBS ELEMENT TITLE Evaluation	
6. WBS INDEX LINE NO. N/A	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	7,152	7,116	7,166				
CENRTC							
GPP							
LINE ITEM							
TOTAL	7,152	7,116	7,166				

B. TECHNICAL BASES

Goals and objectives:

- Monitor and analyze programmatic performance/cost & schedule activity.
- Provide feedback on cost/schedule performance.
- Monitor engineering performance against accepted standards.
- Recommend corrective actions.

- Corrective action recommendations
- Audits
- Surveillances
- Assessments

Acceptance criteria:

This work will be performed in accordance with the criteria detailed in the Program Management System Description, DOE-RL-93-0106, and annexes; the Management Implementing Procedures; and applicable engineering standards.

C. STATEMENT OF WORK

Required activities over lifetime:

- Collect and analyze performance data.
- Analyze resource utilization, elapsed time factors, and program commitments.
- Use trending techniques to forecast success/failure probabilities.
- Recommend appropriate recovery strategies/alternatives as necessary.
- Employ peer review teams to perform external audit functions.

Interfaces:

#	From This WBS To	Item Provided
1	Other Program Elements	Engineering Analyses
2	Other Program Elements	Findings of External Audit Teams
	To This WBS From	
1	External Audit Teams	Audit Findings

Technologies to be assessed: N/A

Options to be considered:

- Maintain all administrative systems in a configuration compatible with DOE reporting and planning conventions.

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- DOE Order 4700.1

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.03 Evaluation	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.03.01/VI	5. WBS ELEMENT TITLE Program Analysis							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-00-AC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER /TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	53	0	0
CENRTC			
GPP			
LINE ITEM			
TOTAL	53	0	0

B. TECHNICAL BASES

Goals & objectives:

Purpose is to determine how various functions are achieving their respective objectives and compliance with the MYWP. The program analysis activity does not perform the respective function task itself.

Example: Baseline management monitors performance of the TWRS program against the baseline periodically. Program Analysis evaluates how well Baseline Management performs this activity compared to Baseline Management objectives and the MYWP.

Status of Design Documentation: N/A

Major end-item deliverables :

1. Develop and manage procedures for analyzing performance of various baseline and ADS 1200 functions.

C. STATEMENT OF WORK

The following activities are included in the TWRS Master Program Schedule under activity code ACA 200.

Required activities:

Prepare and Manage Program Analysis Procedures.

Technologies to be assessed: N/A

Options to be considered:

Execution by staff assigned to support the Program Analysis function.

Self analysis by staff responsible for execution of the functions.

Analysis by line Management.

Incorporation of this scope into other functions that will conduct similar activities that are presently directed toward other objectives such as Quality Assurance.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	H. T. Tauscher	
Cost Account Manager	H. T. Tauscher	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>K. N. Jordan</i>	9-22-94
Activity Manager	H. T. Tauscher <i>H. T. Tauscher</i>	9/22/94
Cost Account Manager	H. T. Tauscher <i>H. T. Tauscher</i>	9/22/94
Business Management Representatives	M. A. Broska <i>M. A. Broska</i> R. S. Claeson <i>RS Claeson</i>	9-22-94 9/22/94

FDS Number

. This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1.1 TWRS PROGRAM 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.03 Evaluation	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.03.02/VI	5. WBS ELEMENT TITLE Program Data	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	1,640	1,690	1,740
CENRTC			
GPP			
LINE ITEM			
TOTAL	1,640	1,690	1,740

B. TECHNICAL BASES

Goals & objectives:

The goal of this account is to provide routine and timely reporting of actual budget/cost/schedule and technical activity for review, analysis, corrective action, issues identification, and budget and funding control point analysis. The objectives include the collection, monitoring, and analysis of programmatic performance cost and schedule activity. This monitoring and analytical process will provide cost/schedule performance feedback and recommended corrective actions.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

FORMAL REPORTING:

SMS and PTS Reports
MPR
Significant Events Report

INTERNAL REPORTING:

Multiple tracking/status worksheets

C. STATEMENT OF WORK

The following activities are included in the TWRS Master Program Schedule under activity code ACA 100.

Required activities:

General:

Collect, monitor, and analyze programmatic performance/cost & schedule activity.

Provide feedback on cost/schedule performance, monitor engineering performance against approved baseline.

Recommend corrective actions.

Follow up on actions items.

Specific:

REPORTING:

ADS/FDS/P3 Reporting & Analysis
SMS Report
PTS Report
Senior Management/Controller Briefings

ANALYSIS:

ADS/FDS/P3 Reporting & Analysis
Financial Plan Reconciliation
Funds Transfers
Funds Control Tables

WHC-SP-1101

Monthly/Quarterly Performance Reviews

Organizational Codes/Mod
Masts/Reorganizations

Unmatched Report

Uncosted Analysis

Secretarial/Clerical Support

FYSF/EAC Consolidation
Priority List Worksheet
Unmatched Report

INDIRECT FYWP:

Secretarial/Clerical Support

Technologies to be assessed:

Available data information systems and computer "hardware and software".

Options to be considered:

Available data information systems and computer "hardware and software".

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	H. T. Tauscher	
Cost Account Manager	M. L. Petermann	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan <i>K. N. Jordan</i>	9-22-94
Activity Manager	H. T. Tauscher <i>H. Tauscher</i>	9/22/94
Cost Account Manager	M. L. Petermann <i>M. L. Petermann</i>	9/22/94
Business Management Representatives	M. A. Broska <i>M. A. Broska</i> R. S. Claeson <i>RS Claeson</i>	9/22/94 9/22/94

FDS Number

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt and Admin 1.1.1.1.01.03 Evaluation	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.03.03/VI	5. WBS ELEMENT TITLE Customer Support (GSSC)							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW-3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW-3120075		
Expense	Capital	Line Item						
EW-3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	5,334	5,426	5,426
CENRTC			
GPP			
LINE ITEM			
TOTAL	5,334	5,426	5,426

B. TECHNICAL BASES

Goals & objectives:

Provide Level of Effort technical, programmatic, and administrative support to the RL TWRS Program. Additionally, the resources for other DOE Laboratory support are also managed under this element of the program.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Technical reviews, comments, status reports, presentation materials
- Management Integrating Procedures; Training Plans/Modules/Records
- Assessments, surveillances and oversight reports
- Estimates; schedules
- Benchmark development
- Validations
- Correspondence distribution and filing; Action tracking reports
- Office space

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity codes ADK 100, ADK 120, and ADK 130.

Required activities:

Program Management and Integration; ES&H Oversight; Technical Support; Strategic Planning; Business Management Development; Training; Estimating; Validations; Sub-TAPs; TWRS Benchmark Development; Correspondence Distribution, Tracking and Filing; Action Tracking Reports; Provide Rental Space

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	W. J. Schlauder	
Activity Manager	H. T. Tauscher	
Cost Account Manager	W. F. Edwards	
Project Control Analyst	J. A. Hansen	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	W. J. Schlauder <i>W. J. Schlauder</i>	9/26/94
Activity Manager	H. T. Tauscher <i>H. T. Tauscher</i>	9/26/94
Cost Account Manager	W. F. Edwards x <i>W. F. Edwards</i>	9/26/94
Project Control Analyst	J. A. Hansen <i>J. A. Hansen</i>	9/26/94

FDS Number

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt & Admin 1.1.1.1.01.03 Evaluation	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.03.04/VI	5. WBS ELEMENT TITLE Engineering Assessment							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	125	0	0
CENRTC			
GPP			
LINE ITEM			
TOTAL	125	0	0

B. TECHNICAL BASES

Goals & objectives:

The goal is to achieve excellence in engineering by performing self assessments, reviewing the technical training program and supporting for technical resolutions to DNFSB 90-02 recommendations. The objectives include:

Perform self-assessment(s) by assembling task teams to achieve excellence in TWRS Engineering by ensuring that engineerin/engineering documents are in compliance with DOE Orders, industry standards and codes, engineering procedures, and with other applicable state and national regulatory requirements.

Support technical resolution of DNFSB 90-02 recommendationsfor implementation of standard requirements relating to design, construction, operations, and decommissioning of defense nuclera facilities.

Develop TWRS Engineering Handbook which is to be used as a road-map for TWRS engineers to find various information, standards, and requirements.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS

FY95 Milestones:	Complete Minimum of six self-assessments. Issue TWRS Engineering Handbook.
FY96 Milestones:	Complete six to eight self-assessments. Revisit and revise training and certification program to implement changes in industry and WHC procedures.
FY97 Milestones:	Complete six to eight self-assessments.

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity code . ACA400.

Required activities:

Perform self-assessment(s), to achieve excellence in TWRS Engineering by ensuring that engineering /engineering documents are in compliance with DOE Orders, Industry Standards and Codes, WHC Engineering Procedures and with other applicable State and National Regulatory Requirements.

Support technical resolution of DNFSB 90-02 recommendations for implementation of standard requirements relating to design, construction, operations, and decommissioning of defense nuclear facilities.

Develop TWRS Engineering Handbook which is to be used as a road map for TWRS engineers to find various information, standards and requirements.

Technologies to be assessed: N/A

Options to be considered:

Should this funding not be approved, TWRS/WHC objectives of engineering excellence will be jeopardized. Also WHC commitment on self-assessments will not met.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	H. T. Tauscher	
Cost Account Manager	R. K. Sanan	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	H. T. Tauscher	
Cost Account Manager	R. K. Sanan	
Business Management Representatives	M. A. Broska <i>M.A. Broska</i> R. S. Claeson <i>RS Claeson</i>	9/22/94 9/22/94

FDS Number

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt and Admin (M&O Contractor)	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.04/V	5. WBS ELEMENT TITLE Program Management Systems	
6. WBS INDEX LINE NO. N/A	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AD	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120075	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING							
CENRTC							
GPP							
LINE ITEM							
TOTAL	0	0	0				

B. TECHNICAL BASES

Goals and objectives:

- Develop the TWRS Program Implementation Plan.
- Define the TWRS Program management scheme and program requirements.
- Develop the Program Management System Description.
- Develop the Management Implementing Procedures.

Major end-item deliverables:

- Total Quality Management Plan
- Configuration Management Plan
- Health and Safety Management Plan
- Environmental Compliance Management Plan
- Public Involvement Plan
- Information Resources Management Plan
- Acquisition Management Plan
- Testing and Evaluation Plan
- Qualification and Training Plan
- Business Management Plan
- Systems Engineering Management Plan
- Property Management Plan

Acceptance criteria:

This work will be performed in accordance with the criteria detailed in the Program Management System Description, DOE-RL-93-0106, and annexes and the Management Implementing Procedures.

C. STATEMENT OF WORK

Required activities over lifetime:

- Review TWRS/M&O Contractor management systems, procedures, and plans to ensure compliance with the TWRS Strategic Plan.
- Utilize external resources to create systems, procedures, and plans if in-house subject matter experts are not available.
- Develop and implement a training program for the TWRS Program, and support personnel in the use/application of the TWRS Program Management Systems.
- Provide a documented change process to accommodate the evolutionary processes of TWRS management and provide for DOE-RL participation/approval.

Interfaces:

#	From This WBS To	Item Provided
1	All Program Elements	Configuration Management Plan, Acquisition Management Plan, Public Involvement Management Plan, Business Management Plan, Building Management Plan, Systems Engineering Management Plan, Test/Evaluation Management Plan, Training and Qualification Plan, ESH & QA Support Management Plan, IRM Support Plan
	To This WBS From	
1	DOE-RL	Record of Decision on TWRS EIS
2	All Program Elements	Information to support TWRS TSD Unit Permit Applications
3	All Program Elements	Information to support modifications to TWRS RCRA Permit

Technologies to be assessed: N/AOptions to be considered:

- Maintain all administrative systems in a configuration compatible with DOE reporting and planning conventions.

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- DOE Order 4700.1
- DOE Order 5700.6C
- *Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)*
- Applicable sections of the Washington Administrative Code (WAC)

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS PROGRAM 1.1.1.1 Manage Program 1.1.1.1.01 Program Mgmt and Admin 1.1.1.1.01.04 Program Mgmt Systems	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.1.01.04.01/VI	5. WBS ELEMENT TITLE Program Documentation Development							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1200-0-AD							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) N/A	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120075</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120075		
Expense	Capital	Line Item						
EW3120075								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	0	0	0
CENRTC			
GPP			
LINE ITEM			
TOTAL	0	0	0

B. TECHNICAL BASES

Goals & objectives:

The goals of this program element are:

Develop and apply an effective management system to execute the TWRS program to include the following elements:

Monthly, quarterly, annual reporting systems
Change control system(s)
Funds management
Technical development management

Define the TWRS management scheme and program requirements.

Develop the program management system description.

Develop the management implementing procedures.

Development of TWRS management systems and the automated resource loaded Primavera/FDS schedule/cost system using Primavera and Parade software.

Specifics include the development of automated input screens and reporting output (e.g., CAPS, SMS, monthly reports, resource mix), and to support unforeseen requests by WHC personnel in support of both TWRS and non-TWRS objectives. Examples include staff requirements by area, uncosted/unobligated analysis technology development crosscuts, etc; ADP steering committee; computer procurement acquisition plan.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Program Management System Description & Annexes	Annual Update
Management Implementing Procedures	Support as Required
Audits, Surveillances, Assessments	Quarterly
Computer Acquisition Strategy	Annually
Total Quality Management Plan	Update as Needed
Configuration Management Plan	Update as Needed
Health & Safety Management Plan	Update as Needed
Environmental Compliance Management Plan	Update as Needed
Public Involvement Plan	Update as Needed
Information Resources Management Plan	Update as Needed
Acquisition Management Plan	Update as Needed

Testing and Evaluation Plan	Update as Needed
Qualification and Training Plan	Update as Needed
Business Management Plan	Update as Needed
Systems Engineering Management Plan	Update as Needed
Property Management Plan	Update as Needed

C. STATEMENT OF WORK

The following activities are included in the TWRS Program Master Schedule under activity codes ADA 100, ADB 100, ADC 100, ADC 200, ADC 300, ADC 400, ADC 500, ADD 100, ADE 100, ADF 100, ADG 100, ADH, 100, ADH 200, ADI 100, ADJ 100, ADK 100, ADL 100, ADL 200, ADL 300, and ADM 100.

Required Activities:

Review TWRS/WHC management systems, procedures, and plans to assure compliance with the TWRS Strategic Plan.

Utilize external resources to create systems, procedures, and plans if in-house subject matter experts are not available.

Develop and implement a training program for TWRS and support personnel in the use./application of the TWRS program management systems.

Provide a change control system to accommodate the evolutionary processes of TWRS management and provide for RL participation/approval.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	M. W. Wells	
Business Management Representatives	M. A. Broska R. S. Claeson	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	K. N. Jordan	
Activity Manager	W. J. Schlauder	
Cost Account Manager	M. W. Wells	
Business Management Representatives	M. A. Broska R. S. Claeson	

FDS Number

Tank Waste Remediation System
Work Breakdown Structure Dictionary

1. PROGRAM TITLE/PARTICIPANT 1.1 Tank Waste Remediation System Mission 1.1.1 TWRS Program/M&O Contractor	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930															
4. WBS ELEMENT CODE/LEVEL 1.1.1.2/III	5. WBS ELEMENT TITLE Manage Tank Waste																
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994															
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0, 1110-0, 1120-0, 1120-1, 1120-2, 1120-4, 1120-6, 1120-7, 1280-0-AA, 1130-0, 1210-0, 1210-2, 1210-4																
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENT DOCUMENT (DOE/RL-92-60 REV 1) 4.2.1 Manage Tank Waste 4.2.3 Manage Systems Generated Waste & Excess Facilities	12. BUDGET AND REPORTING NUMBER <table> <tr> <td>Expense</td><td>Capital</td><td>Line Item</td></tr> <tr> <td>EW3120071</td><td>35EW31207</td><td>39EW31301</td></tr> <tr> <td>EW3120072</td><td>35EW31301</td><td></td></tr> <tr> <td>EW3120074</td><td></td><td></td></tr> <tr> <td>EW3130010</td><td></td><td></td></tr> </table>		Expense	Capital	Line Item	EW3120071	35EW31207	39EW31301	EW3120072	35EW31301		EW3120074			EW3130010		
Expense	Capital	Line Item															
EW3120071	35EW31207	39EW31301															
EW3120072	35EW31301																
EW3120074																	
EW3130010																	

13. ELEMENT DESCRIPTION

The total cost of this WBS element is 14,023,123,000.

The Manage Tank Waste element consists of elements that will manage existing tank waste (e.g., waste contained in double-shell tanks, single-shell tanks, and miscellaneous tanks), new tank waste from site-level interfaces (e.g., facility operations, D&D, ER), and in-process waste (e.g., pretreated high-level waste, pretreated low-level waste, partially pretreated waste) from TWRS. Manage Tank Waste includes safe compliant storage, waste characterization, waste retrieval, waste concentration, and waste transfer to other facilities or processes. The waste will continue to be managed until all of the waste is removed from all of the tanks.

Also included in the Manage Tank Waste element is the management of waste and excess facilities generated during the process of remediating TWRS tank waste. Activities to be managed include disposition of liquid and gaseous effluent, as well as solid waste and excess facilities, and the disposition of reusable materials. This effort includes management of miscellaneous waste and processing to transfer failed equipment like pumps and melters to the organization responsible for ultimate disposal. This activity will terminate when all tank waste is remediated and all excess facilities have been turned over to the site-level Deactivate Facilities for final cleanup and closure.

Manage Tank Waste is comprised of the following elements:

- Tank Farm Operations and Maintenance (1.1.1.2.01)
- Waste Tank Safety (1.1.1.2.02)
- Tank Farm Upgrades (1.1.1.2.03)
- Characterization (1.1.1.2.04)
- Waste Retrieval (1.1.1.2.05)

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste	2. DATE PREPARED August 31, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01/IV	5. WBS ELEMENT TITLE Tank Farm Operations and Maintenance	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.4 Transfer Waste 4.2.1.5 Concentrate Waste 4.2.3.2 Disposition Gaseous Effluents 4.2.3.3 Disposition Liquid Effluents 4.2.3.4 Disposition Solid Waste 4.2.3.5 Disposition Excess Facilities 4.2.3.6 Disposition Reusable Materials	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT

The total cost of Tank Farm Operations and Maintenance is \$5,196,539,000.

B. TECHNICAL BASES

The functional product of Tank Farm Operations and Maintenance (O&M) is management of tank farm waste and facilities until waste is removed from all tanks for final disposal processing and facilities have been turned over to the Environmental Restoration (ER) Decontamination & Decommissioning (D&D) program. This program element is currently scheduled to end in the year 2028. The D&D turnover deliverable standard will be as established by EM-40 in the Office of Environmental Restoration Decontamination and Decommissioning Guidance Document. Standards to which waste must be removed from the waste tanks will be established by final closure plans developed by the Retrieval Program.

Work scope planning and risk factors are programmatically. As infrastructure upgrades and restoration activities are completed and a final safety basis is achieved, it will transform into a low risk activity. Specific potential for risk reduction is likely to be realized as developed technologies are assessed and applied. Near

term O&M work is heavily driven by worker/public safety and environmental considerations; safety-prioritized single-shell tank stabilization is a primary activity.

The O&M function comprises the following Level V activities:

- 1.1.1.2.01.01 Technical Management & Administration
- 1.1.1.2.01.02 Tank Farm Environmental Compliance & Corrective Activities
- 1.1.1.2.01.03 Tank Farm East Storage Facilities
- 1.1.1.2.01.04 Tank Farm West Storage Facilities
- 1.1.1.2.01.05 Single-Shell Tank (SST) Stabilization Program
- 1.1.1.2.01.06 Tank Farm Evaporator/AW & AP Tank Farm Operations
- 1.1.1.2.01.07 Retired Facilities and Turnover Support

Goals & objectives:

The mission goal is for safe, compliant, and cost-effective management of waste and tank farm facilities, striving for continuous improvement. Objectives to be achieved will include; 1) Concentrating low-heat generating liquid wastes through evaporation (242-A), thus reducing volume and the number of double-shell tanks required to store dangerous liquid wastes and allowing Hanford facilities terminal cleanout operations; 2) Executing upgrades to improve infrastructure to allow the final safety bases to be achieved; 3) Maintaining a final safety basis for tank farm operations through FY 2028; 4) Practical management of tank volumes to meet specific capacity requirements of the program system; and 5) Turnover of tank farm facilities to Environmental Restoration for final Decontamination and Decommissioning activities and final closure.

Major end-item deliverables:

1. Maintaining the safe and compliant operating configuration within Tank Farms
2. Operating the 242-A evaporator, achieving a yearly waste volume reduction goal
3. Completing M-41-00, Single-Shell Tank Interim Stabilization
4. Completing M-46-00, Double-Shell Tank Space Evaluation
5. Achieving a "Final Safe Operations Level" in Tank Farms (This includes completing and implementing safety documentation upgrades, resolving unreviewed safety questions, completing near term hardware upgrades, and characterizing tank contents)
6. Release of waste tanks for retrieval and eventual turnover for closure
7. Turnover of all tank farm facilities to ER for closure

Acceptance criteria:

- Achieving and maintaining regulatory and DOE Order compliance (see section D, Other Legal Drivers and Order Requirements) in tank farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
- Implementation and adherence to the new Operational Safety Requirement parameters.
- Sufficient surveillance data and engineering analysis to demonstrate the safety, compliant, and integrity status of each high-level waste tank.
- Continuous safe conditions for workers, the public, and the environment.

- Restoration to operation of degraded tank farm equipment that is necessary for safe and compliant receipt, storage, and transfers of waste.
- Continuous availability of sufficient tank space to accommodate contents of largest inventory of any single-shell tank and receipt of wastes from Hanford facilities in operations and cleanup phases.
- Receive on demand of all HLW wastes from Hanford facilities to avoid non-compliances or operation interruptions of those facilities.
- Acceptance of tank farm facilities by the Environmental Restoration program D&D operations.

C. STATEMENT OF WORK

Receive, contain, and monitor radioactive liquid wastes from Hanford facilities for managing tank waste in a environmentally safe and cost effective manner. This will continue until all waste is received and processed for final disposal. This element includes performing routine surveillance, operations, maintenance, and stabilization activities necessary for safe and compliant underground waste storage and waste concentration activities. Continued safe operation of these facilities require near and long term upgrades in safety bases and hardware restoration. Planning anticipates achieving a final safety bases in the beginning of fiscal year 2001 following numerous upgrades, USQ resolution, and tank characterization. This will achieve a significantly improved infrastructure allowing a mature safe operation for the planned life cycle (thru 2028) of tank farms.

The single-shell tanks (149) have aged beyond their useful life. In addition, these underground waste storage tanks cannot be properly monitored to ensure integrity as required by the State of Washington. Pumpable liquid (interim stabilization) is being removed from these tanks with retrieval operations and final closure following. This program element will complete interim stabilization activities by the year 2000 allowing Retrieval activities (4.2.1.3) to be performed. This activity is of low programmatic risk, 107 of 149 single-shell tanks have been interim stabilized and numerous safety studies have been or are nearing completion to allow pumping of watch-list single-shell tanks.

The final phase in the life cycle of the tank farms is the closure of all remaining facilities under the control of operations. As the last of the tank waste is processed into glass, unneeded waste tanks will be cleaned out and prepared for turnover to Environmental Restoration for decontamination and decommissioning. The 242-A evaporator will be the first "major" facility earmarked for turnover (initial work on turnover will start in the year 2007), followed by farms in West Area and finally East Area. Timely closure and turnover of unneeded facilities will reduce operating costs in the Tank Farm Life Cycle. This final phase of Tank Farms has the highest uncertainty factor from a planning standpoint. To date, a major tank farm facility has not been prepared for turnover to Environmental Restoration for D&D activities. Planning is preliminary and will be better defined following preparation of a study and detail cost estimate. Activity for turnover preparations is not scheduled to begin until FY 1997. On a smaller scale, the first tank farm facilities scheduled for turnover to ER for D&D will be the 242-T and 242-S evaporators.

Required activities over lifetime:

The Tank Farm Operations and Maintenance program continues to transform and has become "standards driven" and committed to continuous improvement. Waste Tank Operations will adopt new (modern) standards for Conduct of Operations against which performance will be continuously measured for improvements. Operating crews will staff for five shifts to support training requirements for nuclear process operators. Training will be comprehensive, formal, and use auditable certification examinations. Configuration control of all waste tank operation facilities will be maintained to modern standards through a commitment by line management to do so and formal procedures to manage updates to drawings, documents, and labels. (WHC/PNL/HEHF)

WHC-SP-1101

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements through the operating and maintaining of plant systems necessary for the safe storage, treatment, and transfer of liquid waste in tank farms.
	To This WBS From	
1	Program Management 1.1.1.1.01	The TWRS Environmental Impact Statement (EIS) Record of Decision is required for determining the final status of single-shell tanks and assessing safety issues. This will impact and determine final operations, retrieval, and closure of the single-shell tanks and may impact double-shell tanks. Implementation of the TWRS Dangerous Waste (RCRA) Permit will be required for ensuring compliant operations and achieving a final safety bases.
2	Waste Retrieval 1.1.1.2.05	Retrieval of waste from single and double-shell tanks to commence preparations of farms for turnover to ER for D&D activities. Included will be the issuances of final approved closure plan for single and double-shell tanks.
3	Waste Pretreatment 1.1.1.3.01	The pretreatment facilities will include a waste evaporator which is adequate for managing (eg. reducing) tank waste volume. This will preclude the need to replace the 242-A evaporator.
4	Low-Level Waste 1.1.1.3.02	The LLW facility operations are required to match waste retrieval rates and minimize the amount of DST storage space needed.
5	High-Level Waste 1.1.1.3.03	HLW vitrification operations are needed to allow Tank Farm Operations to manage system-generated waste. Following completion of HLW facility operations, the last DST can be transferred to ER for D&D activities and final closure.
6	Waste Tank Safety 1.1.1.2.02	Closing of all Unreviewed Safety Questions (USQ) for DSTs and SSTs (M-40-09) is required to achieve a final safe operating condition. In addition, mitigation and resolution of safety issue is required for maintaining a safe operating condition through 2027.
7	Characterization 1.1.1.2.04	Issuance of Tank Characterization Reports (TCRs) (M-44-0) for all 177 high-level waste tanks is required to achieve a final safe operating condition in tank farms. In addition, the Characterization program will provide the necessary RCRA, process, and feed tank samples needed for evaporator operations, SST interim stabilization, and compliance with the tank farms Waste Analysis Plans.

8	Tank Farm Upgrades 1.1.1.2.03	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters. These upgrades scheduled for completion by 2005, should allow operations of the program to the year 2028.
---	----------------------------------	--

Technologies to be assessed:

- New in-tank instrumentation replacements
- Modern equipment replacements (eg, pumps, vent systems)
- Waste minimization and pollution prevention
- ALARA practices
- New leak detection and analysis technologies

Options to be considered:

- Specialized contractors bringing new technology improvements
- Retiring facilities disposal options
- Best Available Technology (BAT) improvements
- New double-shell tanks for needed tank space
- New stand-alone evaporator for Tank Farms

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Reference the following:

Department of Energy Established:

Standards/Requirements Identification Documents (S/RIDs)

Tank Waste Remediation System Functions and Requirements

Section 2, table F4.2.1.1, 4.2.1.4, 4.2.1.5, 4.2.3.1, 4.2.3.2, 4.2.3.3, 4.2.3.4, 4.2.3.5, 4.2.3.6, item V, paragraph B

Section 3, table A4.2.1.1, 4.2.1.4, 4.2.1.5, 4.2.3.1, 4.2.3.2, 4.2.3.3, 4.2.3.4, 4.2.3.5, 4.2.3.6, item VIII, paragraph C

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations and Maintenance/M & O Contractor	2. DATE PREPARED September 20, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01/V	5. WBS ELEMENT TITLE Technical Management & Administration	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.4 Transfer Waste 4.2.1.5 Concentrate Waste 4.2.3.1 Immobilize & Dispose LLW 4.2.3.2 Disposition Gaseous Effluents 4.2.3.3 Disposition Liquid Effluents 4.2.3.4 Disposition Solid Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	25,138	28,687	30,670				
CENRTC		200	200				
GPP							
LINE ITEM							
TOTAL	25,138	28,887	30,870				

1.1.1.2.01.01

A2-7

B. TECHNICAL BASES

Goals & objectives:

Provide the support needed to continue safe operations and maintenance in tank farm facilities. This activity consists of performing:

1. Program element and baseline management
2. Providing utilities and services
3. Integrated planning and administration support
4. Waste tank operations training
5. Providing quality assurance/quality control support
6. Tank farm security operations and upgrades
7. Review/revising tank farm operations & administrative procedures
8. Nuclear safety oversight functions
9. Configuration management support
10. Providing for dissemination of passback funds by program priority
11. Tank farm surveillance database maintenance & management

The following program master schedule activities are supported by WBS 1.1.1.2.01.01:

S004000	Perform Tank Farm Program Element & Baseline Management
S004005	Perform Nuclear Safety Oversight
S004010	Perform Tank Farm Program Assessments
S004015	Perform Planning & Administration Support
S004020	Perform Issues/Corrective Action Management
S004029	Continue Tank Farm Training Program
S004030	Provide QA/QC Support to Tank Farms
S004035	Perform Tank Farm Security Operations
S004037	Complete Tank Farm Security Upgrades
S004040	Maintain Tank Farm Operational & Administrative Procedures
S004045	Perform CASS/TMACS/SACS Data Base Management

Major end-item deliverables:

1. Monthly baseline reviews with DOE-RL
2. Five-year plan input and review with DOE-RL
3. Yearly integrated field operations schedule
4. Waste tank operations self assessments
5. Emergency preparedness planning and readiness
6. Nuclear process operator routines/liquid level monitoring training
7. Upgraded maintenance training program
8. Nuclear process operator certifications
9. Continued QA/QC support to tank farm operations & maintenance (approx. 3500 tasks)
10. Improved access and barrier control in tank farms
11. Revision as necessary of the Tank Farms Vulnerability Assessment
12. Yearly review and re-issue if necessary of 280 plant operating procedures
13. Monthly corrective action/issues management status reports
14. Replace the existing Computer Automated Surveillance System (CASS) with the new Tank Monitor and Control System (TMACS)
15. Software revisions to the Surveillance Analysis Computer System (SACS)

Acceptance criteria:

1. Achieving and maintaining regulatory and DOE Order compliance in tank farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
2. Implementation and adherence to the new Operational Safety Requirement parameters.

C. STATEMENT OF WORK

Required activities:

1. Involve waste tank operations and integrate with other TWRS program elements in baseline functions and planning
2. Define and coordinate tank farm utilities and services requirements
3. Integrate TWRS field activities through an integrated schedule, setting priorities and defining available resources
4. Issue mandated training plan and install training requirements for tank farm access
5. Continue with a centralized TWRS training organization to ensure continued compliance with mandated training requirements
6. Revise tank farms vulnerability assessments as changing conditions arise to ensure proper physical and industrial security measures
7. Review every two years all plant operating procedures (560) and revise as necessary to ensure continued safe operations
8. Perform independent nuclear safety oversight to continually assess the overall safety of each tank farm facility
9. Facilitate corrective action management for TWRS identifying conditions through risk evaluations, lessons learned, resolution plans, and condition closures
10. Provide for dissemination of passback funds by program priority
11. Upgrade TMACS software to handle data acquisition expansion including adding new functions

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements though its training, security, integration & planning, utilities & services, surveillance data management, and issues/corrective action management. This is part of base safe operations in TWRS.
	To This WBS From	
1	1.1.1.2.02 Waste Tank Safety	Mitigating and resolving tank safety issues to achieve a final safe operating condition envelope.
2	1.1.1.2.04 Characterization	Characterization of all double and single-shell tanks to ensure safe operations.
3	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters.

Technologies to be assessed:

1. Utilities and service improvements (eg, alternative energy sources)
2. Improved security measures (eg, automated access control, physical security upgrades)
3. Software improvements for TMACS
4. Data management configurations/improvements

Options to be considered:

1. Smart card installation
2. Tank Farm entry trailers - install auto closures & locks, unlatched door warnings
3. Best Available Technology (BAT) improvements
4. Replacing the Surveillance Analysis Computer System (SACS)

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Primary driver is the Department of Energy established and approved:

- Standards/Requirements Identification Documents (S/RIDS)

Other drivers which encompasses S/RIDS include the following:

COMPLIANCE AGREEMENT

- Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)

AIR

- 42 USC 7401, et seq., "Clean Air Act"
-RCW 70.94, "Washington Clean Air Act"

WATER

- 33 USC 1251, et seq., "Clean Water Act"
- 42 USC 300, et seq., "Safe Drinking Water Act"
- WAC 173-200, "Water Quality Standards for Groundwater of the State of Washington"
- 91nm-177, Ecology Consent Order

SOLID AND HAZARDOUS WASTE AND MATERIALS

- 42 USC 6901, et seq., "Resource Conservation and Recovery Act of 1976 (RCRA) and Hazardous and Solid Waste Amendments of 1984"
- 42 USC 9601 et seq., "Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and Superfund Amendments and Reauthorization Act of 1986 (SARA)"
- WAC 173-303, "Dangerous Waste Requirements"

ENVIRONMENTAL PROTECTION & PRESERVATION

- 42 USC 4321, et seq., "National Environmental Policy Act of 1969 (NEPA)"

RADIOLOGICAL REQUIREMENTS

- 42 USC 2011 et seq., "Atomic Energy Act of 1954 (AEA)"
- 10 CFR 71, "Packaging and Transportation of Radioactive Material"

SAFETY REQUIREMENTS

- 229 CFR 1910, "Occupational Health & Safety Standards"
- PL 101-510 Sec 3137, "Wyden Amendments"
- Defense Nuclear Facilities Safety Board (DNFSB) Recommendations

DOE Orders

- DOE Order 5000.3A, Occurrence Reporting and Processing of Operations Information"
- DOE Order 5481.1, "Safety Analysis and Review System"
- DOE Order 5484.1, "Environmental Protection, Safety, and Health Protection Information Reporting System"
- DOE Order 5820.2A, "Radioactive Waste Management"

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1. TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.01/VI	5. WBS ELEMENT TITLE Program Element & Baseline Management							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3,327	\$3,597	\$3,705
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$3,327	\$3,597	\$3,705

1.1.1.2.01.01.01

A2-13

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Provide cost/budget analyst support for all levels of WBS Management. This includes day to day activities such as inserting work orders, approving cost authorization documents, accumulation of variance analysis reports, distribution of cost reports, and independent analysis of cost/budget.

Provide scheduler support in the development of level IV resource loaded schedules. Schedules will be built using Primavera software and will incorporate all WHC Other, Key, DOE-RL, DOE-HQ, Tri-Party Agreement and Safety initiative milestones. Schedules will be statused on a monthly basis at a minimum. Schedules will be logic driven with interface points with other program elements clearly identified.

Provide Program Management Support for all aspects of the program (i.e.):
Program Direction

- Interfacing with DOE-RL and Stakeholders
- Approval of Program plans and Documentation
- Integration with other Program Elements
- Approval of Workscope & Deliverables

Provide Resource Loaded Integrated schedules which tie all activities into a common schedule. Resource level the schedule to ensure critical skills are available to complete work as scheduled. Schedules will be at sufficient levels of detail to allow for use as a daily/weekly activity schedule.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Completion of annual ADS preparation and submittal
Completion of annual work plans/MYPP Updates
Maintain Baseline Documentation
Complete Integrated Resource loaded schedules for all Operations Field Activities
Control Scope/Expenditures within Guidance levels

Acceptance Criteria

Approval of Planning documents by DOE-RL

C. STATEMENT OF WORK

Required activities:

Monthly program reviews with DOE-RL
Regularly scheduled integrated schedule status meetings
Completion of Required Baseline Documentation
 Planning Forms
 Indexes
 Basis for estimate
 Resource Loaded Schedules
 etc.
Compliance with MCS guideline

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	D. L. Lenseigne	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L C Mercado</i>	9/19/94
Cost Account Manager	D. L. Lenseigne <i>D L Lenseigne for</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J. S. Thomas</i>	9/19/94

FDS Number

1N1D41

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance/ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.02/VI	5. WBS ELEMENT TITLE Tank Farm Utilities And Services	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$6,721	\$7,112	\$7,208
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$6,721	\$7,112	\$7,208

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The purpose/goal of this account is to provide funding for multiple general service activities that are performed by various organizations within WHC and then "assessed" to TWRS using various distribution methods. The following activities are included in this account: 1) BPA Electricity, 2) Electrical Maintenance, 3) Laundry services, 4) Mask services, 5) Steam/Water usage and Utilities, 6) Dry Waste Disposal, 7) Rail and Track, 8) Vehicles and Equipment Maintenance, 9) Tank Farm Sewer Services.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

These assessments are for basic Tank Farm Operations needs and as such, support many of the deliverables that are identified throughout the Fiscal Year Work Plan. As such, there are no specific deliverables for this account. The following is a brief description of each assessment included in this account: 1) BPA Electricity - electricity used in tank farm facilities (lighting, pumps, fans, etc.), 2) Electrical Maintenance - maintaining electrical transmission and distribution systems, 3) Laundry services - cleans and repairs government supplied work and regulate clothing, 4) Mask Services - cleaning and testing of provided masks for personnel respiratory protection, 5) Steam/Water Usage - provides space heating steam for tank farm facilities and process steam for evaporators (242-A, 242-T, 242-S), tank heating, ventilation system heating and transfer jets, 6) Dry Waste Disposal - disposing of dry waste (garbage) in the site landfill, 7) Rail and Track - railroad system operations support to tank farms, primarily the 204-AR Unloading Facility, 8) Vehicles and Equipment Maintenance - routine maintenance of tank farm assigned vehicles (sedans, trucks, etc.) and equipment (compressors, generators, etc.), 9) Tank Farm Sewer Services.

C. STATEMENT OF WORK

Required activities:

These activities are required to support "base" operations.

Technologies to be assessed:

Currently steam is being provided by the existing boilers in 200E and 200W. Studies are ongoing to determine if this steam can be provided at a more cost effective manner through the use of "packaged" boilers.

Options to be considered:

See above

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	D. L. Lenseigne	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L.C. Mercado</i>	9/19/94
Cost Account Manager	D. L. Lenseigne <i>D.L. Lenseigne</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J.L. Thomas</i>	9/19/94

FDS Number

1N1D42

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1. TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance\ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.03/VI	5. WBS ELEMENT TITLE Planning and Administration							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,930	\$2,072	\$2,137
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$1,930	\$2,072	\$2,137

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The goal of this cost account is to provide management and administrative support to insure all sub-elements and requirements of the management systems functional area within the Tank Farm S/RIDS are performed as required or appropriately dispositioned as not applicable.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Revise structure of WHC-IP-0842, "Waste Tanks Administration Manual," and issue new copies to all manual holders.
- Issue 52 new or revised procedures for the WHC-IP-0842 manual
- Prepare Daily Operating Report
- Prepare and issue integrated schedule
- Process 180 Procedure revisions for the level I and II manuals
- Complete Technical Data Service Center upgrades in support of OSR database administration, environmental and operational management, including availability of the latest reference information.
- Issue weekly OSR surveillance status reports
- Provide data for quarterly USQ report

C. STATEMENT OF WORK

Required activities:

Specific management systems subelement corrective actions funded by this cost account are:

- 1) Management and Administration
- 2) Document Control and Records Management
- 3) Policy and Procedure System. This account also funds information integration which includes:
 - a) OSR Tracking/Notification System
 - b) USQ Tracking System
 - c) Equipment Status Tracking
 - d) Temporary Component Identification

Technologies to be assessed:

CD-ROM Vendor Information System

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	D. L. Burt	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>LC Mercado</i>	9/19/94
Cost Account Manager	D. L. Burt <i>DL Burt</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>MA Dewitt</i>	9/20/94

FDS Number

1N1D43

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance/ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.04/VI	5. WBS ELEMENT TITLE Tank Farm Training							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$6,300	\$7,377	\$8,312
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$6,300	\$7,377	\$8,312

B. TECHNICAL BASES

OBJECTIVES:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

TWRS Training provides training services to the TWRS Organization which meet identified training needs, organizational commitments, and regulatory requirements. Training will be scheduled and presented in a manner which supports organizational goals and enhances job performance while meeting identified budgetary milestones.

The goal is to ensure that all identified personnel are provided training and qualification programs commensurate with their assigned duties. The qualification programs apply the graded approach to training based on the risk, complexity, and potential to impact safety of employees, the public and the environment.

WORK PACKAGES:

1N144DOA	TRAINING ADMINISTRATION
1N144DOB	OPERATIONS INITIAL TRAINING
1N144DOC	OPERATIONS CONTINUING TRAINING
1N144DOD	MAINTENANCE INITIAL TRAINING
1N144DOE	MAINTENANCE CONTINUING TRAINING
1N144DOF	SUPPORT STAFF INITIAL TRAINING
1N144DOG	SUPPORT STAFF CONTINUING TRAINING

1N144D0A	TRAINING ADMINISTRATION
----------	-------------------------

TASK 01	Management
TASK 02	Records and Scheduling
TASK 03	Direct Training Programs Management
TASK 04	Procedures
TASK 05	Assessments
TASK 06	Facilities and Equipment

Statement of Work

1. WORK TO BE PERFORMED:

The TWRS Training organization acts as a single point of contact for training issues that are related to Waste Tank Operations. These training activities may be performed by other organizations; however, TWRS Training remains cognizant of these support activities to maintain overall training effectiveness.

The training organization is responsible to plan, direct, evaluate, and control a Systematic Approach to Training process that supports the facility mission. TWRS Training and Operations Management are responsible for ensuring that training programs produce competent workers and managers.

2. HOW WORK IS TO BE PERFORMED:

The work identified produces training programs utilizing the instructional skill of the training staff coupled with the subject matter expertise of the operating organization. These administrative activities are performed by, but are not limited to the following:

- development and maintenance of a training schedule for delivery of the training classes,
- implementing training in accordance with regulations, policies, or directives that impact training

delivery

- monitoring training effectiveness through use of an established training evaluation process,
- conducting regular TWRS Training and Operations management interface meetings,
- supporting periodic review / assessment by DOE, DNFSB, and other regulatory agencies,
- completing periodic self-assessments, and
- implementing training improvement utilizing an on-going basis of feedback from various training evaluation, assessment, monitoring processes.

3. WHY WORK IS TO BE PERFORMED:

Training administrative work is conducted to support a framework for the systematic approach to training. These administrative activities support the following work processes:

- management and administration of training, qualification, and certification programs
- development and qualification of the training staff
- definition and monitoring of trainee entry-level requirements
- determination of training program content
- design and develop training programs
- scheduling and conduct of training
- trainee examinations and evaluations
- training program evaluation

These activities are driven by DOE Order 5480.18A, 19, 20, 10CFR, 29CFR and WAC.

4. LIST OF DELIVERABLES:

TASK 1N144DOA01 - Management

The TWRS Training Organization management consists of a manager and staff personnel to meet regulatory and organizational requirements.

Deliverables:

- A. Staffing to meet identified work scope - This deliverable identifies the staffing effort to obtain and maintain a qualified training staff. This includes instructors, support staff, management, and contractors as required to meet identified training needs.
- B. Interface with regulatory and TWRS line organizations to meet training needs - This deliverable identifies the time commitment of TWRS staff instructors and management to effectively coordinate the training product.
- C. Develop a set of Performance Indicators to monitor training activities across the entire WTO organization.

TASK 1N144DOA02 - Records and Scheduling

Training records must be maintained to support management information needs and to provide required data on each individuals training participation, performance, and qualification/certification. Training records are also maintained to support verification of the accuracy of training program content. Training records are maintained in an auditable manner.

Deliverables:

- A. Training records process and/or procedures which support the records management objectives of the TWRS Training Organization.

- B. Training files which contain training records of each certified TWRS Operations staff member to support the individual's training participation, performance, and qualification / certification.

TASK 1N144DOA03 - Direct Training Program Management

TWRS Training Programs are managed by a staff of management and staff personnel. These individuals have direct responsibility and authority for the analysis, design, development, implementation, and evaluation of TWRS Training Programs.

Deliverables:

- A. Approved training schedules
- B. Trained and qualified TWRS Instructional Staff
- C. Implementation of a Systematic Approach to Training
- D. Submit an approved WHC Training Plan for TWRS per the requirements of 10CFR 830.330.

TASK 1N144DOA04 - Procedures

Detailed guidance to the TWRS Training Organization concerning the conduct and routine implementation of training activities. These procedures are required.

Deliverables:

- A. Approved procedures for WHC-IP-0883, TWRS Training Administration Manual.
- B. Revised, approved procedures for WHC-IP-0883 as required to support changing regulatory and organizational needs.

TASK 1N144DOA05 - Audit/Assessment

Training Program evaluation by outside organizations such as DOE-RL, DOE-HQ, EM-25, DNFSB and other regulatory organizations which monitor training delivery, conduct interviews with the TWRS Staff, and provide documentation of the reviews (audits/assessments) conducted.

Deliverables:

- A. Scheduling TWRS Training Staff to support audit team activities (audit coordination, interviews, etc.)
- B. Providing training materials to the audit team as requested.
- C. Providing training records to the audit team as requested.
- D. Creation of a written corrective action plan to address the schedule and actions to be taken to resolve recommendations.
- E. Maintain the RID current.

TASK 1N144DOA06 - Facilities and Equipment

Administrative and management processes are established to ensure that sufficient training facilities, proper tools and equipment, and materials are available to support applicable training content and performance activities.

Deliverables:

- A. Technical reference material such as operating procedures, technical manuals, and drawings are readily available to instructors and trainees.
- B. Adequate facilities are available to support safe and consistent training.
- C. Instructional support materials and equipment are available to support the training activities.

1N144D0B OPERATIONS INITIAL TRAINING

TASK 01 NPO Certification (East/West/Evap/EWO)

WHC-SP-1101

TASK 02	OE Certification
TASK 03	Power Operator Qualification
TASK 04	Training Evaluation
TASK 05	Plant Changes/Modifications (LDUA, 101-SY, 103 Caustic).
TASK 06	IOSR Training

Statement of Work

1. WORK TO BE PERFORMED:

Initial Training classes will be provided to train additional operators in each of the certification areas. Two classes will be provided for each NPO certification, unless additional needs are identified by the operating organization. Using the WHC Requirements Identification Document as the guiding document, TWRS Initial Training Programs which lead to TWRS Operator/Manager certification will be provided using the Systematic Approach to Training.

Routine activities concerning the analysis, design, development, maintenance, and upgrade will be completed using approved procedures by qualified instructional staff, Subject Matter Experts and management staff.

2. HOW WORK IS TO BE PERFORMED:

The work identified to support Initial Training will be

- completed in accordance with a training implementation schedule for delivery of the training product,
- monitored for effectiveness through use of an established training evaluation process,
- reviewed periodically by TWRS Training and Operations management staff,
- critiqued regularly via TWRS Training and Operations management Training Interface Meeting,
- periodically reviewed / assessed by DOE, DNFSB, and other regulatory agencies,
- monitored by periodic self-assessments, and
- improved in an on-going basis utilizing feedback from various evaluation, assessment, monitoring sources.

Limited use of contracted resources (via a BOA) may be required for these activities.

3. WHY WORK IS TO BE PERFORMED:

The Initial Training Programs provide TWRS Operations Staff personnel the training required for certification in a specific area of TWRS Operations. Each of the sixteen certification areas will be supported by an Initial Training Program which is based on identified job skills and knowledge. These Initial Training Programs will be established on criteria as defined in DOE Order 5480.20 and other supporting guidance as required to support the overall TWRS mission. Providing Initial Training which is job specific and performance based is consistent with established DOE and industry standards in developing a well trained, effective, safe work force.

These activities are driven by DOE Order 5480.18A, 19, 20A, 10CFR, 29CFR and WAC.

4. LIST OF DELIVERABLES:

TASK 1N144D0B01	NPO Certification (East/West/Evap/EWO)
TASK 1N144D0B02	OE Certification
TASK 1N144D0B03	Power Operator Qualification
TASK 1N144D0B06	IOSR Training

WHC-SP-1101

Each NPO Certification and OE Certification will require maintenance of training materials to support an initial training program. A Power Operator qualification program will be developed in concert with other nuclear facilities in order to take maximum advantage of concurrent activities. The following identifies the deliverables from the development of the initial training program materials for each NPO certification areas.

Deliverables:

- A. Completed Job Analysis
- B. Approved Task List
- C. Completed Lesson and Student Materials
- D. Completed Examination Bank
- E. Completed OJT Card
- F. Completed JPMs
- G. Upgrade of Training Materials based on evaluation and feedback
- H. Lesson Materials (classroom and OJT), Student Materials, and Examination Materials
- I. Training Program Description for each Training Program
- J. Training schedule created for the TWRS Initial Training Program
- K. Training provided as scheduled
- L. The Operator Initial training program will be compliant with 5480.20 by 9-30-95.

TASK 1N144D0B04 - Training Evaluation

TWRS Training Programs will be evaluated in an on-going basis in support of a Systematic Approach to training.

Deliverables:

- A. Training Program Evaluation Plan for TWRS Training for training delivered in FY95.
- B. Completed Training Program Evaluations as defined in the Evaluation Plan.

TASK 1N144D0B05 - Plant Changes/Modifications (LDUA, 101-SY, 103 Caustic).

This training is routinely based on need identified by the Operating Organization, Regulatory agencies, and performance issues. Plant Changes/Modifications which change work scope will be supported by the "change request" process, however, small emergent training issues within existing job scope could be anticipated. The deliverables for training issues supporting Plant Changes/Modifications would be agreed to by TWRS Training Management and DOE TWRS Training.

Deliverables:

- A. Products as agreed to in support of Plant Changes Training issues.

1N144D0C OPERATIONS CONTINUING TRAINING

- TASK 1N144D0C01 NPO Continuing Training (East/West/Evap/EWO)
- TASK 1N144D0C02 OE Continuing Training
- TASK 1N144D0C03 Power Operator Re-qualification
- TASK 1N144D0C04 Drill Program

Statement of Work

1. WORK TO BE PERFORMED:

Each certified operator must complete a re-certification program every two years. Using the WHC Requirements Identification Document as the guiding document, TWRS Continuing Training Programs which lead to TWRS Operator/Manager re-certification will be produced using the Systematic Approach to Training.

Routine activities concerning the analysis, design, development, maintenance, and upgrade will be completed using approved procedures by responsible instructional staff personnel and management staff.

2. HOW WORK IS TO BE PERFORMED:

The work identified to support Continuing Training will be:

- completed in accordance with a training implementation schedule for delivery of the training product,
- monitored for effectiveness through use of an established training evaluation process,
- reviewed periodically by TWRS Training and Operations management staff,
- critiqued regularly via TWRS Training and Operations Management Training Interface Meetings,
- periodically reviewed / assessed by DOE, DNFSB, and other regulatory agencies,
- monitored by periodic self-assessments, and
- improved in an on-going basis utilizing feedback from various evaluation, assessment, monitoring sources.

3. WHY WORK IS TO BE PERFORMED:

Continuing Training Programs provide TWRS Operations Staff personnel the training required for re-certification in a specific area of TWRS Operations. Each of the sixteen certification areas will be supported by a Continuing Training Program which is based on identified job skills and knowledge, areas of identified weakness, industry events, facility design changes, and drills. Continuing Training Programs will be established on criteria as defined in DOE Order 5480.20 and other supporting guidance as required to support the overall TWRS mission. Providing Continuing Training which is job specific and performance based is consistent with established DOE and industry standards in developing a well trained, effective, safe work force.

These activities are driven by DOE Order 5480.18A, 19, 20A, 10CFR, 29CFR and WAC.

4. LIST OF DELIVERABLES:

TASK 1N144D0C01	NPO Continuing Training (East/West/Evap/EWO)
TASK 1N144D0C02	OE Continuing Training
TASK 1N144D0C03	Power Operator Re-qualification

Each NPO Certification, OE Certification, and Power Operator Qualification will require development of training materials to support a biennial continuing training program. The following identifies the deliverables from the development of the continuing training program materials for each of the existing certification programs.

Deliverables:

- A. Lesson Materials (classroom and OJT), Student Materials, and Examination Materials
- B. Training plan created for the biennial TWRS Continuing Training Program
- C. Training schedule created for the biennial TWRS Continuing Training Program
- D. Training provided as scheduled
- E. The Continuing Training Program will be compliant with 5480.20 by 8-1-95

TASK 1N144D0C04 - Drill Program

An "In-Plant" Drill Program is required by DOE Order 5480.19. Drills to support the NPO Certification, OE Certification, and Power Operator qualification will require development of training materials as part of biennial continuing training program. The following deliverables will be developed with the continuing training program materials for each of the existing certification programs.

Deliverables:

- A. Drill packages including evaluation criteria
- B. Drill implementation plan created for the biennial TWRS Continuing Training Program
- C. Drill implementation schedule created for the biennial TWRS Continuing Training Program

1N144D0D - MAINTENANCE INITIAL TRAINING

- Task 01 - Waste Tanks Instrument and Controls Training
- Task 02 - Waste Tanks Electrical Training
- Task 03 - Waste Tanks Millwright Training
- Task 04 - Waste Tanks Pipefitter Training
- Task 05 - Waste Tanks Other Craft Training
- Task 06 - Waste Tanks Multi-Craft Training
- Task 07 - Waste Tanks Maintenance Training Evaluation
- Task 08 - Waste Tanks Vendor Training

1. WORK TO BE PERFORMED

Utilizing a Systematic Approach to Training, implement a credible facility specific Maintenance training program. This will include analyzing, designing, developing, implementing, and evaluating craft maintenance training programs leading to qualification. This work will include the development and completion of a incumbent craft assessment.

2. HOW WORK IS TO BE PERFORMED

Maintenance Training will be developed using the expertise of the existing incumbent crafts. This approach will streamline the development effort by not requiring the training developer to "relearn" any skills that already exist in the incumbent crafts. Existing training material from other DOE sites is being utilized where applicable to save development costs.

The development of a credible Maintenance Training Program, in a timely manner, lends itself to utilizing both permanent full-time instructional staff and temporary or out-source "training developers" (i.e. Job Shoppers, BOA Contracts, etc.) for effective development.

3. WHY WORK IS TO BE PERFORMED

TWRS Maintenance Training is being developed to meet DOE Orders "Personnel Selection, Qualification, and Training" (5480.20), "Conduct of Maintenance" (4330.4B). Additional drivers include support of Tri-Party Agreement (TPA) Milestone M-41-06, and in response to the ORISE 12/20/93 "Assessment of the Training and Qualification Program for Maintenance Personnel at the Hanford Site".

4. LIST OF DELIVERABLES

1N1D440D01 - Waste Tanks Instrument and Controls Training

- A. I&C Core Task to Training Matrix - This deliverable will identify course numbers and materials for the Waste Tanks I&C Technicians "Core Training" as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- B. Implement I&C Core Training - This deliverable will be met with the declaration that the training is available and ready for utilization. Craft Core Training is not required and will be used for craft persons to review or enhance knowledge associated with their specific craft. (Most craft core training is expected to be provided through Computer

Based Training and Self-Study modules)

- C. I&C Assessment Package - This deliverable will be the tool used to identify the incumbent craftspersons areas of qualification as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- D. I&C Qualification Training Plans (QTP)- This deliverable will be the results of the incumbent crafts qualification assessment. The QTP will identify each craftspersons qualification and training needs.
- E. Approved Waste Tanks Specific I&C On-the-Job Training (OJT) Packages - 106 I&C OJT packages (including OJT Guide, Self Study, Job Performance Measure, and Qualification checklist) will be developed, as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- F. Waste Tanks I&C Specific Class Material - 34 Lesson Plans and Student handout materials for classroom presentation of tasks as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- G. Waste Tank I&C Specific Maintenance Courses - Present 12 courses.
- H. Updated Waste Tank I&C Specific Maintenance Training Material - maintain all training material associated with the program (i.e. Task Lists, VISION Data Bases, OJT's, Lesson Plans, etc.)

1N1D440D02 - Waste Tanks Electrical Training

- A. Electrical Core Task to Training Matrix - This deliverable will identify course numbers and materials for the Waste Tanks Electricians "Core Training" as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- B. Implement Electrical Core Training - This deliverable will be met with the declaration that the training is available and ready for utilization. Craft Core Training is not required and will be used for craft persons to review or enhance knowledge associated with their specific craft. (Most craft core training is expected to be provided through Computer Based Training and Self-Study modules)
- C. Electrical Assessment Package - This deliverable will be the tool used to identify the incumbent craftspersons areas of qualification as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- D. Electrical Qualification Training Plans (QTP)- This deliverable will be the results of the incumbent crafts qualification assessment. The QTP will identify each craftspersons qualification and training needs.
- E. Approved Waste Tanks Specific Electrical On-the-Job Training (OJT) Packages - 44 Electrical OJT packages (including OJT Guide, Self Study, Job Performance Measure, and Qualification checklist) will be developed, as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- F. Waste Tanks Electrical Specific Class Material - 11 Lesson Plans and Student handout materials for classroom presentation of tasks as identified in the Waste Tanks Maintenance Training Plan (IP-1056).

WHC-SP-1101

- G. Waste Tank Electrical Specific Maintenance Courses - Present 6 courses.
- H. Updated Waste Tank Electrical Specific Maintenance Training Material - maintain current all training material associated with the program (i.e. Task Lists, VISION Data Bases, OJT's, Lesson Plans, etc.)

1N1D440D03 - Waste Tanks Millwright Training

- A. Millwright Task to Training Matrix - This deliverable will identify course numbers and materials for the Waste Tanks Millwrights "Core Training" as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- B. Implement Millwright Core Training - This deliverable will be met with the declaration that the training is available and ready for utilization. Craft Core Training is not required and will be used for craft persons to review or enhance knowledge associated with their specific craft. (Most craft core training is expected to be provided through Computer Based Training and Self-Study modules)
- C. Millwright Assessment Package - This deliverable will be the tool used to identify the incumbent craftspersons areas of qualification as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- D. Millwright Qualification Training Plans (QTP)- This deliverable will be the results of the incumbent crafts qualification assessment. The QTP will identify each craftspersons qualification and training needs.
- E. Approved Waste Tanks Specific Millwright On-the-Job Training (OJT) Packages - 13 Millwright OJT packages (including OJT Guide, Self Study, Job Performance Measure, and Qualification checklist) will be developed, as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- F. Waste Tanks Millwright Specific Class Material - 11 Lesson Plans and Student handout materials for classroom presentation of tasks as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- G. Waste Tank Millwright Specific Maintenance Courses - Present 4 courses.
- H. Updated Waste Tank Millwright Specific Maintenance Training Material - maintain current all training material associated with the program (i.e. Task Lists, VISION Data Bases, OJT's, Lesson Plans, etc.)

1N1D440D04 - Waste Tanks Pipefitter Training

- A. Pipefitter Task to Training Matrix - This deliverable will identify course numbers and materials for the Waste Tanks Pipefitters "Core Training" as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- B. Implement Pipefitter Core Training - This deliverable will be met with the declaration that the training is available and ready for utilization. Craft Core Training is not required and will be used for craft persons to review or enhance knowledge associated with their specific craft. (Most craft core training is expected to be provided through Computer Based Training and Self-Study modules)
- C. Pipefitter Assessment Package - This deliverable will be the tool used to identify the

WHC-SP-1101

incumbent craftspersons areas of qualification as identified in the Waste Tanks Maintenance Training Plan (IP-1056).

- D. Pipefitter Qualification Training Plans (QTP)- This deliverable will be the results of the incumbent crafts qualification assessment. The QTP will identify each craftspersons qualification and training needs.
- E. Approved Waste Tanks Specific Pipefitter On-the-Job Training (OJT) Packages - 42 Pipefitter OJT packages (including OJT Guide, Self Study, Job Performance Measure, and Qualification checklist) will be developed, as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- F. Waste Tanks Pipefitter Specific Class Material - 18 Lesson Plans and Student handout materials for classroom presentation of tasks as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- G. Waste Tank Pipefitter Specific Maintenance Courses - Present 6 courses.
- H. Updated Waste Tank Pipefitter Specific Maintenance Training Material - maintain current all training material associated with the program (i.e. Task Lists, VISION Data Bases, OJT's, Lesson Plans, etc.)

1N1D440D05 - Waste Tanks Other Craft Training

- A. Waste Tanks Maintenance Training Program Description Revision, IP-0883 section 10.4 - This deliverable will include the identification of training and qualification requirements for "other" crafts (i.e. Painters, Insulators, Welders) not covered in the initial revision.

1N1D440D06 - Waste Tanks Multi-Craft Training

- A. Waste Tanks Maintenance Administration Class Material - Deliverables are Lesson Plans and Student handout materials for classroom presentation of administrative tasks as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- B. Waste Tanks Maintenance Administration Class - Present 4 Classes.
- C. Waste Tanks Maintenance Systems Overview Class Material - Deliverables are Lesson Plans and Student handout materials for classroom presentation of Systems Overview as identified in the Waste Tanks Maintenance Training Plan (IP-1056).
- D. Waste Tanks Maintenance Systems Overview Class - Present 8 Classes.
- E. The Maintenance Training program will be compliant with 5480.20 by 9-30-95.

1N1D440D07 - Waste Tanks Maintenance Training Evaluation

- A. Eight Course Evaluations - Evaluate eight Waste Tanks Maintenance Training Courses utilizing appropriate documentation.
- B. Eight OJT Effectiveness Evaluations - Evaluate eight Waste Tanks Maintenance Training OJT's utilizing appropriate documentation.

WHC-SP-1101

1N1D440D08 - Waste Tanks Vendor Training

- A. Sponsor Vendor Training - Written objectives and administration of as needed vendor courses on new/modified equipment.

1N144D0E - MAINTENANCE CONTINUING TRAINING

1N1D440E01 - Waste Tanks Multi-Craft Continuing Training

- A. Waste Tanks Maintenance Training Program Description Revision, IP-0883 section 10.4 - This deliverable will include the identification of continuing training and qualification requirements for all Waste Tanks crafts.

5. MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

Maintenance Training

All "training material" deliverables shown above will be developed in accordance with WHC applicable procedures and with guidance from the DOE Standards and Guides to Good Practice. All course attendance will be documented, and evaluated per WHC applicable procedures.

1N144D0F - Waste Tanks Support Staff Initial Training

- Task 01 - Technical Support Training Program
- Task 02 - Health Physics Technician Training
- Task 03 - Instructor Training
- Task 04 - Manager Training
- Task 05 - Person-in-Charge Training
- Task 06 - Management Initiatives Activities
- Task 07 - Dangerous Hazardous Waste Training
- Task 08 - Other Facility Specific Required Training

1. WORK TO BE PERFORMED

Utilizing a Systematic Approach to Training, implement a credible facility specific Support Staff training program. This will include analyzing, designing, developing, implementing, and evaluating Support Staff training programs leading to qualification. Development of position qualification standards and individual QTPs is funded and scoped as part of DNFSB 92-4 implementation plan. These activities are not funded via 1N1 and are not covered by this statement of work. HPT continuing training is provided by the HPT Training organization, and is not funded or covered by this statement of work.

2. HOW WORK IS TO BE PERFORMED

Support Staff Training will be developed using the expertise of the existing incumbent staff. This approach will streamline the development effort by not requiring the training developer to "relearn" any skills or knowledge that already exist in the incumbent staffs. Existing training material from other DOE sites or commercial facilities will be utilized where applicable to save development costs.

The development of a credible Support Staff Training Program, in a timely manner, lends itself to utilizing both permanent full-time instructional staff and temporary or out-source "training developers" (i.e. Job Shoppers, BOA Contracts, etc.) for effective development.

3. WHY WORK IS TO BE PERFORMED

TWRS Support Staff Training is being developed to meet DOE Order "Personnel Selection, Qualification, and Training" (5480.20). Additional drivers include DNFSB 92-4 and 93-3 Assessments, and WAC 173-303.

4. LIST OF DELIVERABLES

1N1D440F01 - Technical Support Training Program

- A. Waste Tanks Technical Support Training Program Description - An approved internal procedure describing the training and qualification program for technical support personnel performing duties associated with Tank Farms.
- B. Waste Tanks Technical Support specific class material - Five lesson plans and student handout materials for classroom presentation of tasks as identified in the training implementation plan will be developed.
- C. Waste Tank Technical Support specific courses - Present 15 courses. This includes USQ training.
- D. Update Waste Tank Technical Support specific training material - maintain current all training material associated with the program (i.e. Task Lists, VISION Data Bases, OJT's, Lesson Plans, etc.)

1N1D440F02 - Health Physics Technician (HPT) Training

- A. Waste Tanks HPT Training Program Description - An approved internal procedure describing the training and qualification program for HPT's performing duties associated with Tank Farms.

1N1D440F03 - Instructor Training

- A. Waste Tanks Instructor Training Program Description - An internal procedure describing the training and qualification program for technical instructors performing duties associated with Tank Farms. This training consists of two major components; instructional skills and subject matter content.

1N1D440F04 - Manager Training

- A. Waste Tanks Manager Training Program Description - An approved internal procedure describing the training and qualification program for managers performing duties associated with Tank Farms.
- B. Waste Tanks Manager specific class material - Any additional courses that need to be developed to support the training program will be identified.
- C. Update Waste Tank Manager specific training material - maintain current all training material associated with the program (i.e. Task Lists, VISION Data Bases, OJT's, Lesson Plans, etc.)

1N1D440F05 - Person-in-Charge (PIC) Training

- A. Waste Tank PIC specific courses - Present six courses.

WHC-SP-1101

- B. Update Waste Tank PIC specific training material - maintain current all training material associated with the program (i.e. Task Lists, VISION Data Bases, OJT's, Lesson Plans, etc.)

1N1D440F06 - Management Initiatives Activities

- A. Standards/Requirements Identification Documents (SRIDs) Phase 2 Adherence Assessment - perform Phase 2 assessment for the functional area of Training and Qualification

1N1D440F07 - Dangerous Hazardous Waste Training

1N1D440F08 - Other Facility Specific Required Training

1N144DOG - Support Staff Continuing Training

1N1D440G - Waste Tanks Support Staff Continuing Training

Task 01 - Support Staff Continuing Training

- A. Identify Support Staff Continuing Training Program - identify requirements for continuing training for each of the support staff programs, including frequency, intended audience, and selection process for topics to be presented.
- B. Provide Waste Tanks Technical Support Staff Continuing Training -
- C. Provide Waste Tanks PIC Continuing Training -
- D. Provide Waste Tanks USQE Continuing Training -
- E. Provide Waste Tanks Manager Continuing Training -
- F. Provide Waste Tanks HPT Continuing Training -
- G. Provide Waste Tanks Technical Instructor Continuing Training -
- H. Provide Waste Tanks Dangerous Hazardous Waste Continuing Training -

6. MANDATORY SCHEDULE CONSTRAINTS

The implementation schedule for Waste Tanks Maintenance Training is defined in IP-1056 "Waste Tanks Maintenance Training Plan" and was submitted as required in TPA Milestone M-41-06. Section 4 of this document shows the roll up of these deliverables. The due dates for these deliverables are shown on the schedule, and culminate to show that a fully implemented program is to be established by September 29, 1995.

7. Budget Forecast:

The FY 1995 through FY 1997 budget forecast is shown in section A. Cost Content.

8. Maximum Cost Of Each Deliverable:

1N1D440A: 965K
1N1D440B01: 675K
1N1D440B02: 178K

1N1D440B03: 68K
 1N1D440B04: 100K
 1N1D440B06: 35K
 1N1D440C01: 630K
 1N1D440C03: 50K
 1N1D440C04: 110K
 1N1D440C06: 550K
 1N1D440D01: 980K
 1N1D440D02: 200K
 1N1D440D03: 145K
 1N1D440D05: 15K
 1N1D440D06: 45K
 1N1D440D07: 50K
 1N1D440D08: 100K
 1N1D440D52: 500K
 1N1D440E01: 15K
 1N1D440F01: 200K
 1N1D440F02: 15K
 1N1D440F03: 15K
 1N1D440F04: 100K
 1N1D440F05: 30K
 1N1D440F06: 20K
 1N1D440F07: 50K
 1N1D440F08: 35K
 1N1D440G01: 225K

9. Roles And Responsibilities:

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to oversee work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to scope, cost or schedules in this cost account that occur during the fiscal year.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	T. Morton	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>LC Mercado</i>	9/19/94
Cost Account Manager	T. Morton <i>Tim Morton</i>	9-19-94
Project Control Analyst	M. A. Dewitt <i>MA Dewitt</i>	9/20/94

FDS Number
<u>1N1D44</u>

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.05/VI	5. WBS ELEMENT TITLE QA/QC Support	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$2,031	\$2,399	\$2,471
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$2,031	\$2,399	\$2,471

1.1.1.2.01.01.05

A2-41

B. TECHNICAL BASES

Goals & Objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Tank Waste Remediation System (TWRS) Quality Assurance (QA) function is to establish TWRS QA policies, and help line organizations implement a QA program. QA is oriented towards preventing problems and is capable of confirming the attainment of quality through independent verification. The QA function verifies that the appropriate QA and Quality Control (QC) concepts are applied to the activities that affect the quality of products, and services to the customer.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

1. Complete 8 assessments as identified on schedule initiated on 9-30-94 specifically in the areas noted in item A.
 - A. Perform 2 assessments per quarter for a total of 8 assessments, within the following areas:
 1. Perform 2 assessments on Conduct of Operations
 2. Perform 2 assessments on Conduct of Maintenance
 3. Perform 2 assessments on Job Control Processes
 4. The other 2 assessments will be performed as needs develop.
3. Assemble a Material Review Board (MRB) to establish corrective action/disposition of nonconformance. MRB board will hold weekly meetings to identify and track TWRS backlog of NCR's. This board will also be convened to disposition newly initiated NCR's when required.
4. Pre-review work plans, operating procedures, and maintenance procedures. 16 procedures will be reviewed and released by TWRS QA per month.
5. Pre-review JCS work packages to identify the following:
 - o "Hold" points
 - o "Witness" points
 - o "Verification" points
6. Post-review JCS work packages prior to permanent retention. Post-review of JCS work packages will be performed within 2 days of receipt and returned to Operations and Maintenance.
7. Bi-weekly meeting will be held with TWRSQA, TWRS Operations, TWRS Maintenance, TWRS Engineering, TWRS Procurement, and TWRS planning and scheduling to discuss and resolve field issues and concerns.

Bi-weekly schedule for FY95 will be completed by October 3, 1994.

Meeting minutes will be issued within 2 days to TWRS management on issues and how the issues were resolved.

STATEMENT OF WORK:

Perform assessments, procedural review, configuration assurance, and identify/initiate "Hold", "Witness", and "Verification" points in the JCS work package system within Tank Farm Storage and Treatment Facilities. This activity provides the Quality Assurance program for Operations and Maintenance (O&M). Within this activity, QA identifies and initiates training for its personnel to maintain qualification/certification.

Required activities:

- 1) Develop, implement, and deliver training programs designed to enhance and maintain qualification/certification of the Quality Assurance Engineer (QAE), Plant Quality Engineer (PQE), and Quality Control Technician (QC) skill levels concerning quality assurance and technical aspects of TWRS.
- 2) Maintain required training of QAEs, PQEs, and QC Technicians to quality assurance and TWRS procedural requirements. The following training will be covered:
 - General (WHC required, i.e., rad worker, haz. waste, etc.)
 - Qualification/Certification of QAEs, PQEs, and QC Technicians
- 3) Initiate assessments concerning conduct of operations, conduct of maintenance, and job control processes within the Tank Farm Storage (single/double shell) and Treatment Facilities.
- 4) QA/QC assures 200E/200W Storage and Treatment facilities an independent overview by qualified/certified individuals who do not perform or are not managed/supervised by those who perform work.
- 5) Corrective Action Management - Will issue assessment, nonconformance reports (NCRs) and noncompliance reports (NPRs).
- 6) Assemble a Material Review Board (MRB) to establish corrective action/disposition of NCRs. MRB will hold weekly meetings to identify and track TWRS backlog of NCRs. This board will also disposition newly initiated NCRs when required.
- 7) Assemble a TWRS Quality Assurance/Operations interface meeting to discuss and resolve field issues that are identified. This meeting will be scheduled bi-weekly and will include TWRS QA, TWRS Operations, TWRS Maintenance, TWRS Procurement, TWRS Engineering, TWRS Planning and Schedule.
- 8) This activity covers the following facilities/activities within TWRS:

• 242-A Evaporator	• 242-S Evaporator
• 242-T Evaporator	• Single Shell Tanks
• Double Shell Tanks	• Hoisting and Rigging Loft
• 204-AR Facility	• DST Integrity Assessment
- 9) The work activities include:
 - Pre-review work plans, operating and maintenance procedures. This will include approximately 200 procedures.

WHC-SP-1101

- Pre-review JCS work packages to identify "Hold", "Witness", "Verification" points. This will include approximately 2,200 work packages.
- Post-review JCS work packages prior to archiving. This will include approximately 150 to 200 work packages.
- Review purchase requisition prior to ordering materials and equipment. This is to trace material back to configuration of equipment.
- Remove and replace in kind equipment, instruments, and materials.
- Preventative maintenance on equipment within TWRS.
- Calibration of newly procured and installed equipment.
- Hydro and in-service leak tests within identified facilities.
- Weld repair of pipe and pipe components.
- Field configurations verification of material, instruments, and equipment that have been removed and installed. This verification is completed via drawings and ECNs initiated by engineering.
- Perform assessments of operations and maintenance according to required procedures. Eight assessments will be performed during FY95.

OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

CFR830.120, "Quality Assurance"
DOE Order 5700.6C, "Quality Assurance"
WHC -CM-1-3, "Management Requirements and Procedures"
WHC-CM-4-2, "Quality Assurance Manual"
WHC-CM-4-8, "Quality Assurance Instructions"
Supporting work in support of the Tri-Party Agreement
WHC-CM-1-8, "Job Control System"
WHC-IP-0842, Section 9.5, "Job Control System"

Technologies to be assessed: N/A

Options to be considered: N/A

9. Roles And Responsibilities:

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see the work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL-TWRS guidance and guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	J. Weber	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L. C. Mercado</i>	9/19/94
Cost Account Manager	J. Weber <i>Jack Weber</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J. S. Thomas</i>	9/19/94

FDS Number

1N1D45

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.06/VI	5. WBS ELEMENT TITLE Configuration Management	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$400	\$771	\$795
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$400	\$771	\$795

1.1.1.2.01.01.06

A2-47

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Provide administrative support, coordinate actions and integrate plans for the Configuration Management Plan implementation for TWRS Plant and Waste Tank Plant Engineering. TWRS Plant is the facility owner and Waste Tank Plant Engineering is the design authority for those facilities. Activities to be monitored and coordinated are :

- Implement Integrated TWRS Plant As-Building Program Consisting of:
 - H-2 to H-14 Drawing Conversion
 - Component Labeling
 - Develop Master Equipment List (MEL)
 - Map Equipment Location
 - Perform Field Verification
- Maintain Technical Data Service Centers for Waste Tank Farms and 242-A Evaporator
- Implement Configuration Management Program Plan for Waste Tank Farms and 242-A Evaporator
- Implement Design Reconstitution Program Plan for Waste Tank Farms and 242-A Evaporator
- Develop Configuration Control Data Base Management System for Waste Tank Farms and 242-A Evaporator
- Continue S/RIDS, Configuration Management Functional Area Self Assessment

Status of Design Documentation:

- The Phase I performance-based S/RIDS assessment concluded that the WHC Configuration Management functional area is discrepant in 84 requirements out of 115 deemed applicable to Tank Farms. Audit AA-93-0020, WesTip workshop recommendations, and quality assessed safety issues contain ample evidence that the Configuration Management Process is in a poor state of health.

A Configuration Management Plan for Waste Tank Farms and the 242-A Evaporator for TWRS has been prepared, based on the requirements specified in DOE-STD-1073-93 "Guide for Operational Configuration Management Program." Also prepared is a Design Document Reconstitution Program Plan, required in the Configuration Management Plan and conforming to the DOE-STD-1073-93. These two plans need to be implemented. In conjunction to these plan implementations, The Configuration Management Data Base needs to be evaluated and established to support the documentation network required of the plans.

The S/RIDS evaluation, in response to DNFSB 90-2 recommendation, requires that a Phase I adequacy assessment and a Phase II compliance assessment be completed for the Configuration Management functional area. The Phase I assessment is complete with the Phase II assessment just commencing. The entire S/RIDS process is to provide a living document that will evaluate the functional area continuously over a three year cycle to measure the level of compliance to the requirements and provide a measure for improvement. With the poor state of health in the Configuration Management area, implementing the corrective action plan from this assessment process will require a considerable resource commitment. Every effort needs to be taken to combine the S/RIDS assessment process with the previously described Configuration Management Plan implementation.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Provide administrative support to the Configuration Management Guidance Board - Design authority administration
- Monitor drawing, labeling and Master Equipment List development - Design authority coordination
- Maintain Technical Data Service Centers for TWRS Tank Farms and 241-A Evaporator - Provide certified controlled data for TWRS Plant
- Technical support and administrative monitoring of Configuration Management Plan implementation - Design authority coordination
- Technical support and administrative monitoring of Design Document Reconstitution Plan - Design authority coordination
- Technical support and administrative monitoring of the development of the configuration management data base system - Design authority coordination
- Technical support and coordination of the S/RIDS configuration management functional area - Compliance to DNFSB 90-2 recommendations

C. STATEMENT OF WORK

WORK TO BE PERFORMED:

- Coordinate the activities of the Configuration Management Guidance board, represent Waste Tank Plant Engineering, and resolve defined issues.
- Point of contact, monitor and provide advice regarding drawing/labeling/MEL/verification activities. Provide for the revision of procedures that are affected by discovery resulting from the labeling program.
- Maintain Technical Data Service Centers for Waste Tank Farms and 242-A Evaporator. Services provided consist of:
 - Release engineering documents.
 - Maintain and track design change controls (ECNs).
 - Maintain microfilm (current and/or history status) of drawings and hard copies of applicable change documents and Engineering Document Transmittals (EDTs) for specific facilities or areas.
 - Update control print files.
 - Maintain and control "Essential Drawing" original mylars for specific facilities or areas.
 - Maintain and assign Supporting Drawing (SD) numbers.
 - Maintain Technical Reference Library files containing Vendor Information, Miscellaneous specifications, Vendor Catalogs and Select Industry Codes and Standards.
 - Provide database reports and searches.
 - Support engineers.
- Point of contact, coordination and integration of the Configuration Management Program Plan implementation for Waste Tank Farms and 242-A Evaporator. Tasks to be accomplished are:
 - Provide assistance in the development of the Configuration Management Implementation Engineering Task Plan (ETP).
 - Provide assistance in the development of "Systems List" with identified "System Boundaries."

WHC-SP-1101

- Point of contact, coordination and integration of the Design Document Reconstitution Plan implementation for the Waste Tank Farms and the 242-A Evaporator. Tasks to be accomplished are:
 - Provide assistance in the development of the Design Document Reconstitution Engineering Task Plan (ETP).
 - Participate in the WesTip to develop the integrated "Grading Criteria" for Configuration Management and Design Document Restoration activities and processes. The scope of this task is:
 - Design Information Recovery and Extraction.
 - Verification and Validation of retrieved information.
 - Disposition and Regeneration of open items.
 - Preparation of Design Information Summaries.
 - Graded Approval process and criteria.
 - Prepare a training module on procedure applications and identify target audience.
- Point of contact, coordination and integration of a Configuration Management Data Base System for Waste Tank Farms and 242-A Evaporator. Tasks to be accomplished are:
 - Participate in the WesTip to define the data sets to establish a Configuration Management Data Base.
 - Participate in the WesTip to define data set and Configuration Management data base requirements.
 - Assist in the development of a supporting document resulting from the WesTip activities.
- Continue the S/RIDS Configuration Management Functional Area Self Assessment Process.
 - Conclude Phase II performance-based self assessment process.
 - Integrate the S/RIDS CM assessment deficiencies into the Configuration Management Implementation Program.
 - Prepare a Phase II corrective action closure document for the DNFSB 90-2 Configuration Management functional area.

HOW WORK IS TO BE PERFORMED:

The majority of this work scope is to review and coordinate work products resulting from the development and implementation of the Configuration Management Plan that was developed during FY 1994 by the Upgrades Program. Waste Tank Plant Engineering is the design authority for the TWRS Plant; consequently the configuration management process development and implementation must support Waste Tank Plant Engineering in carrying out its design authority responsibility and maintaining the configuration control documentation. The Configuration Management Plan implementation development will remain the responsibility of the Upgrades Program. As the process and product developments are completed, they will become the responsibility of the Waste Tank Plant Engineering to be sustained. One of the outcomes resulting from the TWRS Plant As-Building Program will be procedural discrepancies that must be addressed. Some funding has been identified to support procedure revisions that are identified through field verification discoveries.

Waste Tank Plant Engineering holds the chairman position on the Configuration Management Guidance Board. One quarter of an FTE (WHC) has been identified to support the board activities and provide oversight to the Configuration Management implementation development. The balance of the professional support including the continued S/RIDS will come from contracted support. The Technical Data service centers are manned by WHC non exempt personnel. The data control stations that directly support the tank farms, and 242-A evaporator are funded in this account.

WHY WORK IS TO BE PERFORMED:

- Establish and maintain Plant configuration consistent with safety analysis design bases.
- Provide controlled technical data in support of plant operation and maintenance.
- Coordinate Configuration Management Plan implementation to be consistent with applicable codes, standards, directives and action plans.
- Implement the S/RIDS self assessment process in response to DNFSB 90-2.

LIST OF DELIVERABLES:

- Coordinate the Configuration Management Guidance Board as required:
 - Set meeting schedules
 - Establish agendas
 - Prepare and issue meeting minutes
 - Resolve issues
- Delivery of the drawing/labeling/MEL/verification as defined in the Upgrades Program work scope
- Provide procedure revisions resulting from discoveries in implementing the drawing/labeling MEL/verification activities
- Technical Data Service Centers responsive to the demands of controlled information in support of TWRS Plant operation and maintenance
- Configuration Management Implementation Engineering Task Plan
- Plant "Systems List" that identifies boundaries of configuration control for TWRS plant
- Design Document Reconstitution Engineering Task Plan
- Establish a "Grading Criteria" for Configuration Management and Design Document Restoration activities
- Define data sets that are required of the Configuration Management data base system
- Establish Configuration Management data base requirements
- Conclude and report the Phase II S/RIDS self assessment
- Prepare a Phase II S/RIDS corrective action plan

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK:

DOE Orders and Environmental Health and Safety requirements infer that the contractor have implemented a configuration management system that ensures that the basic relationship between the design requirements, physical configuration, and the facility documentation are established and maintained. Applicable Quality Assurance requirements obligates the Contractor to provide objective evidence that configuration management system is functionally compliant to the governing regulations and approved implementation program plans. To assist the Contractors in meeting their obligation DOE Standard DOE-STD-1073-93 "Guide For Operational Configuration Management Program," was issued complimenting the requirements of DOE 4700.1, DOE 5700.6C, RLIP4700.1A, and RLID 5000.12.

Further, DNFSB 90-2 has imposed a requirement that a self assessment process be established for the Configuration Management functional area to ensure that the applicable requirements are identified, incorporated and routine measurement be performed to determine effectiveness.

MANDATORY SCHEDULE RESTRAINTS:

There are no mandatory schedule restraints. However, WHC is being criticized regarding its delay in implementing the S/RIDS process.

WHC-SP-1101

BUDGET FORECAST:

Because the majority of this work is supporting activities primarily covered in ADS 1120, the budget forecast is lumped for several deliverables based on the type of resource required to support the activities.

<u>SOURCE</u>	<u>HOURS</u>	<u>COST EST.</u>
Tank Stabilization & Engineering Support (oversight)	453	\$ 27 K
Procedure Modification Support (procedure writing)	100	\$122 K
Technical Data Center Support (document control)	8154	\$257 K
Professional Contract Support (CM Plan Imp. S/RIDS)	281	\$343 K
TOTAL	8988	\$749 K

MAXIMUM COST OF EACH DELIVERABLE:

Refer to ADS 1120 and these costs

ROLES AND RESPONSIBILITIES:

This is a new account in the 1N1 WBS structure for Waste Tank Plant Engineering that recognizes the development, implementation and integration of the Configuration Management Plan for the Tank Farms and the 242-A Evaporator. The development of the plan and its implementation is being performed in ADS 1120 by the Upgrades Program. The finished product and processes will be turned over to Waste Plant Engineering for routine support and upkeep. The support for the maintenance of the Technical Data centers has also been moved to this WBS. Configuration control will place a demand on procedure modifications as physical plant and document discrepancies are identified. The S/RIDS work has been ongoing but has not been recognized in funding within the Waste Tank Plant Engineering funding.

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A Lead RL staff member will be appointed to over-see work in the specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL-TWRS office guidance and guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work cost or schedules in this cost account that occur as the fiscal year progresses.

Required activities: N/A

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	D. B. Engelman	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>D. M. Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L. C. Mercado</i>	9/19/94
Cost Account Manager	D. B. Engelman <i>D. B. Engelman</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J. Thomas</i>	9/19/94

FDS Number

1N1D46

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1. TWRS Program 1.1.1.2. Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.07/VI	5. WBS ELEMENT TITLE Tank Farm Security	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$279	\$704	\$726
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$279	\$704	\$726

1.1.1.2.01.01.07

A2-55

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Ensure TWRS Plant is operated in accordance with the applicable Safeguards and Security requirements identified in the Tank Farm S/RIDS.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Complete TWRS Plant application of Smart Card Entry Control System
- Complete revision of Safeguards and Security S/RID to include DOE-HQ comments.
- Complete Phase I assessment of Safeguards and Security S/RID
- Complete Phase II performance assessment

C. STATEMENT OF WORK

Required activities:

Perform required revisions and/or updates for the Tank Farm Risk Assessment. Support all phases of the DNFSB 90-2 work for Safeguards and Security. Act as the point-of-contact for all S&S compliance management activities. Perform field assessments as required such as lock & key compliance. Coordinate repair of all physical security deficiencies. Investigate Security Incident Reports as needed.

Technologies to be assessed:

Access Control and Entry System (ACES)

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	D. L. Burt	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L. C. Mercado</i>	9/19/94
Cost Account Manager	D. L. Burt <i>D. L. Burt</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J. L. Thomas</i>	9/20/94

FDS Number

1N1D47

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance/ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.08/VI	5. WBS ELEMENT TITLE Tank Farm Operations Procedures	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071 . .	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,700	\$1,909	\$1,966
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$1,700	\$1,900	\$1,966

1.1.1.2.01.01.08

A2-59

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Operating procedures will be developed to support TWRS Plant activities by providing specific direction for operating systems and equipment during normal and postulated abnormal and emergency conditions. These procedures will provide appropriate direction to ensure that the facility is operated within its design bases and will be used to effectively support safe operation of the TWRS Plant facilities. In addition to developing new procedures, existing procedures will be evaluated so that:

- Procedures will be managed to ensure that all procedures are reviewed at least bi-annually.
- Procedures will be revised before the number of changes exceeds five to any revision.
- Procedures will be revised before changes to any revision are greater than six months old.
- Approximately half of the procedure base will be issued every 12 months.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

The following deliverables will be prepared to accomplish the established goals:

- Review and revise (as required) half of the TWRS Plant procedure base (approximately 180)
- Issue revised procedures as directed by the TWRS Plant Operations Managers.
- Issue procedures for new operations as directed by the TWRS Plant Operations Managers.

C. STATEMENT OF WORK

Required activities:

In order to adequately support the TWRS Plant Facilities operating procedures will be developed and existing procedures will be maintained. Procedures are a key factor affecting operator performance and will be established for all anticipated operations, evolution, tests and abnormal or emergency situations. Procedures will be maintained to ensure consistency of format, accuracy, and currency to the system or equipment. The process involves the preparation or revision of the procedure, review and comment incorporation, and issuance of the procedure. The development or revision will be consistent with the standards identified in DOE Order 5480.19, "Conduct of Operations." Included in this work scope is the distribution of current procedures utilizing the Procedure Access Controlled Electronically (PACE) system and maintaining historical files of operating procedures to satisfy record requirements.

This cost account supports the procedure evaluation or review by TWRS Plant engineering, TWRS Plant Operations, Nuclear Safety, Quality Assurance or other ESQ organization personnel.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	J. L. Shelor	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L. C. Mercado</i>	9/19/94
Cost Account Manager	J. L. Shelor <i>J. L. Shelor</i>	9-19-94
Project Control Analyst	M. A. Dewitt <i>M. A. Dewitt</i>	9/20/94

FDS Number

1N1D48

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-AC06-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.09/VI	5. WBS ELEMENT TITLE Nuclear Safety Oversight	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,150	\$1,207	\$1,243
CENTRC			
GPP			
LINE ITEM			
TOTAL	\$1,150	\$1,207	\$1,243

1.1.1.2.01.01.09

A2-63

B. TECHNICAL BASES

Purpose:

The Independence Performance Review activity will be performed as required by DOE Orders 5480.1B, 5480.21, 5480.22, 5480.23, WHC-CM-4-46 and 4-49, WHC-CM-1-4, MP 5.15, MRPs 5.23, 5.24 and organizational requirements specified in IP 0860. Included in this activity are the evaluation of the risk or severity of any identified deficiencies, assistance in determining or evaluation of root cause, lessons learned and immediate and long term corrective actions. Additionally, Nuclear Safety personnel participate in activities relating to Emergency Preparedness, the Safety and Environmental Advisory Council (SEAC) and the Hanford Personnel Dosimetry Advisory Council (HPDAC). Personnel training for tasks related to these activities, as required by IP 0851, is also included.

The Nuclear Safety Functional Review includes: independent functional reviews; Operational Readiness Reviews (ORRs); Design Reviews/Verification; document and procedure reviews (eg. reviews of TSRs, USQs, safety basis/interim safety basis documents, Safety Analysis Reports, Functional Design Criteria, supporting documentation, and work/engineering documents). Requirements for performance and conduct of the functional reviews is contained in DOE Orders 5480.1B, 5484.1, and WHC Implementation Plan for DOE Orders 5480.21, .22, .23. Requirements are also contained in WHC-MP 5.16, MRP 5.23, 5.24, 5.50, WHC-CM-4-46, and CM-4-49, function level manual IP 0860 and IP-0625. Training requirements for personnel involved in performance of these activities is included in IP-0851.

Deliverables under this cost account are indicated within each major activity area and in order of perceived priority. Any work scope or priority changes will involve review and approval by the assigned RL Lead to assure agreement on scheduled activities and prioritization of those activities.

Objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Program Management and Support: This activity covers the resources necessary to effectively manage the program development and implementation, as directed by this FY-95 work plan. Included in this activity is assistance in the development of the FY-96 work plan and corresponding budget request.

TWRS Nuclear Safety Support will:

- Ensure operations of Tank Farms nuclear facilities are performed safely and within established safety envelope and ensure the adequacy of documentation and the safety of operations associated with, processes and projects. And help to ensure that the safety envelope for Tank Farms operations is properly addressed and maintained and that assigned personnel understand the purpose of OSR/TSR Limits.
- Monitor Tank Farms nuclear facility safety experience to assess performance levels and trends.
- Verify that Tank Farms nuclear facilities have instituted and continue to utilize an effective program for Unreviewed Safety Questions (USQ) determinations and analyses.
- Develop and administer an independent performance review program to control and minimize nuclear hazards to onsite personnel and the public and to promote continuous improvement in nuclear safety performance in all Tank Farms nuclear facilities, processes and projects.
- Perform appropriate post reviews of facility documentation.

WHC-SP-1101

- Participate in and/or provide oversight of Occurrence Reporting and Accident Investigations of events of significance to nuclear/criticality safety.
- Participate in Plant Review Committee (PRC) activities.
- Develop and administer a functional review methodology to control and minimize nuclear hazards to onsite personnel, the public and environment; and to promote continuous improvement in nuclear safety performance in all Tank Farm nuclear facilities, processes and projects.
- Provide nuclear safety service through the efforts of qualified/certified personnel. To this end, continue to train and qualify Nuclear Safety independent oversight personnel.

Work to be performed:

This cost account provides the nuclear safety program management and oversight to TWRS. TWRS NSS will review and approve work packages and revised safety documentation (ISB and IOSR) per the Nuclear Safety Manual as well as related documents. Additional work to be performed includes management of this cost account, and assisting in the development of the FY-96 work plan and associated budget request.

Activities specifically not funded under this cost account:

How work is to be performed:

Specific work to be performed includes interfacing with both internal WHC and external oversight and regulatory personnel (auditors, inspectors); and assisting in the response to audits, appraisals, and surveillances. Where these interface and response activities may represent an impact to overall schedule and work plan priorities, the Program Lead will be notified for direction on possible work scope changes.

Why the work is to be performed:

The work to be performed under this cost account is required to ensure compliance with Nuclear Safety regulatory requirements, and ensure worker nuclear safety issues are properly addressed. Significant regulatory driver nuclear safety issues at Tank Farms are RL directives. Other drivers include DOE Orders. Additional benefit from work performed is the tie to implementation of specific WHC Nuclear Safety Program elements related to safety analysis and hazard identification and control.

List of all deliverables:

- TWRS Nuclear Safety Support will review and approve 300 Work Packages and related documents per nuclear safety manual provided that at least 300 work packages are received for review and approval.
- TWRS Nuclear Safety Support will review and approve 1000 documents (ie: Design, Plant Ops Procedures, etc) per Nuclear Safety Manual provided that at least 1000 documents are received for review and approval.
- TWRS Nuclear Safety Support will complete one Operational Readiness Reviews(ORR) provided that TWRS schedules and completes at least one ORR.
- TWRS Nuclear Safety Support will review and approve revised safety documentation (ISB and IOSR) per Nuclear Safety Manual provided that Safety documentation is submitted for review and approval.

WHC-SP-1101

Mandatory requirements for performance of work:

The mandatory requirements for performance of work will be measured by the completion of each activity represented by supporting documentation. Where the activity is on-going, measurement will be documented by meeting performance criteria established at the activity level. In most cases, completion of deliverables will be communicated to the Program Lead.

Budget forecast:

The budget forecast was prepared using the TWRS NSS Management Plan for FY94.
(NEXT PAGE)

TWRS NUCLEAR SAFETY MANAGEMENT PLAN REPORT TOTALS SHEET for FY 94

ACTIVITY	QTRs (Budget FTEs)				TOT	TWRS Nuclear Safety (Actual HRs & FTEs)							TOTAL
	1st	2nd	3rd	4th		1stQ	2ndQ	3rdQ		1stQ	2ndQ	3rdQ	
MANAGEMENT & TRAINING (Non-TWRS Funded)													
Func/Org Mgmt	0.23	0.23	0.23	0.23	0.9	810	968	804		0.44	0.53	0.44	1.41
Planning/Budgeting	0.03	0.03	0.03	0.03	0.1	300	27			0.16	0.01	0.00	0.17
Self-Assessment	0.03	0.03	0.03	0.03	0.1		22			0.00	0.01	0.00	0.01
Correct Act Mgmt	0.03	0.03	0.03	0.03	0.1					0.00	0.00	0.00	0.00
Personnel Training (general - HGET, etc)	0.13	0.13	0.13	0.13	0.5	150	256	58		0.08	0.14	0.03	0.25
Good Neighbor Program	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
TQ/Comm/El Committees	0.03	0.03	0.03	0.03	0.1					0.00	0.00	0.00	0.00
Professional Society	0.05	0.05	0.05	0.05	0.2					0.00	0.00	0.00	0.00
Employee Concerns	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
Procurement Activity	0.03	0.03	0.03	0.03	0.1		11	3		0.00	0.01	0.00	0.01
POLICIES & REQUIREMENTS (Non-TWRS Funded)													
Management & Training (NSSR Only)	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
DOE Requirements	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
MP/MRP/IP Rev./Comm'ts	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
Design Criteria	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
Personnel Training (NS qual program)	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
DO Activity	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
COG Activity	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
DOE Resp/Support	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
Safety Culture	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
INDEPENDENT PERFORMANCE REVIEWS (Partially Funded by TWRS)													
OSAs	0.05	0.05	0.05	0.05	0.2	1050	88			0.57	0.05	0.00	0.62
Surveillance	0.05	0.05	0.05	0.05	0.2	1050	41			0.57	0.02	0.00	0.59
Compliance Inspection	0.05	0.05	0.05	0.05	0.2	330	2			0.18	0.00	0.00	0.18
Audits/Appraisals	0.05	0.05	0.05	0.05	0.2	960	191	130		0.53	0.10	0.07	0.70
Personnel Training Courses reqd by NS	0.00	0.00	0.00	0.00		300	11	104		0.16	0.01	0.06	0.23
SEAC Activity	0.05	0.05	0.05	0.05	0.2	360	13			0.20	0.01	0.00	0.21
Emergency Preparedness	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
HPDAC Activity	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
DOE Resp./Support	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
Misc.	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
FUNCTIONAL REVIEWS (Funded by TWRS)													
ORRs	0.53	0.53	0.53	0.53	2.1	1650	58	37		0.90	0.03	0.02	0.95
Design Review/Verif.	0.15	0.15	0.15	0.15	0.6	9300	105	508		5.09	0.06	0.28	5.43
Training Reqs/Review	0.25	0.25	0.25	0.25	1.0		38	45		0.00	0.02	0.02	0.04
Personnel Training (required by facility)	0.00	0.00	0.00	0.00		1740	18	84		0.95	0.01	0.05	1.01
Staff/SEAC/PRC/CAEG/AI	0.05	0.05	0.05	0.05	0.2	150	52	24		0.08	0.03	0.01	0.12
Peer Document Reviews	1.50	1.50	1.50	1.50	6.0		3269	1450		0.00	1.79	0.79	2.58
Post Review/Plt.Supp.	0.00	0.00	0.00	0.00				22		0.00	0.00	0.01	0.01

ACTIVITY	QTRs (Budget FTEs)				TOT	TWRS Nuclear Safety (Actual HRS & FTEs)							TOTAL
	1st	2nd	3rd	4th		1stQ	2ndQ	3rdQ		1stQ	2ndQ	3rdQ	
epare SERs/Misc.	0.00	0.00	0.00	0.00				111		0.00	0.00	0.06	0.06
Projects	0.00	0.00	0.00	0.00						0.00	0.00	0.00	0.00
RUNNING TOTALS										9.91	2.83	1.84	----

Mandatory schedule constraints:

Schedule constraints for FY-95 are directly tied to the provision of full funding and headcount on-board necessary for performance of work. Additional constraint is the lack of control over ability to achieve a full staffing level within WHC or obtain contract personnel to perform identified activities.

Accident Investigations will be on a case-by-case basis whenever services are requested.

The number of documents to be reviewed will be at the level as described in the deliverables.

Contractor support will be utilized to supplement efforts in meeting milestones/deliverables.

Nuclear Safety will coordinate the independent review process for nuclear facilities.

Roles and responsibilities:

Programmatic direction for this effort shall be provided by the RL TWRS Tank Farm Operations office. An RL Lead will be appointed to oversee work under this account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

contractor will notify the TWRS Tank Farm Operations office of any direction or guidance provided by RL, but will not act on guidance or direction until approved by the TWRS Program staff member.

The Program lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	M. N. Islam	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>LC Mercado</i>	9/19/94
Cost Account Manager	M. N. Islam <i>M N Islam</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J-S Thomas</i>	9/19/94

S Number

INID49

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1. TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 20, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.10/VI	5. WBS ELEMENT TITLE Program Passbacks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	0	0	0
CENRTC			
GPP			
LINE ITEM			
TOTAL	0	0	0

B. STATEMENT OF WORK

Required activities:

Provide for dissemination of passback funds by program priority.

1.1.1.2.01.01.10

A2-71

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	D. L. Lenseigne	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DMLucoff</i>	9/23/94
Activity Manager	L. C. Mercado <i>DMLucoff / FOR</i>	
Cost Account Manager	D. L. Lenseigne <i>DL Lenseigne</i>	9/22/94
Project Control Analyst	M. A. Dewitt <i>MA Dewitt</i>	9/23/94

FDS Number

1N1D4A

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operation & Maintenance/ M & O Contractor 1.1.1.2.01.01 Technical Management & Planning	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.01.11/VI	5. WBS ELEMENT TITLE CASS/TMACS/SACS Maintenance and Development	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-ND	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,300	\$1,539	\$2,107
CENRTC		200	200
GPP			
LINE ITEM			
TOTAL	\$1,300	\$1,739	\$2,307

1.1.1.2.01.01.11

A2-73

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

- (1) Maintain the current production version of the Computer Analysis Surveillance System (CASS), Tank Monitor and Control System (TMACS), and the Surveillance Analysis Computer System (SACS) which supports Environmental and Regulatory Compliance issues and are currently part of the operating procedures;
- (2) Provide enhancements to SACS to better utilize Surveillance Analysts time and meet the business needs. These upgrades include adding more specialized analysis tools to more efficiently process data; providing data retrieval and receipt with HDAT; providing data retrieval from non-relational database sources; adding a full interface with TMACS; adding data types such as psychometric, radiation, dome elevations, and pressures;
- (3) Support the increased user load in SACS due to the recently-installed TWINS interface;
- (4) Continue to support the addition of new tank farm instrumentation in the field that is now being connected to the TMACS I/O network. These instruments include new or refurbished thermocouples, Panalarm annunciators, and the new ENRAF surface level indicators;
- (5) Support TMACS operator terminals in 242-S and 242-A Evaporators;
- (6) Retire CASS and place its functions on TMACS and SACS;
- (7) Position TMACS and SACS as viable alternatives for the plant operations and management information computer systems for TWRS projects including W-314, W-211, Flammable Gas Mitigation, the DACS-2 control trailer. This will help TWRS standardize on an information system and thereby reduce life-cycle costs, delay times in acquisitions, and the proliferation of multiple, isolated systems.

Status of Design Documentation:

Both TMACS and SACS have production releases already in operation which have adequate design documentation. Enhancements to these systems are requirement driven and will be implemented mostly from the current design. Any necessary design modifications will be part of the work scope.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

List of All Deliverables

Pre-Defined Deliverables:

Refer to the attached tables for CASS, TMACS, and SACS deliverables. Accompanying each deliverable is its driver, the associated milestone, and the completion date.

Maintenance:

For CASS/TMACS maintenance work we currently have a backlog of 15 TMACS defects (FY94 carryover). Over the course of FY95 we expect to accumulate an equal number. Our goal is to reduce the current backlog to less than 10 and resolve 65% of the new defects by the end of FY95.

WHC-SP-1101

For SACS maintenance work we plan to resolve 80% of all open problem reports that we expect to accumulate over the course of FY95. We also plan to maintain and create triggers, database functions, utilities and security as needed to support ongoing activities.

CASS Pre-Defined Deliverables:

CASS Deliverable Description	Driver	Milestone	Completion Date
A and C-Farm CASS alarm migration to TMACS. (FY94 carry-over)	Tank Farm Instrumentation Upgrade Plan	CASS Release 3.0	07/31/95
CASS manual liquid-level entry migration to SACS or TMACS. (FY94 carry-over)	CASS Retirement	CASS Release 3.0	07/31/95
Drywell/LOW processing: process "Quality Record" Data from vans.	QA Audit Resolution	CASS Release 3.0	07/31/95
Temperature monitoring and reporting software removed to allow for shutdown of CASS.	CASS Retirement	CASS Release 3.0	07/31/95
Liquid levels removed that have been replaced by TMACS, to allow for shutdown of CASS.	CASS Retirement	CASS Release 3.0	07/31/95
CASS alarm points removed that have been replaced by TMACS or are no longer required, to allow for shutdown of CASS.	CASS Retirement	CASS Release 3.0	07/31/95
Other Change Requests as needed by TF Operations.	Operator Requirement	CASS Release 3.0	07/31/95
Software to accept and process drywell data from new van computers.	Operator Requirement	CASS Release 3.0	07/31/95

TMACS Pre-Defined Deliverables:

TMACS Deliverable Description	Driver	Milestone	Completion Date
Acromag software connection for AW, S, and SX Tank Farms - 36 tanks in all. (FY94 carry-over)	Tank Farm Instrumentation Upgrade Plan	TMACS Release 6.0	01/15/95
All possible instruments from tanks in the 241-A, -AX, -AW tank farms (16 tanks), including liquid level and temperature, connected to TMACS, to allow for shutdown of CASS.	Tank Farm Instrumentation Upgrade Plan	TMACS Release 6.0	01/15/95
Software communications driver for new Enraf CIU Control Stations (provides direct connection to replace Acromag connection)	Draft Tank Farm Instrumentation Upgrade Plan	TMACS Release 6.0	01/15/95

WHC-SP-1101

TMACS Deliverable Description	Driver	Milestone	Completion Date
Software performance upgrades: - event-driven point processing; - delta-band filtering in communications drivers.	CASS Retirement	TMACS Release 6.0	01/15/95
All Enrafs that are connected to the TMACS Acromag hardware during FY94 available through TMACS.	Tank Farm Instrumentation Upgrade Plan	TMACS Release 7.0	05/15/95
All possible instruments from tanks in the 241-AP, -AY, and AZ tank farms (12 tanks), including liquid level and temperature, connected to TMACS, to allow for shutdown of CASS.	Tank Farm Instrumentation Upgrade Plan	TMACS Release 7.0	05/15/95
Connection to first-installed Enraf CIU Control Station.	Draft Tank Farm Instrumentation Upgrade Plan	TMACS Release 7.0	05/15/95
Performance Upgrade: installation of Sun SPARC-10 Workstations. (Assumes availability of CENTRC or lease funds)	Tank Farm Instrumentation Upgrade Plan	TMACS Release 7.0	05/15/95
All Enrafs that are connected to the TMACS Acromag hardware during FY95 available through TMACS.	Draft Tank Farm Instrumentation Upgrade Plan	TMACS Release 8.0	09/15/95
All possible instruments from tanks in the 241-B, -TX, -TY (36 tanks), including liquid level and temperature, connected to TMACS, to allow for shutdown of CASS.	Tank Farm Instrumentation Upgrade Plan	TMACS Release 8.0	09/15/95
All Enrafs that are connected to the TMACS CIU hardware during FY95 available through TMACS.	Tank Farm Instrumentation Upgrade Plan	TMACS Release 8.0	09/15/95
Performance Upgrades: - G2 Release 4.0 installed; - Trend Graphs Enhanced.	System Maintenance	TMACS Release 8.0	09/15/95
Remote TMACS user terminals at 242-S and 242-A evaporator facilities.	Draft Tank Farm Instrumentation Upgrade Plan	TMACS Release 8.0	09/15/95
Revisions to the following TMACS documents: Functional Requirements, Software Configuration Management Plan, Software Test Plan. (FY94 carry-over)	QA Requirement	TMACS/CASS Software Project Management	09/30/95
TMACS Software Design Document - Initial Release. (FY94 carry-over)	QA Requirement	TMACS/CASS Software Project Management	09/30/95

WHC-SP-1101

TMACS Deliverable Description	Driver	Milestone	Completion Date
Releases of the following revised documents: - FY96 Software Project Management Plan; - FY96 Acquisition Plan;	Business Practices Requirement, QA Requirement	TMACS/CASS Software Project Management	09/30/95
Maintenance Support of Tank Farm Training and Operating Procedures organizations.	Operators Requirement	TMACS/CASS Software Project Management	09/30/95

SACS Pre-Defined Deliverables:

SACS Deliverable Description	Driver	Milestone	Completion Date
A modified Data Retrieval form that performs the following functions:			
- Allows for specialized batch SQL requests/reports.	WHC-EP-0182-73, Tank Farm Surveillance and Waste Status Summary Report	SACS Release 2.0	01/15/95
- Allows the ability to access high frequency data from TMACS and CASS.	Data requests for high visibility tanks.	See Note 1	See Note 1
- Provide TMACS level displays from SACS for tanks monitored by TMACS but not receiving real time levels.	TMACS Enhancement	SACS Release 2.0	01/15/95
A modified V&V form that performs the following functions:			
- Indicates duplicate data error in temperatures.	Customer Request	See Note 1	See Note 1
- Indicates duplicate data error in surface levels.	Customer Request	See Note 1	See Note 1
- Allows for modification of surface level comments.	Customer Request	See Note 1	See Note 1
- Changes the default time on historical temperature data.	Customer Request	See Note 1	See Note 1
- Modify data entry confirmation message form.	Customer Request	See Note 1	See Note 1
- Develop the ability to enter data from existing mechanized records.	Customer Request	See Note 1	See Note 1
- Add instrument model to entry fields.	Customer Request	See Note 1	See Note 1

WHC-SP-1101

SACS Deliverable Description	Driver	Milestone	Completion Date
- Allow null data entry as out of service.	Customer Request	See Note 1	See Note 1
- Add the ability to save instrument device when entering data.	Customer Request	See Note 1	See Note 1
A modified V&V form that performs the following functions:			
- Allows for V&V of LOW data.	OSD-T-151-00031, "Operating Specification for Tank Farm Leak Detection"	SACS Release 2.0	01/15/95
- Enhances V&V graph to identify the device in use.	Customer Request	See Note 1	See Note 1
- Allows for auto scaling Y-axis.	Customer Request	See Note 1	See Note 1
- Allow multiple thermocouples to be identified with symbols.	Customer Request	See Note 1	See Note 1
- Allow multiple thermocouples to be identified with color.	Customer Request	See Note 1	See Note 1
- Has a comment field in grid for viewing purposes.	Customer Request	See Note 1	See Note 1
- Leaves the grid open until all changes are complete.	Customer Request	See Note 1	See Note 1
- Selects grid area and mark as block for modifying groups of data at a time.	Customer Request	See Note 1	See Note 1
Enhanced reporting capability to perform the following functions:			
- Frequency Violation Report sorted by tank	Customer Request	See Note 1	See Note 1
- Frequency Violation Report without Suspect data as surface level readings on report	Customer Request	See Note 1	See Note 1
- Frequency Violation Report with ability to backdate the report	Customer Request	See Note 1	See Note 1
- Frequency Violation Report with a toggle button which allows users to choose daily, weekly, quarterly, or all readings	Customer Request	See Note 1	See Note 1
- Temperature Report with display waste level on report	Customer Request	See Note 1	See Note 1

SACS Deliverable Description	Driver	Milestone	Completion Date
- Temperature Report with display height of thermocouple on report	Customer Request	See Note 1	See Note 1
- Create new report that shows SACS data to be compared with CASS reports.	Customer Request	See Note 1	See Note 1
- Create new report that displays TMACS "UNKNOWN" data.	Customer Request	See Note 1	See Note 1
Enhanced Table Maintenance functions to include:	Tank Farm Instrumentation Upgrade Plan		
- Configure double shell tank farms AY and AZ.	Engineering Request due in Release 2.0	See Note 1	See Note 1
- Mark historical data with thermocouple type and riser.	Customer Request	See Note 1	See Note 1
- Replace updated ILL readings on SACS after recalculation on CASS.	OSD-T-151-00031, "Operating Specification for Tank Farm Leak Detection" due in Release 2.0	See Note 1	See Note 1
- Configure other tank farms as needed to support ongoing activities.	Maintenance Activity	See Note 1	See Note 1
- Configure temperature sensors for TMACS data.	TMACS Enhancement due in Release 2.0	See Note 1	See Note 1

Note 1 In SACS Release 2.0, we plan to provide the functions in the deliverables specifically identified in this table plus a minimum of two other functions listed with these deliverables.

In the subsequent releases (Releases 3.0 and 4.0), we plan to provide a minimum of eight functions, per release, listed with these deliverables. Therefore, we are committing to provide a minimum of 21 out of 33 listed functions.

We have chosen to take this approach since at this time the end-user has selected the list of deliverables, and the functions to be provided in each deliverable, but would like to maintain some flexibility in the order in which we incorporate them in SACS.

C. STATEMENT OF WORK

Work to be Performed

The primary work in this cost account plan involves modifications to existing versions of CASS, TMACS, and SACS. All three of these systems are currently in production; that is they are running and providing their end

users with specific, computer-automated functions that assist them in the performance of their jobs.

The work to be performed falls into two categories: pre-defined deliverables and maintenance. The majority of the work will produce pre-defined deliverables, most of which add new functions to a system. The pre-defined deliverables are listed the List of All Deliverables in this section. The balance of the work, maintenance, will provide general support to the current systems including fixes to operational problems and system anomalies.

Included in the work to be performed to produce a deliverable or fix an operational problem is a series of activities. These activities follow a standard software development life-cycle and are explained below. All work will be formally tracked as specified in each system's Configuration Management Plan.

Basic Software Development Activities:

The source code and documentation will be delivered as specific "Releases". A release is an event that occurs when a new version of the software is put into production.

A release is planned in advance to occur at a specific date (major milestone). For FY95 we have planned for 1 CASS release, 3 TMACS releases, and 3 SACS releases.

The software modifications that make up a release are identified in advance (milestone description).

The general activities involved in a release are as follows:

- (1) Verification of the Requirements - assurance that the new functions or maintenance modifications are what the users want or the system needs and that they have been described to the necessary detail. This will often be done by prototyping.
- (2) Component and System Design - development and documentation of the "how" the changes will be built and integrated into the rest of the system.
- (3) Implementation and Preliminary Testing - construction of the changes using code or programming tools and testing of the changes by the developer.
- (4) Formal Test and Acceptance - execution of documented test procedures to validate that the changes work as expected by the customer end-user.
- (5) Release - provision of the changes with the new functions or modifications to the production (operational) environment for use.

How Work is to be Performed

There will be three work packages: one for CASS designated as "CASS Maintenance"; one for TMACS, designated as "TMACS Maintenance and Development"; and one for SACS, designated as "SACS Maintenance and Development".

The CASS work will require 0.6 FTEs. TMACS will require 3.2 FTEs. And SACS will require 5.5 FTEs. The staff mix will average eight software engineers (SEs) and one manager. The manager will oversee all three work packages. One SE will be designated as the project lead for CASS and TMACS. SACS will have one SE designated as the administrative lead and another SE designated as the technical project lead. All staff are BCSR personnel. All staff will work from their offices in 2750E.

The software engineers, project leads, and the manager will continue to interface directly and on a daily basis with their end-user customers. Project personnel will also have direct contact with the TWRS/WTO cognizant engineer for CASS, SACS, and TMACS (Dave Barnes), and the TMACS Instrumentation & Control engineer (Chuck Scaief).

The project leads and manager will report their progress to BCSR's WHC monitor, Dave Kummer, and WHC's RL monitor, Guy Bishop.

We will continue to seek productivity gains through participation in BCSR's effort to achieve Level 3 Certification in the Software Engineering Institute's Capability Maturity Model (SEI/CMM). SEI is a federally funded research and development center affiliated with Carnegie Mellon University. CMM is a conceptual framework for software process improvement based on state-of-the-art software engineering practices. Our participation will require specific changes in the software development process, which have been shown to reduce costs.

Why Work is to be Performed

CASS, TMACS, and SACS provide TWRS surveillance and operations personnel with automated tools to collect, display, analyze, and archive tank farm instrument readings. These readings provide an indication of the current state of the waste tanks and whether or not the tanks are operating within established safety limits. The readings are relied upon to predict transitions to off-normal conditions. In addition, tank farm instrument readings provide information for new plant designs.

In their current operating states these systems, complemented by manually-collected instrument readings, provide basic RCRA and WAC compliance. However, they currently do not provide all the necessary functions for surveillance and operation personnel to effectively address TPA requirements, DOE orders, or the full SARs/OSRs/OSDs.

CASS, TMACS, and SACS are in support of the following (see List of All Deliverables for how these match with specific deliverables):

- W-320 Project (C-106 Sluicing)
- WHC-SD-WM-TI-357, "Waste Storage Tank Status and Leak Detection Criteria"
- WHC-OSD-T-151-00007/0024, "WHC Operating Specification Documents"
- DOE Order 5480.5 defining safety requirements for nuclear facilities
- "National Defense Authorization Act for Fiscal Year 1991" Section 3137, Public Law 101-510, "Safety Measures for Waste Tanks at Hanford Nuclear Reservation"
- WHC-EP-0182-68, "Tank Farm Surveillance and Waste Status Report"
- WHC-EP-0392, "Tank Farms Restoration and Upgrades Program Plan"
- WHC-EP-0600, "Status Report on Resolution of Waste Tank Safety Issues at the Hanford Site"
- WHC-SD-WM-TI-589, "Waste Storage Tank Level Detection Report"
- OSD-T-151-00031, "Operating Specification for Tank Farm Leak Detection"
- WHC-SD-WM-WP-132, Revision 2, "Tank Farm Instrument Upgrade Plan"

Technologies to be assessed:

The basic technologies for CASS, TMACS, and SACS have already been established and are in use. However, as part of these system enhancements we will be looking at new computer equipment and software to increase system productivity.

The equipment of interest includes more efficient CPUs for SACS and TMACS to handle additional loads. Most likely these will be the more advanced Sun workstations or specialized database file servers.

The software of interest includes database server software for replicating transactions in SACS. This could

provide the necessary backup and security SACS will need to accommodate its multiple users and the TWINS interface. For TMACS we will investigate Gynsym's Inc. TeleWindows for Windows NT. This product could provide remote access for TMACS users from PCs.

Options to be considered:

There are no technical options being considered in lieu of continuing the enhancement of TMACS and SACS and the subsequent retirement of CASS.

An option to leave all three systems in their current production state and only provide routine operational maintenance could be considered. Under this option no additional data types could be added to TMACS or SACS and their use to the end-user would be limited. These data types could continue to be collected and stored manually. Also, with this option CASS could not be retired and TMACS and SACS would not be viable candidates for other tank farm projects that require data acquisition, monitoring, and data management (i.e., W-314, W-211, Flammable Gas Mitigation, the DACS-2 control trailer).

Replication Server software has been considered as an option to provide system backup for the SACS database and ease the user load on SACS (thereby decreasing response time). It should be noted that PNL has indicated that they may procure Replication Server software to decrease the response time of getting SACS data to their users. From a DOE-RL standpoint, it would seem to be more efficient and useful to utilize this software in WHC for the dual purpose.

Mandatory Requirements for Performance of Work

For each of the scheduled software releases for CASS, TMACS, and SACS we will perform an acceptance test. The acceptance test includes written test procedures to verify that the deliverables perform as expected. The acceptance test will also define the criteria that the end-user and the developer have agreed upon as to what constitutes successful completion of new functions in the software deliverable. Upon completion and sign off of the acceptance test, the revised software will be installed into production.

Mandatory Schedule Constraints

CASS:

The retirement of CASS is dependent on the replacement of alarms and annunciator panels in the field (approximately 800). The replacement of alarms requires a technical study of current alarm requirements and a physical verification that the current alarm sensors are functional.

TMACS:

The software scope and deliverable schedule for TMACS are determined by the "Tank Farm Instrumentation Upgrade Plan", WHC-SD-WM-WP-132. TMACS is dependent on hardware being connected to the Acromag and Panalarm units and Enraf CIU controllers. Installation of remote workstations is dependent on the procurement of the workstations and network connections.

SACS:

The SACS schedule is affected by requirements to support Tank Waste Information Network System (TWINS), Washington Department of Ecology requests for data, and tank farm priorities and request for data and new functions to more easily support their activities.

Budget Forecast

Activity	Expense	CENTRC	Total
CASS	\$ 148.0		\$ 148.0
TMACS	518.8	75.0	593.8
SACS	825.8		825.8
Total	\$1,492.6	\$ 75.0	\$1,567.6

Maximum Cost of Each Deliverable

The cost estimate for this cost account plan is not based on specific deliverables but instead on the minimum staff BCSR would provide to do maintenance and development work on these systems. Additional cost for maintaining software licenses, maintenance contracts, and travel and training were also included. Details are provided by cost element in the cost account plan.

Roles and Responsibilities

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

No specific support is required from RL in the performance of this work.

The software engineers, project leads, and the manager will continue to interface directly and on a daily basis with their end-user customers. Project personnel will also have direct contact with the TWRS/WTO cognizant engineer for CASS, SACS, and TMACS (Dave Barnes), and the TMACS Instrumentation & Control engineer (Chuck Scaief).

The project leads will expect the end-user customers to set priorities on deliverables that have been identified but not specifically scheduled in this cost account.

The software engineers will expect the end-users, operations, and engineering personnel to clarify the detail requirements for the deliverables identified in this cost account.

The project leads and manager will report their progress to BCSR's WHC monitor, Dave Kummer, and WHC's RL monitor, Guy Bishop.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	D. B. Engelman	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>LC Mercado</i>	9/19/94
Cost Account Manager	D. B. Engelman <i>DB Engelman</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>MA Dewitt</i>	9/29/94

FDS Number

1N1D4E

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations and Maintenance/M & O Contractor	2. DATE PREPARED September 20, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02/V	5. WBS ELEMENT TITLE Tank Farm Compliance & Corrective Activities							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.4 Transfer Waste 4.2.1.5 Concentrate Waste 4.2.3.1 Immobilize & Dispose LLW 4.2.3.2 Disposition Gaseous Effluents 4.2.3.3 Disposition Liquid Effluents 4.2.3.4 Disposition Solid Waste	12. BUDGET AND REPORTING NUMBER <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td colspan="3">EW3120071</td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$32,269	\$33,012	\$33,666				
CENRTC	1,000						
GPP							
LINE ITEM							
TOTAL	\$33,269	\$33,012	\$33,666				

B. TECHNICAL BASES

Goals & objectives:

1. Achieving and maintaining environmental compliance including management of hazardous wastes in Tank Farms. This activity consists of performing:
 - Double-shell tank (DST) integrity assessments
 - Permitting and regulatory compliance
 - Environmental compliance engineering, analysis, and assessments
 - Surface contamination zone reduction
 - DST emergency pumping planning/preparations
 - Radioactive/hazardous solid waste management
 - Special disposal of unusable/abandoned field and in-tank equipment
 - Compliance management and ALARA support to field activities
 - Industrial health and safety support
 - Radiological protection support
2. Prepare and implement new operational safety requirements (OSRs) in Tank Farms for improving the safety bases. This activity consists of:
 - Single-shell tank interim OSRs
 - DST/AWF Final Safety Analysis (FSAR)/Technical Safety Requirements (TSRs)
 - 242-A evaporator FSAR updates
 - OSR implementation including necessary upgrades
 - Criticality engineering upgrades and safety reviews

The following program master schedule activities are supported by WBS 1.1.1.2.01.02:

S003040	Develop DST Integrity Assessment Program
S003041	Perform Initial DST Inspections & Prepare IARs
S003043	Issue 242-A/DST Part B Permits
S003045	Perform Tank Farm Environmental Analysis & Compliance Assessments
S003055	Disposal of Identified Failed Field Equipment
S003060	Characterize, Package, & Dispose of New Rad/Haz Waste
S003065	Upgrade Criticality Safety Bases
S003067	Maintain Criticality Safety Bases
S003070	Develop DST Emergency Pumping Capability
S003080	Complete Initial Codes & Standards Program (90-2)
S003085	Maintain Codes & Standards Program (90-2)
S003090	Implement SST Interim OSRs
S003093	Implement AWF Interim/Final OSRs
S003095	Implement DST Interim/Final OSRs
S003110	Issue DST/AWF FSAR/TSRs
S003115	Issue/Revise SST Interim OSRs
S003119	Issue Other Tank Farm SARs

Major end-item deliverables:

1. Initial DST integrity assessments & issue reports
2. WDOE/EPA Part B Permits for DSTs and 242-A evaporator
3. DST and 242-A evaporator Waste Analysis Plans
4. Tank Farm stack sampling/monitoring
5. Disposal of identified failed field equipment

WHC-SP-1101

6. Characterize, package, ship approximately 25K-50K cuft of LLW and 5K cuft RMW per year to burial grounds and/or CWC for final disposal
7. Surveillance implementation of fissile material measurement
8. Methods/equipment to safely increase response time in the event of a declared DST leaker
9. S/RIDS compliance assessments in 18 functional areas
10. Revised and implemented DST/AWF/SST interim OSRs
11. DST/AWF final safety analysis report (FSAR)
12. Full implementation of Operational Safety Requirements (OSRs)
13. Cleanup of surface contamination in Tank Farms areas
14. Implementation of Waste Tanks Operations Minimization Plan
15. RCRA inspection schedules and logs

Acceptance criteria:

1. Safe storage of underground waste tanks.
2. Achieving and maintaining environmental compliance in tank farm facilities for continued safe storage and treatment of hazardous wastes, gaseous emissions, and liquid effluents.
3. Implementation and adherence to the new Operational Safety Requirement parameters.

C. STATEMENT OF WORK

Required activities:

1. Develop ultrasonic testing equipment for DST annulus inspections
2. Respond and incorporate where necessary notice of deficiency (NODs) comments on Part B Permit applications
3. Incorporate tank characterization results and changing regulatory requirements in waste analysis plans
4. Install new generic stack samplers and continue monitoring effluent
5. Inventory, determination, WDOE negotiation (if applicable), and treatment/disposal of stored or abandoned equipment in tank farms
6. Continuously perform environmental compliance audits/reviews (WHC/TBD)
7. Perform radiological characterization of tank farms solid waste streams to ensure proper waste designation
8. Acceptance testing and training on DST emergency pumping equipment/procedures
9. Developed final DST Technical Specification Requirements (TSRs) defining acceptable conditions, safe boundaries, bases therefore, and management or administrative control required to ensure safe operations

Interfaces:

#	From This WBS To	Item Provided
1	Solid Waste (CWC/burial grounds)	Shipment of tank farms newly generated low-level solid waste, radioactive mixed waste, and hazardous waste.
2	Washington Department of Ecology (WDOE) & Environmental Protection Agency (EPA)	RCRA inspection schedule/logs, audit finding, issue/concern responses, NESHAP annual reviews, stack sampling & monitoring results, NOD responses, waste analysis plans, RCRA compliance assessments, burial records, etc.
	To This WBS From	
1	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters

Technologies to be assessed:

1. Effluent monitoring, solid waste minimization & characterization, recycling programs, decontamination processes, and sample analysis alternatives/strategies
2. Tank structural monitoring/analysis, corrosion control methods, modeling, and fissile material measurement methods

Options to be considered:

1. Solid waste drum compactor
2. Soil reclamation/recycling
3. Best Available Technology (BAT) improvements
4. Treating & reclassification of wastes
5. Co2 field decontamination
6. Improved cathodic protection
7. Statistical data analysis
8. In-Situ Characterization (i.e. copper foil survey technology)

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Primary driver is the Department of Energy established and approved:

- Standards/Requirements Identification Documents (S/RIDS)

Other drivers which encompasses S/RIDs include the following:

COMPLIANCE AGREEMENT/AUDITS

- Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)
- Washington Department of Ecology (WDOE) Waste Analysis Plan
- Washington Department of Health audit Findings/Concerns

AIR

- 42 USC 7401, et seq., "Clean Air Act"
-RCW 70.94, "Washington Clean Air Act"

WATER

- 33 USC 1251, et seq., "Clean Water Act"
- 42 USC 300, et seq., "Safe Drinking Water Act"
- WAC 173-200, "Water Quality Standards for Groundwater of the State of Washington"
- 91nm-177, Ecology Consent Order

SOLID AND HAZARDOUS WASTE AND MATERIALS

- 42 USC 6901, et seq., "Resource Conservation and Recovery Act of 1976 (RCRA) and Hazardous and Solid Waste Amendments of 1984"
- 42 USC 9601 et seq., "Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and Superfund Amendments and Reauthorization Act of 1986 (SARA)"
- WAC 173-303, "Dangerous Waste Requirements"

ENVIRONMENTAL PROTECTION & PRESERVATION

- 42 USC 4321, et seq., "National Environmental Policy Act of 1969 (NEPA)"

RADIOLOGICAL REQUIREMENTS

- 42 USC 2011 et seq., "Atomic Energy Act of 1954 (AEA)"
- 10 CFR 71, "Packaging and Transportation of Radioactive Material"

SAFETY REQUIREMENTS

- 229 CFR 1910, "Occupational Health & Safety Standards"
- PL 101-510 Sec 3137, "Wyden Amendments"
- Defense Nuclear Facilities Safety Board (DNFSB) Recommendations

DOE Orders

- DOE Order 5480.22, "Technical Safety Requirements"
- DOE Order 5480.23, "Nuclear Safety Analysis Reports"
- DOE Order 5480.5, "Safety of Nuclear Facilities"
- DOE Order 5481.1, "Safety Analysis and Review System"
- DOE Order 5484.1, "Environmental Protection, Safety, and Health Protection Information Reporting System"
- DOE Order 5820.2A, "Radioactive Waste Management"

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.01/VI	5. WBS ELEMENT TITLE DST Integrity Assessments	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1 4.2.3	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,747	\$1,827	\$1,628
CENRTC	1,000		
GPP			
LINE ITEM			
TOTAL	\$2,747	\$1,827	\$1,628

1.1.1.2.01.02.01

A2-91

B. TECHNICAL BASES

Goals & Objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Work to be performed

Perform the following assessment activities: DCRT assessments, engineering task plan (ETP), seismic assessment plans, tank farm waste characteristics, tank farm corrosion protection, above-tank pit examination, transfer line tests, and diversion boxes examinations.

Ensure readiness to perform ultrasonic inspections of double-shell tanks (DST) using an inspection robot developed with CENRTC funding.

The readiness activities include: performance test preparation activities and documentation; work package development; materials and work to support DST inspections; and readiness assessment activities.

Inspection data will be evaluated by a group of technical personnel prior to distribution. All inspection data will be stored and managed within requirements of a data management plan. Contractually required vendor information will be processed.

How work will be performed

The productivity challenge will be achieved by process improvements made during the execution of assessment activities. We will take advantage of pits that are opened by others (as-built, environmental status) to reduce costs. Experience from the assessment activities will be key to identifying process improvements.

Why work is to be performed

DST inspections and other work will be included in an integrity assessment report certified by an independent professional engineer. This report will comply with Ecology's Dangerous Waste Regulations. Tri-Party Agreement Milestones will be negotiated for DST inspections.

This work is funded under the Store Waste Function.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Above-tank pit examination report
- Inspection equipment performance test report
- Tank inspection report

C. STATEMENT OF WORK

Required activities:

Mandatory requirements for performance of the work.

Develop, test, and use a remote crawler/inspection equipment to examine one double-shell tank for wall thinning, pitting, and cracks.

Develop procedures and perform pneumatic leak tests of the transfer piping.

Issue reports on results of examinations and studies.

Mandatory schedule constraints.

The inspection equipment test results must be acceptable prior to performing DST inspections.

Deliverables & Cost:

List of all deliverables/maximum cost of each deliverable.

<u>Deliverable</u>	<u>\$K</u>
Integrity Assessments	
DCRT reports (2)	132
ETPs (1)	50
Tank farm waste characteristics reports (3)	111
Tank farm corrosion protection reports (3)	111
Above-tank pit examination report (26 pits)	188
Pressure test letter reports (5 transfer lines)	37
Diversion box examination letter report (3 diversion boxes)	64
Pressure test letter reports (5 transfer lines)	78
Seismic assessment plans and integration	150
Integrity Assessments/Upgrades Integration Plan	111
UT Inspection - Pre-Inspection Activities	
Inspection Acceptance Criteria	42
Minimum tank wall determination for inspection	15
NEPA documentation	15
Performance Test Report	234
Inspection Work Package	150
Readiness Assessment	90
UT Inspection	
Inspection Data Resolution (level of effort)	20
Tank inspection report (AN106)	180
Inspection Data Management (level of effort)	20
Vendor Information Processing	50

Budget forecast.

<u>Work Package</u>	<u>1st Qtr.</u>	<u>2nd Qtr.</u>	<u>3rd Qtr.</u>	<u>4th Qtr.</u>
Integrity Assessments	200	200	325	285
UT Pre-Inspection	185	217	200	0
UT Inspection	0	0	0	270

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	K. V. Scott	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>LC Mercado</i>	9/19/94
Cost Account Manager	K. V. Scott <i>KV Scott</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J. S. Thomas</i>	9/19/94

FDS Number

1N1C312N1C15

1 WBS Number 1.1.1.2.01.02.01/V1		COST ACCOUNT AUTHORIZATION				Activity Mgr. L. C. MERCADO		Date 09/15/94		Rev. 0	
FDS Number 2NIC15		Title ULTRASONIC TESTING SYSTEM		PROGRAM/PROJECT TANK FARMS OPERATIONS & MAINT.				Original		Revised	
Resp. Org. Title/Code SYS.STRUC.INT.ASSES 7E650				Original Budget (K\$)	Budget Prior Revision	Changes This Revision	Current Total Budget	Start	Complete	Start	Complete
Cost Acct. Mgr./Phone K. V. SCOTT 376-5445				1,000							

Funding Source: ☐ Operating Expense ☒ CENRTC FY 95 ☐ Line Item FY ☐ GPP FY ☐ Small Projects FY B&R Code 35EW31207

2 Controlled Milestones T = TPA M = Major DOE-HQ K = Major RL R = Westinghouse Key O = Other

Milestone No.	Type	Date	Description
OTHER	O	04/30/95	ISSUE PERFORMANCE TEST REPORT

3 Description/Instructions (scope, objectives, approach, constraints, further milestone definition) (capital justification)

The Washington Department of Ecology's Dangerous Waste Regulations require integrity assessment of tank systems. Washington Administrative Code (WAC) 173-303-604(2) states that the owner or operator of each tank system must determine that the tank system is not leaking or is unfit for use. Ultrasonic test (UT) of double-shell tanks (DSTs) is necessary to demonstrate their integrity.

The preliminary design of a UT device for non-destructive examination of the DSTs was completed in FY93. FY94 funds provided continued development, fabrication and testing. This cost account provides FY95 funding to continue with FY94 work and a performance test of a UT robotic device. Expense funding or other support project work is in cost account 1NIC31.

* Note: Split-funded activity, budget does not include prior years CENRTC Fund

ADS Number	1100-00	
Total CAP \$000	G & A/CSP \$000	Total CAA \$000
877	123	1,000

4 Distribution		Approvals					
	Title	Authority to Initiate Planning	Date	Title	Work Authorization	Date	
(1) Program Administration/ Project Control	Activity Manager	J. C. Mercado	9/19/94	Program Administration	J. L. Thomas	9/19/94	
(2) Program Element Manager	Program Element Manager	D. M. Lucero	9/19/94	Program Element Manager	D. M. Lucero	9/19/94	
(3) Activity Manager	Program Administration	J. L. Thomas	9/19/94	Activity Manager	J. C. Mercado	9/19/94	
(4) Cost Acct. Manager	Cost Account Manager	K. V. Scott	9/19/94	Cost Account Manager	K. V. Scott	9/19/94	

42-95

WHS-SP-1101

CAPITAL EQUIPMENT COST ESTIMATE AND REVIEW

Cost Account Title ULTRASONIC TESTING SYSTEMCost Account Number 2N1C15Replacement ☐Addition ☐

Location of Item _____

Property Number _____

Capital Equipment Cost Estimate

	Cost	Schedule
Design	_____	_____ To _____
Procurement	<u>803</u>	<u>10/01/94</u> To <u>04/30/95</u>
MPR	<u>60</u>	_____ To _____
Fabrication	_____	_____ To _____
Material	_____	_____ To _____
Labor	_____	_____ To _____
Installation	<u>7</u>	<u>10/01/94</u> To <u>04/30/95</u>
Inspection	_____	<u>10/01/94</u> To <u>04/30/95</u>
Contingency/Other (specify) <u>Travel</u>	<u>7</u>	_____ To _____
Escalation	_____	_____ To _____
TOTAL	\$ <u>877</u>	_____ To _____

Third Party Review

☒ Plant/Process EngineeringSign XULIA Date 9/19/94☐ Safety & Security

Sign _____ Date _____

☐ Industrial Engineering

Sign _____ Date _____

☐ Telecommunications

Sign _____ Date _____

☐ Project Integration Support (Estimating)

Sign _____ Date _____

☐ Acquisition Planning Support (ADP)

Sign _____ Date _____

☐ Fleet Management (HO Coded)

Sign _____ Date _____

☒ Property Accounting

Sign _____ Date _____

☐ Property Management (Office Equipment)

Sign _____ Date _____

☐ Other _____

Sign _____ Date _____

Schedule Identification

	Yes	Specify Schedule:	If not on schedule, explain why not and/or corrective action being taken:
Level I Schedule	☐	_____	_____
Level II Schedule	☐	_____	_____
Level III Schedule	☐	_____	_____

Approvals

Program Administrator _____ Date _____

Program Control Manager _____ Date _____

Program Capital Review Board _____ Date _____

A2-96

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.02/VI	5. WBS ELEMENT TITLE Permitting and Regulatory Compliance	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1 4.2.3	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$2,310	\$2,781	\$2,834
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$2,310	\$2,781	\$2,834

1.1.1.2.01.02.02

A2-97

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Environmental Compliance Management of the TWRS Plant facilities for continued storage and treatment of radioactive and hazardous wastes involves identification of applicable environmental regulatory requirements, assessment of facility status against those regulatory requirements, and development and implementation of corrective actions. These regulatory requirements address waste management, gaseous emissions, and liquid effluents.

This activity provides for identification of applicable regulatory requirements, negotiation of corrective action schedules, resolution of environmental compliance issues and concerns, interface with regulatory agency personnel, and coordination of permit application preparation.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS: N/A

C. STATEMENT OF WORK

Required activities:

Tank Farms Environmental Compliance will provide Environmental Compliance Officers to support the managers of East Tank Farms Operations, West Tank Farms Operations, and 242-A Evaporator/LERF Operations. These Environmental Compliance Officers (ECOs) will serve as the point-of-contact for the operations managers for all environmental compliance issues. The ECOs will be responsible for ensuring that the operations managers and the TWRS Environmental Compliance Officer are aware of the environmental compliance status of their facilities and the corrective actions necessary to achieve compliance.

Tank Farms Environmental Compliance will coordinate environmental permitting activities for TWRS Plant facilities. This will include preparation of permit applications, negotiation of permit conditions, and implementation of permits. These permits will cover TWRS Plant activities including dangerous waste management, gaseous emissions, liquid effluents, and underground storage tanks. Specific permit activities to be accomplished in fiscal year 1995 include:

Submittal of the air operating permit application for all TWRS Plant air emissions sources associated with the single- and double-shell tanks and the 242-A Evaporator.

Response to Washington Department of Ecology Notice of Deficiency on the 242-A Evaporator Dangerous Waste Permit Application.

Revision of the Double-Shell Tanks Dangerous Waste Permit Application.

Integrating the 242-A Evaporator/Liquid Effluent Retention Facility/Effluent Treatment Facility Dangerous Waste Permit Applications.

Revision of the Single-Shell Tanks Part A Dangerous Waste Permit Application.

Tank Farms Environmental Compliance will coordinate the ECO review of TWRS Plant documentation, including procedures, design documents, engineering studies, and project documentation.

WHC-SP-1101

Tank Farms Environmental Compliance will coordinate the preparation and submittal of TWRS Plant input to the Hanford Site annual environmental regulatory reports, including the dangerous waste report and the EPCRA 312 and 313 reports. Tank Farms Environmental Compliance will also review the existing system for collection of data for these reports and initiate upgrades, including procedure development and QA data verification, as necessary to ensure reports are accurate and complete.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	L. A. Garner	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L. C. Mercado</i>	9/19/94
Cost Account Manager	L. A. Garner <i>L. A. Garner</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>M. A. Dewitt</i>	9/19/94

FDS Number

1N1C32

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.03/VI	5. WBS ELEMENT TITLE Environmental Engineering							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1 4.2.3	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$4,915	\$5,494	\$5,629
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$4,915	\$5,494	\$5,629

1.1.1.2.01.02.03

A2-101

B. TECHNICAL BASES

Goals and Objectives

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Tank Farms Environmental Engineering provides technical support and application of environmental compliance activities and corrective actions to systems and work practices to achieve and maintain compliance in the areas of waste management, air emissions, and liquid effluents. The emphasis of Environmental Engineering duties are to directly support Waste Tank facility operations on compliance matters through the TWRS Environmental Compliance Officer (ECO).

C. STATEMENT OF WORK

Tank Farms Environmental Engineering (TFEE) conducts engineering, analysis, assessment, and corrective actions necessary to achieve and maintain environmental compliance within systems under the responsibility of TWRS Plant operations with a present emphasis on Waste Tank facilities. In addition to specifically planned work, TFEE handles a myriad of emergent compliance issues and problems as they arise, including those arising from inspections and audits of regulatory agencies and WHC and DOE oversight functions. TFEE will conduct the following work in Fiscal Year 1995:

1. Perform administrative functions for the TWRS ECO, including:
 - Maintain TWRS Plant Environmental Compliance Resource Center, to include: Library, Environmental Compliance Officer (ECO) files, and associated databases.
 - Maintain TWRS Plant Regulatory File Center, to include: copies of, or locations of, cleared operating record information, documents, reports, etc. which demonstrate environmental compliance; and associated Records Inventory and databases.
 - Track environmental commitments for the TWRS Plant ECO by maintaining the ECO Activity Management System.
2. Conduct gaseous effluent cognizant engineers functions. In particular:
 - Recommend, initiate, and support interim operational improvements, configuration changes, and upgrades/projects to exhausters, emission points, sampling systems, and emission controls that are determined necessary from compliance assessments and engineering studies.
 - Acquire, review, input, and trend data for stack emissions, exhauster operation and configuration, sampling/monitoring systems, instrument calibration, and equipment maintenance and operability.
 - Identify potential problems and initiate corrective actions.
 - Provide regulatory guidance in development of new regulatory compliant stack flow measurement procedures, request regulatory agency approval of necessary alternate methods, and provide interim stack flow guidance and configuration changes.
 - Provide regulatory support to the development of a new generic stack sampling and monitoring system for application to stacks as needed to attain regulatory compliance per the National Emission Standards for Hazardous Air Pollutants (NESHAP) Federal Facility Compliance Agreement (FFCA).
 - Accompany Washington Department of Health (WDOH) inspectors onsite and attend monthly interface meetings with WDOH.
 - Performance of other Cognizant Engineer responsibilities as specified in WHC-SD-WM-SD-005.
 - Provide environmental review and support to projects, programs, and permitting activities associated with air emissions at TWRS Plant facilities.

3. Develop and implement an environmental compliance self-assessment program to identify compliance issues and deficiencies at TWRS Plant facilities related to environmental laws, regulations, requirements, guidance, DOE Orders and WHC requirements.
 - Conduct periodic assessments and produce associated reports to TWRS Plant management and to DOE-RL.
 - Support development and application of corrective actions and track to completion.
4. Provide regulatory analysis functions for existing and emergent issues related to environmental compliance at TWRS Plant facilities.
5. Surface contamination zone reduction and stabilization. Continue efforts to stabilize and cleanup surface contamination in Tank Farm facilities. FY 95 effort will focus on eliminating some of the most serious surface contamination problems, specifically:
 - Five Tank Farms will be decontaminated and released to the status of Radiologically Controlled Areas (RCAs) eliminating the need for anti-contamination protective clothing.
 - Two radioactive open ditches will be interim stabilized in preparation for landlordship transfer to the Environmental Restoration contractor, BHI.
 - The most serious sources of animal and airborne radionuclide spread in the tank Farms will be sealed or stabilized.
 - Ten surface contamination areas (SCAs) ranging in size from 1 to 3 acres will be cleaned up.
 - Areas previously sealed by dust control emulsion will be maintained by selective reapplication.
 - The 200-East Area population of burrowing animals (contamination spreaders) will be reduced by pipelining and backfilling the steam plant water ditch.
 - All decontaminated areas will be reseeded and vegetation-managed.
6. Continue to implement the Waste Tanks Operations Waste Minimization Plan:
 - Conduct eight (minimum) Pollution Prevention Opportunity Assessments (P2OAs) on Tank Farm waste streams.
 - Conduct monthly meetings of the TWRS Plant Waste Minimization/Pollution Prevention (WM/PP) Committee as a forum to define WM/PP activities and to assign actions.
 - Conduct product substitution at TWRS Plant that includes: 1) phase out and replacement of Class II Ozone Depleting Chemicals; 2) reduce consumption and/or replacement of listed chemicals defined in the EPCRA 33/50 Program; and 3) replace other hazardous materials.
 - Identify, track, and document WM/PP activities at TWRS Plant facilities.
 - Interface with DOE-RL, DOE-HQ, WHC Pollution Prevention Group, other WHC groups, and contractors to plan, direct, track, or document WM/PP activities.
 - Develop and implement a WM/PP incentive program for TWRS Plant.
 - Design and implement a WM/PP training course for TWRS Plant employees.
 - Conduct first revision of WHC-SD-WM-EV-090, Waste Tank Operations Waste Minimization/Pollution Prevention Plan.
 - Issue required WM/PP reports.
7. RCRA Inspection Schedules and Logs:
 - Maintain Inspection Schedule Database. Update continuously to current equipment field status.
 - Revise Inspection Schedule document quarterly.
 - Review RCRA Inspection Logs for completeness, accuracy, equipment anomalies, and corrective actions.
 - Fully implement Inspection Logs in field.
8. Waste Analysis Plans, Data Quality Objectives, & Waste Acceptance:
 - Complete Environmental Regulatory Data Quality Objectives (DQO) process.
 - Support new DQOs or revisions to existing DQOs such as compatibility, safety screening, vapor sampling, rotary sampling, core sampling, retrieval, and tank specific.
 - Revise DST DQO and DST Waste Analysis Plan (WAP) as necessary to incorporate revisions

- to other DQOs including those from the Tank Characterization Program.
 - Revise 242-A DQO after integrating LERF and ETF into the process. Revise LERF WAP and 242-A WAP.
 - Review Waste generator WAPs. Evaluate waste shipments to DSTs against acceptance criteria. Approve shipments as appropriate.
9. Provide support, direction, and coordination to liquid effluent sampling efforts at 242-A and at Tank Farms.
10. Conduct inventory of stored/abandoned equipment within Tank Farm system ancillary units.
- Prepare workplan, procedures, and safety documentation for equipment inventory.
 - Research existing inventory information and photographs for the units to be inventoried. Determine which units need to be entered for inventory.
 - Provide technical field direction, coordination, and support for Operations and crafts.
 - Conduct inventory of approximately 64 process or transfer pits and vaults by existing knowledge, remote photography, or physical inspection.
 - Research process data for categorization and characterization of potentially contaminated equipment.
 - Develop and implement an stored/abandoned equipment inventory database.
 - Prepare a report detailing the results of the ancillary unit equipment storage inventory. The report shall be developed for use as a tool to: help determine whether the equipment is reusable, recyclable, amenable to decontamination, or waste; and to assist in decisions regarding retrieval, characterization, and disposal.
11. Upgrade Environmental Procedures.
- Develop functional test procedures loop calibrations for important environmental equipment and systems not covered under an OSR requirement.
 - Revise operator rounds to include additional environmental equipment identified in the RCRA Inspection Schedule Matrix.
 - Revise existing POPs to reflect regulatory requirements being satisfied.
 - Create and/or revise administrative control procedures as needed.
 - Coordinate Environmental and OSR procedure requirements.
 - Evaluate adequacy of maintenance procedures for environmental equipment.
12. 242-A Vessel Vent Organic Sampling/Analysis.
- Conduct 5 sampling events for 94-2 campaign and for two campaigns in FY 95 if determined necessary from previous sample analysis.
 - Procure contract lab for organic analysis.
 - Review analytical data and provide in a report.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	R. D. Gustavson	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>LC Mercado</i>	9/19/94
Cost Account Manager	R. D. Gustavson <i>R.D. Gustavson</i>	9/20/94
Project Control Analyst	M. A. Dewitt <i>J. S. Thomas</i>	9/19/94

FDS Number

1N1C33

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations and Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.04/VI	5. WBS ELEMENT TITLE Solid Waste Shipping Support							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1 4.2.3	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$7,630	\$7,734	\$7,966
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$7,630	\$7,734	\$7,966

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The goal of this element is to handle solid waste generated from Waste Tank operations and maintenance activities in a safe, compliant and cost effective manner. Approximately 35,000 cuft of low level waste and 4000 cuft of mixed waste will be generated during FY1995 from tank Farms operations and maintenance.

The primary governing documents are WAC 173-303 and DOE Order 5820.2A. The acceptance criteria for waste acceptance is listed in WHC-EP-0063.

C. STATEMENT OF WORK

1.0 SHIP THE EQUIVALENT OF 3000 CUFT/MONTH OF SOLID WASTE.

- 1.1 Engineering Support - 7C470 - Prepare and maintain the procedures and paperwork to collect and ship 3000 cuft/month of solid waste. Prepare LLWSRD's per EP-0063 current rev. to support the shipment of 3000 cuft/month. Request SDAR's per EP-0063 current rev. to support the shipment of 3000 cuft/month. Review and update procedures that control the solid waste handling system within the Tank farms organization.
- 1.2 Operations Support - 81010 - Prepare 3000 cuft/month of Mixed, Dangerous, Low-level, and Non-regulated waste for shipment to CWC, 616, burial grounds, and the landfill respectively. This task includes packaging and repackaging, labeling, and paperwork per SDAR and 49CFR requirements. This task also includes sampling for both radionuclide analysis and hazardous chemical constituents.
- 1.3 Operations Support - 81010 - Collect and stage waste collected from the field. Collect waste from the various tank farms and transport it to the staging areas/ < 90 day storage pad. Operate the staging areas/ < 90 day storage pad in accordance with the applicable regulations.
- 1.4 Packaging Support - 84100 - Develop and update shipping packages as required to ship tank farms solid waste and the associated paperwork (i.e. SARP's, SEP's and other SD's). Provide technical support to tank farms on proper use of waste containers to meet 49CFR and the applicable DOE order.
- 1.5 Hazardous Materials Support - 84300 - Provide performance based inspections of tank farm solid waste prior to shipment to appropriate facility. Inspect all dangerous waste prior to shipment to 616. Inspect at least 10% of mixed and low-level waste to CWC and 616 respectively. Inspect non-regulated waste on request. Additionally, issue ORSR's and consult on the development of ORSR's on request.
- 1.6 Procure Solid Waste Containers - 7C470 - Procure containers to handle 3000 cuft/month of solid waste.
- 1.7 Procedure Development Support - 7CA11 - Provide technical services for preparation and revision of procedures the support and control handling of solid waste.
- 1.8 RCRA facility compliance support - 88410 - Provide regulatory oversight services for solid waste shipping and handling activities. Issue reports after assessments have been completed. Assist solid waste handling groups to achieve completion of corrective actions to conditions identified during the assessment process.
- 1.9 Analyze solid waste for radioactive constituents - 222S Lab - Perform laboratory analysis of samples

WHC-SP-1101

removed from solid waste containers. The analysis will include total activity, total alpha, total beta, and GEA.

2.0 COMPACT 2500 CUFT OF WASTE PER QUARTER.

- 2.1 Compact low-level waste - Offsite Compaction - Compact 50,000 lbs at 1.50/lbs each quarter.
- 2.2 Engineering Support - 7C470 - Prepare and coordinate shipment of LLW for offsite volume reduction. Prepare a procedure to control shipment of waste offsite for volume reduction. Collect and trend data on the performance of the volume reduction service. Issue a monthly report to DOE-RL on performance of volume reduction program.
- 2.3 Operations Support - 7C470 - Prepare 2500 cuft of waste per quarter for offsite shipment to support the reduction program.

3.0 209E BUILDING MAINTENANCE

- 3.1 Perform maintenance on the 209E building as necessary.
- 3.2 Develop PM's for the 209E building.
- 3.3 Provide cognizant engineering support to the 209E building.

4.0 SOLID WASTE ASSESSMENT

- 4.1 Provide funds for the operations/engineering of CWC, burial grounds and the 616 building to allow acceptance of tank farms waste.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	J. C. Biagini	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>D. M. Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L. C. Mercado</i>	9/19/94
Cost Account Manager	J. C. Biagini <i>J. C. Biagini</i> ^{Br JCB}	9/20/94
Project Control Analyst	M. A. Dewitt <i>M. A. Dewitt</i>	9/20/94

FDS Number

1N1C34

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.05/VI	5. WBS ELEMENT TITLE Radiological/Hazardous Solid Waste Characterization							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1 4.2.3	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3,317	\$3,883	\$3,146
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$3,317	\$3,883	\$3,146

1.1.1.2.01.02.05

A2-111

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Characterization of radiological and hazardous containerized solid wastes for the TWRS Plant facilities needs to be performed prior to shipment of such waste to a permitted TSD facility. Tank Farm Operations and Maintenance is expected to generate approximately 35,000 cuft of non-compacted low level waste and 8,000 cuft of mixed waste during fiscal year 1995.

Performance of solid waste characterization will require technical review of applicable state (WAC 173-303), federal (10 CFR 61.55), DOE-RL (5820.2A) and WHC (WHC-EP-0063-4) requirements. Additionally, identification of facility waste streams, development of criteria and strategies for tank waste stream sampling, laboratory analysis and review of sampling data are required support activities.

C. STATEMENT OF WORK

Required activities:

Tank Farm Waste Characterization & Pre-Planning will provide scientific, engineering and administrative services in support of solid waste characterization program for fiscal year 1995 to include:

- Conduct self-assessment of TF Characterization Program to identify areas of need. Document findings in peer-reviewed report.
- Develop, issue and maintain program plan for characterization of tank farm solid waste radionuclide inventory.
- Develop Data Quality Objectives (DQOs) for tank waste hazardous chemical/radiological sampling and waste container sampling efforts.
- Provide radiological/hazardous chemical characterization data reviews to support disposal of tank farm long-length/in-tank and surface equipment.
- Provide scientific, engineering and administrative services to Operations in support of disposal of non-routine solid waste from tank farm facilities. Includes long-length in-tank equipment, unused stored equipment, and abandoned surface equipment.
- Issue schedule identifying special equipment disposal projects for FY 95.
- Prepare peer-reviewed formal report on Tank Farm soil de-listing, including analysis of available data and recommendations. Performance of additional field sampling will be implemented in FY 96.
- Provide engineering/planning services to Operations in support of tank farm solid waste removal activities. Prepare annual tank farm solid waste forecast.
- Implement program to predict activation and fission products in Tank Farms waste streams. Issue letter report to Waste Tank Characterization and Solid Waste Groups, identifying needs.
- Conduct review of available tank farm waste stream historical data to support characterization projections. Issue quarterly reports on Waste Stream Identification.
- Perform self-assessment on software used to perform waste container radiological inventory and category determinations.

Tank Farm Waste Characterization & Pre-Planning will coordinate and monitor the following tasks to be provided by various support organizations during fiscal year 1995:

- Perform laboratory analysis of radioactive/hazardous waste samples to support characterization tasks.
- Perform dose-rate-to-curie conversions of data obtained from radioactive smears and dose rate surveys of both standard and non-standard tank farm waste containers and equipment.

WHC-SP-1101

- Provide equipment, operators, and analytical services to perform assaying of tank farm waste containers on a full-time basis.
- Provide statistical services in support of tank farm waste container characterization programs.

Technologies to be assess: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	J. M. Thurman	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DMLucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>LCMercado</i>	9/19/94
Cost Account Manager	J. M. Thurman <i>JMT</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>MADewitt</i>	9/19/94

FDS Number

1N1C35

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.06/VI	5. WBS ELEMENT TITLE Criticality Engineering	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$400	\$276	\$284
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$400	\$276	\$284

1.1.1.2.01.02.06

A2-115

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

1. All activities required to manage the Tank Farms Criticality Safety Program will be completed.
2. The Tank Farms Criticality Safety Representative will insure elements of the Criticality Safety Program are identified and implemented which comply with appropriate WHC requirements, DOE Orders and ANS Standards. The program elements will include the following:
 - Serve as the liaison for criticality matters between Tank Farms and all other organizations.
 - Coordinate the preparation, review and approval of CSERs and CPSs required to support safe operations within Tank Farms.
 - Determine the need and request CSERs to support operations and maintain current, auditable files on CPSs and their supporting CSERs.
 - Ensure facility modifications and process changes are reviewed and approved according to WHC and DOE policy and requirements.
 - Advise operating personnel on criticality safety questions and provide advice and assistance in criticality safety training. Maintain the CSR certification.
 - Assist responsible safety, operations and engineering personnel in developing specific recovery plans after a CPS nonconformance has been discovered, and provide management with a recommendation for approval or disapproval of the corrective actions.
 - Conduct or supervise the performance and reporting of operational inspections and ensuring that corrective actions are implemented.
 - Approve all facility procedures that implement criticality safety requirements for the handling, processing, storage, or transportation of fissionable material.
 - Ensure that appropriate criteria for criticality safety postings is established and the postings are placed throughout the facility.
3. All engineering and operations personnel with responsibilities for making decisions with criticality safety implications shall have ready access to the appropriate documentation which specifies controls and limits. Including, the necessary system to allow shift engineers in the East and West tank farms to have continuous access to the current fissile materials inventory.
4. Insure the Criticality Safety Training content for operations and engineers reflect all new controls and requirements identified during the FY, including:
 - training classes with presentations to operators, engineers and supervisors,
 - Tank Farms specific Criticality Safety Training.
5. Insure all CSER's and CPS's or revisions for ongoing activities or previously unevaluated changes in Tank Farm Operations are completed and reflect a high standard of quality and useability.
6. Assist as necessary in activities related to the resolution of the Tank Farms Criticality Safety Issue.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Prepare monthly reports, starting 11/10/94 & 10th of each month.
- Modify WHC-IP-0842, Section 15.2 to comply with all current requirements. 7/15/95
- Complete Quarterly Tank Farm Criticality Inspections. 10/11/94, 1/11/95, 4/11/95 & 7/11/95

- Complete CSR recertification by April 1, 1995.

C. STATEMENT OF WORK

Required activities:

1. Complete required reports and administrative activities in support of the management of the cost account.
2. Prepare the necessary software modifications to allow engineering personnel access to the continuous fissile material inventory. The files for each tank are updated as required by the inventory technician, the ability to transfer those files to Read Only access will require modification to the System Engineering menus. There is the potential need for site wide access to the information which will require additional support from BCSR. All activities necessary to maintain and update the continuous inventory will be completed.
3. The Tank Farm specific procedure in WHC-IP-0842, Section 15.2, "Criticality Safety" will be compared to current WHC, DOE and ANS requirements. Any deficient condition will be documented and provided to RL. An action to bring the procedure into compliance will be identified, initiated, planned and scheduled.
4. Quarterly Tank Farm Criticality Inspections will be completed and issued by the 11th calendar day of the first day of each quarter. The inspections will cover an area of Tank Farms which has been involved in the transfer or distribution of fissile material. The inspection reports will include the area inspected, status of previously identified findings, identification of corrective actions and will be provided to DOE-RL. This activity will include the effort to insure the adequacy of closure of all findings, track open items and maintain a file on the inspection reports.
5. Any support for the criticality safety training of operations or engineering personnel will be provided. This will include any request to provide presentations, documentation or upgrade of training material. The requirement for annual facility specific criticality safety training as part of safety meetings will be supported as requested. All activities required for the Criticality Safety Representative recertification board will be completed.
6. All support, reviews, approval and interpretation of the maintenance of the criticality safety bases of Tank Farms will be provided. In addition, any changes to the bases as a result of process modifications, new operations not previously evaluated, operating procedure modifications, CPS and/or CSER changes or clarifications will be supported. Any USQ safety and screening efforts as a result of process modifications or discovery's will be supported. Any documentation supporting the criticality safety bases will be provided to DOE-RL.
7. Any required support of inspections, audits or appraisals of the criticality safety program by organizations outside of Tank Farms will be fully supported.
8. Activities specifically not funded in this cost account include:
 - S/RIDS.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	T. S. Vail	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DMLucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L. C. Mercado</i>	9/19/94
Cost Account Manager	T. S. Vail <i>Terry S. Vail</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J. S. Thomas</i>	9/19/94

FDS Number

1N1C36

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.07/VI	5. WBS ELEMENT TITLE Double-Shell Tank Emergency Pumping Preparations	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$300	\$255	\$269
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$300	\$255	\$269

1.1.1.2.01.02.07

A2-119

B. TECHNICAL BASES

PURPOSE:

The purpose of this activity is to decrease the time required to respond to a leaking Double Shell Tank (DST). This activity addresses a priority 2 Safety Issue as identified in, Status Report on Resolution of Waste Tank Safety Issues at the Hanford Site, (WHC-EP-0600, Section 5.2.6). This was in turn derived from the Priority 2 safety issue "Response to a Leaking DST" in the 1991 DOE Report to Congress. Thus, this work is a response to this issue in this Report. Work to be performed under this cost account includes the identification and procurement of equipment required to significantly reduce the time required to respond to a leaking double shell tank. Also included is the development of transfer procedures to accomplish the pumping activity and maintain the equipment.

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The objective of this activity is to obtain the ability to expedite the emergency transfer operation of waste from a leaking Double Shell Tank. A short term goal for fiscal year 1995, is to have the ability to begin emergency pumping operations within 30 days of identifying a leak.

This activity will:

- Complete and issue WHC-SD-WM-AP-031, Double Shell Tank Emergency Pumping Plan
- Prepare Design and Procurement Documentation for equipment identified to emergency pump DSTs
- Identify equipment to expedite transfer
- Prepare fabrication documentation, CVI and maintenance procedures
- Procure and fabricate equipment identified within CENRTC funding
- Develop and approve tank farm specific transfer procedures for DSTs

Accomplishing these tasks will develop the necessary tools for preparing and maintaining the ability to emergency pump a DST in an expeditious manner. These tasks will primarily be performed by WHC and KEH personnel.

Work to be Performed:

The equipment required for the emergency pumping of a leaking DST will be identified using the Double Shell Tank Emergency Pumping Plan, (WHC-SD-WM-AP-031). The listing of equipment identified will be amended to the Emergency Pumping Plan. Designs will be completed and issued for equipment identified in this listing. Using approved designs, vendor files and preventative maintenance procedures will be developed, as appropriate, for these items to be stored until needed.

Emergency transfer procedures will be developed using the equipment identified in the Double Shell Tank Emergency Pumping Plan. Procedures will be developed for the transfer of waste from non watchlist tanks in 241-AW, 241-AP, 241-AN, 241-AY, and 241-SY tank farms. The transfer procedures will provide routes and methods of transfer. Safety assessment documentation will not be provided to allow for the transfer of waste from a hydrogen watchlist tank. The transfer of waste from a non-watchlist tank is an authorized activity and this task will provide the USQ screening for the non-watchlist tank transfers.

Equipment identified will be procured in accordance with WHC procurement procedures and policies if CENRTC funding is available for the procurement.

Activities which are specifically under this cost account:

- Corrective maintenance on existing installed equipment
- Development of a Aging Waste Facility emergency transfer flowsheet and emergency transfer procedures
- The sampling or characterization of tank waste
- The safety analysis necessary to pump a hydrogen watchlist tank

How Work is to be Performed:

The productivity challenge for these activities will be met through the use of the developed double shell tank emergency pumping plan and the use of the generic transfer procedure format which has previously been developed. Additional savings may be achieved through the use of equipment previously procured at WHC and no longer required and existing designs.

Why Work is to be performed:

The purpose of this activity is to decrease the time required to respond to a leaking Double Shell Tank. This activity addresses a priority 2 Safety Issue as identified in, Status Report on Resolution of Waste Tank Safety Issues at the Hanford Site, (WHC-EP-0600, Section 5.2.6).

In addition, WAC 173-303-640, paragraph (7-a-[b]), and 40 CFR Part 264.196 and 40 CFR Part 265.196 require the ability to initiate emergency pumping activities within 24 hours or as soon as possible.

List of All Deliverables:

- Complete and issue WHC-SD-WM-AP-031, Double Shell Tank Emergency Pumping Plan
- Prepare Design and Procurement Documentation for equipment identified to emergency pump DSTs
- Prepare fabrication documentation, CVI and maintenance procedures
- Procure and fabricate equipment identified within the CENRTC funds
- Develop and approve tank farm specific transfer procedures for DSTs
- Identify equipment to expedite transfer

Mandatory Requirements for Performance of Work:

- An addendum to the double shell tank emergency pumping plan will be incorporated, identifying equipment needed for the emergency pumping activity.
- Design documentation for equipment identified in the addendum to the emergency pumping plan will be developed and issued. Costs of this activity are based on the procurement of 3 pumps and 10 jumpers to expedite the emergency transfer of waste.
- Procurement documentation will be prepared for items identified in the addendum to the pumping plan, limited by the CENRTC dollars available. Cost of this activity are based on the procurement of 3 pumps and 10 jumpers to expedite the emergency transfer of waste.
- Fabrication of equipment identified by the plan, will be performed in accordance with the issued design documentation and within the limits of the CENRTC dollars of this cost account. Costs of this activity are based on the procurement of 3 pumps and 10 jumpers to expedite the emergency transfer of waste.
- Certified Vendor Information files and preventative maintenance procedures will be developed for items procured under this cost account in accordance with WHC procedures and policies. Costs of this activity are based on the procurement of 3 pumps and 10 jumpers to expedite the emergency transfer of waste.
- Transfer procedures for each of the double shell tank farms (241-AW, 241-AN, 241-AP, 241-SY, 241-AY) will be prepared and issued. These five (5) procedures will identify the route and necessary instrumentation necessary to transfer waste from the tanks in these farms to the designated receiver tank. Safety assessment documentation will not be provided to allow for the transfer of waste from a hydrogen watchlist tank. The transfer of waste from a non-watchlist tank is an authorized activity and

WHC-SP-1101

- this task will provide the USQ screening for the non-watchlist tank transfers.
- The S/RIDs will be reviewed and utilized in identifying the necessary requirements for the design and procurement, as well as maintenance for the items procured.

Mandatory Schedule Constraints: N/A

Budget Forecast:

Not available at this time.

Maximum Cost of Each Deliverable:

- Complete and issue WHC-SD-WM-AP-031, Double Shell Tank Emergency Pumping Plan (5K)
- Prepare Design and Procurement Documentation for equipment identified to emergency pump DSTs (87K)
- Identify equipment to expedite transfer (17K)
- Prepare fabrication documentation, CVI and maintenance procedures (53K)
- Procure and fabricate equipment identified within the CENRTC funds (180K)
- Develop and approve tank farm specific transfer procedures for DSTs (190K)

Roles and Responsibilities:

Programmatic direction for this effort shall in all cases and at all times be provided by the DOE-RL (RL) RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L.C. Mercado	
Cost Account Manager	R. A. Dodd	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L.C. Mercado</i>	9/19/94
Cost Account Manager	R. A. Dodd <i>R.A. Dodd</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J. S. Thomas</i>	9/19/94

FDS Number

1N1C37

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1. TWRS Program 1.1.1.2. Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
3. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.08/VI	5. WBS ELEMENT TITLE Interim Operating Safety Requirement Implementation							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$2,948	\$500	\$1,175
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$2,948	\$500	\$1,175

B. TECHNICAL BASES

Objectives

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

1. Work To Be Performed

- Complete the Interim Operational Safety Requirements (IOSRs) Compliance Implementation Plans (CIPs) for Phase 4, 5 and 6 of the approved implementation strategy to support submittal concurrent with the submittal of the revised IOSRs.
- Implement the IOSRs in accordance on the schedules provided in the approved CIPs or approved supplements.
- Implement emerging nuclear safety requirements in Waste Tanks (e.g., DOE Orders, Standards/Requirements Identification Documents (S/RIDs), Rule making).
- Revise and re-issue the Safety Equipment List (SEL).

Planning Assumptions

- A) This account covers only the cost of the initial implementation of new nuclear safety requirements. The costs of maintaining the facility to meet those requirements and performing the necessary surveillances will be funded out of other accounts.
- B) Necessary increases in spare parts to support the new operability requirements will be funded out of other accounts.
- C) During FY 1995, the OSRs will be revised to support the conclusion reached in the Accelerated Safety Analysis. Several LCOs and Administrative Controls will be eliminated based upon lack of bases, while additional requirements may have to be added as a result of additional analyses. This WBS does not address this emerging status.
- D) Resolution of "environmental" safety class issue is accomplished in FY 1994.
- E) The cost and schedule to implement phase 4, 5 and 6 will be dependent upon the ASA, the IOSR consistency matrix, the planned strategy document and the individualized compliance plans. These costs and schedule which cannot be determined at this time will be added by the change request process during FY 1995.
- F) The Compliance Implementation Plans for 2 and 3 were submitted with requests for certain waivers based upon justification for safe operations. Phase 2 Implementation was approved with the waiver requests granted. There are no funds in this WBS dictionary for full compliance without the waivers.

2. How Work is to Performed

Concurrent with this work scope, the IOSRs are being revised. That effort will provide a consistency matrix comparing those limits and requirements with the controls which are the results of completed safety analyses. The surviving IOSRs are expected to be a sub-set of the existing IOSRs and therefore implementation costs should be reduced. The productivity challenge will take full advantage of this cost savings.

3. Why Work is to be Performed

This work is being performed to demonstrate interim compliance with DOE Orders 5480.22 and 5480.23 and to be responsive to anticipated Code of Federal Regulation rule-making.

4. List of all Deliverables

- Provide planning, scheduling and program management support for the implementation of nuclear safety requirements in the Tank Farms.
- Complete the implementation of the remainder of Phases 2 and 3 strategy for IOSR (as approved with waivers) by March 30, 1995.
- Update the IOSR strategy document based upon U.S. Department of Energy, Richland Operations Office (RL) review comments of the ASA and resolution of the Environmental Safety Class issue by January 31, 1995.
- Provide the TWRS Plant (engineering and operations) review for Accelerated Safety Analysis (ASA) follow-on tasks and for the OSR revision efforts.
- Develop CIPs for Phases 4, 5, and 6, based upon the ASA results issued in FY 1994.
 - Phase 4, February 28, 1995
 - Phase 5, March 31, 1995
 - Phase 6, April 30, 1995
- Implement the IOSRs per the schedules provided in the approved phase 4, 5 and 6 CIPs. Additional funding may be required by change request.
- Prepare program documents and procedures for implementation of Administrative Controls. Significant effort anticipated on the following:
 - Corrosion Control June 30, 1995
 - Watch List March 30, 1995
 - Heat Load June 30, 1995
 - Flammable Gas March 30, 1995
 - Dome Load October 30, 1994
 - Compatibility March 30, 1995
 - Cathodic Protection June 30, 1995
 - Concrete Tank Temp. June 30, 1995
- Develop CIPs for the new IOSRs developed for auxiliary facilities (e. g., 244-AR, 204-AR, 242-T) based upon the ASA and implement per the schedules provided.
- Update all three Interim Safety Equipment Lists (ISEL) to incorporate analysis from the ASA to provide a consistent set of safety documentation. This effort will start on June 1, 1995 (upon submittal of the revised OSRs to RL for approval) and continue into FY 1996.
- Provide the Secretary and staff support to the Tank Waste Remediation System (TWRS) Plant Review Committee (PRC)
 - Issue approximately 30 meeting minutes
 - Update the Unreviewed Safety Question (USQ) and PRC procedures as required.
- Provide staff support for the implementation within TWRS of the 10 CFR 820, and 830 rules.
- Perform the FY 1995 annual S/RIDs Nuclear Safety compliance assessment.

5. Mandatory Requirement for Performance of Work

- A) Implement Phases 2 and 3 Limiting Conditions for Operation (LCOs) for IOSRs not completed in FY 1994. (As Approved With Waivers)
- B) Prepare CIPs for Phases 4, 5, and 6 on the schedule listed above and implement per the CIP schedules.
- C) Act as Secretary and staff for the TWRS PRC in accordance with requirements in WHC-IP-0842, Section 7.11 and keep USQ and PRC procedures current.
- D) Institute Administrative Controls per the CIPs on the schedule provided above.
- E) Develop CIPs for auxiliary facilities (e.g., 244-AR, 204-AR, 242-T) and implement on the schedules provided.

- F) Upgrade the TWRS Safety Equipment Lists.
- G) Develop Implementation plans for 10 CFR 820 and 830 rules.
- H) Conduct the annual S/RIDs Nuclear Safety self assessments.

6. Mandatory Schedule Constraints

See accompanying resource loaded schedule.

7. Budget Forecast

TBD

8. Maximum Cost of Each Deliverable

See attached Cost Account Packages.

9. Roles and Responsibilities

Programmatic direction for this effort shall be in all cases and at all times be provided by the DOE-RL (RL) RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. That individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL-TWRS office guidance and the guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead for this cost account shall be appraised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

RL shall provide approval to the CIPs for IOSR implementation and for meeting emerging nuclear safety requirements.

This cost account interfaces with the 1N1C39 cost account. The later account develops the required safety analyses for safe operations of the Hanford Waste Tanks and proposes limits and controls based upon those analyses. This account is responsible for the acceptance by the operating facility of those limits and controls and executing their field implementation.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	R. B. Gelman	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>LC Mercado</i>	9/19/94
Cost Account Manager	R. B. Gelman <i>R. B. Gelman</i>	9/20/94
Project Control Analyst	M. A. Dewitt <i>J. K. Thomas</i>	9/20/94

FDS
Number

1N1C38

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.09/VI	5. WBS ELEMENT TITLE Safety Documentation Upgrades							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3455	\$3,964	\$4,084
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$3455	\$3,964	\$4,084

1.1.1.2.01.02.09

A2-13/

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The purpose of this cost account plan (1N1C39) is to provide funding for the SAR Upgrade Program activities associated with the Tank Farms. There are four purposes and objectives for Safety Analysis Reports: (1) provide the bases for approval of new facilities and operations, major modifications thereto, and eventual decommissioning; (2) define and control the safety bases and commitments; (3) support DOE and contractor management safety oversight of facilities and operations; and (4) provide the analytical rational for operations as delineated in technical safety requirements (TSR). [DOE Order 5480.23]. Activities associated with SAR upgrades have increased significantly to meet new DOE Orders and Westinghouse Hanford requirements for format, content, review, and approval. Major upgrades are required for the tank farm SARs and related safety documentation to meet new DOE Orders. The objective of the TWRS Safety Analysis and Engineering function is to develop safety analysis that establish and evaluate the adequacy of the safety bases of the Tank Farm Facilities. The Safety Analysis Report required by DOE Order 5480.23 documents the results of the safety analysis. The safety basis to be analyzed shall include management, design, construction, operation, and engineering characteristics necessary to protect the public, workers and the environment from the safety and health hazards posed by the Tank Farm Facility.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

The major end-item deliverables for TWRS SA&E is:

- Resolve DOE RL TOP and Independent Review Team Comments on the Accelerated Safety Analysis submittal of Interim Chapter 3.
- Revise the OSRs (AWF/DST/SST) to incorporate the ASA and comments for DOE review.
- Revise and issue the Interim Safety Basis (ISB) document incorporating the ASA after DOE comments are resolved.
- Complete high priority follow-on safety analysis.
- Identify and prioritize other analysis as a result of DOE reviews.
- Submit first draft of the DST (including AWF) SAR to functional review on August 30, 1995.
- Issue fixed price RFP to support the preparation of a graded SST SAR in 1996.

C. STATEMENT OF WORK

Required activities:

1. Revised IOSRs (AWF/SST/DST) (10/1/94 - 5/31/95)

Currently, there are three sets of tank farm Interim Operational Safety Requirements (IOSRs):

WHC-WM-SD-OSR-004, AWF IOSR
 WHC-WM-SD-OSR-005, SST IOSR
 WHC-WM-SD-OSR-016, DST IOSR

IOSR Revision

Revise AWF/DST/SST IOSRs to be entirely consistent with the Accelerated Safety Analysis following resolution of comments with DOE-RL.

It is expected that some existing IOSR items will be deleted and that new ones will be added. Overall, the effort should be less intensive than the FY 94 effort which resulted in WHC approval of the current versions.

The existing format and content will be used to the maximum extent possible. Guidance in the form of the draft Chapter 6 for WHC-CM-4-46 will not be used.

WHC will use the results of the FY 94 milestone for consistency review between IOSRs and ASA topical reports as the starting point. Those existing IOSRs which are not supported by the ASA will be deleted. Additional IOSRs which are justified by the ASA will be added. The balance of existing IOSRs will be reviewed to ensure that they are updated to conform to the ASA. For instance, Surveillance frequencies and LCO Completion times will be examined to assure they maintain an adequate safety margin. In addition, the BASES will be reviewed to assure that the justification for numerical values is updated to reflect the ASA. "Engineering judgment and past practice" will be eliminated as much as possible in favor of more objective measures.

Deliverables:

Revised AWF/DST/SST IOSRs to be entirely consistent with ASA following resolution of comments with DOE-RL. 05/31/95 (DOE-RL)

2. ASA Comments and Issue Resolution (10/1/94 - 05/31/95)

WHC will submit Interim Chapter 3 and supporting documents (topical reports) to DOE-RL (RL) on July 29, 1994. RL will then have two reviews - internal and independent. As a result of these reviews a task is required to respond to questions from DOE reviewers and to formally respond to comments. The resolution agreed upon between reviewer and author could result in changes to the document that will need to be incorporated.

Deliverables:

W to provide response to resolve all comments on ASA. (completion of this task is dependent on completion of the DOE review)

Revise ASA (Interim Chapter 3) following resolution of all comments.

3. ASA Follow-On (Refinement of Detailed Analysis) (10/1/94 - 8/01/95)

The submittal of the interim Chapter 3 to DOE-RL on July 29, 1994 was never intended to close all the issues associated with the accident analysis tasks. The following is a list of potential follow-on work to support the Final Safety Analysis Report for the Tank Farms.

WHC-SP-1101

ASA FOLLOW-ON TASKS

FY 95 PRIORITIES		+	-	OSR	\$ 1N1	Other	H	M	L
1. 244-AR Transfers	H	Ability to use 244-AR	Required to transfer out of facility to maintain safe status		\$60K		\$60K		
2. Complete Bump Analysis and Topical	H	Define Safety Envelope for storage of sludge in AWF	Safe as is but a Sludge level OSR is indicated and should be pursued	New OSR	\$50K \$100K		Topical \$50K	Anal ysis \$10 OK	
3. Organic Tanks Delete and replace with N2 request	H	Simplified Organic Safety Envelope	Clear definition of all aspects of organic S.E.			\$170K Safety Prog 1N2			
4. Toxicological consequence calculations for release scenarios	H	Specific Toxicological release	Lack of coverage of toxic release - 5480.23 requires this analysis.		\$100K		\$100K		
5. Lightning	H	Confirmation of need for grounding/bonding for Lightning protection in certain tanks	Chance to limit # of tanks needing grounding/bond	New?		\$100K Safety Prog 1N2			
6. Evaluate Pool release Controls	H	May reduce the controls required from the Pool topical		New	\$100K		\$100K		
7. Heat Transfer + SX Tank Farms Reanalyzed	M	Lower doses from SX heat-up	Proper ventilation outage time	3.4.1	\$50K			\$50 K	
8. Chemical Reactions Waste Compatibility	M	Definition of basis for Waste Compatibility Program	Understanding of acceptability of waste mistransfers	AC 5.18	\$100K			\$10 OK	
9. DCRT H ₂ Analysis	M	Establish need for ventilation flow in DCRTs, etc.	Retain existing conservative definition of safety envelope for DCRTs	3.4.2	\$125K			\$12 5K	
10. Dose Consequences - Boiling Tank (Non-AWF)	L	Better understanding of loss of ventilation and justification for ventilation requirement OSR.	Consequences undefined from boiling tank		\$75K				\$75K
11. HEPA Filter Contact Dose	L	Less Conservative More realistic	Conservative/ High dose from vent. upsets		\$50K				\$50K

FY 95 PRIORITIES		+	-	OSR	\$ 1N1	Other	H	M	L
12. 204-AR (Higher Source Term)	L	More flexible 204-AR operation	Current analysis covers only presently planned incoming waste		\$25K				\$25k
13. Mistransfers from Non-TF facilities/Transfers that may cause plugging	L	More complete Tech Basis of Mis-transfer	Additional Tech. Basis for Mis- transfer		\$30K				\$30K
14. Excess Vac	L	More complete HVAC facility analysis required if structural analysis cannot verify inherent safety.	Flexibility of HVAC operation	3.3.2	\$120K				\$120 K
15. Others as Identified by DOE			-	New					
			SUBTOTAL		\$985K				
			SUPPORT TO STRUCTURAL			\$100K 1N3			
			MANAGEMENT/ADMINIST RATIVE SUPPORT		\$45.5K		\$45.5K		
			TOTAL		\$1030. 5K		\$355.5 K	\$37 5K	\$300 K

Deliverables:

Provide letter after discussion and agreement with RL describing all follow-on work to be done on the ASA. This determination of follow-on work to be done following ASA comment resolution. 11/15/94 (DOE-RL). The current funding level will allow work to be completed on the HIGH Priority list. If additional analysis is needed as a result of DOE reviews a change package will be submitted.

Complete ASA follow-on tasks and incorporate results in the Topical Reports and Interim Chapter 3. (08/30/95) [DOE-RL]

4. ISB Update (Results of ASA) (12/1/94-9/30/95)

The Tank Farm Facilities Interim Safety Bases will be maintained current to reflect new and relevant information that alters the safety envelope until revised SARs are issued for Tank Farm Facilities. The ISB will be updated to incorporate the revised IOSR's, this update will be completed 30 days after DOE approval of the revised IOSRs.

Deliverables:

Update ISB to incorporate revised IOSRs - 30 days after approval of revised IOSRs (DOE-RL)

5. ISB Annual Update (Vol 2 Revision)

The ISB document will be updated annually to reflect the current status of important safety issues and tank inventory information. Results of completed safety assessments, inclusion of relevant topical reports, updated tank inventory data, and selective USQ evaluations will be evaluated for inclusion in

the ISB. Configuration management of the document will be maintained with controlled distribution listings, master copy maintenance and update, and ECN of document revision as appropriate. Also, in this annual update the ISB, Vol. 2 will be updated to incorporate the As-Built Program results and the and Facility Description chapter of the DST SAR and the Operational Summaries for SST.

Deliverables:

Issue annual update (carryover from delayed milestone FY94) November 30, 1994.
Issue annual update to ISB by 8/21/95 (Vol. 1 and Vol. 2)

6. DST Chapter Writing (10/1/94 - 9/30/95) [AWF/DST Chapter Writing complete 8/1/95 - Functional review to start 8/1/95- Submittal to DOE April 1996]

Prepare all chapters of AWF/DST SAR consistent with draft DOE STD 3009 and DOE Order 5480.23.

Develop the chapters for the SAR. These chapters detail the results of the analysis, describe the facility and the safety SSCs, and the safety-management programs.

The programmatic chapters provide a summary description of the key features of the various safety programs as they relate to the Tank Farms. These chapters are not meant to be used as the vehicle for the determination of adequacy of these programs.

Deliverables:

Draft SAR submitted to Functional review August 1, 1995 (WHC-Key)

7. SST Graded SAR Work (10/1/94 - 9/30/95)

This effort will issue a fixed price RFP to produce a graded approach SAR. The expected chapters to be completed (STD 3009) are 2, 3, 4, and 5.

Deliverables:

Issue and place a fixed price RFP. The RFP will request the work to start in FY96. DOE-RL

How Work Will Be Performed:

The TWRS SA&E engineering staff responsibilities include technical management and performance of analysis to support the tasks outlined for FY95 and will function as the technical experts for Safety Analysis. Supplemental specialized analytical capabilities will be obtained through subcontract experts of some planned engineering tasks and/or emergent issues.

Resources from Tank Farm Operations and Safety Programs will be utilized for technical reviews of work being performed.

Engineering support will be provided to the OSR Implementation tasks to provide clarification and interpretation of the Accelerated Safety Analysis and the revision to the Operational Safety Requirements.

The FY 1995 productivity challenge will be met for this cost account by streamlining the review cycles. There are several steps in the review cycle; as part of the productivity challenge these steps will overlap at various stages. This will require a greater level of integration between tasks and organizations.

Options to be considered:

- The schedule for deliverables [SEE SCHEDULE UNDER MANDATORY SCHEDULE] (specifically the IOSR revision and Implementation Plans [cost account 1N1C38]) is dependent upon the DOE review of the ASA deliverable (Interim Chapter 3) and comments generated during the review. It is currently assumed the RL-TOP review will be completed by 9/30/94. Comment resolution will be completed by 10/30/94. Obtain sign-off on the RCRs and with WHC OPs and SEAC buy-in by 11/30/94. The revision of the ASA and Topicals and internal approvals will be completed by 12/30/94. The DOE Independent Review will start by 12/30/94 and complete by 2/28/95. Comment resolution, sign-offs on RCRs and a final revision to the ASA and Topicals with WHC approval will be completed by 5/31/94.
- Structural Tasks are not being supported by the cost account plan.

Why the work is to be performed:

The work to be performed under this cost account will satisfy in part the Nuclear Safety Requirements; DOE Order 5480.21, 5480.22, and 5480.23. (Implementation is under CAP 1N1C38) It will also provide analytical rational for operations of the tank farms and assure WHC and DOE of safe operations of the facility by updating the safety envelope of the Tank Farms.

This task will also complete the Hazel O'Leary safety issue to upgrade Safety Analysis Reports for the Tank Farms.

Mandatory Schedule Constraints

The mandatory schedule constraints are the completion of reviews on schedule, availability of resources, timely outsourcing for expertise needed, adequate funding is available to complete the tasks. The Schedule on the following page represents the commitments being made to support the review of the ASA; Revisions to the OSRs; and the integration of the Implementation Tasks currently under 1N1C38.

- * Assumes 500 comments that can be resolved without major rework to Topicals.
- ** Assumes that RCRs must be routed back through TOP.

IASA.CDR
9-2-94

WHC-SP-1101

A2-138

Maximum Cost of Each Deliverable

Priority	Description	Task Total	Subtotal
1.0	OSR Updates	\$ 438.3	
2.0	ASA Comment/Issue Resolution	\$ 251.5	\$ 689.8
3.0	Refinement of Detailed Analysis	\$ 300.5	\$ 989.8
4.0	ISB Update (results of ASA)	\$ 438.3	\$1428.1
5.0	ISB Annual Update (Vol 2 - Operational Summaries/As Built Program	\$ 205.0	\$1633.1
6.0	AWF/DST Chapter Writing	\$1720.4	\$3353.5
7.0	SST Graded SAR Work	\$ 100.	\$3453.5

Roles and Responsibilities

Programmatic direction for this effort shall be in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. That individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL-TWRS office guidance and the guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead for this cost account shall be appraised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

This cost account interfaces with 1N1C38. The later account implements the results of the safety analysis tasks that include proposed limits and control bases on field operations.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	R. B. Gelman	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L.C. Mercado</i>	9/19/94
Cost Account Manager	R. B. Gelman <i>R.B. Gelman</i>	9/20/94
Project Control Analyst	M. A. Dewitt <i>J. J. Thomas</i>	9/20/94

FDS Number

1N1C39

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.10/VI	5. WBS ELEMENT TITLE Compliance Programs and ALARA	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1 4.2.3	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3,200	\$3,479	\$3,618
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$3,200	\$3,479	\$3,618

1.1.1.2.01.02.10

A2-141

B. TECHNICAL BASES

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Compliance Programs and ALARA performs functions primarily for the TWRS Plant while also supporting and interfacing with other TWRS organizations and interfacing with other WHC compliance organizations. Required functions include Compliance Management, Corrective Action/Issue Management, Lessons Learned, and ALARA evaluations. Additionally, support is provided to TWRS Plant for assessments and in the preparation of performance indicators to evaluate compliance status and to measure progress toward compliance. The goal is to integrate these functions into an efficient management tool for achieving and maintaining compliance.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Deliverables include:

Compliance Management

- Issue S/RID updates quarterly
- Issue S/RID compliance reports quarterly
- Complete the FY 1995 annual phase 2 S/RID assessment

Corrective Action/Issue Management

- Issue status reports monthly
- Complete approximately 80 CA/IM facility status reports
- Complete approximately 650 Root Cause Analysis (150 formal Root Cause Analysis based on PPG greater than 11)
- Complete approximately 500 Priority Planning Grid determinations
- Complete an assisted self-assessment of the CA/IM pilot program

Assessment

- Pilot an integrated assessment program using S/RID's as a basis and using integrated resources from line organizations and independent oversight organizations
- Complete approximately 12 facility assessment reports

Lessons Learned

- Issue approximately 50 Lessons Learned

Performance Indicators

- Issue approximately 48 performance indicator packages

ALARA

- Complete approximately 150 ALARA planning packages
- Complete approximately 150 ALARA post-job reviews
- Complete approximately 50 worker protection program facility reviews.

C. STATEMENT OF WORK

Required activities:

Compliance Programs and ALARA consists of an interactive set of proactive support functions which are intended to assess and identify compliance deficiencies (including DOE Orders, WHC Policies and Procedures, Code of Federal Regulations, Washington State Departments of Health and Ecology, etc.) manage corrective actions in a rigorous manner, provide internal and external lessons learned, prepare performance indicators to monitor compliance posture, and evaluate work space conditions to enhance ALARA principles and worker safety. These functional areas form the work packages in this cost account.

- Compliance Management. The Defense Nuclear Facility Safety Board (DNFSB) Recommendation 90-2 requires that DOE identify the specific standards/requirements applicable to the design, construction, operation and decommissioning of DOE defense nuclear facilities. The DNFSB Recommendation further requires that implementation assessments be performed on a continuing basis to determine the extent to which these standards have been implemented at DOE defense nuclear facilities. The DOE 90-2 Implementation Plan, written in response to the DNFSB 90-2 recommendation, requires that the standards/requirements applicable to Tank Farms will be specified in a Facility Specific Standards/Requirements Identification Document (S/RID). The DOE 90-2 Implementation Plan further requires that implementation assessments will be performed in two phases to determine the extent to which the S/RID requirements are fully implemented in the performance of facility work processes and activities.

The S/RID Maintenance Task involves monitoring changes to the Tank Farms operational or regulatory baselines and updating the S/RID requirements for affected functional areas on a quarterly basis to reflect changes in regulatory requirements or the facility operational baseline. The DOE Implementation Plan requires that the facility report changes in Federal and State Regulations, and DOE Directives that are applicable to Tank Farms on a quarterly basis. In addition, Tank Farms is required to conduct Phase 1 assessments against the revised standard/requirements to demonstrate that facility policies and procedures address the new or revised requirements. And on an annual basis, Tank Farms is required to conduct Phase 2 assessments to demonstrate that policies and procedures identified as meeting the S/RID requirements are fully implemented in work processes and activities.

- Corrective Action/Issue Management. Corrective Action/Issue Management provides process guidance and administrative support to line management in correcting deficiencies that have been identified. The process uses an issue management approach that has been developed through waivers obtained to RLID 1000.1, "Self-Assessment," and WHC-CM-1-4, "Corrective Action Management." Support includes risk evaluation, root cause analysis, corrective action status tracking, audit response coordination, issue identification, and records management control. The process meets the intent of RLID 1000.1 and WHC-CM-1-4 but allows line management more accountability for the corrective action process. This modified process will be implemented during fiscal year 1995 as a pilot program that will be evaluated for its effectiveness in managing the corrective action process in a rigorous and defensible manner while achieving increased productivity.

The pilot process will require the development of new procedures and personnel training (internal and line organizations).

This work package does not develop the corrective action plans or authorize closure, these specific activities are the responsibility of the line organization in which the condition was identified.

- Assessment. The purpose of assessment is to identify compliance deficiencies by assisting the TWRS Plant line organizations in performing internal self-assessments and facility monitoring. TWRS Compliance Management will develop an integrated assessment process which will combine all internal assessments under one program (based on the S/RIDs requirements) and use the resources of both line management and the independent oversight organizations (ESQ and DOE-RL) to perform the assessments. This program includes development of a computer based assessment module as a part of the Compliance Management model. The evaluations consider:

- Does the activity add value?
- Is the activity compliant with regulations and policies?
- Is the activity cost effective?

Assessments will be performed:

- As regularly scheduled events (tri-annual based on S/RID requirements).
- As needed when indicated by occurrence reports.
- As needed when indicated by externally generated Lessons Learned.
- As needed when indicated by performance indicators.
- Lessons Learned. Lessons Learned develops, implements, and maintains a program for the dissemination and use of information which contributes to continuous improvement in Health, Safety and efficiency in compliance with DOE Order 5480.19, "Conduct of Operations". To achieve this goal, information is accessed through the following interface sources:
 - Corrective Action/Issue Management
 - Performance Assessment
 - Occurrence Reporting
 - Event Critiques
 - ALARA Reviews
 - Inspection results from External Agencies

The Lessons Learned process includes facilitating the generation of internal Lessons Learned. This is accomplished by collecting internal and external information, evaluating the applicability, validity, accuracy, and priority of the information and disseminating the information to applicable groups.

Represent the Hanford Site as the DOE-HQ Lessons Learned Performance Improvement Team, "Standard for Lessons Learned Programs."

- Performance Indicators. Performance Indicators are developed in compliance with DOE Order 5480.26, "Trending and Analysis of Operations Information Using Performance Indicators," to support the TWRS Plant line organizations in identifying and communicating their progress to achieve or maintain an established standard. These standards are especially beneficial in tracking and reporting specific results that are to be achieved in lieu of a tangible product. Graphical reports will be developed on periodic and as-requested basis to support the line organizations and TWRS Plant management. This work scope does not include the generation of data used to prepare the graphical performance indicators.
- ALARA. ALARA facilitates the implementation of proper radiological planning and execution in accordance with 10 CFR 835 and the DOE Radiological Controls Manual. Support is provided to each TWRS Plant facility through ALARA Coordinators matrixed to the facility

WHC-SP-1101

Manager's staff. Integration of the Worker Protection Program with the ALARA program is accomplished through cross training of the ALARA Coordinators in the non-radiological aspects of safety, especially the Voluntary Protection Program.

Technologies to be assessed: N/A

Options to be considered:

Corrective Action/Issue Management pilot will be used as a demonstration of the proposed issue management process for managing corrective actions. The pilot, utilizing waivers to RLID 1000.1 and WHC-CM-1-4, shifts the responsibility to the line organizations for corrective action planning and closure. The effectiveness of the piloted process will be assessed for recommendation to continue the waivers on a permanent basis.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	J. L. Shelor	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L C Mercado</i>	9/19/94
Cost Account Manager	J. L. Shelor <i>J L Shelor</i> FOR	9/19/94
Project Control Analyst	M. A. Dewitt <i>M A Dewitt</i>	9/20/94

FDS Number

1N1C3A

Tank Waste Remediation System (TWRS) Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.02 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.11/VI	5. WBS ELEMENT TITLE TWRS Industrial Hygiene and Safety	
6. WBS INDEX LINE NO. Not used	7 CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$867	\$1,367	\$1,567
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$867	\$1,367	\$1,567

B. TECHNICAL BASES

Purpose:

The work to be performed under this cost account can be defined as occupational safety and health (OSH) program management, oversight, and support. Professional disciplines responsible for the work performance and associated deliverables include Industrial Safety, Industrial Hygiene, Fire Protection, and Industrial Hygiene technician resources.

Deliverables are specifically associated with management of this cost account, assessing and assuring regulatory compliance, analysis of the work site, and hazard identification and control. Most activities relate directly to implementation of the Westinghouse Hanford Company (WHC) Worker Protection Program -- the umbrella for WHC health and safety OSH activities.

Deliverables under this cost account are indicated within each major activity area. Any work scope or priority changes will involve review and approval by the assigned RL Lead to assure agreement on scheduled activities and prioritization of those activities.

Cost for each deliverable has been noted under the section titled "Maximum cost of each deliverable" in this WBS dictionary. An additional section ("Proposed/Unfunded Workslope") has been added to indicate those activities proposed, but unfunded in FY-95.

Activity areas and associated deliverables for FY-95 are as follows:

- Program Management and Support
 - Coordinate, control, and direct the resources for OSH program development and implementation
 - Provide management of this 1N1C account for FY-95
 - Develop FY-96 work plan and associated budget request
 - Provide RL-requested reporting and performance measures on a quarterly basis
 - Meet monthly with RL TWRS Tank Operations
- Oversight Activities
 - Perform annual Baseline Hazard Assessment of 16 tank farms and five major tank farm facilities for the purpose of updating the Tank Farm Health and Safety Plan (HASP)
 - Perform Fire Protection Assessments (approximately 30 - in accordance with schedule developed by Fire Protection Program office) to meet requirements of DOE Order 5480.7A and RLID 5480.7
- Tank Vapor Issues
 - Perform 72 source monitoring sweeps and report performance on a quarterly basis
 - Hanford Environmental Health Foundation (HEHF) - Perform tank farm sampling, analyze samples, and provide report of results

Goals & objectives:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Program Management and Support: This activity covers the resources necessary to effectively manage the OSH program development and implementation, as directed by this FY-95 work plan, and to ensure timely execution of program activities within budget constraints. Included in this activity is the development of the FY-96 work plan and corresponding budget request, and performance measurement, tracking and reporting.

Oversight Activities: These activities encompass DOE-mandated health, safety, and fire protection assessments

to assure compliance with OSHA and NFPA codes and requirements. Included as deliverables under this oversight category are Fire Protection Assessments (approximately 30) required by DOE Order 5480.7 and RLID 5480.7A and Baseline Hazard Assessments (21), an integral piece of the WHC Worker Protection Program. Areas identified with deficiencies will be documented, and a report issued to tank farm management for corrective action. Additionally, deficiencies will be submitted into the Quality, Environmental, Safety Tracking system for tracking to closure.

Tank Vapor Issues: Activities under this category relate specifically to tank farm vapor issues. Each activity is aimed at reducing the potential for exposure of tank farm workers to chemical vapors through monitoring of personnel, work tasks and/or areas. Included is funding for HEHF support in tank farm sampling (personal and source) and analysis through its accredited laboratory. Funding request for this activity has decreased by greater than two-thirds due to progress made in FY-94 in obtaining initial baseline information. Through additional improvements (i.e., possibly further reductions or changes in respiratory protection zones), a cost savings could be realized. If the potential for a cost savings is identified, it will be communicated to the RL Lead for direction on possible change request. The above activities reflect continuation of efforts initiated in response to the 1992 Type B investigation of tank farm vapor exposures and an EH report on tank farms. The objective is to reduce or eliminate the potential for employee exposures to vapors in tank farms, and assure that a safe working environment is maintained.

Work to be performed:

Specific work to be performed includes management of this cost account; development of the FY-96 work plan and associated budget request; performance measurement, tracking, and reporting; and monthly interface meetings with RL TWRS Tank Operations.

Oversight will be performed through conduct of Fire Protection Assessments and Baseline Hazard Assessments, as mandated by DOE Orders and federal regulations. These assessments will be conducted, documented, and formally issued. Additionally, information obtained during the Baseline Hazard Assessments will be incorporated into the Tank Farm Health and Safety Plan, as appropriate, to update hazard communication. A summary report of oversight activities will be provided to the RL Lead on a quarterly basis.

Work to address tank vapor issues will include performing organic vapor source monitoring sweeps of breather filters, pits and risers of twelve tank farms (A, AX, B, BX, BY, C, S, SX, T, TX, TY, and U) for a total of 72 sweeps per year. These source sweeps assure that the baseline has not changed, and workers remain protected from the potential for vapor exposures. Additional field sampling of personnel and work activities will be conducted by HEHF staff, and samples analyzed through its accredited lab, with results documented and issued to TWRS Industrial Health and Safety (IH&S) for evaluation.

Activities specifically not funded under this cost account:

- Construction project support (design and document reviews)
- Conduct of formal safety training (PIC, New Supervisors, New Operators)
- Professional development of staff
- OSH S/RIDS
- TWRS IH&S Conduct of Safety Self-Assessment
- Field support to Operations & Maintenance (funded under separate accounts)

How work is to be performed:

The FY-95 productivity challenge will be met for this cost account through recommendation of measures for reducing tank farm vapor-related respiratory protection requirements. Depending on recommendations and implementation of those recommendations by Operations, labor and equipment cost savings could be realized.

Why the work is to be performed:

The work to be performed under this cost account is required to ensure compliance with Industrial Safety, Industrial Hygiene, and Fire Protection regulatory requirements, and ensure worker health and safety issues are properly addressed. Significant regulatory driver for health and safety issues at Tank Farms is 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response." Other drivers include DOE Order 5480.7 and RLID 5480.7A for Fire Protection assessments. Work to be performed ties specifically to implementation of the WHC Worker Protection Program elements primarily related to worksite analysis and hazard identification and control.

List of all deliverables:

- Program Management and Support
 - Coordinate, control, and direct the resources for OSH program development and implementation
 - Provide management of this 1N1C account
 - Develop FY-96 work plan and associated budget request
 - Provide RL-requested reporting and performance measures
 - Meet monthly with RL TWRS Tank Operations
- Oversight Activities
 - Perform annual Baseline Hazard Assessment of 16 tank farms and five major tank farm facilities for the purpose of updating the Tank Farm Health and Safety Plan (HASP)
 - Perform Fire Protection Assessments (approximately 30 - in accordance with schedule developed by Fire Protection Program office) to meet requirements of DOE Order 5480.7A and RLID 5480.7
- Tank Vapor Issues
 - Perform 72 source monitoring sweeps in twelve tank farms per month and report performance on a quarterly basis
 - HEHF - Perform tank farm sampling, analyze samples, and provide report of results

Mandatory requirements for performance of work:

Work activities will be conducted in accordance with requirements and guidance of applicable regulatory documents. Baseline Hazard Assessments will be performed to WHC-IP-0030, #20, "Comprehensive Baseline Hazard Assessments Instruction." Fire Protection Assessments will be conducted in accordance with DOE Order 5480.7A and RLID 5480.7. Monitoring activities will be performed to standard operating procedures and requirements of the Tank Farm Health and Safety Plan.

The mandatory requirements for performance of work will be measured by the completion of each activity represented by supporting documentation. Where the activity is on-going, measurement will be documented by meeting performance criteria established at the activity level. In most cases, completion of deliverables will be communicated to the RL Lead through monthly interface meetings and quarterly reporting.

Budget forecast:

Allocated budget is \$500,000 as of 08/17/94, based on the funds remaining following distribution of dollars to 1N1F63 and 1N1G73 for Industrial Safety, Industrial Hygiene, and Fire Protection field support. An additional \$380,000 has been requested for this account, however, and will be necessary to fund the described activities. Those activities proposed, but unfunded in FY-95, are indicated later in this WBS.

Mandatory schedule constraints:

Schedule constraints for FY-95 are directly tied to the provision of full funding and headcount necessary for

performance of work. Additional constraint is the lack of control over ability to achieve a full staffing level within WHC or obtain contract personnel to perform identified activities.

Maximum cost of each deliverable:

- Program Management and Support (387.6K)
 - Coordinate, control, and direct the resources for OSH program development and implementation
 - Provide management of this 1N1C account
 - Develop FY-96 work plan and associated budget request
 - Provide RL-requested reporting and performance measures
 - Meet monthly with RL TWRS Tank Operations
- Oversight Activities
 - Perform annual Baseline Hazard Assessment of 16 tank farms and five major tank farm facilities for the purpose of updating the Tank Farm Health and Safety Plan (HASP) (218.4K)
 - Perform Fire Protection Assessments (approximately 30 - in accordance with schedule developed by Fire Protection Program office) to meet requirements of DOE Order 5480.7A and RLID 5480.7 (8.1K)
- Tank Vapor Issues
 - Perform 72 source monitoring sweeps and report performance on a quarterly basis (16.1K)
 - HEHF - Perform tank farm sampling, analyze samples, and provide report of results (250K)

Unfunded Activities (\$489.6 Total)

- Program Management and Support (25.2K Total)
 - Respond to audits, appraisals, and surveillances (16.8K)
 - Develop an interface with TWRS Lessons-Learned Program office for conveyance of safety-related information
 - Interface and interact with both internal WHC and external oversight and regulatory personnel (auditors, inspectors, OSH Sub-Tap) (8.4K)
- Staff Training and Professional Development (130K)
 - Provide staff training to meet requirements associated with areas of assigned responsibility
 - Develop an FY-95 schedule for staff attendance at professional development courses
- Self-Assessment (TWRS Industrial Health & Safety) (11.8K)
 - Complete "Conduct of Safety" self-assessment
- Oversight Activities (230K Total)
 - Perform monthly Field Surveys (informal OSHA-type compliance inspections) of 16 tank farms and five major tank farm facilities (194.8K)
 - Complete four Hanford Occupational Exposure Assessment Program (HOEAP) observations per quarter (24.6K)
 - Assess the effectiveness of the tank farm heat stress control program (as outlined in the HASP) and implement necessary improvements (10.6K)

- Tank Vapor Issues (92.6K Total)
 - Provide response to Tank Farm "odor" concerns (Noxious Odor Advisory System - NOAS)
 - Issue report recommending engineering controls to further reduce potential for vapor exposures in tank farms (36.9K)
 - Issue report with recommendations on the use of personal monitoring instruments (chemical dosimetry) for tank farm workers (10.6K)
 - Issue summary report of vapor sampling and monitoring conducted, and recommendations made during FY-94 (45.1K)

Roles and responsibilities:

Programmatic direction for this effort shall be provided by the RL TWRS Tank Operations office. An RL Lead will be appointed to oversee work under this account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor will notify the RL TWRS Tank Operations office of any direction or guidance provided by any other RL office, but will not act on that guidance or direction until approved by the RL TWRS staff member. Any conflicts between the RL TWRS office guidance and guidance offered by another RL office shall be referred to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Technologies to be assessed: N/A

Options to be considered: N/A

•

C. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	S. S. Glover	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DMLucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>LC Mercado</i>	9/19/94
Cost Account Manager	S. S. Glover <i>SS Glover</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J. S. Thomas</i>	9/19/94

FDS Number
<u>1N1C3B</u>

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.01 Tank Farm Compliance & Corrective Activities	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION UMBER DE-AC06-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.02.12/VI	5. WBS ELEMENT TITLE Radiological Support	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. ADS/TDD BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,180	\$1,452	\$1,466
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$1,180	\$1,452	\$1,466

1.1.1.2.01.02.12

A2-155

B. TECHNICAL BASIS

PURPOSE

The work to be performed under this cost account can be broadly defined as radiological control and safety management, oversight and support. Professional disciplines responsible for the work performance and associated deliverables include Radiation Health Physicists, Radiation Health Analysts, Administrative and Training Administrators and Functional area Managers.

The purpose of these activities are to assure that Tank Waste Remediation Systems programs conduct their radiological operations in a manner that ensures the health and safety of all it's employees, other contractors and the general public. In performing these activities ensures that radiation exposures to it's workers and the public, and releases of radioactivity to the environment are maintained below regulatory limits and efforts are taken to further reduce exposures and releases in accordance with a process that seeks to make any such exposures and releases as low as reasonably achievable .

OBJECTIVES AND WORK TO BE PERFORMED:

Please refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The overall objective of this cost account is to provide technical, administrative and field related work activities within the limits of established standards, budgets and procedural guidelines, budgets and to ensure compliance to policies and procedures or as directed by DOE-RL. Additionally, adequate staffing needs are identified and implemented to supply our customer, employees, the public and the environment with a safe, secure and environmentally sound radiological protection program and to support the completion of scheduled milestones and end-item deliverables. Following are the specific goals and objectives identified within this statement of work.

Functional Area Management and Administration:

This activity provides the resources necessary to effectively manage and administrate the TWRS Radiological Protection Program, it's development, implementation and maintenance as required by the DOE Radiological Controls Manual and the 10CFR835. Included in this activity is the development and maintenance of cost account plans as well as radiological trending, tracking and reporting. This activity is responsible as the driving force to manage implementation and improvements in the TWRS radiological protection program.

Regulatory Compliance and Assessment:

This activity manages the implementation and compliance aspects of the radiation protection program as defined in the DOE Radiological Control Manual. With the legal requirement of having 10CFR835 fully implemented by January 1, 1996, this activity will be the key focus point in the TWRS RADCON organization to coordinate, track and document implementation status in an auditable form for assessment.

This activity also manages the TWRS Radiation Protection Functional Area of S/RIDs. Responsibilities include a smoothly functioning RP S/RIDs program with evaluation of newly identified regulations and requirements, and update of the RP S/RIDs based on the FY-94 assessment outcome. Additional deliverables under this activity are full development of the FY-95 RP functional area self assessment workbook and conduct of the FY-95 self-assessment.

Training Administration:

This activity provides the administrative support necessary to meet all required training, scheduling tracking and documentation. This function schedules required training for all personnel assigned to the TWRS Radcon

organization, tracks their current training status and notifies the employees and their management of training schedules for planning purposes. This activity also performs continuing evaluations of training requirements to ensure that training is scheduled and performed in a cost effective manner, that there are requirements for all training provided to our employees, and reports training status to management and other assessors or auditors that need to know our training requirements and performance.

HPT Core Task Training:

This activity provides required performance based On-the-Job Training (OJT) for Health Physics Technicians (HPT's) as required by DOE requirements. Initial as well as refresher training is provided to the HPT's. This activity also provides Tank Farm Systems training to HPT's as well as first line RP management so they can understand the systems that they are providing radiological safety coverage to as well as past history and events to understand the historical radiological conditions in the Tank Farm facilities. This training is documented and tracked to provide auditable records of qualifications as required by DOE.

Projects Support:

This activity provides the radiological safety review and oversight of all project work, designs and plans as required by the DOE Radcon manual. This is a programmatic function that crosscuts a variety of organizations that perform work in Tank Farm facilities. This allows the radiological requirements to be built to the designs and execution plans to meet requirements and to maintain exposures to personnel, the environment and the public As Low As Reasonably Achievable (ALARA).

Operations Support:

This activity manages and supports field implementation of radiological containment devices used in Tank Farm facilities. This activity is focused at reducing the risk associated with working on radiologically contaminated materials and equipment in Tank Farm facilities for reasons of DOE requirements, personnel safety and environmentally sound radiological work practices. Containment devices have also proven to be in many cases, a more efficient and cost effective way of doing radiological work. Containment activities are also key in the surface contamination reduction plans planned for Tank Farm facilities as once surface area are decontaminated or stabilized, containment devices will provide the radiological integrity necessary to maintain their downposted status.

This activity also provides training to personnel through containment training and Facility Orientation training. These training activities provided by the TWRS Radcon organization will provide the knowledge necessary to execute proper radiological work practices in Tank Farms facilities as well as understand radiological work practice expectations.

Along with the above mentioned activities, this function will also assist Operations personnel in developing and implementing a TWRS Radiological Work Practices manual which will provide radiological work procedures to implement the DOE Radcon Manual and 10CFR835 requirements in the field.

Radiological Controls:

The radiological controls activity primarily focuses on providing field application and support activities. A number of programmatic requirements are covered under this activity such as air sampling programs, Radiological Work Permit development and training, technical and investigative support for incidents and occurrences; and support and evaluation of field activities such as records, documentation, criteria, instrumentation and technical data evaluation.

Program Support:

This activity is provided by the Site Radiological Engineering organization which provides programmatic assessment and technical support to TWRS organizations in addition to the TWRS Radcon organization. This activity provides second party oversight and assessment of TWRS radiological program activities as well as professional technical support to TWRS Operations, Characterization, Upgrades and Safety programs.

WORK/RESOURCES SPECIFICALLY NOT FUNDED UNDER THIS COST ACCOUNT

- HPT Bargaining unit support
- Sampling and laboratory analysis services

HOW THE WORK WILL BE PERFORMED

All work activities shall be performed in a safe, efficient and cost effective manner. The fiscal year 1995 productivity challenge will be met for this CAP by developing tools which will reduce the time required to perform general tasks.

Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators for strategic parameters maintained and given visibility appropriate to the mission of the facilities.

Work requests from other programs, will not be performed unless funding from those programs is provided.

WHY THE WORK IS TO BE PERFORMED

The work to be performed under this cost account is required to ensure compliance with radiological safety regulations and requirements that ensure worker, environment and public health and safety. The significant regulatory drivers for radiological health and safety requirements are DOE/EH-0256T Rev 1, "USDOE Radiological Control Manual", DOE 5480.11 "Radiation Protection for Occupational Workers", DOE 5400.5 "Radiation Protection of the Public and the Environment" 10CFR835 "Occupational Radiation Protection".

C. LIST OF DELIVERABLES

Functional Area Management and Administration: (\$380.1K)

1. Provide managerial, administrative and clerical support.
2. Provide monthly Radiological Summary report.
3. Manage the TWRSRC cost accounts and provide monthly budget status reports.
4. Provide RL-requested reporting and performance measures.
5. Interface and interact with both internal WHC and external oversight and regulatory personnel.

Regulatory Compliance and Assessment: (\$109.7K)

1. Complete RADCON manual compliance review by December 31, 1994.
2. Implement 10CFR835 compliance documentation by September 30, 1995.
3. Develop/rewrite procedures as required to be in compliance with all RADCON manual and 10CFR835 requirements as identified. (LOE)

4. Manage the Radiation Protection S/RIDs program for TWRS. (LOE)
5. Conduct an S/RIDs functional area self-assessment on Radiation Protection in the Tank Farms on a selected portion of the S/RIDs requirements continuing the FY-94 effort by September 30, 1995.

Training Administration: (\$109.7K)

1. Track and maintain all required training for TWRS Radcon personnel and maintain a 95% training currency rate.
2. Perform quarterly training assessments of TWRS Radcon personnel training adequacy.
3. Ensure one emergency exercise drill is performed each quarter in the TWRS Radcon organization

HPT Core Task Training: (\$109.7K)

1. OJT qualify all HPT's assigned to TWRS Radcon within 6 months of their assignment on all required training tasks.
2. Provide Tank Farms Systems training to all newly assigned HPT's within 6 months of their assignment.
3. Provide Tank Farms Systems training to all newly assigned First Line Managers within 3 months of their assignment.
4. Track OJT qualification progress for all HPT's assigned to TWRS Radcon.

Projects Support: (\$109.7K)

1. Provide Radiological engineering reviews of projects, designs and technical input to project engineering groups as required. (LOE)
2. Provide radiological safety reviews for the Safety and upgrades programs as requested. (LOE)

Operations Support: (\$164.6K)

1. Support the radiological containment program in Tank Farms assisting in the design, procurement and field installation of containment devices. (LOE)
2. Maintain the Containment Guide for use in Tank Farms. (LOE)
3. Provide radiological containment training to PIC's, Operators and HPT's as scheduled. Schedule one training class per quarter.
4. Provide Tank Farm Orientation training, schedule 2 classes per week.
5. Develop practices for the TWRS Radiological practices manual as requested by Operations organization.(LOE)
6. Support surface area decontamination efforts and provide input to the Contamination Control Improvement Program for tracking quarterly.

Radiological Controls: (\$131.6K)

WHC-SP-1101

1. Provide support to the workplace and environmental air sampling programs and interact with WHC and external oversight personnel as requested.
2. Develop and implement Radiological Work Permit training for Tank farm personnel by January 1, 1995.
3. Provide support to occurrence report investigations.
4. Provide support and oversight for radiological release performance and documentation.

Program Support: (\$164.6K)

1. Provide external radiological engineering support to East/West Tank Farms, Evaporator, Tank Safety and Upgrades programs.
2. Provide external oversight for Tank Farm radiological control requirements.

MANDATORY REQUIREMENTS OF PERFORMANCE OF WORK

Establish and maintain regulatory compliance for occupational, environmental and public radiological health and safety. The mandatory requirements for performance of work will be measured by the completion of each activity represented by supporting documentation. Where the activity is on-going, measurement will be documented by meeting performance criteria established at the activity level.

MANDATORY SCHEDULE CONSTRAINTS

Schedule constraints for FY-95 are directly tied to the provision of full funding and headcount necessary for the performance of work.

BUDGET FORECASTS

\$1,279.7 \$ 1,225

MAXIMUM COST OF EACH DELIVERABLE

Functional Area Management and Administration: \$380.1K

Regulatory Compliance and Assessment: \$109.7K

Training Administration: \$109.7K

HPT Core Task Training: \$109.7K

Projects Support: \$109.7K

Operations Support: \$164.6K

Radiological Controls: \$131.6K

Program Support: \$164.6K

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall be provided by the RL TWRS Tank Operations office. An RL Lead will be appointed to oversee work under this account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform requested work.

The contractor will notify the RL TWRS Tank Operations office of any direction or guidance provided by any other RL office, but will not act on that guidance or direction until approved by the RL TWRS staff member. Any conflicts between the RL TWRS office guidance and guidance offered by another RL office shall be referred to the RL TWRS office for resolution.

1.1.1.2.01.02.12

A2-160

The RL lead for this account shall be appraised, as soon as reasonably possible, of any impacts to work costs or schedules in this account that occur as the fiscal year progresses.

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Reference the following:

Radiation Protection Functional Area S/RIDs

C. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	L. C. Mercado	
Cost Account Manager	B. H. Lueck	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DMLucoff</i>	9/19/94
Activity Manager	L. C. Mercado <i>L. C. Mercado</i>	9/19/94
Cost Account Manager	B. H. Lueck <i>B. H. Lueck</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>J. S. Thomas</i>	9/19/94

FDS Number

1N1C3C

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor	2. DATE PREPARED September 20, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.03/V	5. WBS ELEMENT TITLE Tank Farm 200 East Storage Facilities	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NF	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) 4.2.1.1 Store Waste 4.2.1.4 Transfer Waste 4.2.1.5 Concentrate Waste 4.2.3.1 Immobilize & Dispose LLW 4.2.3.2 Disposition Gaseous Effluents 4.2.3.3 Disposition Liquid Effluents 4.2.3.4 Disposition Solid Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120071 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$34,950	\$38,060	\$38,034				
CENRTC	700						
GPP							
LINE ITEM							
TOTAL	\$35,650	\$38,060	\$38,034				

1.1.1.2.01.03

A2-163

B. TECHNICAL BASES

Goals & objectives:

Coordinate, monitor and control Facility Operations support to the material condition, receipt, storage, and transfer operations of 200 Tank Farm East Storage Facilities (TFESF) in support of Westinghouse Hanford Company (WHC) and DOE's environmental management goals at Hanford. Conduct all activities pertaining to operation of a permitted TSD facility within the boundary of current Interim Safety Basis (ISBs) and in a manner that ensures compliance with all applicable federal, state, and local environmental regulations to ensure a safe work environment for all employees and support groups.

The primary support functions to these goals include corrective and preventative maintenance, routine surveillance, facility operations, health physics support, industrial hygiene & safety support, and systems engineering and analysis support necessary for the safe and compliant underground waste storage.

The following program master schedule activities are supported by WBS 1.1.1.2.01.03:

S006130	Perform Interim Safe Facility Operations - East Tank Farms
S006145	Perform Interim Safe Routine Surveillance - East Tank Farms
S006160	Perform Interim Safe Operations - East Corrective Maintenance
S006175	Perform Interim Safe Operations - East Preventative Maintenance
S006185	Perform 200 East Plant/Systems Engineering
S006185A	M-46-00 Perform Double-Shell Tank Space Evaluation
S006190	Perform 200 East Industrial Hygiene Monitoring & Analysis
S006193	Perform New 200 East Tank Farm Preparations

Major end-item deliverables

Tank Farm East Preventive Maintenance (1N1F61)

- Plan, schedule, and complete performance of all required PM work packages by September 30, 1995.

Tank Farm East Corrective Maintenance (1N1F62)

- Plan, schedule, and complete performance of CM work packages in accordance with East Operations priorities as shown in POD, POW, and Integrated Schedule.
- Issue monthly a report on the following performance indicators: CM Backlog reduction, PM delinquencies, overtime usage, essential equipment up time, work package close out cycle time, and work package suspension rate.
- Issue Maintenance Implementation Plan to DOE-RL for review.

Tank Farm East Facility Operations (1N1F63)

- Provide overall project management and safe and efficient operation of the ETFSF.
- Self-Assessment/SRID's support - provide support to 18 teams.
- Ensure that all Off-Normal/Unusual Occurrence Reports (Notification, 10-day, Finals) thoroughly investigated and generated in East Tank Farms are submitted in accordance with established procedural time constraints.
- Manage Facility Operations and Routine Surveillance Cost Accounts. Provide monthly status to Program Office/DOE-RL.
- Issue/revise FY96 multi-year plan by August 30, 1995.
- Conduct 45 internal (DCRTs, catch tank, tank-to-tank) waste transfers allowing sufficient tank space to accommodate contents of largest pumpable liquid inventory of any single SST in East

Area.

- Restore Cross-Site Transfer Capability
- Perform housekeeping, i.e., tumbleweed removal and waste clean-up, etc.
- Perform seasonal equipment and facility surveillances and preparations.
- Complete all FY95 scheduled Operational Test Procedures (OTPs).
- Coordinate access to 200 ETFSF for Waste Tank Safety Programs, Engineering, and Characterization activities.
- Provide base operations, corrective and preventative maintenance, receive, unload and ship waste to the 204-AR facility.
- Support 13 external (222-S, 300 area, T-Plant, etc.) HLW/LLW wastes from other Hanford Site facilities in operation or cleanup phases to avoid noncompliance or operation interruptions at those facilities.
- Complete Phase III Interim Operational Safety Requirements (IOSR) implementation.
- Provide quarterly Rad Con Manual field assessments.
- Provide quarterly Conduct of Operations assessments.
- Conduct monthly inspections of ETFSF.
- Obtain full compliance with new DOE Radiological Control Manual in FY95.
- Health Physics shall be in full compliance with all Articles of the DOE Radiological Control Manual, Rev. O, by March 31, 1995.
- Health Physics shall complete all annual Radiological Control Manual compliance reviews by December 31, 1994.
- TWRHP shall provide support for all repairs, modifications and upgrades of facility equipment in accordance with TWRS Integrated Schedule.
- Provide health physics support for transfers, field crew support, general housekeeping zone reductions, decontamination and stabilization, and ACES roving Health Physics support.
- Provide health physics field support for zone team activities (PMs and CBRS items, vent and balance activities, third party inspections).
- Complete herbicide spraying per the FY95 herbicide spray schedule.
- Issue FY96 herbicide schedule by September 30, 1995.
- Equipment removal from A-Farm and B-Farm complex.
- Provide Industrial Safety, Industrial Hygiene, and Fire Protection Field Support to East Area Tank Farms.
- Provide review and approval of approximately 180 work control documents and 600 plant documents, and issue quarterly summary report.
- Perform required Industrial Hygiene monitoring for Operations work activities (approximately 18 jobs) and issue quarterly summary report.

Tank Farm East Surveillance (1N1F64)

- Obtain daily and quarterly liquid level readings of DST/SST/catch tanks in accordance to OSD-T-151-00031.
- Prepare/provide engineering data for the analysis of liquid levels, drywells, LOWs, temperatures, pressures and other DST/SST data within specified frequencies to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (83) HLW tanks.
- Breather filter monitoring.
- Temperature monitoring.
- Investigations of tank anomalies.
- Provide health physics support for transfers, field crew support, general housekeeping zone reductions, decontamination and stabilization, and ACES roving Health Physics support.
- Provide health physics field support for zone team activities (PMs and CBRS items, vent and balance activities, third party inspections).
- Complete herbicide spraying per the FY95 herbicide spray schedule.
- Issue FY96 herbicide schedule by September 30, 1995.
- Equipment removal from A-Farm and B-Farm complex.

WHC-SP-1101

- Provide Industrial Safety, Industrial Hygiene, and Fire Protection Field Support to East Area Tank Farms.
- Provide review and approval of approximately 180 work control documents and 600 plant documents, and issue quarterly summary report.
- Perform required Industrial Hygiene monitoring for Operations work activities (approximately 18 jobs) and issue quarterly summary report.
- Perform data analysis of LOWs drywells, liquid levels, temperature, tank pressures, and other DST/SST data per requirements of OSR, OSD and waste tank leak detection monitoring programs.
- Issue Surveillance Discrepancy Reports as necessary when anomalies occur per WHC-IP-0842
- Issue Surveillance Alert List monthly per WHC-IP-0842
- Issue weekly liquid level instrumentation status.
- Issuance of two tank evaporation analysis.
- Develop generic database and issue sensitivity plots for future tank evaporation analysis.
- Obtain drywells, LOWs, temperatures, pressures and other DST/SST data within specified frequencies to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (83) HLW tanks.
- Swab riser readings as required from Engineering.
- Complete 11 in-tank photography missions.
- Complete 20 pit inventory and/or inspection videos.
- Provide Operations/Health Physics support to obtain all required DST/SST data within specified frequencies.
- Health Physics will perform required radiological surveys according to established frequencies as stated in current task descriptions, maintaining a 95% completion rate for scheduled radiological surveys.
- Health Physics will issue Monthly Radiological Status Report.
- Health Physics will maintain and update Tank Farm status maps.

Tank Farm East Systems Engineering (1N1F66)

- Manage East Systems Engineering Efforts and this Cost Account and provide monthly status to RL lead.
- Development of FY '96 Budget and complete required Training/Certification of Engineers
- Provide engineering documentation for 30 work packages per quarter.
- Disposition of 50 NCRs
- Perform procedure review forms and appropriate change documentation identified per WHC-IP-0842, for 60 operating documents.
- Provide technical support for 45 internal tank farm transfers and 13 transfers from generators. Perform compatibility assessments per the tank farm compatibility criteria. Provide technical input to the development of the transfer procedures.
- Preparation and verification of instrument documents
- Centrally collocate East System Engineers
- Provide 2 Operational Waste Volume Projections and 6 special projections.
- Complete the Review and Revision of OSR/OSD CBRS data input

C. STATEMENT OF WORK

Required activities:

Tank Farm East Preventive Maintenance (1N1F61)

1. Work to be Performed:

Plan, schedule, and perform all required Preventative Maintenance (PM) work packages to ensure high levels of availability of systems, components and structures in the A, AN, AX, AY, AZ, B, BX, BY, and C 200 East Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, and Component Based Recall System (CBRS) data base and procedures support.

Program Management:

This task will provide overall management of the 200 East Tank Farm Preventative Maintenance activities including PM overall planning, development, reporting, and assessment of PM performance.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of PM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Perform a systematic review of each PM identified using Reliability Centered Maintenance (RCM) principals to determine follow on activities (ie. increase PM rate, delete PM requirement, and other options). Plan, estimate, schedule, and status individual work packages. Group work packages to ensure the optimum efficiency and reduce the number of behind schedule PMs.

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field PM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform maintenance and calibration. Overtime will limited to the percent identified in the budget.

CBRS Support:

The CBRS Recall and Procedures groups will provide data base maintenance and recall notices.

WHC-SP-1101

Tank Farm East Corrective Maintenance (1N1F62)

1. Work to be Performed:

Plan, schedule, and perform all required Corrective Maintenance (CM) work packages to ensure high levels of availability of systems, components and structures in the A, AN, AX, AY, AZ, B, BX, BY, and C 200 East Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, Material Supply, Central Craft Support, Central Shop Support, and Nondestructive Examination (NDE).

Program Management:

This task will provide overall management of the 200 East Tank Farm Corrective Maintenance activities including CM overall planning, development, reporting, assessment of CM performance, revision of the Maintenance Implementation Plan, and implementation of S/RID's.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of CM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Plan, estimate, schedule, and status individual work packages.

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field CM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform repairs and restorations. Overtime will limited to the percent identified in the budget.

Material Supply:

This task will stock and control the 200 East Tool Crib, and order and stage materials identified on work package Bill Of Material (BOM).

Central Craft Support:

Provide supplemental craft support for work package execution.

Central Shop Support:

Provide fabrication and material support to work packages.

Nondestructive Examination:

Provide NDE service as required for work package execution.

Tank Farm East Facility Operations (1N1F63)

1. Work to be Performed:

Direct all administrative, technical, and field related work activities, within the limits of established specifications, standards, budgets and procedural guidelines, and to ensure compliance to policies and procedures or as directed by DOE-RL. All work activities will be managed in support of the overall safe and cost effective operation of the tank farm facilities. Ensure safe access to employees and all support groups (i.e. KEH, Engineering, etc.) and provide a work place that is free from fatalities and serious accidents, and continuously reduce injuries and adverse health effects. Additionally, adequate staffing needs are identified and implemented to support completion of scheduled milestones and end-item deliverables.

Project Management

This task will provide overall monitoring, control and access of ETFSF. The overall goals and objectives of ETFO, Project Management is to provide general administrative support for East area.

Administration

Provide the necessary administration support for various administrative responsibilities which includes Phase I SRIDs Assessments, Occurrence Investigations/Reporting, Root Cause Analysis, Priority Planning Grid (PPG) Evaluations, Lessons Learned and Cost Account Plan (CAP) management.

Site Services Support

Site Services support to ETFSF (i.e. plastic, radio maintenance, fuel for generators, locksmith services, and other incidental unplanned essential work activities).

Transfers

• The specific objective of planned waste transfers is to receive, store and transfer radioactive liquid waste from Hanford facilities into underground storage tanks via waste transfer systems and railcar/tanker truck unloading facilities. Performing jumper changes, pressure tests, pump removals and construction of containment structures will be conducted as required to support transfers. HLW/LLW transfers from other Hanford facilities, in operation or cleanup phases, is to avoid noncompliance or operation interruptions at those facilities.

Restore Cross-Site Transfer Capability

The overall object is to support the development of work plans/packages to restore the capability to perform cross-site waste transfers by March 31, 1995. This includes development of work plans, procedures development and review, pressure tests, pumping of leak detectors and related catch tanks, and identifying and supporting the CBRs/PMs of related instrumentation.

Field Activities

Provides support to corrective/preventative maintenance at East Tank Farm facilities and the restoration of degraded tank farm equipment which is necessary for the safe and compliant receipt, storage, and transfers of waste. This includes the winterization of tank farm equipment and facilities, troubleshooting, construction of containment structures, response to emergency work requests, material acquisition, and to support the reduction of backlog corrective maintenance packages. Operational Test Procedures (OTPs) support is included here for ETFO support to all major maintenance upgrades/projects. Support of the repair of failed FICs, manual tapes, active CASS alarms deficiencies, and repair of exhausters, etc. is also included.

204-AR

Provide operations support for activities at the 204-AR facility. Maintain base operations, corrective and preventative maintenance, receive, unload, and ship waste from HLW/LLW generated from other Hanford Site facilities.

Technical Support

Develop operating strategies/plans, process improvements, monitoring process limits, ensuring technical accuracy, and process problem resolution. Provide review of OTPs to ensure adequate testing of all major maintenance upgrades/projects prior to placing the equipment/systems in service. Assure the completion of Phase III Interim Operational Safety Requirements (IOSR) implementation and provide technical and field support to meet this initiative. Over 150 procedures will be written and 30 functional tests conducted. Technical Support will assist in the resolution of emergency technical issues in East Tank Farm facilities. Support the activities associated with full compliance of the Rad Con manual, perform field assessment of work activities with respect to radiological work packages and Conduct of Operations assessments.

Conduct of Operations

Strict housekeeping and work standards, and establishment of a working environment where safety of personnel and equipment is the highest priority will be maintained. Routine inspections of all work areas, ensure the safe and secure operation of the facilities and their systems in accordance with the established Interim Safety Basis and the Conduct of Operations philosophy. Personnel exposure to all hazards will be As Low As Reasonable Achievable (ALARA).

Health Physics

Health Physics supports all field activities for zone team activities such as PMs, CBRS's, vent and balance activities, and third party inspections. Provide HP support for all repairs modifications and upgrades of facility equipment in accordance with the TWRS integrated work schedule including work package and RWP preparations and containment requirement analysis. Provide HP support for transfers, emergency pumping, field crew support, general housekeeping, decontamination and stabilization, and ACES roving HPT support. HP technical support personnel provide professional/technical support through review of work plans, supporting documents, procedures, SAR's, and engineering design documents. Technical Support also writes procedures, desk instructions, and technical documents.

Herbicide Control and Custodial Services

This scope includes spraying and regulatory guidance for herbicide control of the 200 East and West Tank Farms. Included herein are material procurement, maintenance of spray schedules, and all other resources required to complete identified spraying.

Provide janitorial and floor service for 272-AW and 242-A in 200 East Area. Surrounding mobile office custodial support is covered by the Landlord.

Equipment Removal

Remove old portable exhausters from A-Farm and portable generators from BX-BY farms.

Industrial Health and Safety Support

The East Area Industrial Health and Safety organization will provide Industrial Safety, Industrial Hygiene, and Fire Protection Field Support to East Area Tank Farms. They will provide review and approval of approximately 180 work control documents and 600 plant documents, and issue quarterly summary reports. Monitoring of Operations work activities (approximately 18 jobs per week based on FY 94 experience) will be conducted and quarterly summary reports issued.

Tank Farm East Routine Surveillance (1N1F64)

1. Work to be performed:

The overall objective of this cost account is to provide technical and field related surveillance activities within the limits of established specifications, standards, budgets and procedural guidelines, and to ensure compliance to policies and procedures or as directed by DOE-RL. Additionally, adequate staffing needs are identified and implemented to supply our customer and stakeholders with the safe, secure, and environmentally sound treatment and storage of hazardous waste at East Tank Farms and to support the completion of scheduled milestones and end-item deliverables. Following are the specific goals and objectives identified within this Statement of Work.

Routine Surveillance

The routine surveillance activities outlined in this Statement of Work include Shift Managers, Operators, Power Operators, Operations Engineers, and Operations Clerical support on a 24 hour basis. The Shift Manager is responsible for command and control of the facility during the shift. Shift Operations must maintain the facility within the safety envelope defined by the Operational Specification Documents and Operational Safety Requirements.

Operations Engineers provide work package review, lock and tag walk-down, Procedure Change Authorization (PCA) incorporation and review, etc. in support of Shift Operations.

All data from instrumentation and equipment from Single-Shell/Double-Shell tanks, leak detection pits, catch tanks, ventilation systems, etc. is taken per specified frequencies and entered into the Computer Automated Surveillance System (CASS) as outlined in Operating Procedures and other governing criteria and are required to take action to mitigate abnormal or unsafe conditions as they arise.

WHC-SP-1101

A 5th Shift provides adequate time for training to assure Operations personnel are qualified through education, training, certification, and on-the-job experience to safely carry out their duties and meet all DOE and RCRA requirements. They are required to follow the principles and procedures of the Conduct of Operations philosophy.

Surveillance Data Analysis (Technical Support)

Field data is monitored and analyzed to ensure the facility is in a stable condition and in conformance with applicable requirements. This data ensure's operations within all safety parameters and is also used for Engineering Analysis. East Operations Technical Support provides engineering analysis of liquid levels, drywells, LOWs, temperatures, pressures and other DST/SST data within East Tank Farms to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (83) HLW tanks. Surveillance Discrepancy Reports are issued as necessary when anomalies occur.

East Tank Farm Operating Parameters

Field data that is monitored and analyzed is used for Engineering analysis for unsafe or non-compliant conditions. As a result of these reviews, a weekly status on level monitoring devices is developed and distributed to Operations as well as a monthly Alert List which defines areas of concern with leak detection monitoring equipment.

Tank Evaporation Analysis

The surveillance program reviews technical data associated with the east tank farm leak detection systems and temperature monitoring for compliance with Operational Safety Requirements, Operating Specifications Documents and waste tank leak detection monitoring programs. Two evaporation analyses are anticipated for FY95. In addition to these activities, a generic database and sets of tables/plots will be developed for use in future evaporation analysis.

Surveillance Operations (LOW/Drywell)

Surveillance Operations collects data from stored liquid wastes and provides surveillance support for all 200 East Area. They operate and conduct drywell monitoring, LOW monitoring, take lateral readings, swab riser readings as required from Engineering. Data obtained is transmitted to the Computer Automated Surveillance System (CASS).

In-tank Photography/Pit Inspections

Eleven in-tank photography missions are scheduled for FY 1995. The photos provide a means for analysis of tank integrity, in-tank equipment integrity and waste characterization. This Cost Account Plan considers setting a greenhouse, the actual photo and cleanup/teardown time allotments. Resources required for this include Managers, Nuclear Operator support, Crane and Rigging support, Respiratory Protection and BCSR photography.

This deliverable calls for 20 video camera shoots scheduled for FY95. The intent of the these videos is to obtain pit inventory/inspection videos to provide analysis of pit integrity, equipment inventory and waste accumulation and for leak detection purposes. Video shoots require little support from crane and rigging but will utilize Westinghouse crafts, technical and Respiratory Protection resources

Health Physics

Health Physics provides required radiological surveys at East Tank Farms on a routine schedule as required by applicable regulations. This includes radiation monitoring, personnel, radiological and work place surveys. They perform/monitor source checks, PCM1B source checks on a daily basis as well as PCM1B efficiency checks weekly.

Tank Farm East Systems Engineering (1N1F66)

1. Work to be performed:

Reactive Capability:

East Systems Engineering is charged with maintaining the ability to promptly respond to emerging technical issues involving East Tank Farms systems and facilities. East Tank Farm Systems Engineering will have a qualified technical staff with tank farm experience and with the ability to supplement resources with additional resources.

Proactive Oversight:

East Systems Engineering will provide the oversight, evaluation, and analysis capability to be able to proactively address pending changes to the East Tank Farm facilities, and operations.

Resources:

Engineers will complete training to obtain knowledge of facility specific technical and administrative requirements; performance; and governing codes, standards, and regulations.

Acceptance criteria:

Tank Farm East Preventive Maintenance (1N1F61)

- All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.
- Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

Tank Farm East Corrective Maintenance (1N1F62)

- All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.
- Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

Tank Farm East Facility Operations (1N1F63)

- Establish and achieve a schedule to maintain regulatory and DOE Order compliance in Tank Farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
- Implementation and adherence to the new Interim Operational Safety Requirement parameters.

WHC-SP-1101

- Workers should not be exposed to unsafe working conditions. Unsafe conditions will be resolved promptly to avoid delays to projects or program work activities that involve access to tank farm facilities.
- No Hanford Site facility will suffer noncompliance with storage regulations, nor cleanup program delays, due to the inability of tank farms to receive liquid waste.
- All work activities shall be performed in a safe and efficient and cost effective manner. The fiscal year 1995 productivity challenge will be met for this CAP by developing tools which will reduce the time required to perform general tasks.
- Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators for strategic parameters maintained and given visibility appropriate to the mission of the facilities.
- Minimize the total number and length of time equipment operating parameters are out of normal limits. Minimize the unavailability of safety systems. Minimize personnel errors through the effective and aggressive use of the 5th shift training program.
- Work requests from other programs, will not be performed unless funding from those programs is provided.

Tank Farm East Surveillance (1N1F64)

- The fiscal year 1995 productivity challenge will be met for this CAP by developing tools which will reduce the time required to perform general tasks in a more outcome oriented manner.
- Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators for strategic parameters will be maintained and given visibility appropriate to the mission of the facilities.
- Minimize the total number and length of time equipment operating parameters are out of normal limits. Minimize the unavailability of safety systems. Minimize personnel errors through effective and aggressive use of 5th shift and training program. Timely completion of scheduled surveillance.

Tank Farm East Systems Engineering (1N1F66)

- The fiscal year 1995 productivity challenge will be met for this cost account by developing tools which will reduce the time required to perform general tasks. With the development of a strong technical basis, the time required to modify the facility and operating procedures will be significantly reduced. Performing reviews of the CBRS system will significantly reduce the continuous support needed to maintain the system. The co-location of the engineering staff near to operations will enhance the effectiveness of the organization.
- East Systems Engineering will provide Cognizant Engineers/Leads for assigned facilities and/or activities. These engineers will be assigned responsibility for individual components, systems, structures and activities. Their accountability will be for the adequacy of the technical performance of the design and associated operational procedures.
- The East Systems Engineers will perform routine inspections of the tank farm facilities and operations. This will allow them to maintain current awareness of conditions and performance of the facilities and assure their ability to consider impacts of all field conditions on engineering decisions and technical direction originated by them. The engineers will originate process memo instructions to the operations staff, perform chemical compatibility assessments for waste transfers, prepare USQ screening and evaluations, and revise OSDs.
- East Systems Engineering will provide technical reviews of drawings, procedures, and other operations maintenance documents in support of program deliverables under the associated WBS Cost Account Plans.

Waste types generated:

- Off Gas: Yes
- Effluents: Yes
- Solid Waste: Yes

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements. It is the base operations of managing tank waste.
	To This WBS From	
1	Other Liquid Generating Hanford Facilities	Liquid generating facilities such as PUREX, UO ₃ , B Plant, S Plant, T Plant, PFP, etc. require tank farms for waste discharge when perform cell & basin cleanout, plant processing, decontamination/deactivation, and other ongoing terminal cleanout operations.
2	1.1.1.2.02 Waste Tank Safety	Mitigating and resolving tank safety issues to achieve a final safe operating condition envelop.
3	1.1.1.2.04 Characterization	Characterization of all double and single-shell tanks to achieving a final safe operations level.
4	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters.

Technologies to be assessed:

1. In-tank instrumentation replacements
2. Modern equipment replacements (e.g., pumps)
3. Waste minimization processes
4. Data taking equipment (e.g., spectral gamma)

Options to be considered:

1. Best Available Technology (BAT) improvements
2. Additional double-shell tanks base DST space evaluations

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS**Department of Energy Established:**

- Standards/Requirements Identification Documents (S/RIDs)
- Tank Waste Remediation System Functions and Requirements
- Section 2, table F4.2.1.1, item V, paragraph B
- Section 3, table A4.2.1.1, item VIII, paragraph C
- WAC 173-303, "Dangerous Waste Requirements"

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance 1.1.1.2.01.03 Tank Farm 200 East Storage Facility/M&O Contractor	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.03.01/VI	5. WBS ELEMENT TITLE 200 East Preventative Maintenance	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NF	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,870	\$1,926	\$1,930
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$1,870	\$1,926	\$1,930

1.1.1.2.01.03.01

A2-177

B. TECHNICAL BASES

OBJECTIVES:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The objective of 200 East Tank Farm Preventative Maintenance is to ensure the availability of systems, components, and structures during operations through attaining *high reliability* and *minimum equipment failure* levels. The requirements for these activities are contained in DOE Order 4330.4A Conduct of Maintenance, the Draft Maintenance Implementation Plan (MIP), and other documents defined by the Safety/Requirements Identification Documents Phase I.

STATEMENT OF WORK:

Work to be Performed:

Plan, schedule, and perform all required Preventative Maintenance (PM) work packages to ensure high levels of availability of systems, components and structures in the A, AN, AX, AY, AZ, B, BX, BY, and C 200 East Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, and Component Based Recall System (CBRS) data base and procedures support.

Program Management:

This task will provide overall management of the 200 East Tank Farm Preventative Maintenance activities including PM overall planning, development, reporting, and assessment of PM performance.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of PM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Perform a systematic review of each PM identified using Reliability Centered Maintenance (RCM) principals to determine follow on activities (ie. increase PM rate, delete PM requirement, and other options). Plan, estimate, schedule, and status individual work packages. Group work packages to ensure the optimum efficiency and reduce the number of behind schedule PM's.

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field PM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform maintenance and calibration. Overtime will limited to the percent identified in the budget.

CBRS Support:

The CBRS Recall and Procedures groups will provide data base maintenance and recall notices.

Items Not Included In Scope:

The following items of work and resources are not considered in this scope:

- Spare parts and equipment inventories are to be provided by ADS 7360.
- Setpoint control program is provided by Engineering Programs (1N1G76).

How The Work Is To Be Performed:

All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.

Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

Why The Work Is To Be Performed:

This work is performed to minimize the total number and length of time equipment operating parameters are out of normal limits and to minimize the unavailability of safety systems.

List Of All Deliverables:

- Plan, schedule, and complete performance of all required PM work packages by September 30, 1995.

Mandatory Requirements For Performance Of The Work:

- DOE Order 4330.4A Conduct of Maintenance.
- Draft TWRS Maintenance Implementation Plan

Mandatory Schedule Constraints:

- TWRS Integrated Schedule.
- East Tank Farm Plan of the Month.
- East Tank Farm Plan of the Week.
- East Tank Farm Plan of the Day.

Budget Forecast:

The FY 1995 through FY 1997 budget forecast is shown in section A. Cost Content.

Maximum Cost Of Each Deliverable:

Plan/perform PM work packages	\$1,870K
-------------------------------	----------

Roles And Responsibilities:

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to scope, cost or schedules in this cost account that occur during the fiscal year.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	P. Hinojosa <i>N/A</i>	
Cost Account Manager	K. W. Leliefeld <i>N/A</i>	
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	P. Hinojosa <i>P. Hinojosa</i>	9/19/94
Cost Account Manager	K. W. Leliefeld <i>K. W. Leliefeld</i>	9/19/94
Project Control Analyst	M. A. DeWitt <i>M. A. DeWitt</i>	9/20/94

FDS Number

1N1F61

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance 1.1.1.2.01.03 Tank Farm 200 East Storage Facility/M&O Contractor	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.03.02/VI	5. WBS ELEMENT TITLE 200 East Corrective Maintenance							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NF							
11. SYSTEM ENGINEERING ARCHTECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$11,030	\$12,490	\$12,495
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$11,030	\$12,490	\$12,495

B. TECHNICAL BASES

OBJECTIVES:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The objective of 200 East Tank Farm Corrective Maintenance is to ensure the availability of systems, components, and structures during operations through prompt and efficient work execution to attain high availability and minimum equipment down time. The requirements for these activities are contained in DOE Order 4330.4B Conduct of Maintenance, the Draft Maintenance Implementation Plan (MIP), and other documents defined by the Safety/Requirements Identification Documents Phase I.

STATEMENT OF WORK:

Work to be Performed:

Plan, schedule, and perform all required Corrective Maintenance (CM) work packages to ensure high levels of availability of systems, components and structures in the A, AN, AX, AY, AZ, B, BX, BY, and C 200 East Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, Material Supply, Central Craft Support, Central Shop Support, and and Nondestructive Examination (NDE).

Program Management:

This task will provide overall management of the 200 East Tank Farm Corrective Maintenance activities including CM overall planning, development, reporting, assessment of CM performance, revision of the Maintenance Implementation Plan, and implementation of S/RID's.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of CM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Plan, estimate, schedule, and status individual work packages.

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field CM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform repairs and restorations. Overtime will limited to the percent identified in the budget.

Material Supply:

This task will stock and control the 200 East Tool Crib, and order and stage materials identified on work package Bill Of Material (BOM).

Central Craft Support:

Provide supplemental craft support for work package execution.

Central Shop Support:

Provide fabrication and material support to work packages.

Nondestructive Examination:

Provide NDE service as required for work package execution.

Items Not Included In Scope:

The following items of work and resources are not considered in this scope:

- Spare parts and equipment inventories are to be provided by ADS 7360.
- Health Physics, Crane & Rigging, and Occupational Health & Safety are provided by 200 West Tank Farm Operations (1N1F63 & 1N1F64).

How The Work Is To Be Performed:

All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.

Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

Why The Work Is To Be Performed:

This work is performed to minimize the total number and length of time equipment operating parameters are out of normal limits and to minimize the unavailability of safety systems.

List Of All Deliverables:

- Plan, schedule, and complete performance of CM work packages in accordance with East Operations priorities as shown in POD, POW, and Integrated Schedule.
- Issue monthly a report on the following performance indicators: CM Backlog reduction, PM delinquencies, overtime usage, essential equipment up time, work package close out cycle time, and work package suspension rate.
- Issue Maintenance Implementation Plan to DOE-RL for review.

Mandatory Requirements For Performance Of The Work:

- DOE Order 4330.4B Conduct of Maintenance.
- Draft TWRS Maintenance Implementation Plan.

WHC-SP-1101

Mandatory Schedule Constraints:

- TWRS Integrated Schedule.
- East Tank Farm Plan of the Month.
- East Tank Farm Plan of the Week.
- East Tank Farm Plan of the Day.

Budget Forecast:

The FY 1995 through FY 1997 budget forecast is shown in section A. Cost Content.

Maximum Cost Of Each Deliverable:

Plan/perform CM work packages	\$ 8,060K
Issue monthly performance report	\$ 2,704K
Develop and issue MIP	\$ 273K
Total Cost Account	\$11,037K

Roles And Responsibilities:

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to scope, cost or schedules in this cost account that occur during the fiscal year.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	P. Hinojosa <i>N/A</i>	
Cost Account Manager	K. W. Leliefeld	
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	P. Hinojosa <i>P. Hinojosa</i>	9/19/94
Cost Account Manager	K. W. Leliefeld <i>K. W. Leliefeld</i>	9/19/94
Project Control Analyst	M. A. DeWitt <i>M.A. DeWitt</i>	9/20/94

FDS Number

1N1F62

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance 1.1.1.2.01.03 Tank Farm 200 East Storage Facility/M&O Contractor	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.03.03/VI	5. WBS ELEMENT TITLE Tank Farm East Facility Operations	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NF	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$11,720	\$12,077	\$12,080
CENRTC	\$ 700		
GPP			
LINE ITEM			
TOTAL	\$12,420	\$12,077	\$12,080

1.1.1.2.01.03.03

A2-187

B. TECHNICAL BASIS

GOALS AND OBJECTIVES:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Goal is to coordinate, monitor and control Facility Operations support to the material condition, receipt, storage, and transfer operations of 200 East Tank Farms Operations (ETFO) in support of Westinghouse Hanford Company (WHC) and DOE's environmental management goals at Hanford. Objectives include conduct all activities pertaining to operation of a permitted TSD facility within the boundary of current Interim Safety Basis (ISB's) and in a manner that ensures compliance with all applicable federal, state, and local environmental regulations to ensure a safe work environment for all employees and support groups.

The major activities of ETFO include corrective and preventative maintenance, waste transfers, administrative and technical expertise to 241-A, AX, AN, AY, AZ, BX, BY, B, C-Complex, waste transfer/routing piping and associated catch tanks, and the 204-/244-AR facilities.

STATEMENT OF WORK:Work to be Performed:

Direct all administrative, technical, and field related work activities, within the limits of established specifications, standards, budgets and procedural guidelines, and to ensure compliance to policies and procedures or as directed by DOE-RL. All work activities will be managed in support of the overall safe and cost effective operation of the tank farm facilities. Ensure safe access to employees and all support groups (i.e. KEH, Engineering, etc.) and provide a work place that is free from fatalities and serious accidents, and continuously reduce injuries and adverse health effects. Additionally, adequate staffing needs are identified and implemented to support completion of scheduled milestones and end-item deliverables. The primary support functions to these goals include Facility Operations, Health Physics, Conduct of Operations, Herbicide Spraying, Crane and Rigging and Custodial Services, organizations and misc. Site Services support. Following are the specific goals and objectives identified within this Statement of Work.

Project Management

This task will provide overall monitoring, control and access of ETFO facilities which includes all activities herein. In addition to the overall goals and objectives of ETFO, Project Management provides general administrative support for East area that includes:

- Management, procurement and accountability of all property per DOE Order 2000.6.
- Provide emergency preparedness support to the coordination of emergency drills.
- Operations interface to work package release and major maintenance work coordination.
- Control of adequate staffing needs and placement per WHC and Union contracts.
- Corrective Action Management - assure timely reporting resolution and completion of audit, surveillance, non-conformance issues.
- Implementation of new programs and requirements, i.e. confined space, initiate hand held data (HDAT) program, etc.
- Perform Operational Readiness Reviews and review of emergent and/or field work.
- Review Operations and Maintenance procedures and engineering documentation.
- Identification of work priorities and review and monitoring of scheduled activities and equipment compatibilities.

Administration

ETFO personnel will be trained in accordance with the Tank Farms Dangerous Waste Training Plan and the Westinghouse Radiation Area Monitoring (WRAM) access requirements. The administrative support will ensure ETFO personnel maintain the maximum readiness achievable.

ETFO will provide an internal assessment of our compliance within each area of regulatory requirements found to apply to TWRS by the Phase I SRIDS assessment. Operations will provide representatives to the 6 area assessment teams. Support will also be provided to 18 teams during their assessment of East Tank Farms.

Occurrence Reports are issued per the requirements of DOE Order 5000.3 and must be generated within the procedural time constraints. Events and conditions once identified will be thoroughly reported through the Occurrence Reporting Processing System (ORPS), adequately investigated and documented. Expert evaluation teams, Root Cause, trending analysis, Priority Planning Grid (PPG) evaluations, and Lessons Learned are all an intricate part in the Occurrence Reporting process. This activity provides the administrative support for compliance to the DOE-RL 5000.3 criteria.

ETFO will provide the management of the two 1N1F Facility Operations Cost Account Plans (CAP's), and all other end functions/programs task packages in accordance with the Management Control System (MCS). ETFO will interface with TWRS budget representatives to resolve all funding issues. Monthly status updates will be provided to the Program Office/DOE-RL lead. In addition, this activity provides for the development of the FY96 multi-year plan.

To obtain in-house decontamination capabilities of process pits, tools, pressure heads, etc. through the procurement of a mobile CO2 decontamination unit.

Site Services Support

This CAP includes miscellaneous Site Services support to ETFO (i.e. plastic, radio maintenance, fuel for generators, locksmith services, and other incidental unplanned essential work activities).

Transfers

The specific objective of planned waste transfers is to receive, store and transfer radioactive liquid waste from Hanford facilities into underground storage tanks via waste transfer systems and railcar/tanker truck unloading facilities. Performing jumper changes, pressure tests, pump removals and construction of containment structures will be conducted as required to support transfers. HLW/LLW transfers from other Hanford facilities, in operation or cleanup phases, is to avoid noncompliance or operation interruptions at those facilities. Note: Waste transfers in general are supported by various organizations, however this CAP provides funding only for Operations, Health Physics, and Crane and Rigging.

- Conduct 45 internal waste transfers allowing sufficient tank space to accommodate contents of the largest pumpable liquid inventory of any SST in East area.
 - To develop, set-up, verify routes and complete a transfer
 - Perform jumper changes and pump removals as required in support of waste tank, rail car and tanker truck transfers.
 - Perform field walkdowns and provide approval.

Restore Cross-Site Transfer Capability

The overall object is to support the development of work plans/packages to restore the capability to perform cross-site waste transfers by March 31, 1995. This includes:

- Development of work plans, procedure development and review
- Pressure tests
- Pumping of leak detectors and related catch tanks

- Crane and rigging support
- Identify and support the CRBS/PM's of related instrumentation

Field Activities

Field activities provides ETFO support to corrective/preventative maintenance at East Tank Farm facilities and the restoration of degraded tank farm equipment which is necessary for the safe and compliant receipt, storage, and transfers of waste. This includes the winterization of tank farm equipment and facilities, troubleshooting, construction of containment structures, response to emergency work requests, material acquisition, and to support the reduction of backlog corrective maintenance packages. Operational Test Procedures (OTP's) support is included here for ETFO support to all major maintenance upgrades/projects. Support of the repair of failed FIC's, manual tapes, active CASS alarms deficiencies, and repair of exhausters, etc. is also included. The deliverable for this activity is covered by the corrective/preventative maintenance CAP's.

204-AR

Provide operations support for activities at the 204-AR facility. Maintain base operations, corrective and preventative maintenance, receive, unload, and ship waste.

Note: Waste transfers in general are supported by various organizations, however this CAP provides funding only for Operations, Health Physics, and Crane and Rigging.

- Support 13 external HLW/LLW waste transfers generated from other Hanford Site facilities.
 - To develop, set-up, and complete transfers.
 - Perform jumper changes and pump removals as required in support of waste tank, rail car and tanker truck transfers.
 - Obtain dose rates.

Technical Support

Develop operating strategies/plans, process improvements, monitoring process limits, ensuring technical accuracy, and process problem resolution. Provide review of OTP's to ensure adequate testing of all major maintenance upgrades/projects prior to placing the equipment/systems in service. Assure the completion of Phase III Interim Operational Safety Requirements (IOSR) implementation and provide technical and field support to meet this initiative. Over 150 procedures will be written and 30 functional tests conducted. Technical Support will assist in the resolution of emergency technical issues in East Tank Farm facilities. Support the activities associated with full compliance of the Rad Con manual, perform field assessment of work activities with respect to radiological work packages and Conduct of Operations assessments.

Conduct of Operations

Strict housekeeping and work standards, and establishment of a working environment where safety of personnel and equipment is the highest priority will be maintained. Routine inspections of all work areas, ensure the safe and secure operation of the facilities and their systems in accordance with the established Interim Safety Basis and the Conduct of Operations philosophy. Personnel exposure to all hazards will be As Low As Reasonable Achievable (ALARA).

Health Physics

Health Physics supports all field activities for zone team activities such as PM's, CBRS's, vent and balance activities, and third party inspections. Provide HP support for all repairs modifications and upgrades of facility equipment in accordance with the TWRS integrated work schedule including work package and RWP preparations and containment requirement analysis. Provide HP support for transfers, emergency pumping, field crew support, general housekeeping, decontamination and stabilization, and ACES roving HPT support. HP technical support personnel provide

professional/technical support through review of work plans, supporting documents, procedures, SAR's, and engineering design documents. Technical Support also writes procedures, desk instructions, and technical documents.

Herbicide Control and Custodial Services

- This CAP includes spraying and regulatory guidance for herbicide control of the 200 East and West Tank Farms. Included herein are material procurement, maintenance of spray schedules, and all other resources required to complete identified spraying.
- Provide janitorial and floor service for 272-AW and 242-A in 200 East Area. Surrounding mobile office custodial support is covered by the Landlord.

Equipment Removal

Remove old portable exhausters from A-Farm and portable generators from BX-BY farms.

Industrial Health and Safety Support

The East Area Industrial Health and Safety organization will provide Industrial Safety, Industrial Hygiene, and Fire Protection Field Support to East Area Tank Farms. They will provide review and approval of approximately 180 work control documents and 600 plant documents, and issue quarterly summary reports. Monitoring of Operations work activities (approximately 18 jobs per week based on FY 94 experience) will be conducted and quarterly summary reports issued. These activities shall emphasize electrical safety-related work practices, confined space entry, chemical hazard communication program compliance, lockout/tagout of equipment and machinery, hoisting and rigging safety, selection and use of appropriate personal protective equipment, worker protection from heat stress, construction related safety and health issues, ergonomics, safety and health training, and hazard waste operations and emergency response operations. Compliance with all applicable DOE Orders, Occupational Safety and Health Administration (OSHA) 29 CFR 1910 and 1926 safety and health standards and regulations will be assured.

Waste types generated: (List NA if none)

- Off gas: Yes
- Effluents: Yes
- Solid waste: Yes

Work/Resources Specifically not Funded Under the Cost Account

- Implementation of emergency preparedness program to drill operating personnel.
- CO2 mobile decontamination unit funding (CENTRC).
- Support to construction of major maintenance upgrades and projects.
- Sampling and laboratory analysis services.
- Support from Engineering, Maintenance and Planning.
- Programs to support ALARA.
- Evaluation of potential Unreviewed Safety Questions (USQ's).
- Development of Safety Analysis Reports (SAR's).
- 200 East Area Pesticide Control.
- Waste Tank Safety Programs equipment installation support.
- Surface Contamination Area Reduction.
- Trending and review of operating data.
- Grout Operations.

How the Work Will be Performed

All work activities shall be performed in a safe and efficient and cost effective manner. The fiscal year 1995 productivity challenge will be met for this CAP by developing tools which will reduce the time required to perform general tasks.

Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators for strategic parameters maintained and given visibility appropriate to the mission of the facilities.

Minimize the total number and length of time equipment operating parameters are out of normal limits. Minimize the unavailability of safety systems. Minimize personnel errors through the effective and aggressive use of the 5th shift training program.

Work requests from other programs, will not be performed unless funding from those programs is provided.

Why the Work is to be Performed

This work is required to provide our customers with the safe, secure, and environmentally sound treatment and storage of radioactive hazardous waste in East Area Tank Farms and ensure compliance with all applicable federal, state, and local environmental regulations.

Deliverables

Project Management

This task will provide overall management of the ETFO facilities, which includes management of the above activities - LOE.

Administration

- Self-Assessment/SRID's support - provide support to 18 teams.
- Ensure that all Off-Normal/Unusual Occurrence Reports (Notification, 10-day, Finals) thoroughly investigated and generated in East Tank Farms are submitted in accordance with established procedural time constraints.
- Manage Facility Operations and Routine Surveillance Cost Accounts. Provide monthly status to Program Office/DOE-RL.
- Issue/revise FY96 multi-year plan by August 30, 1995.
- Track and maintain ETFO personnel training in compliance with the Tank Farms Dangerous Waste Training Plan and WRAM access requirements.
- Secure funding and issue requisition for the procurement of CO2 mobile decontamination unit by March 31, 1995.

Site-Services

- LOE

Transfers

- Conduct 45 internal (DCRT's, catch tank, tank-to-tank) waste transfers allowing sufficient tank space to accommodate contents of largest pumpable liquid inventory of any single SST in East Area.
 - 20 catch tank transfers
 - 10 DCRT transfers
 - 15 misc. tank-to-tank

Restore Cross-Site Transfer Capability

- Support the development of work plans/packages to restore cross-site transfer capability.
- Conduct all jumper changes necessary to support the transfer deliverables.

Field Activities

Note: The corrective/preventative maintenance deliverable is covered in the maintenance CAP's.

- Manage 200 East field activities.
- Housekeeping, i.e., tumbleweed removal and waste clean-up, etc.
- Perform seasonal equipment and facility surveillances and preparations.
- Complete all FY95 scheduled Operational Test Procedures (OTP's).
- Coordinate access to 200 ETFO facilities for Waste Tank Safety Programs, Engineering, and Characterization activities.

204-AR

- Provide base operations, corrective and preventative maintenance, receive, unload and ship waste to the 204-AR facility.
- Support 13 external (222-S, 300 area, T-Plant, etc.) HLW/LLW wastes from other Hanford Site facilities in operation or cleanup phases to avoid noncompliance or operation interruptions at those facilities.

Technical support

- Complete Phase III Interim Operational Safety Requirements (IOSR) implementation.
- Provide quarterly Rad Con Manual field assessments.
- Provide quarterly Conduct of Operations assessments.

Conduct of Operations

- Conduct monthly inspections of ETFO facilities.

Health Physics

Note: All deliverables herein will be supported by Health Physics.

- ETFO to obtain full compliance with new DOE Radiological Control Manual in FY95.
- Health Physics shall be in full compliance with all Articles of the DOE Radiological Control Manual, Rev. O, by March 31, 1995.
- Health Physics shall complete all annual Radiological Control Manual compliance reviews by December 31, 1994.
- TWRHP shall provide support for all repairs, modifications and upgrades of facility equipment in accordance with TWRS Integrated Schedule.
- Provide support for transfers, field crew support, general housekeeping zone reductions, decontamination and stabilization, and ACES roving Health Physics support.
- Provide field support for zone team activities (PM's and CBRS items, vent and balance activities, third party inspections).

Herbicide Control and Custodial Services

- Complete herbicide spraying per the FY95 herbicide spray schedule.
- Issue FY96 herbicide schedule by September 30, 1995.
- Custodial Services - LOE.

Equipment Removal

- Equipment removal from A-Farm and B-Farm complex.

Industrial Health and Safety

- Provide Industrial Safety, Industrial Hygiene, and Fire Protection Field Support to East Area Tank Farms.

WHC-SP-1101

- Provide review and approval of approximately 180 work control documents and 600 plant documents, and issue quarterly summary report.
- Perform required Industrial Hygiene monitoring for Operations work activities (approximately 18 jobs) and issue quarterly summary report.

C. MANDATORY REQUIREMENTS OF PERFORMANCE OF WORK

- Establish and achieve a schedule to maintain regulatory and DOE Order compliance in Tank Farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
- Implementation and adherence to the new Interim Operational Safety Requirement parameters.
- Workers should not be exposed to unsafe working conditions. Unsafe conditions will be resolved promptly to avoid delays to projects or program work activities that involve access to tank farm facilities.
- No Hanford Site facility will suffer noncompliance with storage regulations, nor cleanup program delays, due to the inability of tank farms to receive liquid waste.

D. MANDATORY SCHEDULE OF CONSTRAINTS

The mandatory schedule constraints are:

- Sample and laboratory results for external Hanford facilities in preparation for transfers to East Tank Farms.
- Availability of materials and work packages to perform the field work.
- Ability to obtain personnel within WHC or contract personnel to perform these activities.
- Completion of the major maintenance upgrades and projects, including completion of the Acceptance Test Procedure (ATP), prior to performing the acceptance OTP.
- Ability to support the activities associated with full compliance of the Rad Con Manual under environmental conditions that exist at East Tank Farms.

E. BUDGET FORECASTS

Not available at this time.

1. Maximum Cost of Each Deliverable

Project Management - LOE	\$ 1,876.6K
General Administration - LOE	702.50K
Site-Services	335.1K
Transfers Internal	507.9K
External	69.5K
Restore Cross-Site Transfer Capability	538.0K
Field Activities	2,368.3K
204-AR	887.7K
Technical Support	298.7K
Conduct of Operations	107.0K
Health Physics	2,356.9K
Herbicide Control	180.4K
Custodial Services	155.4K
Equipment Removal	138.7K
Industrial Hygiene	<u>1,202.3K</u>
Total WBS	\$ 11,725.0K

F. ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements. It is the base operations of managing tank waste.
	To This WBS From	
1	Other Liquid Generating Hanford Facilities	Liquid generating facilities such as PUREX, UO3, B Plant, S Plant, T Plant, PFP, etc. require tank farms for waste discharge when performing cell & basin cleanout, plant processing, decontamination/deactivation, and other ongoing terminal cleanout operations.
2	1.1.1.2.02 Waste Tank Safety	Mitigating and resolving tank safety issues to achieve a final safe operating condition envelop.
3	1.1.1.2.04 Characterization	Characterization of all double and single-shell tanks to achieving a final safe operations level.
4	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters.

Technologies to be assessed: N/A

Options to be considered:

- Best Available Technology (BAT) improvements
- Additional double-shell tanks base DST space evaluations

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Department of Energy Established:

- Standards/Requirements Identification Documents (S/RIDs) Tank Waste Remediation System Functions and Requirements
- Section 2, table F4.2.1.1, item V, paragraph B
- Section 3, table A4.2.1.1, item VIII, paragraph C
- WAC 173-303, "Dangerous Waste Requirements"

E. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	P. Hinojosa <i>N/A</i>	
Cost Account Manager	R. Ni	
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/20/94
Activity Manager	P. Hinojosa <i>[Signature]</i>	9/19/94
Cost Account Manager	R. Ni <i>[Signature]</i>	9/19/94
Project Control Analyst	M. A. DeWitt <i>M.A. DeWitt</i>	9/20/94

FDS Number

1N1F63

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance 1.1.1.01.03 Tank Farm 200 East Storage Facility/M&O Contractor	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.03.04/VI	5. WBS ELEMENT TITLE Tank Farm East Routine Surveillance	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS/TDD BUDGET AND REPORTING NUMBER 1100-0-NF	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$7,400	\$7,622	\$7,625
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$7,400	\$7,622	\$7,625

1.1.1.2.01.03.04

A2-199

B. TECHNICAL BASIS

GOALS AND OBJECTIVES:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Goal is to obtain, evaluate and report surveillance data from waste tank instruments within 200 East Tank Farms (Double/Single-shell tank farms). Objectives includes facility data acquisition/analysis, Liquid Observation Well (LOW) / drywell van operation, SST photo/video mission, and Health Physics surveys/checks to 241-A, AX, AN, AY, AZ, BX, BY, B, C-Complex, ~~purgewater facilities and ponds-cribs-and-ditches~~. Supporting organizations include Facility Operations, and Health Physics.

STATEMENT OF WORK:

Work to be performed:

The overall objective is to provide technical and field related surveillance activities within the limits of established specifications, standards, budgets and procedural guidelines, and to ensure compliance to policies and procedures or as directed by DOE-RL. Additionally, adequate staffing needs are identified and implemented to supply our customer and stakeholders with the safe, secure, and environmentally sound treatment and storage of hazardous waste at East Tank Farms and to support the completion of scheduled milestones and end-item deliverables. Following are the specific goals and objectives identified within this Statement of Work.

Routine Surveillance

The routine surveillance activities outlined in this Statement of Work include Shift Managers, Operators, Power Operators, Operations Engineers, and Operations Clerical support on a 24 hour basis. The Shift Manager is responsible for command and control of the facility during the shift. Shift Operations must maintain the facility within the safety envelope defined by the Operational Specification Documents and Operational Safety Requirements.

Operations Engineers provide work package review, lock and tag walk-down, Procedure Change Authorization (PCA) incorporation and review, etc. in support of Shift Operations.

All data from instrumentation and equipment from Single-Shell/Double-Shell tanks, leak detection pits, catch tanks, ventilation systems, etc. is taken per specified frequencies and entered into the Computer Automated Surveillance System (CASS) as outlined in Operating Procedures and other governing criteria and are required to take action to mitigate abnormal or unsafe conditions as they arise.

A 5th Shift provides adequate time for training to assure Operations personnel are qualified through education, training, certification, and on-the-job experience to safely carry out their duties and meet all DOE and RCRA requirements. They are required to follow the principles and procedures of the Conduct of Operations philosophy.

Surveillance Data Analysis (Technical Support)

Field data is monitored and analyzed to ensure the facility is in a stable condition and in conformance with applicable requirements. This data ensure's operations within all safety parameters and is also used for Engineering Analysis. East Operations Technical Support provides engineering analysis of liquid levels, drywells, LOW's, temperatures, pressures and other DST/SST data within East Tank Farms to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (83) HLW tanks. Surveillance Discrepancy Reports are issued as necessary when anomalies occur.

East Tank Farm Operating Parameters

Field data that is monitored and analysed is used for Engineering analysis for unsafe or non-compliant conditions. As a result of these reviews, a weekly status on level monitoring devices is developed and distributed to Operations as well as a monthly Alert List which defines areas of concern with leak detection monitoring equipment.

Tank Evaporation Analysis

The surveillance program reviews technical data associated with the east tank farm leak detection systems and temperature monitoring for compliance with Operational Safety Requirements, Operating Specifications Documents and waste tank leak detection monitoring programs. Two evaporation analyses are anticipated for FY95. In addition to these activities, a generic database and sets of tables/plots will be developed for use in future evaporation analysis.

Surveillance Operations (LOW/Drywell)

Surveillance Operations collects data from stored liquid wastes and provides surveillance support for all 200 East Area. They operate and conduct drywell monitoring, LOW monitoring, take lateral readings, swab riser readings as required from Engineering. Data obtained is transmitted to the Computer Automated Surveillance System (CASS).

In-tank Photography/Pit Inspections

NINE

~~Eleven~~ in-tank photography missions are scheduled for FY 1995. The photos provide a means for analysis of tank integrity, in-tank equipment integrity and waste characterization. This Cost Account Plan considers setting a greenhouse, the actual photo and cleanup/teardown time allotments. Resources required for this include Managers, Nuclear Operator support, Crane and Rigging support, Respiratory Protection and BCSR photography.

This deliverable calls for 20 video camera shoots scheduled for FY95. The intent of these videos is to obtain pit inventory/inspection videos to provide analysis of pit integrity, equipment inventory and waste accumulation and for leak detection purposes. Video shoots require little support from crane and rigging but will utilize Westinghouse crafts, technical and Respiratory Protection resources.

Health Physics

Health Physics provides required radiological surveys at East Tank Farms on a routine schedule as required by applicable regulations. This includes radiation monitoring, personnel, radiological and work place surveys. They perform/monitor source checks, PCM1B source checks on a daily basis as well as PCM1B efficiency checks weekly.

Waste types generated: (List NA if none)

- Off gas: Yes
- Effluents: Yes
- Solid waste: Yes

WHC-SP-1101

Work/Resources Specifically not Funded Under the Cost Account

- Support to construction of major maintenance upgrades and projects.
- Support from System Engineering, Maintenance and Planning.
- Evaporator, AW/AP Operations
- Shift Engineers
- Operation of modu-tanks.

How the Work Will be Performed

The fiscal year 1995 productivity challenge will be met for this CAP by developing tools which will reduce the time required to perform general tasks in a more outcome oriented manner.

Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators for strategic parameters will be maintained and given visibility appropriate to the mission of the facilities.

Minimize the total number and length of time equipment operating parameters are out of normal limits. Minimize the unavailability of safety systems. Minimize personnel errors through effective and aggressive use of 5th shift and training program. Timely completion of scheduled surveillance.

Why the Work is to be Performed

The work is required to provide our customers with the safe, secure, and environmentally sound treatment and storage of hazardous waste in East Area Tank Farms and ensure compliance with all applicable federal, state, and local environmental regulations.

Deliverables

Routine Surveillance

- Obtain daily and quarterly liquid level readings of DST/SST/catch tanks in accordance to OSD-T-151-00031.
- Prepare/provide engineering data for the analysis of liquid levels, drywells, LOW's, temperatures, pressures and other DST/SST data within specified frequencies to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (83) HLW tanks.
- Breather filter monitoring.
- Temperature monitoring.
- Investigations of tank anomalies.

Surveillance Data Analysis (Technical Support)

- Perform data analysis of LOW's drywells, liquid levels, temperature, tank pressures, and other DST/SST data per requirements of OSR, OSD and waste tank leak detection monitoring programs.
- Issue Surveillance Discrepancy Reports as necessary when anomalies occur per WHC-IP-0842

East Tank Farm Operating Parameters

- Issue Surveillance Alert List monthly per WHC-IP-0842
- Issue weekly liquid level instrumentation status.

Tank Evaporation Analysis

- Issuance of two tank evaporation analysis.
- Develop generic database and issue sensitivity plots for future tank evaporation analysis.

Surveillance Operations (LOW/Drywells)

- Obtain drywells, LOW's, temperatures, pressures and other DST/SST data within specified frequencies to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (83) HLW tanks.
- Swab riser readings as required from Engineering.

In-Tank Photography/Pit Inspections

- Complete ⁹ in-tank photography missions.
- Complete 20 pit inventory and/or inspection videos.

Health Physics

- Provide Operations/Health Physics support to obtain all required DST/SST data within specified frequencies.
- Health Physics will perform required radiological surveys according to established frequencies as stated in current task descriptions, maintaining a 95% completion rate for scheduled radiological surveys.
- Health Physics will issue Monthly Radiological Status Report.
- Health Physics will maintain and update Tank Farm status maps.

C. MANDATORY REQUIREMENTS OF PERFORMANCE OF WORK

- Establish and maintain regulatory and DOE Order compliance in tank farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
- Implementation and adherence to the new Interim Operational Safety Requirement parameters.
- A leak in any underground waste tank in Tank Farm East Storage Facilities shall be promptly identified.
- Workers should not be exposed to unsafe working conditions. Unsafe conditions will be resolved promptly to avoid delays to projects or program work activities that involve access to tank farm facilities.
- The ability to photograph the interior of any SST within 7 working days of the need to do so.
- Ensure tank data is taken and does not exceed periodicity requirements.

D. MANDATORY SCHEDULE OF CONSTRAINTS

The mandatory schedule constraints are:

- Availability of materials and work packages to perform the work.
- Ability to obtain personnel within WHC or contract personnel to perform these activities.
- Ability to support the activities associated with full compliance of the Rad Con Manual under environmental conditions that exist at East Tank Farms.
- Due to adverse weather conditions and personnel safety, the possibility exists for exceeding certain tank data periodicity requirements.
- Engineering preparation and approval to obtain in-tank photos within 7 days.

E. BUDGET FORECASTS

Not available at this time.

1. Maximum Cost of Each Deliverable

Routine Surveillance	\$ 4,025.0K
Surveillance Data Analysis (Tech Support)	255.9K
East Tank Farm Operating Parameters	254.2K
Tank Evaporation Analysis	52.0K
Surveillance Operations (LOW/Drywells)	302.0K
In-Tank Photography/Pit Inspections	692.0K
Health Physics	<u>1,818.9K</u>
Total WBS	\$ 7,400.0K

F. ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements. It is the base operations of managing tank waste.
	To This WBS From	
1	Other Liquid Generating Hanford Facilities	Liquid generating facilities such as PUREX, UO3, B Plant, S Plant, T Plant, PFP, etc. require tank farms for waste discharge when performing cell & basin cleanout, plant processing, decontamination/deactivation, and other ongoing terminal cleanout operations.
2	1.1.1.2.02 Waste Tank Safety	Mitigating and resolving tank safety issues to achieve a final safe operating condition envelop.
3	1.1.1.2.04 Characterization	Characterization of all double and single-shell tanks to achieving a final safe operations level.
4	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters.

Technologies to be assessed: N/AOptions to be considered:

- Best Available Technology (BAT) improvements
- Additional double-shell tanks base DST space evaluations

G. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Department of Energy Established:

- Standards/Requirements Identification Documents (S/RIDs)

Tank Waste Remediation System Functions and Requirements

- Section 2, table F4.2.1.1, item V, paragraph B
- Section 3, table A4.2.1.1, item VIII, paragraph C
- WAC 173-303, "Dangerous Waste Requirements"

H. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	P. Hinojosa <i>N/A</i>	
Cost Account Manager	R. Ni	
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>D.M. Lucoff</i>	9/20/94
Activity Manager	P. Hinojosa <i>P. Hinojosa</i>	9/19/94
Cost Account Manager	R. Ni <i>R. Ni</i>	9/19/94
Project Control Analyst	M. A. DeWitt <i>M.A. DeWitt</i>	9/20/94

FDS Number

1N1F64

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.1 Tank Farm Operations and Maintenance 1.1.1.2.1.03 Tank Farm 200 East Storage Facility/M&O Contractor	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.03.06/VI	5. WBS ELEMENT TITLE East Systems Engineering	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NF	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$2,930	\$3,945	\$3,904
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$2,930	\$3,945	\$3,904

1.1.1.2.01.03.06

12-207

B. TECHNICAL BASES

PURPOSE:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The work to be performed under this cost account is the maintenance and development of the technical basis for the receipt, storage and transfer operations of the East Tank Farm facilities. These facilities include tank farms 241-A, 241-AN, 241-AX, 241-AY, 241-AZ, 241-B, 241-BX, 241-BY, 241-C, and facilities 204-AR, 244-A, 244-AR, 244-BX, 244-CR, and associated transfer lines, diversion boxes, catch tanks and valve pits. The deliverables associated with this cost account are consistent with achieving the tank farm mission of technical and environmental excellence.

GOALS & OBJECTIVES:

East Systems Engineering is to provide an engineering authority and focal point for assuring that performance of components, systems, and structures in the East Tank Farms are adequate to safely receive, transfer and store high level radioactive waste. It is also the goal to assure proactive monitoring of plant performance and technical direction regarding changes in design and operations. The necessary technical resources will be furnished to respond to emergent environmental and safety issues relating to facility design and operations.

The goal is to supply the continuous reactive capability to promptly address emergent technical issues that threaten reliable and safe operation of components, systems, and structures. These structures are designed to safely receive, transfer and store high level radioactive waste.

In addition, the continual proactive oversight, evaluation and analysis of conditions and performance of waste tank equipment, systems, and structures will be provided to identify candidate areas of improvement. Engineering studies identifying alternative solutions and designs improvements for the operation of the tank farms will be pursued to reduce waste generation and strive toward environmental excellence.

STATEMENT OF WORK

Required activities:

Reactive Capability: East Systems Engineering is charged with maintaining the ability to promptly respond to emerging technical issues involving East Tank Farms systems and facilities. East Tank Farm Systems Engineering will have a qualified technical staff with tank farm experience and with the ability to supplement resources with additional resources.

Proactive Oversight: East Systems Engineering will provide the oversight, evaluation, and analysis capability to be able to proactively address pending changes to the East Tank Farm facilities, and operations.

Resources: Engineers will complete training to obtain knowledge of facility specific technical and administrative requirements; performance; and governing codes, standards, and regulations.

Scope specifically not funded under this cost account:

- Support to construction projects
- Sampling and laboratory analysis services
- Support of integrity assessment issues
- SRIDS support
- Upgrades program support
- Interim Operational Safety Requirements Implementation

WHC-SP-1101

The preparation and closure of Justifications for Continued Operations (JCO)
Surveillance Engineering activities
Activities within the scope of this cost account, not within the available funds (see below)
Shift Engineering
Technical support to the installation of video camera equipment.

How Work Will Be Performed:

Technical Focal Point: Primary systems engineering staff responsibilities include the design and support of facility modifications and maintenance, technical input to operating and transfer procedures, chemical compatibility assessments for transfers, OSR/OSD assessment reviews, specifications for preventative maintenance and calibration documentation, preparation of system design documentation, issuance of process memos providing technical input to the operation of the tank farms, preparation of unreviewed safety screenings and evaluations, and field support to the maintenance zones.

East Systems Engineering will provide Cognizant Engineers/Leads for assigned facilities and/or activities. These engineers will be assigned responsibility for individual components, systems, structures and activities. Their accountability will be for the adequacy of the technical performance of the design and associated operational procedures.

The East Systems Engineers will perform routine inspections of the tank farm facilities and operations. This will allow them to maintain current awareness of conditions and performance of the facilities and assure their ability to consider impacts of all field conditions on engineering decisions and technical direction originated by them. The engineers will originate process memo instructions to the operations staff, perform chemical compatibility assessments for waste transfers, prepare USQ screening and evaluations, and revise OSDs.

East Systems Engineering will function as the technical experts whose concurrence is required on all technical decisions and documents that potentially affect the function of the East Tank Farm facilities.

Supplemental specialized analytical capability will be obtained through subcontract experts of some planned engineering tasks and/or emergent issues.

East Systems Engineering will provide technical reviews of drawings, procedures, and other operations maintenance documents in support of program deliverables under the associated WBS Cost Account Plans.

Resources from support organizations have been identified and financial plans coordinated such that total costs for deliverables under this CAP are identified in this CAP.

Options To Be Considered:

Loop Calibration - The method of single element calibration should be abandoned and the loop calibration should be adopted. This dictionary does not address this as one of the deliverables. Should this option be considered, it will have an impact on the budget and schedules as well as Maintenance. This method of calibration will require modification of existing calibration procedures, CBRS cards, and the generation of new procedures.

Status of Design Documentation: N/A

Major End-Item Deliverables (Related to Milestones and Interfaces Appropriate to this Level of the WBS):

Manage East Systems Engineering Efforts and this Cost Account (290K)

This activity includes funding for the management and administration of the East Systems Engineering staff of approximately 20 and this cost account. Also included are the fixed costs for supplies, computers, etc.

WHC-SP-1101

Deliverables: Provide monthly status to RL lead for this cost account
Development of FY '96 Budget

Complete Required Training/Certification of Engineers (300K)

This figure represents the time spent by staff attending classes identified in the Tank Farm Dangerous Waste Training Plan as well as certification as Phase II and Phase III Engineers. It does not include funding for training development.

Corrective Maintenance (1,200K)

Provide engineering documentation for 30 work packages per quarter. This includes the cost of preparing the engineering documentation, USQ screenings and evaluations, drafting support for incorporation into existing drawings and the maintenance and update of the Certified Vendor Information files to reflect the modifications.

Deliverables: Engineering Documentation to support 30 Corrective Maintenance packages per quarter.

Disposition of 50 NCRs (64K)

The disposition of 50 Non Conformance reports (NCRs) currently on backlog for East Systems Engineering will be performed.

Deliverables: Engineering disposition of 50 Non Conformance Reports

Development/review of Plant Operating Documents (214K)

Development, revision, review and approval of 60 operating procedures supporting east tank farm systems. These reviews will be in accordance with The Tank Farm Administrative Manual, WHC-IP-0842. Modifications to these operating procedures will be accompanied by the appropriate USQ screenings and/or evaluations.

Deliverables: Procedure review forms and appropriate change documentation identified per WHC-IP-0842, for 60 operating documents.

Support Routine Transfers (110K)

Provide technical support for 45 internal tank farm transfers and 13 transfers from generators. Perform compatibility assessments per the tank farm compatibility criteria. Provide technical input to the development of the transfer procedures.

Deliverables: 45 internal Tank farm transfers; The receipt of 13 waste transfers from non-tank farm facilities.

Preparation and verification of instrument documents (160K)

The System Cognizant Engineer will maintain set points on the instrument system CBRS cards and resolve inconsistencies between CBRS cards and the as found conditions/documentation associated with the system. In addition, the Cognizant Engineer will review CBRS cards to assure that they meet the requirements of the safety bounding documents (OSR, OSD, etc) and will generate CBRS cards for those that are missing or severely out of date. For newly installed equipment, the funding for generation of the CBRS cards is expected to come from the appropriate organization. This activity responds to questions which are raised during field operation, but does not provide an overall review of all OSR/OSD instruments.

Collocate East System Engineers (31K)

This item provides funding to move the East Systems Engineering organization from their current offices to an office location near the operations organization. This move has been identified as a productivity improvement.

WHC-SP-1101

Deliverable: Centrally located East Systems Engineering organization near East Tank Farms Operations.

Waste Volume Projection (260K)

This activity prepares the Operational Waste Volume Projection, required per TPA Milestone M-46-00B, for fiscal year 1995. Also included in this item is the preparation of 6 special waste volume projections requested by various organizations pursuing the systems engineering approach to out year planning activities.

Deliverable: Two Operational Waste Volume Projections and 6 special projections.

Complete the Review and Revision of OSR/OSD CBRS data input (78K)

This activity completes an activity initiated in FY94 to review all OSR/OSD calibration and functional test data sheets to ensure technical accuracy.

Deliverable: CBRS input forms reflecting the necessary modifications to the system.

The following items fall within the scope of this WBS dictionary, in providing the technical basis for east tank farms, but do not fall within the existing funding provided in this account.

Shift Engineering Support (225K)

This item provides East System Engineering's portion of the funding for the Shift Engineering support.

Respond to technical Requests (215K)

This accounts for the Cognizant Engineers' time devoted to routine technical inquiries regarding their applicable system or facility.

Photo Engineering support (110K)

This account provides funding for the development of investigative technologies such as in-tank videos.

Waste Volume projections Upgrade (300K)

This activity completes software enhancements to the waste volume projections system, to allow the ability to generate waste volume projections in a more timely fashion. Included in this item is the procurement of software development, hardware purchases and

Review and Validate Equipment Status Tracking (25K)

A computer data base was generated in 1994 for the operations management to status equipment. This activity reviews this computer data base and validate the information currently in it and identifies which instruments are OSR and OSD related.

Deliverable: Internal memo to Operations management identifying deficiencies and input to the system.

Review and Modify the Spare Parts inventory for East Tank Farm Systems (265K)

This activity reviews OSR/OSD systems and components and provides input to the spare parts program to ensure that equipment needed for compliance with these requirements are available. This activity will reduce the time in which critical systems are out of service.

Deliverable: Inventory Adjustment forms will be filled out, updating the information in the spare parts program for OSR/OSD equipment and instruments.

WHC-SP-1101

244-AR Closure Plan (145K)

This item prepares a plan outlining the activities required for placing the 244-AR vault in a condition in which it can be turned over to D&D.

Deliverable: A 244-AR closure plan

244-CR Closure Plan (145K)

This activity prepares a plan outlining the activities required for placing the 244-CR vault in a condition in which it can be turned over to D&D.

Deliverable: A 244-CR closure plan

Resolution of CAR 92-1 (450K)

This item provides the corrective actions in response to Corrective Action Request (CAR) 92-001. This funding provides for the update of the response plan, the technical input to the development of tank farm specific ventilation system testing procedures, and an evaluation of the instrumentation used for testing.

Deliverables: Activities performed in accordance with WHC-SD-WM-WP-147.

Review of CBRS Data for non-OSR/OSD instruments (320K)

A review will be performed of the non-OSR/OSD instrumentation. The technical information will be verified and input forms will be submitted to correct deficiencies identified during the review.

Deliverables: Input forms will be submitted to correct deficiencies identified.

System Evaluation (180K)

This item develops system performance criteria and provides funding for the assessment of 6 east Tank Farm systems. Eight monthly system performance assessments will be performed and one annual system performance will be performed.

Deliverable: Eight monthly assessments of six east tank farm systems, and one annual assessment report on six systems.

Develop 4 SDDs first half FY '95 (260K)

This activity develops four system design descriptions identifying design requirements and operating parameters.

Deliverable: Four system design requirements issued

Develop 4 SDDs second half FY '95 (280K)

This activity develops four system design descriptions identifying design requirements and operating parameters.

Deliverable: Four system design descriptions issued

Develop Double Shell Tank leak detection technical basis (160K)

This item provides funding to review the existing double shell tank leak detection criteria and validate the criteria or document changes to the program.

Deliverable: An issued document providing the basis for the Double shell tank leak detection program.

WHC-SP-1101

Issuance of annual corrosion program review (16K)

This item provides East Systems Engineering's portion of the funding for the tank farm corrosion program and supports the preparation of the annual assessment.

Deliverable: Annual corrosion assessment review

Psychometric testing frequency review (35K)

This activity evaluates the frequency for performing psychometric testing of exhaust systems.

Deliverable: An engineering document identifying the basis for and frequency of psychometric testing.

Pump Support (200K)

This item provides funding to complete design modifications to the pump strong back to allow pump testing. Also included is the revision to the Pump report document which identifies future pump needs and characteristics.

Deliverable: Design modifications to Pump strongback and a revision to the pump report document.

Work to be Performed:

The management of this cost account plan will include monthly updates to the RL lead for this cost account. This will require development of performance measures and continuous tracking. In addition, this activity provides for the development of the FY '96 budget. This activity also provides the supplies necessary to support the engineering staff in performing their duties.

The Engineering staff will be trained in accordance with the Tank Farms Dangerous Waste Training Plan (WHC-SD-WM-TR-026). Additional training on tank farm facilities, associated systems, and engineering practices will also be performed. This activity provides for travel to technical seminars and classes.

The objective of the corrective maintenance deliverable is to provide the technical support for corrective maintenance of the east tank farm facilities. This includes the preparation of documentation required for facility modification and repair and the incorporation of these changes into facility documentation to maintain configuration control. The goal for this activity is to respond to emergent work requests and reduce the overall backlog of corrective maintenance packages awaiting engineering support. This task includes the maintenance of the Essential Drawing List and the walkdown of selected facility essential drawings for field configuration verification. This activity is essential for repairing the essential systems and incorporating changes in to the current documentation. Drafting support to enhance new designs and funding of the drawing stations and certified vendor information is a necessary part of the configuration management of the tank farm systems and are included in this item to support the corrective maintenance program.

The disposition of existing Non Conformance Reports (NCRs) and those generated next year will be supported by the System Engineers. Currently, approximately 40 NCRs are open awaiting disposition in the East Tank Farms. This backlog is a hinderance to the configuration management of the tank farm facilities. Funding for 50 NCR dispositions will allow the disposition of those currently unresolved and an additional 10 that may be generated next year.

The objective of the procedure development and revision deliverable is to perform a technical review of east tank farm operating procedures. This review will be performed in accordance with the Waste Tank Project Administration Manual (WHC-IP-0842, Section 7.6). Additional periodic changes will be made as operating conditions change and requirements are modified. These reviews and revisions will provide procedures that are technically accurate and up to date with respect to current operating practices and field Procedure Change Authorization sheets will be initiated and released and procedure review forms identified in WHC-IP-0842 will be completed.

WHC-SP-1101

The technical information required for the receipt and transfer of waste will be provided. Compatibility assessments required prior to the receipt and transfer of waste will be performed in compliance with the waste tank compatibility program. Technical information for the development or modification of transfer procedures will be provided. There are forty-five internal tank farm transfers planned and 13 waste receipts from generators expected during fiscal year 1995.

Cognizant engineering support to the preventative maintenance program provides a technical review of the preventative maintenance work packages for watchlist tank controls as required in the watch list tank program for tank intrusive activities. This task also evaluates and approves changes to the calibration and preventative maintenance procedures. Changes to set points and frequencies will be reviewed to verify compliance with the operational requirements. This activity responds to questions which are raised during field operation, but does not provide an overall review of all OSR/OSD instruments.

As the engineering authority for the east tank farms, numerous technical inquiries are made as to the facility design and operation. A task has been identified to account for the time spent in responding to these technical inquiries. This item also accounts for the System Engineering time spent in responding to occurrences and abnormal events, developing recovery plans.

The collocation of the East Systems Engineering near the East Operations organizations has been identified as an opportunity for increased communication and effectiveness of both organizations. The funding in this activity provides for a relocation of engineering personnel to office space that will be available near the operations organization.

The Waste Volume Projection Activity evaluates and documents the waste volume projections based on the assumptions developed by the Operating Facilities and Tank Farms. Two Operational Waste Volume Projections will be developed; one of which will be used to satisfy TPA Milestone M-46-00B. Also, within the scope of this activity is the preparation of 6 special waste volume projections. These projections are used in the evaluation of proposed future operations to apply a Systems Engineering approach to the integration of activities.

An activity was initiated in fiscal year 1994, to revise the calibration recall system with respect to OSR and OSD instruments. The revision was to verify and modify the system to ensure that OSR and OSD instruments were identified appropriately; and that set points and test frequencies were consistent with the requirements. The activity which was initiated in fiscal year 1994, will be completed in fiscal year 1995. Completion will be documented in an internal memo from East systems Engineering to East Tank Farm Operations outlining the findings and documenting the changes submitted to the CBRS system.

Additional items requested, are beyond the funding currently available in this cost account. Additional funding will be required to support these additional activities.

How work is to be performed:

The fiscal year 1995 productivity challenge will be met for this cost account by developing tools which will reduce the time required to perform general tasks. With the development of a strong technical basis, the time required to modify the facility and operating procedures will be significantly reduced. Performing reviews of the CBRS system will significantly reduce the continuous support needed to maintain the system. The collocation of the engineering staff near to operations will enhance the effectiveness of the organization.

Why the work is to be performed:

The work to be performed under this cost account is required to monitor and operate the east tank farms within compliance with the Operational Safety Requirements for the facilities. Transfers and waste segregation is performed in accordance with the DOE Order 5820.2A and the Tank Farm Waste Compatibility Program. Design and modifications are consistent with DOE Order 6430.1A.

Mandatory schedule constraints:

The mandatory schedule constraints are the availability of 30 work packages per quarter for engineering resolution and the ability to obtain personnel within WHC or contract personnel to perform these activities.

Roles and responsibilities

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	P. Hinojosa <i>P. Hinojosa</i>	9/19/94
Cost Account Manager	R. A. Dodd <i>R. A. Dodd</i>	9/19/94
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	P. Hinojosa <i>P. Hinojosa</i>	9/19/94
Cost Account Manager	R. A. Dodd <i>R. A. Dodd</i>	9/19/94
Project Control Analyst	M. A. DeWitt <i>J. Thomas</i>	9/19/94

FDS Number

1N1F66

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor	2. DATE PREPARED September 20, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.04/V	5. WBS ELEMENT TITLE Tank Farm 200 West Storage Facilities	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NG	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) 4.2.1.1 Store Waste 4.2.1.4 Transfer Waste 4.2.1.5 Concentrate Waste 4.2.3.1 Immobilize & Dispose LLW 4.2.3.2 Disposition Gaseous Effluents 4.2.3.3 Disposition Liquid Effluents 4.2.3.4 Disposition Solid Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120071 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$26,630	\$28,415	\$30,020				
CENRTC	400						
GPP							
LINE ITEM							
TOTAL	\$27,030	\$28,415	\$30,020				

1.1.1.2.01.04

A2-217

B. TECHNICAL BASES

Goals & objectives:

Coordinate, monitor and control Facility Operations support to the material condition, receipt, storage, and transfer operations of 200 Tank Farm West Storage Facilities (TFWSF) in support of Westinghouse Hanford Company (WHC) and DOE's environmental management goals at Hanford. Conduct all activities pertaining to operation of a permitted TSD facility within the boundary of current Interim Safety Basis (ISBs) and in a manner that ensures compliance with all applicable federal, state, and local environmental regulations to ensure a safe work environment for all employees and support groups.

The primary support functions to these goals include corrective and preventative maintenance, routine surveillance, facility operations, health physics support, industrial hygiene & safety support, and systems engineering and analysis support necessary for the safe and compliant underground waste storage.

The following program master schedule activities are supported by WBS 1.1.1.2.01.03:

S007205	Perform Interim Safe Facility Operations - West Tank Farms
S007220	Perform Interim Safe Routine Surveillance - West Tank Farms
S007235	Perform Interim Safe Operations - West Corrective Maintenance
S007250	Perform Interim Safe Operations - West Preventative Maintenance
S007260	Perform 200 West Plant/Systems Engineering
S007265	Perform 200 West Industrial Hygiene Monitoring & Analysis
S007267	Perform New 200 West Tank Farm Preparations

Major end-item deliverables

Tank Farm West Preventative Maintenance (1N1G71)

- Plan, schedule, and complete performance of all required PM work packages by September 30, 1995.

Tank Farm West Corrective Maintenance (1N1G72)

- Plan, schedule, and complete performance of CM work packages in accordance with West Operations priorities as shown in POD, POW, and Integrated Schedule.

Tank Farm West Facility Operations (1N1G73)

- Provide overall management of the WTFO facilities, which includes management of all WTFO activities.
- Operations interface to work package release and major maintenance work coordination.
- Perform Operational Readiness Reviews and review of emergent and/or field work.
- Review Operations and Maintenance procedures and engineering documentation.
- Identify work priorities and review and monitoring of scheduled activities and equipment compatibilities.
- Provide general administrative support to WTFO.
- Submit Off-Normal/Unusual Occurrence Reports (Notification, 10-day, Final) generated in West Tank Farms in accordance with established procedural time constraints.
- Provide Self-Assessment S/RID's support - provide support to 18 teams.
- Manage Facility Operations and Routine Surveillance Cost Accounts. Provide monthly status to Program Office/DOE-RL.
- Issue/revise FY96 multi-year plan by August 30, 1995.
- Track and maintain WTFO personnel training in compliance with the Tank Farms Dangerous

WHC-SP-1101

- Waste Training Plan and WRAM access requirements.
- Secure funding and issue requisition for procurement of a RADROVER radiation monitoring vehicle.
- Management, procurement and accountability of all property per DOE Order 2000.6.
- Provide emergency preparedness support to the coordination of emergency drills.
- Corrective Action Management - assure timely reporting resolution and completion of audits, surveillance, and non-conformance issues.
- Provide West Tank Farm Facility Building Administration (including materials and computer acquisition).
- Complete phase III Interim Operational Safety Requirement (IOSR) implementation.
- Write and approve 80 procedures for WTFO.
- Provide technical support for emergent issues affecting WTFO.
- Provide review of Operational Test Procedures to ensure adequate testing of all major maintenance upgrades/projects prior to placing the equipment/systems in service.
- Seek ways to reduce the use of protective clothing and equipment in the field.
- Support 5 external (PFP) HLW/LLW wastes from other Hanford Site facilities in operation or cleanup phases to avoid interruptions in operations caused by compliance waste storage time constraints.
- Sample and pump related catch tanks.
- Pressure test cross-site transfer line.
- Develop and approve procedures.
- Support CBRS/PM's of related instrumentation.
- Manage 200 West field activities.
- Housekeeping, i.e., tumbleweed removal and waste clean-up, etc.
- The deliverable for corrective/preventive maintenance is covered in the maintenance CAP's.
- Complete acceptance Operational Test Procedures (OTP's) for 12 major maintenance upgrades and projects.
- Perform seasonal equipment and facility surveillances and preparations.
- Coordinate and monitor preventative maintenance/corrective maintenance in 200 WTFO facilities
- Coordinate access to 200 WTFO facilities for Waste Tank Safety Programs, Engineering and Characterization activities
- Conduct monthly inspections of WTFO facilities.
- Package and prepare for shipment waste generated from field work and corrective maintenance items.
- Removal of equipment classified as waste
 - P-29 exhauster
 - Vacuum truck
 - SX-Farm water tank
- TWRHP shall complete all annual Radiological Control Manual compliance reviews, by December 31, 1994.
- TWRHP shall be in full compliance with all of the DOE Radiological Control Manual, Rev. O, by March 31, 1995.
- Support the Surface Contamination Area zone reduction program.
- Provide field support for zone team activities (PM's and CBRS items, vent and balance activities, third party inspections).
- TWRHP shall provide support for all repairs, modifications and upgrades of facility equipment in accordance with TWRS integrated work schedule.
- Provide support for transfers, field crew support, general housekeeping zone reductions, decontamination and stabilization, and ACES roving Health Physics support.
- Provide Industrial Safety, Industrial Hygiene, and Fire Protection Field support to WTFO.
- Provide review and approval of approximately 120 work control documents and 400 plant documents, and issue quarterly summary report.
- Perform required Industrial Hygiene monitoring for Operation's work activities.

WHC-SP-1101

- Submit corrective actions to operating procedures.
- Develop lesson plans and required reading items resulting from self-assessment findings.
- Provide documented on-shift training for identified problems.
- Incorporate lessons learned from other Hanford facilities into TWRS Plant procedures.
- Provide lessons learned to other Hanford facilities.
- Perform pesticide control services as requested by WTFO.

Tank Farm West Surveillance (1N1G74)

- Obtain daily and quarterly liquid level readings of DST/SST/catch tanks in accordance to OSD-T-151-00031.
- Monitor and acquire daily surveillance data on 200W ventilation systems in support of Waste Tank Storage tanks (in accordance with OSD-T-151-00007, OSD-T-151-00011, and OSD-T-151-00013).
- Obtain weekly breather filter data (in accordance with OSD-T-151-00013).
- Obtain DST/SST temperature data in accordance with TO-040-650.
- Perform investigations related to tank temperature/level/pressures/etc. anomalies and intrusions as requested.
- Obtain in-tank photographs from 5 SSTs.
- Complete 6 pit inventory and/or inspection videos.
- Obtain drywell, LOW other DST/SST data within specified frequencies to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (87) HLW tanks.
- Obtain swab riser readings as requested.
- Provide data analysis of LOW's, drywells, liquid levels, temperatures, tank pressures, and other DST/SST data per requirements of OSR, OSD, and waste tank leak detection monitoring programs.
- Issue Surveillance Discrepancy Reports as necessary when waste tank data anomalies occur per WHC-IP-0842.
- Issue Surveillance Alert List monthly per WHC-IP-0842.
- Issue weekly liquid level instrumentation status.
- Perform required radiological surveys according to established frequencies, as stated in current task descriptions, maintaining a 95 % completion rate for scheduled radiological surveys.
- Write/revise task descriptions as necessary.
- Provide Health Physics support to routine surveillance milestones identified by TWRS.
- Maintain and update Tank Farm status maps.
- Issue Monthly Radiological Status Reports.

Tank Farm West Systems Engineering (1N1G76)

- Manage West Systems Engineering Efforts
- Develop/Maintain Budget/Schedule
- Complete Required Training/Certification of Engineers
- Screen/Evaluate USQs
- Review/Revise OSR/OSDs
- Support Configuration Management
- Develop/Review/Revise ECNs
- Preparation and verification of instrument documentation.
- Provide Field Support for Routine/Non-Routine Maintenance
- Respond to Technical Requests
- Support Routine Transfers
- Develop West Systems Engineering Responsibility Bounding Document
- Respond to Assessments/Surveillances NCRs
- Status and Order Spare Parts
- Disposition Overdue NCRs

- Support Emergent Work
- Perform System Walkdowns
- Issue Process Tests
- Development/Review of Plant Operating Procedures
- Development/Review of Maintenance Procedures
- Reviewing Work Packages and statusing Operation's concerns
- Develop Suspect Parts Compliance Plan
- Support in Tank Photo Effort
- Development/Review of Process Memos
- Develop Engineering Study for Steam Elimination in 200W
- Develop Needed Designs for Steam Elimination
- Develop Engineering Study for Compressed Air Elimination in 200W
- Develop Needed Designs for Compressed Air Elimination

C. STATEMENT OF WORK

Required activities:

Tank Farm West Preventative Maintenance (1N1G71)

1. Work to be Performed:

Plan, schedule, and perform all required Preventative Maintenance (PM) work packages to ensure high levels of availability of systems, components and structures in the U, T, TX, TY, S, SX, and SY 200 West Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, and Component Based Recall System (CBRS) data base and procedures support.

Program Management:

This task will provide overall management of the 200 West Tank Farm Preventative Maintenance activities including PM overall planning, development, reporting, and assessment of PM performance.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of PM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Perform a systematic review of each PM identified using Reliability Centered Maintenance (RCM) principals to determine follow on activities (ie. increase PM rate, delete PM requirement, and other options). Plan, estimate, schedule, and status individual work packages. Group work packages to ensure the optimum efficiency and reduce the number of behind schedule PM's.

WHC-SP-1101

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field PM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform maintenance and calibration. Overtime will limited to the percent identified in the budget.

CBRS Support:

The CBRS Recall and Procedures groups will provide data base maintenance and recall notices.

Tank Farm West Corrective Maintenance (1N1G72)

1. Work to be Performed:

Plan, schedule, and perform all required Corrective Maintenance (CM) work packages to ensure high levels of availability of systems, components and structures in the U, T, TX, TY, S, SX, and SY 200 West Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, Material Supply, Central Craft Support, Central Shop Support, and Nondestructive Examination (NDE).

Program Management:

This task will provide overall management of the 200 West Tank Farm Corrective Maintenance activities including CM overall planning, development, reporting, and assessment of CM performance.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of CM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Plan, estimate, schedule, and status individual work packages.

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field CM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform repairs and restorations. Overtime will limited to the percent identified in the budget.

Material Supply:

This task will stock and control the 200 West Tool Crib, and order and stage materials identified on work package Bill Of Material (BOM).

Central Craft Support:

Provide supplemental craft support for work package execution.

Central Shop Support:

Provide fabrication and material support to work packages.

Nondestructive Examination:

Provide NDE service as required for work package execution.

Tank Farm West Facility Operations (1N1G73)

1. Work to be Performed:

Project Management

This task will provide overall management of the WTFO facilities, which includes management of the above activities. This includes providing Operation's interface to work package release and major maintenance work coordination. Operations will review Operations and Maintenance procedures and engineering documentation, perform Operational Readiness Reviews and review of emergent and/or field work. The identification of work priorities and review and monitoring of scheduled activities and equipment compatibilities will also be performed.

Administration

The administration area program provides general administrative support for WTFO. This includes staffing requirements, property management per DOE Order 2000.6, corrective action management, general procurement and building administration duties.

Occurrence reports are issued per DOE Order 5000.3B and are generated within the procedural time constraints. Events and conditions, once identified, will be thoroughly reported and documented. Expert evaluation teams, root cause and trending analysis, priority planning grid (PPG) evaluation and lessons learned are all an intricate part in the Occurrence Reporting process. This deliverable provides the administrative support for compliance to DOE Order 5000.3B.

WTFO personnel will be trained in accordance with the Tank Farms Dangerous Waste Training Plan and the Westinghouse Radiation Area Management (WRAM) access requirements. The administrative support will ensure WTFO personnel maintain the maximum readiness achievable.

WTFO will manage the two 1N1 Facility Operations Cost Account Plans (CAP's) and all other end functions/programs task packages in accordance with the Management Control System (MCS). Monthly status updates will be provided to the Program Office/DOE-RL lead. In addition, this activity provides for the development of the FY96 multi-year plan.

Technical Support

Develop operating strategies/plans, process improvements, trending and review of operating data, monitoring process limits, ensuring technical accuracy and process problem resolution. Seek ways to reduce the use of protective clothing and equipment in the field. The purpose of the IOSR deliverable assures the completion of Phase III Interim Operational Safety Requirements (IOSR) implementation. Technical and field support to meet this initiative will be provided. Technical support will assist in the resolution of emergent technical issues in West Tank Farms facilities. Technical support provides operational support for the Hydrogen Mitigation and Flammable Gas Safety Programs, including the oversight of new mitigation equipment installation, testing and operation. This also includes transferring the operation of the 101-SY mixer pump to WTFO from Test Engineering personnel. Over 80 procedures will be written and reviewed and 12 functional tests conducted.

Waste Transfers

The objective of the waste transfer deliverable is to receive, store and transfer radioactive liquid waste from Hanford facilities into underground storage tanks via waste transfer systems. Performing diversion box/pit entries, jumper changes and pressure testing transfer lines will be conducted as required to support transfers. HLW/LLW transfers from external Hanford facilities, in operation or clean up phases, is to avoid interruptions caused by compliance waste storage time constraints.

- Support 5 external HLW/LLW waste transfers generated from other Hanford Site facilities.
 - To develop, set-up, verify routes and complete transfer
 - Perform diversion box/pit entries and jumper changes as required
 - Recondition tank farm diversion box/pit covers

Restore Cross-Site Transfer Capability

The overall goal of this deliverable is to restore the capability to perform cross-site waste transfers by March 31, 1995. This includes:

- Sample and pump related catch tanks (E/W Vent Station, UX-302-A, 244-S, S-304)
- Pressure test cross-site transfer line
- Perform field walkdown verification and approve operating procedures and drawing changes
- Identify and support the CBRs/PM's of related instrumentation

Field Activities

Field activities provides WTFO technical and field support to the corrective/preventive maintenance of West Tank Farm facilities. Additionally, restore degraded tank farm equipment necessary for safe and compliant receipt, storage and transfer of waste. This includes performing seasonal equipment surveillances and preparations, e.g. winterization. Troubleshooting of equipment, response to emergency work requests and material acquisition also support this activity. Field activities provide project and upgrade acceptance OTP support for all West Tank Farms 1N1 major maintenance upgrades/projects. Support of repairs to failed tank monitoring equipment, active CASS alarm deficiencies, exhausters and other safety related equipment and systems is also included. The deliverable for this activity is housekeeping (inspections, tumbleweed removal, waste packaging/shipment, etc.) covered by the corrective/preventive maintenance CAP's.

Removal of Waste

The deliverable to remove decommissioned equipment classified as waste includes packaging, removal and shipment of aged equipment from tank farms to solid waste. The following equipment is identified for removal in FY 1995:

- P-29 exhauster
- Vacuum truck
- SX-Farm water tank

Health Physics

Tank Waste Remediation Health Physics (TWRHP) provides preventive maintenance, corrective maintenance and facility operations Health Physics support to WTFO. This includes field support for zone team activities such as PM's and CRBS items, vent and balance activities and third party inspections. TWRHP provides support for all repairs, modifications and upgrades of facility equipment in accordance with the Tank Waste System Remediation (TWSR) integrated work schedule. TWRHP will provide support for transfers, field crew support, general housekeeping zone reductions, decontamination and stabilization, and ACES roving Health Physics support. Additionally, Health Physics will support implementation and compliance with the new DOE Radiological Control Manual. Health Physics will also support the reduction of surface contamination areas in West Tank Farms. To enable compliance with the new DOE Radiological Manual, Health Physics will procure a "RADROVER" radiation monitoring vehicle.

Industrial Hygiene and Safety

TWSR Industrial Hygiene and Safety will provide Industrial Safety, Industrial Hygiene, and Fire Protection Field Support to WTFO. This also includes the review and approval of approximately 120 work control documents and 400 plant documents, issuance of quarterly summary reports, and the performance of required Industrial Hygiene monitoring for Operations work activities. These activities shall emphasize electrical safety-related work practices, confined space entry, chemical hazard communication program compliance, lockout/tagout of equipment and machinery, hoisting and rigging safety, selection and use of appropriate personal protective equipment, worker protection from heat stress, construction related safety and health issues, ergonomics, safety and health training, and hazard waste operations and emergency response operations. Compliance with all applicable DOE Orders, Occupational Safety and Health Administration (OSHA) 29 CFR 1910 and 1926 safety and health standards and regulations will be assured.

Conduct of Operations

Strict housekeeping and work standards, and establishment of a working environment where safety of personnel and equipment is the highest priority will be maintained. Routine inspections of all work areas, including lockout/tagout of equipment, machines, processes and operations, ensure the safe and secure operation of the facilities and their systems in accordance with the established Interim Safety Basis and the Conduct of Operations philosophy. Specific Conduct of Operations related work goals include implementation and compliance with the new DOE Radiological Control Manual. Surface contamination area reduction will be completed during the Fiscal Year with an aggressive clean-up effort.

WHC-SP-1101

Site Services Support

This CAP includes miscellaneous Site Services support to WTFO (i.e. plastic, radio maintenance, fuel, locksmith services, and other incidental unplanned essential work activities).

Pesticide Control

This CAP includes Pesticide Spraying and Animal Control services, which meet the requirements of 29 CFR 1910.141(a)(5), (i.e. spraying and control of rodents, wasps, snakes, spiders and other biologics) for the 200 West and East Tank Farms. Included herein are material procurement, maintenance of spray schedules and all other resources required to complete identified spray schedules and animal control.

Custodial Services

Provide janitorial and floor service for 272-WA and 242-S in West Area. Surrounding mobile office custodial support is covered by the Landlord.

Tank Farm West Routine Surveillance (1N1G74)

1. Work to be performed:

Routine Surveillance

The routine surveillance activities outlined in this Statement of Work include Shift Managers, Operators, Power Operators, Operations Engineers, and Operations Clerical support on a 24 hour basis. The Shift Manager is responsible for command and control of the facility during the shift. Shift Operations must maintain the facility within the safety envelope defined by the Operational Specification Documents and Operational Safety Requirements.

All data from instrumentation and equipment for Single-Shell/Double-Shell tanks, leak detection pits, catch tanks and ventilation systems are taken per specified frequencies as outlined in Operating Procedures and other governing criteria and are required to take action to mitigate abnormal or unsafe conditions as they arise. They conduct data acquisition, monitoring, and analysis to ensure the facility is in a stable condition and in conformance with requirements. This data ensures operations within all safety parameters and for Engineering analysis.

Operations provides data for engineering analysis of liquid levels, active ponds, cribs and ditches, temperatures, pressures and other DST/SST data within West Tank Farms to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (87) HLW tanks.

A 5th Shift is to provide adequate time for training to assure Operations personnel are qualified through education, training, certification, and on-the-job experience to safely carry out their duties and meet all DOE and RCRA requirements. They are required to follow the principles and procedures of the Conduct of Operations philosophy.

In-tank Photography/Pit Inspections

The objective, to obtain 5 in-tank photos, calls for West Tank Farm Operations Managers and Operator support, Crane and Rigging support, HEHF and BCSR photography. In tank photographs provide a means for analysis of tank integrity, in-tank equipment integrity and waste characterization. This Cost Account considers planning and scheduling, setting up a greenhouse, the actual photo shoot, and cleanup/teardown time allotment.

This deliverable calls for 6 video camera examinations scheduled for FY95. The intent of the these videos is to obtain pit inventory/inspection videos to provide analysis of pit integrity, equipment inventory and waste accumulation and leak detection purposes. Video shoots do not require support from crane and rigging but will utilize Westinghouse crafts, technical and HEHF resources.

Surveillance Operations (LOW/Drywell)

Surveillance Operations collects data from stored liquid wastes and provides surveillance and maintenance support for 200 West Area. They operate and conduct drywell monitoring, take swab riser readings and LOW readings. Additionally, SST lateral readings are performed and data is provided to the Computer Automated Surveillance System (CASS).

Surveillance Data Analysis (Technical Support)

The surveillance program reviews technical data associated with the West tank farm leak detection systems and temperature monitoring for compliance with Operational Safety Requirements, Operating Specifications Documents and waste tank leak detection monitoring programs. This also includes the issuance of Surveillance Discrepancy Reports as necessary when waste tank data anomalies occur per WHC-IP-0842.

West Tank Farm Operating Parameters

Field data is monitored and analyzed to ensure the facility is in a stable condition and in conformance with requirements. This data ensures operations within all safety parameters and is used for Engineering Analysis. West Operations Technical Support provides engineering analysis of liquid levels, drywells, LOW's, temperatures, pressures and other DST/SST data within West Tank Farms to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (87) HLW tanks. As a result of these reviews, a weekly status on level monitoring devices is developed and distributed to Operations as well as a monthly Alert List which defines areas of concern with leak detection monitoring is compiled and distributed to Operations.

Health Physics

Health Physics performs required radiological surveillances at West Tank Farm facilities on a routine schedule, as required by all applicable regulations. These surveillances include exposure rate surveys, contamination surveys, boundary surveys, functional and source testing of various radiation detection instrumentation, and HPT support for operator rounds.

Tank Farm West Systems Engineering (1N1G76)

1. Work to be performed:

Reactive Capability: West Systems Engineering is charged with maintaining the ability to promptly respond to emerging technical issues involving West Tank Farms systems or facilities. West Systems Engineering will be supplemented during the off shifts by Shift Engineering. The Shift Engineering staff work will include the preparation of process memos, procedure change authorizations, and engineering support to operations during the off shifts.

Proactive Oversight: West Systems Engineering will provide an oversight, evaluation, and analysis capability to be able to proactively address pending changes to the West Tank Farms systems, facilities, and operations.

WHC-SP-1101

Resources: Individual engineers will accomplish training to achieve knowledge of facility specific technical and administrative features; performance; and governing codes, standards, and regulations.

Acceptance criteria:

Tank Farm West Preventative Maintenance (1N1G71)

- All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.
- Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

Tank Farm West Corrective Maintenance (1N1G72)

- All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.
- Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

Tank Farm West Facility Operations (1N1G73)

- Establish and achieve a schedule to maintain regulatory and DOE Order compliance in Tank Farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
- Implementation and adherence to the new Interim Operational Safety Requirement parameters.
- Workers should not be exposed to unsafe working conditions. Unsafe conditions will be resolved promptly to avoid delays to projects or program work activities that involve access to tank farm facilities.
- No Hanford Site facility will suffer noncompliance with storage regulations, nor cleanup program delays, due to the inability of tank farms to receive liquid waste.
- All work activities shall be performed in a safe and efficient and cost effective manner. The fiscal year 1995 productivity challenge will be met for this CAP by developing tools which will reduce the time required to perform general tasks.
- Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators for strategic parameters maintained and given visibility appropriate to the mission of the facilities.
- Minimize the total number and length of time equipment operating parameters are out of normal limits. Minimize the unavailability of safety systems. Minimize personnel errors through the effective and aggressive use of the 5th shift training program.
- Work requests from other programs, will not be performed unless funding from those programs is provided.

Tank Farm West Surveillance (1N1G74)

- The fiscal year 1995 productivity challenge will be met for this CAP by developing tools which will reduce the time required to perform general tasks in a more outcome oriented manner.
- Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators

for strategic parameters will be maintained and given visibility appropriate to the mission of the facilities.

- Minimize the total number and length of time equipment operating parameters are out of normal limits. Minimize the unavailability of safety systems. Minimize personnel errors through effective and aggressive use of 5th shift and training program. Timely completion of scheduled surveillance.

Tank Farm West Systems Engineering (1N1G76)

- The fiscal year 1995 productivity challenge will be met for this cost account by developing tools which will reduce the time required to perform general tasks. With the development of a strong technical basis, the time required to modify the facility and operating procedures will be significantly reduced. Performing reviews of the CBR system will significantly reduce the continuous support needed to maintain the system. The co-location of the engineering staff near to operations will enhance the effectiveness of the organization.
- West Systems Engineering will provide Cognizant Engineers/Leads for assigned facilities and/or activities. These engineers will be assigned responsibility for individual components, systems, structures and activities. Their accountability will be for the adequacy of the technical performance of the design and associated operational procedures.
- The West Systems Engineers will perform routine inspections of the tank farm facilities and operations. This will allow them to maintain current awareness of conditions and performance of the facilities and assure their ability to consider impacts of all field conditions on engineering decisions and technical direction originated by them. The engineers will originate process memo instructions to the operations staff, perform chemical compatibility assessments for waste transfers, prepare USQ screening and evaluations, and revise OSDs.
- West Systems Engineering will provide technical reviews of drawings, procedures, and other operations maintenance documents in support of program deliverables under the associated WBS Cost Account Plans.

Waste types generated: (List NA if none)

- Off gas: Yes
- Effluents: Yes
- Solid waste: Yes

WHC-SP-1101

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements. It is the base operations of managing tank waste.
	To This WBS From	
1	Other Liquid Generating Hanford Facilities	Liquid generating facilities such as PUREX, UO3, B Plant, S Plant, T Plant, PFP, etc. require tank farms for waste discharge when perform cell & basin cleanout, plant processing, decontamination/deactivation, and other ongoing terminal cleanout operations.
2	1.1.1.2.02 Waste Tank Safety	Mitigating and resolving tank safety issues to achieve a final safe operating condition envelop.
3	1.1.1.2.04 Characterization	Characterization of all double and single-shell tanks to achieving a final safe operations level.
4	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters.

Technologies to be assessed:

1. In-tank instrumentation replacements
2. Modern equipment replacements (e.g., pumps)
3. Waste minimization processes
4. Data taking equipment (e.g., spectral gamma)

Options to be considered:

1. Best Available Technology (BAT) improvements
2. Additional double-shell tanks base DST space evaluations

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Department of Energy Established:

- Standards/Requirements Identification Documents (S/RIDs)
- Tank Waste Remediation System Functions and Requirements
- Section 2, table F4.2.1.1, item V, paragraph B
- Section 3, table A4.2.1.1, item VIII, paragraph C
- WAC 173-303, "Dangerous Waste Requirements"

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance 1.1.1.2.01.04 Tank Farm 200 West Storage Facility/M&O Contractor	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.04.01/VI	5. WBS ELEMENT TITLE 200 West Preventative Maintenance							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NG							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,260	\$1,498	\$1,505
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$1,260	\$1,498	\$1,505

B. TECHNICAL BASES

OBJECTIVES:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The objective of 200 West Tank Farm Preventative Maintenance is to ensure the availability of systems, components, and structures during operations through attaining high reliability and minimum equipment failure levels. The requirements for these activities are contained in DOE Order 4330.4A Conduct of Maintenance, the Draft Maintenance Implementation Plan (MIP), and other documents defined by the Safety/Requirements Identification Documents Phase I.

C. STATEMENT OF WORK:

Work to be Performed:

Plan, schedule, and perform all required Preventative Maintenance (PM) work packages to ensure high levels of availability of systems, components and structures in the U, T, TX, TY, S, SX, and SY 200 West Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, and Component Based Recall System (CBRS) data base and procedures support.

Program Management:

This task will provide overall management of the 200 West Tank Farm Preventative Maintenance activities including PM overall planning, development, reporting, and assessment of PM performance.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of PM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Perform a systematic review of each PM identified using Reliability Centered Maintenance (RCM) principals to determine follow on activities (ie. increase PM rate, delete PM requirement, and other options). Plan, estimate, schedule, and status individual work packages. Group work packages to ensure the optimum efficiency and reduce the number of behind schedule PM's.

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field PM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform maintenance and calibration. Overtime will limited to the percent identified in the budget.

CBRS Support:

The CBRS Recall and Procedures groups will provide data base maintenance and recall notices.

Items Not Included In Scope:

The following items of work and resources are not considered in this scope:

- Spare parts and equipment inventories are to be provided by ADS 7360.
- Setpoint control program is provided by Engineering Programs (1N1G76).

How The Work Is To Be Performed:

All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.

Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

Why The Work Is To Be Performed:

This work is performed to minimize the total number and length of time equipment operating parameters are out of normal limits and to minimize the unavailability of safety systems.

List Of All Deliverables:

- Plan, estimate, and complete performance of all required PM work packages by September 30, 1995.

Mandatory Requirements For Performance Of The Work:

- DOE Order 4330.4A Conduct of Maintenance.
- Draft TWRS Maintenance Implementation Plan

Mandatory Schedule Constraints:

- TWRS Integrated Schedule.
- West Tank Farm Plan of the Month.
- West Tank Farm Plan of the Week.
- West Tank Farm Plan of the Day.

Budget Forecast:

The FY 1995 through FY 1997 budget forecast is shown in section A. Cost Content.

Maximum Cost Of Each Deliverable:

Plan/perform PM work packages	\$1,260K
-------------------------------	----------

Roles And Responsibilities:

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to scope, cost or schedules in this cost account that occur during the fiscal year.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	P. Hinojosa	
Cost Account Manager	K. W. Leliefeld	
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>D. M. Lucoff</i>	9/19/94
Activity Manager	P. Hinojosa <i>P. Hinojosa</i>	9/19/94
Cost Account Manager	K. W. Leliefeld <i>K. W. Leliefeld for</i>	9/19/94
Project Control Analyst	M. A. DeWitt <i>M. A. DeWitt</i>	9/20/94

FDS Number

1N1G71

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farms Operations & Maintenance 1.1.1.2.01.04 Tank Farm 200 West Storage Facility/M&O Contractor	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.04.02/VI	5. WBS ELEMENT TITLE 200 West Corrective Maintenance	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NG	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$7,700	\$7,927	\$7,993
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$7,700	\$7,927	\$7,993

B. TECHNICAL BASES

OBJECTIVES:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The objective of 200 West Tank Farm Corrective Maintenance is to ensure the availability of systems, components, and structures during operations through prompt and efficient work execution to attain high availability and minimum equipment down time. The requirements for these activities are contained in DOE Order 4330.4B Conduct of Maintenance, the Draft Maintenance Implementation Plan (MIP), and other documents defined by the Safety/Requirements Identification Documents Phase I.

STATEMENT OF WORK:

Work to be Performed:

Plan, schedule, and perform all required Corrective Maintenance (CM) work packages to ensure high levels of availability of systems, components and structures in the U, T, TX, TY, S, SX, and SY 200 West Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, Material Supply, Central Craft Support, Central Shop Support, and Nondestructive Examination (NDE).

Program Management:

This task will provide overall management of the 200 West Tank Farm Corrective Maintenance activities including CM overall planning, development, reporting, and assessment of CM performance.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of CM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Plan, estimate, schedule, and status individual work packages.

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field CM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform repairs and restorations. Overtime will limited to the percent identified in the budget.

Material Supply:

This task will stock and control the 200 West Tool Crib, and order and stage materials identified on work package Bill Of Material (BOM).

Central Craft Support:

Provide supplemental craft support for work package execution.

Central Shop Support:

Provide fabrication and material support to work packages.

Nondestructive Examination:

Provide NDE service as required for work package execution.

Items Not Included In Scope:

The following items of work and resources are not considered in this scope:

- Spare parts and equipment inventories are to be provided by ADS 7360.
- Health Physics, Crane & Rigging, and Occupational Health & Safety are provided by 200 West Tank Farm Operations (1N1G73 & 1N1G74).

How The Work Is To Be Performed:

All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.

Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

Why The Work Is To Be Performed:

This work is performed to minimize the total number and length of time equipment operating parameters are out of normal limits and to minimize the unavailability of safety systems.

List Of All Deliverables:

- Plan, schedule, and complete performance of all required CM work packages per West Operations POD/POW/Integrated Schedule priorities.

Mandatory Requirements For Performance Of The Work:

- DOE Order 4330.4B Conduct of Maintenance.
- Draft TWRS Maintenance Implementation Plan.

Mandatory Schedule Constraints:

- TWRS Integrated Schedule.
- West Tank Farm Plan of the Month.
- West Tank Farm Plan of the Week.
- West Tank Farm Plan of the Day.

Budget Forecast:

The FY 1995 through FY 1997 budget forecast is shown in section A. Cost Content.

WHC-SP-1101

Maximum Cost Of Each Deliverable:

Plan/perform CM work packages	\$8,212K
-------------------------------	----------

Roles And Responsibilities:

The RL lead shall be apprised, as soon as reasonably possible, of any impacts to scope, cost or schedules in this cost account that occur during the fiscal year.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	P. Hinojosa <i>N/A</i>	
Cost Account Manager	K. W. Leliefeld	
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	P. Hinojosa <i>PH</i>	9/19/94
Cost Account Manager	K. W. Leliefeld <i>K. W. Leliefeld</i>	9/19/94
Project Control Analyst	M. A. DeWitt <i>M.A. Dewett</i>	9/20/94

FDS Number

1N1G72

WHC-SP-1101

This page intentionally left blank.

A2-240

Tank Waste Remediation System Work Breakdown Structure
Dictionary

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance 1.1.1.2.03 Tank Farm 200 West Storage Facilities/M&O Contractor	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.04.03/VI	5. WBS ELEMENT TITLE Tank Farm West Facility Operations	
6. WBS INDEX LINE NO Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NG	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars).

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$9,300	\$9,584	\$9,872
CENRTC	\$ 400		
GPP			
LINE ITEM			
TOTAL	\$9,700	\$9,584	\$9,872

B. TECHNICAL BASIS

GOALS AND OBJECTIVES

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Goal is to provide Facility Operations management and support for the receipt, storage and transfer of waste in 200 West Tank Farm Operations (WTFO) facilities. Objectives include administrative, technical and field related work direction within the limits of established specifications, standards, budgets, and to ensure compliance to policies and procedures while providing coordination of corrective maintenance activities, upgrade projects, safety programs, characterization activities and operational support to completes tasks. All work activities will be conducted in support of the overall safe and cost effective operation of the tank farm facilities providing a safe workplace by housekeeping, surveillances, radiological monitoring and Industrial Safety. The primary support functions to these goals include: Health Physics, Industrial Health and Safety, Pesticide Control, Engineering, Crane and Rigging and Custodial Services. The following are the specific goals and objectives identified within this Statement of Work. All work activities shall be performed in a safe, efficient and cost effective manner.

Project Management

This task will provide overall management of the WTFO facilities, which includes management of the activities listed below. This includes providing Operation's interface to work package release and major maintenance work coordination. Operations will review Operations and Maintenance procedures and engineering documentation, perform Operational Readiness Reviews and review of emergent and/or field work. The identification of work priorities and review and monitoring of scheduled activities and equipment compatibilities will also be performed.

Administration

The administration area program provides general administrative support for WTFO. This includes staffing requirements, property management per DOE Order 2000.6, corrective action management, general procurement and building administration duties.

Occurrence reports are issued per DOE Order 5000.3B and are generated within the procedural time constraints. Events and conditions, once identified, will be thoroughly reported and documented. Expert evaluation teams, root cause and trending analysis, priority planning grid (PPG) evaluation and lessons learned are all an intricate part in the Occurrence Reporting process. This deliverable provides the administrative support for compliance to DOE Order 5000.3B.

WTFO personnel will be trained in accordance with the Tank Farms Dangerous Waste Training Plan and the Westinghouse Radiation Area Management (WRAM) access requirements. The administrative support will ensure WTFO personnel maintain the maximum readiness achievable.

WTFO will manage the two 1N1 Facility Operations Cost Account Plans (CAP's) and all other end functions/programs task packages in accordance with the Management Control System (MCS). Monthly status updates will be provided to the Program Office/DOE-RL lead. In addition, this activity provides for the development of the FY96 multi-year plan.

Technical Support

Develop operating strategies/plans, process improvements, trending and review of operating data, monitoring process limits, ensuring technical accuracy and process problem resolution. Seek ways to reduce the use of protective clothing and equipment in the field. The purpose of the IOSR deliverable assures the completion of

Phase III Interim Operational Safety Requirements (IOSR) implementation. Technical and field support to meet this initiative will be provided. Technical support will assist in the resolution of emergent technical issues in West Tank Farms facilities. Technical support provides operational support for the Hydrogen Mitigation and Flammable Gas Safety Programs, including the oversight of new mitigation equipment installation, testing and operation. This also includes transferring the operation of the 101-SY mixer pump to WTFO from Test Engineering personnel. Over 80 procedures will be written and reviewed and 12 functional tests conducted.

Waste Transfers

The objective of the waste transfer deliverable is to receive, store and transfer radioactive liquid waste from Hanford facilities into underground storage tanks via waste transfer systems. Performing diversion box/pit entries, jumper changes and pressure testing transfer lines will be conducted as required to support transfers. HLW/LLW transfers from external Hanford facilities, in operation or clean up phases, is to avoid interruptions caused by compliance waste storage time constraints.

- Support 5 external HLW/LLW waste transfers generated from other Hanford Site facilities.
 - To develop, set-up, verify routes and complete transfer
 - Perform diversion box/pit entries and jumper changes as required
 - Recondition tank farm diversion box/pit covers

Restore Cross-Site Transfer Capability

The overall goal of this deliverable is to support the development of work plans/packages to restore the capability to perform cross-site waste transfers by March 31, 1995. This includes:

- Sample and pump related catch tanks (E/W Vent Station, UX-302-A, 244-S, S-304)
- Pressure test cross-site transfer line
- Perform field walkdown verification and approve operating procedures and drawing changes
- Identify and support the CBRs/PM's of related instrumentation

Field Activities

Field activities provides WTFO technical and field support to the corrective/preventive maintenance of West Tank Farm facilities. Additionally, restore degraded tank farm equipment necessary for safe and compliant receipt, storage and transfer of waste. This includes performing seasonal equipment surveillances and preparations, e.g. winterization. Troubleshooting of equipment, response to emergency work requests and material acquisition also support this activity. Field activities provide project and upgrade acceptance OTP support for all West Tank Farms 1N1 major maintenance upgrades/projects. Support of repairs to failed tank monitoring equipment, active CASS alarm deficiencies, exhausters and other safety related equipment and systems is also included. Field activities also provide housekeeping support (inspections, tumbleweed removal, waste packaging/shipment, etc...) for WTFO facilities. The deliverable for this activity is covered by the corrective/preventive maintenance CAP's.

Removal of Waste

The deliverable to remove decommissioned equipment classified as waste includes packaging, removal and shipment of aged equipment from tank farms to solid waste. The following equipment is identified for removal in FY 1995:

- P-29 exhauster
- Vacuum truck
- SX-Farm water tank
- 241-S duct work and two skid mounted exhausters
- Slurry distributor at 241-SY

Health Physics

Tank Waste Remediation Health Physics (TWRHP) provides preventive maintenance, corrective maintenance and facility operations Health Physics support to WTFO. This includes field support for zone team activities such as PM's and CRBS items, vent and balance activities and third party inspections. TWRHP provides support for all repairs, modifications and upgrades of facility equipment in accordance with the Tank Waste System Remediation (TWRs) integrated work schedule. TWRHP will provide support for transfers, field crew support, general housekeeping zone reductions, decontamination and stabilization, and ACES roving Health Physics support. Additionally, Health Physics will support implementation and compliance with the new DOE Radiological Control Manual. Health Physics will also support the reduction of surface contamination areas in West Tank Farms. To enable compliance with the new DOE Radiological Manual, Health Physics will procure a "RADROVER" radiation monitoring vehicle.

Industrial Hygiene and Safety

TWRs Industrial Hygiene and Safety will provide Industrial Safety, Industrial Hygiene, and Fire Protection Field Support to WTFO. This also includes the review and approval of approximately 120 work control documents and 400 plant documents, issuance of quarterly summary reports, and the performance of required Industrial Hygiene monitoring for Operations work activities. These activities shall emphasize electrical safety-related work practices, confined space entry, chemical hazard communication program compliance, lockout/tagout of equipment and machinery, hoisting and rigging safety, selection and use of appropriate personal protective equipment, worker protection from heat stress, construction related safety and health issues, ergonomics, safety and health training, and hazard waste operations and emergency response operations. Compliance with all applicable DOE Orders, Occupational Safety and Health Administration (OSHA) 29 CFR 1910 and 1926 safety and health standards and regulations will be assured.

Conduct of Operations

Strict housekeeping and work standards, and establishment of a working environment where safety of personnel and equipment is the highest priority will be maintained. Routine inspections of all work areas, including lockout/tagout of equipment, machines, processes and operations, ensure the safe and secure operation of the facilities and their systems in accordance with the established Interim Safety Basis and the Conduct of Operations philosophy. Specific Conduct of Operations related work goals include implementation and compliance with the new DOE Radiological Control Manual. Surface contamination area reduction will be completed during the Fiscal Year with an aggressive clean-up effort.

Site Services Support

This CAP includes miscellaneous Site Services support to WTFO (i.e. plastic, radio maintenance, fuel, locksmith services, and other incidental unplanned essential work activities).

Pesticide Control

This CAP includes Pesticide Spraying and Animal Control services, which meet the requirements of 29 CFR 1910.141(a)(5), (i.e. spraying and control of rodents, wasps, snakes, spiders and other biologics) for the 200 West and East Tank Farms. Included herein are material procurement, maintenance of spray schedules and all other resources required to complete identified spray schedules and animal control.

Custodial Services

Provide janitorial and floor service for 272-WA and 242-S in West Area. Surrounding mobile office custodial support is covered by the Landlord.

WORK/RESOURCES SPECIFICALLY NOT FUNDED UNDER THIS COST ACCOUNT

- Training and procedure for transferring operation of mixer pump to WTFO
- Programs to support personnel exposure As Low As Reasonable Achievable (ALARA)
- Evaluation of potential Unreviewed Safety Questions (USQ's)
- Development of Safety Analysis Reports (SAR's)
- Sampling and laboratory analysis services
- RADROVER radiation monitoring vehicle (CENRTC)
- Support from Maintenance and Production Control
- Support to construction of major maintenance upgrades and projects
- 200 West Area Herbicide Control
- Waste Tank Safety Programs equipment installation support
- Characterization support

HOW THE WORK IS TO BE PERFORMED

The fiscal year 1995 productivity challenge will be met for this CAP by developing tools which will reduce the time required to perform general tasks.

Operational performance will be monitored, documented and trended for future reference and to make improvements in operational performance and productivity, such as reducing hours expended on transfers. Performance indicators for strategic parameters shall be maintained and given visibility appropriate to the mission of the facilities.

Pre-job safety meetings and coordination of the plan of the week, plan of the day meeting to correlate work activities. Minimize the unavailability of safety systems. Minimize personnel errors through effective and aggressive pursuit of the training program (increased participation made possible through improved continuing training implementation and fifth operating shift).

WHY THE WORK IS TO BE PERFORMED

This work is required to provide our customers with safe, secure, and environmentally sound treatment and storage of hazardous waste in West Area Tank Farms and ensure compliance with all applicable federal, state, and local environmental regulations.

C. STATEMENT OF WORK

Project Management

- This task will provide overall management of the WTFO facilities, which includes management of all WTFO activities.
- Operations interface to work package release and major maintenance work coordination.
- Perform Operational Readiness Reviews and review of emergent and/or field work.
- Review Operations and Maintenance procedures and engineering documentation.
- Identification of work priorities and review and monitoring of scheduled activities and equipment compatibilities.

Administration

- Provide general administrative support to WTFO.
- Submit Off-Normal/Unusual Occurrence Reports (Notification, 10-day, Final) generated in West Tank Farms in accordance with established procedural time constraints.
- Self-Assessment S/RID's support - provide support to 18 teams.

WHC-SP-1101

- Manage Facility Operations and Routine Surveillance Cost Accounts. Provide monthly status to Program Office/DOE-RL.
- Issue/revise FY96 multi-year plan by August 30, 1995.
- Track and maintain WTFO personnel training in compliance with the Tank Farms Dangerous Waste Training Plan and WRAM access requirements.
- Secure funding and issue requisition for procurement of a RADROVER radiation monitoring vehicle by March 31, 1994.
- Management, procurement and accountability of all property per DOE Order 2000.6.
- Provide emergency preparedness support to the coordination of emergency drills.
- Corrective Action Management - assure timely reporting resolution and completion of audits, surveillance, and non-conformance issues.
- Provide West Tank Farm Facility Building Administration (including materials and computer acquisition).

Technical Support

- Complete phase III Interim Operational Safety Requirement (IOSR) implementation.
- Write and approve 80 procedures for WTFO.
- Provide technical support for emergent issues affecting WTFO.
- Provide review of Operational Test Procedures to ensure adequate testing of all major maintenance upgrades/projects prior to placing the equipment/systems in service.
- Seek ways to reduce the use of protective clothing and equipment in the field.

Waste Transfers

- Support 5 external (PFP) HLW/LLW wastes from other Hanford Site facilities in operation or cleanup phases to avoid interruptions in operations caused by compliance waste storage time constraints.

Restore Cross-site Transfer Capability

- Sample and pump related catch tanks.
- Pressure test cross-site transfer line.
- Develop and approve procedures.
- Support CBRS/PM's of related instrumentation.

Field Activities

- Manage 200 West field activities.
- Housekeeping, i.e., tumbleweed removal and waste clean-up, etc.
- The deliverable for corrective/preventive maintenance is covered in the maintenance CAP's.
- Complete acceptance Operational Test Procedures (OTP's) for 12 major maintenance upgrades and projects.
- Perform seasonal equipment and facility surveillances and preparations.
- Coordinate and monitor preventative maintenance/corrective maintenance in 200 WTFO facilities
- Coordinate access to 200 WTFO facilities for Waste Tank Safety Programs, Engineering and Characterization activities
- Conduct monthly inspections of WTFO facilities.
- Package and prepare for shipment waste generated from field work and corrective maintenance items.

Removal of Waste

- Removal of equipment classified as waste
 - P-29 exhauster
 - Vacuum truck
 - SX-Farm water tank
 - 241-S duct work and two skid mounted exhausters
 - Slurry distributor at 241-SY

Health Physics

- TWRHP shall complete all annual Radiological Control Manual compliance reviews, by December 31, 1994.
- TWRHP shall be in full compliance with all of the DOE Radiological Control Manual, Rev. O, by March 31, 1995.
- Support the Surface Contamination Area zone reduction program.
- Provide field support for zone team activities (PM's and CBRS items, vent and balance activities, third party inspections).
- TWRHP shall provide support for all repairs, modifications and upgrades of facility equipment in accordance with TWRS integrated work schedule.
- Provide support for transfers, field crew support, general housekeeping zone reductions, decontamination and stabilization, and ACES roving Health Physics support.

Industrial Hygiene and Safety

- Provide Industrial Safety, Industrial Hygiene, and Fire Protection Field support to WTFO.
- Provide review and approval of approximately 120 work control documents and 400 plant documents, and issue quarterly summary report.
- Perform required Industrial Hygiene monitoring for Operation's work activities.

Conduct of Operations

- Submit corrective actions to operating procedures.
- Develop lesson plans and required reading items resulting from self-assessment findings.
- Provide documented on-shift training for identified problems.
- Incorporate lessons learned from other Hanford facilities into TWRS Plant procedures.
- Provide lessons learned to other Hanford facilities.

Site-Services

- LOE

Pesticide Control

- Perform pesticide control services as requested by WTFO.

Custodial Services

- Custodial Services - LOE.

MANDATORY REQUIREMENTS OF PERFORMANCE OF WORK

WHC-SP-1101

- Establish and achieve a schedule to maintain regulatory and DOE Order compliance in Tank Farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
- Implementation and adherence to the new Interim Operational Safety Requirement parameters.
- Workers should not be exposed to unsafe working conditions. Unsafe conditions will be resolved promptly to avoid delays to projects or program work activities that involve access to tank farm facilities.
- No Hanford Site facility will suffer noncompliance with storage regulations, nor cleanup program delays, due to inability of tank farms to receive liquid waste.

MANDATORY SCHEDULE CONSTRAINTS

The mandatory schedule constraints are:

- Sample and laboratory results from external Hanford facilities in preparation for transfers to West Tank Farms.
- Completion of the major maintenance upgrades and projects, including completion of the Acceptance Test Procedure (ATP), prior to performing the acceptance OTP.
- Availability of materials and work packages to perform field work
- Ability to obtain personnel with WHC or contract personnel to perform these activities

BUDGET FORECAST

Not available at this time.

MAXIMUM COST OF EACH DELIVERABLE

Project Management	\$ 664.6K
Administration	\$ 1,184.3K
Technical Support	\$ 364.5K
Waste Transfers	\$ 23.5K
Restore Cross-site Transfer Capability	\$ 684.4K
Field Activities	\$ 2,004.5K
Removal of Waste	\$ 707.3K
Health Physics	\$ 1,972.8K
Industrial Hygiene and Safety	\$ 1,019.3K
Conduct of Operations	\$ 107.0K
Site-Services	\$ 335.1K
Pesticide Control	\$ 16.6K
Custodial Services	\$ 116.1K

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Reference the following:

Department of Energy Established:

- Standards/Requirements Identification Documents (S/RIDs) Tank Waste Remediation System Functions and Requirements
- Section 2, table F4.2.1.1, item V, paragraph B
- Section 3, table A4.2.1.1, item VIII, paragraph C
- WAC 173-303, "Dangerous Waste Requirements"

E. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	P. Hinojosa <i>N/A</i>	
Cost Account Manager	J. H. Wicks	
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	P. Hinojosa <i>P. Hinojosa</i>	9/19/94
Cost Account Manager	J. H. Wicks <i>J. H. Wicks</i>	19 Sep 94
Project Control Analyst	M. A. DeWitt <i>J. S. Thomas</i>	9/19/94

FDS Number

1N1G73

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance 1.1.1.2.01.04 Tank Farm 200 West Storage Facility/M&O Contractor	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.04.04/VI	5. WBS ELEMENT TITLE Tank Farm West Routine Surveillance	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NG	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$5,800	\$6,037	\$6,202
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$5,800	\$6,037	\$6,202

B. TECHNICAL BASIS

GOALS AND OBJECTIVES

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The goal is to gather, evaluate and report data while providing administrative, technical, and field related work activities within the limits of established specifications, standards, budgets and procedural guidelines, and to ensure compliance to policies and procedures or as directed by DOE-RL. Additionally, adequate staffing needs are identified and implemented to supply our customer with the safe, secure, and environmentally sound treatment and storage of hazardous waste at West Tank Farms and to support the completion of scheduled milestones and end-item deliverables. Following are the specific goals and objectives identified within this Statement of Work.

Routine Surveillance

The routine surveillance activities outlined in this Statement of Work include Shift Managers, Operators, Power Operators, Operations Engineers, and Operations Clerical support on a 24 hour basis. The Shift Manager is responsible for command and control of the facility during the shift. Shift Operations must maintain the facility within the safety envelope defined by the Operational Specification Documents and Operational Safety Requirements.

All data from instrumentation and equipment for Single-Shell/Double-Shell tanks, leak detection pits, catch tanks and ventilation systems are taken per specified frequencies as outlined in Operating Procedures and other governing criteria and are required to take action to mitigate abnormal or unsafe conditions as they arise. They conduct data acquisition, monitoring, and analysis to ensure the facility is in a stable condition and in conformance with requirements. This data ensures operations within all safety parameters and for Engineering analysis.

Operations provides data for engineering analysis of liquid levels, active ponds, cribs and ditches, temperatures, pressures and other DST/SST data within West Tank Farms to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (87) HLW tanks.

A 5th Shift is to provide adequate time for training to assure Operations personnel are qualified through education, training, certification, and on-the-job experience to safely carry out their duties and meet all DOE and RCRA requirements. They are required to follow the principles and procedures of the Conduct of Operations philosophy.

In-tank Photography/Pit Inspections

The objective, to obtain 5 in-tank photos, calls for West Tank Farm Operations Managers and Operator support, Crane and Rigging support, HEHF and BCSR photography. In tank photographs provide a means for analysis of tank integrity, in-tank equipment integrity and waste characterization. This Cost Account considers planning and scheduling, setting up a greenhouse, the actual photo shoot, and cleanup/teardown time allotment.

This deliverable calls for 6 video camera examinations scheduled for FY95. The intent of these videos is to obtain pit inventory/inspection videos to provide analysis of pit integrity, equipment inventory and waste accumulation and leak detection purposes. Video shoots do not require support from crane and rigging but will utilize Westinghouse crafts, technical and HEHF resources.

Surveillance Operations (LOW/Drywell)

Surveillance Operations collects data from stored liquid wastes and provides surveillance and maintenance support for 200 West Area. They operate and conduct drywell monitoring, take swab riser readings and LOW readings. Additionally, SST lateral readings are performed and data is provided to the Computer Automated Surveillance System (CASS).

Surveillance Data Analysis (Technical Support)

The surveillance program reviews technical data associated with the West tank farm leak detection systems and temperature monitoring for compliance with Operational Safety Requirements, Operating Specifications Documents and waste tank leak detection monitoring programs. This also includes the issuance of Surveillance Discrepancy Reports as necessary when waste tank data anomalies occur per WHC-IP-0842.

West Tank Farm Operating Parameters

Field data is monitored and analyzed to ensure the facility is in a stable condition and in conformance with requirements. This data ensures operations within all safety parameters and is used for Engineering Analysis. West Operations Technical Support provides engineering analysis of liquid levels, drywells, LOW's, temperatures, pressures and other DST/SST data within West Tank Farms to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (87) HLW tanks. As a result of these reviews, a weekly status on level monitoring devices is developed and distributed to Operations as well as a monthly Alert List which defines areas of concern with leak detection monitoring is compiled and distributed to Operations.

Health Physics

Health Physics performs required radiological surveillances at West Tank Farm facilities on a routine schedule, as required by all applicable regulations. These surveillances include exposure rate surveys, contamination surveys, boundary surveys, functional and source testing of various radiation detection instrumentation, and HPT support for operator rounds.

WORK/RESOURCES SPECIFICALLY NOT FUNDED UNDER THIS COST ACCOUNT

- Sampling and laboratory analysis services
- Support to construction of major maintenance upgrades and projects
- Support from Waste Tank Plant Engineering, Waste Tank Upgrade, Installation and Testing, Waste Tank Maintenance and Production Control
- Programs to support maintaining personnel exposure As Low As Reasonably Achievable (ALARA)
- Evaluations of potential Unreviewed Safety Questions (USQs)
- Development of Safety Analysis Reports (SARs)
- Support to Waste Tank Safety programs
- Shift Engineering

HOW THE WORK WILL BE PERFORMED

All work activities shall be performed in a safe and efficient and cost effective manner.

Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators for strategic parameters maintained and given visibility appropriate to the mission of the facilities.

WHC-SP-1101

Minimize the total number and length of time equipment operating parameters are out of normal limits. Minimize the unavailability of safety systems. Minimize personnel errors through effective and aggressive implementation of 5th shift and training program. Timely completion of scheduled surveillance.

WHY THE WORK IS TO BE PERFORMED

The work is required to provide our customers with the safe, secure, and environmentally sound treatment and storage of hazardous waste in West Area Tank Farms and ensure compliance with Operational Safety Requirements and all applicable federal, state, and local environmental regulations.

LIST OF DELIVERABLES

Routine Surveillance

- Obtain daily and quarterly liquid level readings of DST/SST/catch tanks in accordance to OSD-T-151-00031.
- Monitor and acquire daily surveillance data on 200W ventilation systems in support of Waste Tank Storage tanks (in accordance with OSD-T-151-00007, OSD-T-151-00011, and OSD-T-151-00013).
- Obtain weekly breather filter data (in accordance with OSD-T-151-00013).
- Obtain DST/SST temperature data in accordance with TO-040-650.
- Perform investigations related to tank temperature/level/pressures/etc. anomalies and intrusions as requested.

In-Tank Photography/Pit Inspections

- Obtain in-tank photographs from 5 SSTs.
- Complete 6 pit inventory and/or inspection videos.

Surveillance Operations (LOW/Drywell)

- Obtain drywell, LOW other DST/SST data within specified frequencies to assure detection of tank leaks and unsafe or non-compliant conditions of waste in (87) HLW tanks.
- Obtain swab riser readings as requested.

Surveillance Data Analysis (Technical Support)

- Provide data analysis of LOW's, drywells, liquid levels, temperatures, tank pressures, and other DST/SST data per requirements of OSR, OSD, and waste tank leak detection monitoring programs.
- Issue Surveillance Discrepancy Reports as necessary when waste tank data anomalies occur per WHC-IP-0842.

West Tank Farm Operating Parameters

- Issue Surveillance Alert List monthly per WHC-IP-0842.
- Issue weekly liquid level instrumentation status.

Health Physics

- Perform required radiological surveys according to established frequencies, as stated in current task descriptions, maintaining a 95% completion rate for scheduled radiological surveys.
- Write/revise task descriptions as necessary.
- Provide Health Physics support to routine surveillance milestones identified by TWRS.

- Maintain and update Tank Farm status maps.
- Issue Monthly Radiological Status Reports.

MANDATORY REQUIREMENTS OF PERFORMANCE OF WORK

- Establish and maintain regulatory and DOE Order compliance in tank farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
- Implementation and adherence to the new Interim Operational Safety Requirement parameters.
- Ensure tank data is taken and does not exceed periodicity requirements.
- Workers should not be exposed to unsafe conditions working conditions. Unsafe conditions will be resolved promptly to avoid delays to projects or program work activities that involve access to tank farm facilities.
- Aggressively investigate and seek engineering resolution to indications of a potentially leaking SST/DST.
- Ability to obtain in tank photographs from Double Shell Tanks/Single Shell Tanks in 7 (seven) days if necessary

MANDATORY SCHEDULE OF CONSTRAINTS

The mandatory schedule of constraints are:

- Ability to obtain personnel WHC or contractor personnel to perform these activities.
- Adverse weather conditions and personnel safety considerations may cause the periodicity requirements for tank data to be exceeded.

BUDGET FORECASTS

Not available at this time.

MAXIMUM COST OF EACH DELIVERABLE

Routine Surveillance	\$ 3,182.5K
In-Tank Photography/Pit Inspections	\$ 274.7K
Surveillance Operations (LOW/Drywells)	\$ 382.2K
Surveillance Data Analysis (Technical Support)	\$ 297.8K
West Tank Farm Operating Parameters	\$ 237.9K
Health Physics	\$ 1,424.9K

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

WHC-SP-1101

The RL lead shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements. It is the base operations of managing tank waste.
	To This WBS From	
1	Other Liquid Generating Hanford Facilities	Liquid generating facilities such as PUREX, UO3, B Plant, S Plant, T Plant, PFP, etc. require tank farms for waste discharge when performing cell & basin cleanout, plant processing, decontamination/deactivation, and other ongoing terminal cleanout operations.
2	1.1.1.2.02 Waste Tank Safety	Mitigating and resolving tank safety issues to achieve a final safe operating condition envelop.
3	1.1.1.2.04 Characterization	Characterization of all double and single-shell tanks to achieving a final safe operations level.
4	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters.

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Reference the following:

- Standards/Requirements Identification Documents (S/RIDS).
- Tank Waste Remediation System Functions and Requirements.
 - Section 2, table F4.2.1.1, item V, paragraph B.
 - Section 3, table F4.2.1.1, item VIII, paragraph C.
- WAC 173-303, "Dangerous Waste Requirements".

E. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>[Signature]</i>	
Activity Manager	P. Hinojosa <i>[Signature]</i>	
Cost Account Manager	J. H. Wicks <i>[Signature]</i>	19 Sep 94
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>[Signature]</i>	9/19/94
Activity Manager	P. Hinojosa <i>[Signature]</i>	9/19/94
Cost Account Manager	J. H. Wicks <i>[Signature]</i>	19 Sep 94
Project Control Analyst	M. A. DeWitt <i>[Signature]</i>	9/19/94

FDS Number

1N1G74

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations and Maintenance 1.1.1.2.01.04 Tank Farm 200 West Storage Facility/M&O Contractor	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.04.06	5. WBS ELEMENT TITLE West Systems Engineering and Analysis	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NG	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$2,570	\$3,369	\$4,448
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$2,570	\$3,369	\$4,448

1.1.1.2.01.04.06

A2-259

B. GOALS & OBJECTIVES:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

West Systems Engineering is to provide an engineering authority and focal point for assuring that performance of components, systems, and structures in the West Tank Farms are adequate to safely receive, transfers and store high level radioactive waste. It is also our goal to assure proactive monitoring of plant performance and technical direction regarding changes in design and operations is carried out. We will furnish the technical resources necessary to respond to emergent environmental and safety issues relating to facilities design and operations.

Our goal is to also supply the continuous reactive capability to promptly address emergent technical issues that threaten reliable and safe operation of components, systems, and structures. These structures are designed to safely receive, transfer and store high level radioactive waste.

In addition, we are to provide continual proactive oversight, evaluation and analysis of conditions and performance of waste tank equipment, systems, and structures to identify candidate areas of improvement. We will provide the engineering studies to identify alternative solutions and designs for selected improvements.

C. STATEMENT OF WORK

Required activities:

Reactive Capability: West Systems Engineering is charged with maintaining the ability to promptly respond to emerging technical issues involving West Tank Farms systems or facilities. West Systems Engineering will be supplemented during the off shifts by Shift Engineering. The Shift Engineering staff work will include the preparation of process memos, procedure change authorizations, and engineering support to operations during the off shifts.

Proactive Oversight: West Systems Engineering will provide an oversight, evaluation, and analysis capability to be able to proactively address pending changes to the West Tank Farms systems, facilities, and operations.

Resources: Individual engineers will accomplish training to achieve knowledge of facility specific technical and administrative features; performance; and governing codes, standards, and regulations.

Scope which is specifically not funded by this cost account includes:

- Support to construction projects
- Sampling and Laboratory services
- Support of integrity assessment issues
- S/RIDS support and associated Resulting Activities
- Upgrades program support
- Safety program support
- Interim Operational Safety Requirements Implementation
- Characterization Program
- Retrieval Program
- Procedures preparation or revision
- Surveillance data analysis and reporting
- Revision and upgrade of drawings (except ECN incorporation efforts)

How Work Will Be Performed:

Technical Focal Point: Primary systems engineering staff's responsibilities will include the design and support of facility modifications and maintenance, technical input to operating and transfer procedures, chemical compatibility assessments for transfers, OSR/OSD assessment reviews, specifications for preventative maintenance and calibration documentation, preparation of system design documentation issuance of process memos providing technical input, preparation of unreviewed safety screening and evaluations, and field support to the maintenance zones.

A staff of five Shift Engineers will provide off shift availability of technical advice and support to the shift managers of the Evaporator, East and West Tank Farms and will coordinate with assigned System Engineers as necessary. Shift Engineering is providing us this service and the appropriate share (2.5 FTE) will be funded by West Systems Engineering.

West Systems Engineering will provide ten Cognizant Engineers/Leads. These engineers will be assigned responsibility for individual components, systems, and structures. Their accountability will be for the adequacy of the technical performance of the design and associated operational procedures.

Both West System Engineering and the Shift Engineers will perform routine inspections of the respective tank farm facilities and operations. This will allow them to maintain current awareness of conditions and performance of the facilities and assure their ability to consider impacts of all field conditions on engineering decisions and technical direction originated by them. The engineers will originate process memo instructions to the operations staff, perform chemical compatibility evaluations for waste transfers, prepare USQ screening evaluations, and revise OSDs.

West System Engineering will function as the technical experts whose concurrence is required on all technical decisions and documents that potentially affect the function of the facilities. They will also support the Shift Engineers in decisions specific to assigned components, systems and structures.

Supplemental specialized analytical capability will be obtained through subcontract experts of some planned engineering tasks and/or emergent issues.

West Systems Engineering will provide technical reviews of drawings, procedures, and other operations maintenance documents in support of program deliverables under other WBS Cost Account Plans.

Resources from support organizations have been identified and financial plans coordinated such that total costs for deliverables under this CAP are identified in this CAP.

Options To Be Considered:

Loop Calibration - The method of single element calibration should be abandoned and the loop calibration should be adopted. This dictionary does not address this as one of our deliverables. Should this option be considered, it will have impact on our budget and schedule as well as that of Maintenance. This method of calibration will require modification of existing calibration procedures, CBRS cards, and will require generation of new procedures.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

1. Manage West Systems Engineering Efforts (\$325K)

This activity includes funding for the manager and administrative costs for managing a staff of approximately 20. It also include the fixed costs for supplies, computers, etc.

WHC-SP-1101

2. Develop/Maintain Budget/Schedule (\$60K)

This line item accounts for the time spent on the planning, budgeting, and scheduling effort. It also accounts for the time needed to attend the weekly meetings and preparation of associated reports.

Deliverables - Schedules, EACs, Mid-Year Changes and budgets.

3. Complete Required Training/Certification of Engineers (\$271K)

The figure represents the time spent by the staff attending required training as well as certification as Phase II and Phase III Engineers. It does not include any funding for training development.

4. Screen/Evaluate USQs (\$76K)

This accounts for the Cognizant/Systems Engineers' time devoted to the screening and evaluation of USQs. Part of the normal support effort given to operations. Screenings will be done for all changes in procedures, ECNs, and discoveries.

Deliverables - USQ screenings and evaluations.

5. Review/Revise OSR/OSDs (\$67K)

This accounts for the Cognizant Engineers' time devoted to the review and revision of OSRs and OSDs for the applicable facility or system.

6. Support Configuration Management (\$42K)

Configuration Management support will be provided to the timely incorporation of design changes into essential drawings and the development and maintenance of the vendor information files. The amount shown is an assessed amount, prorated to provide for our share of the services.

7. Develop/Review/Revise ECNs (\$298K)

This accounts for the Cognizant Engineers' time devoted to the developing, reviewing and revising ECNs for the applicable system or facility.

Deliverable - Applicable ECNs and needed interface with Configuration Control

8. Preparation and verification of instrument documentation. (\$78K)

The System Cognizant Engineer will maintain set points on the instrument system CBRS cards, support each transfer by providing needed instrument documentation, and resolve inconsistencies between CBRS cards and the as found conditions/ documentation associated with the system. In addition, the Cognizant Engineer will review CBRS cards to assure that they meet the requirements of the safety bounding documents (OSR, OSD, etc.) and will generate CBRS cards for those that are missing or severely out of date. For newly installed equipment, the funding for generation of the CBRS cards is expected to come from the appropriate organization.

Deliverable - Updated instrumentation documentation allowed by budget.

9. Provide Field Support for Routine/Non-Routine Maintenance (\$128K)

This accounts for the Cognizant Engineers' time devoted to routine field support of maintenance activities on the applicable system or facility.

Deliverables - Reviewed procedures, ECNs for maintenance, work packages.

10. Respond to Technical Requests (\$137K)

This accounts for the Cognizant Engineers' time devoted to routine technical inquiries regarding their applicable system or facility.

Deliverable - Timely responses to technical requests.

11. Support Routine Transfers (\$136K)

It is anticipated that West Tank Farms will conduct 5 routine internal/PFP transfers in FY 95. This account for the time engineering will spend supporting those transfers.

12. Develop West Systems Engineering Responsibility Bounding Document (\$3.4K)

A detailed document will be developed defining specific systems boundaries applicable for each Cognizant Engineer. Document will be used as basis of WSE Performance Guideline and ultimately, lead to better performance measurement for West Systems Engineering.

Deliverable - WSE responsibility bounding document.

13. Respond to Assessments/Surveillances NCRs (\$55K)

This accounts for the Cognizant Engineers' time devoted to responding to assessments, surveillances, and NCRs.

Deliverable - Assessment/Surveillance/NCR Responses.

14. Status and Order Spare Parts (\$39K)

This accounts for the Cognizant Engineers' time devoted to statusing and ordering spare parts for the appropriate system or facility.

Deliverable - Recommendations for spare parts procurement.

15. Disposition Overdue NCRs (\$5K)

This accounts for the Cognizant Engineers' time devoted to the dispositioning of overdue NCRs from the backlog.

Deliverable - Quarterly reports stating number NCRs dispositioned.

16. Support Emergent Work (\$80K)

This activity is to support the unplanned work that emerges during the year. It is to be used as a resource for short term efforts. Any projects of magnitude will be funded by the requesting organization or change orders.

17. Perform System Walkdowns (\$167K)

This accounts for the Cognizant Engineers' time devoted to walking down their respective facility/system. These walkdowns may be of the entire system or a portion. The purpose will be to gather information to be used for generating ECNs, screening USQs, answering assessments/surveillances/NCRs, etc.

Deliverables - Input Gathered from System Walkdowns

18. Issue Process Tests (\$81K)

This accounts for the Cognizant Engineers' time devoted to issuing process tests.

Deliverable - Applicable process tests

19. Development/Review of Plant Operating Procedures (\$30K)

This accounts for the Cognizant Engineers' time devoted to writing, reviewing, and distributing Plant Operating Procedures.

Deliverable - Needed Plant Operating Procedures.

20. Development/Review of Maintenance Procedures (\$30K)

This accounts for the Cognizant Engineers' time devoted to writing, reviewing, and distributing Maintenance Procedures.

Deliverable - Needed Maintenance Procedures.

21. Reviewing Work Packages and statusing Operation's concerns (\$137K)

This is the expected engineering time spent on generating, reviewing, and closing work packages and providing their status to Operations.

Deliverable - Engineering input to Work Packages.

22. Develop Suspect Parts Compliance Plan (\$5K)

A Suspect Parts Compliance Plan will be developed for WSE.

Deliverable - Tank Farm Suspect Parts Compliance Plan

23. Support in Tank Photo Effort (\$60K)

24. Development/Review of Process Memos (\$45K)

This accounts for the Cognizant Engineers' time devoted to writing, reviewing, and distributing Process Memos.

Deliverable - Needed Process Memos.

25. Develop Engineering Study for Steam Elimination in 200W (\$35K)

An Engineering Study will be developed to determine the need for; best possible methods of; probable costs of; impact on operations; and other areas relating to the elimination of steam in the West Tank Farms.

Deliverable - Engineering study for steam elimination in 200W.

26. Develop Needed Designs for Steam Elimination (\$30K)

If the Engineering Study determines that removal of steam increases the reliability/availability or increases the ability to promptly restore service to the West Tank Farms, then the needed designs will be developed. Figure depicts producing functional requirements document.

Deliverable - Functional requirements document for steam elimination.

27. Develop Engineering Study for Compressed Air Elimination in 200W (\$35K)

An engineering study will be conducted and documented to determine the feasibility of eliminating compressed air from the 200 West Tank Farms. The aim of the removal of compressed air is improve future productivity and increase reliability and availability of the systems.

Deliverable - Engineering study for compressed air elimination.

28. Develop Needed Designs for Compressed Air Elimination (\$30K)

If the Engineering Study determines that removal of Compressed air increases the reliability/availability or increases the ability to promptly restore service to the West Tank Farms, then the needed designs will be developed. Figure depicts producing functional requirements document.

Deliverable - Functional requirements document for compressed air elimination.

Additional activities that should be undertaken, to be funded by other organizations:

1. Support New TMACS (\$200K/\$50K) (1N3)

West Systems Engineering's involvement in this activity should include review of documents by the Cognizant Engineers. In addition the Cognizant Engineers will become familiar with the equipment and perform the needed engineering acceptance. Original planning included funding West Systems Engineering funding Surveillance Engineering with \$150K. If this funding is already included in the Surveillance Engineering budget, then West Systems Engineering's requirements are estimated to be \$50K.

Deliverables - Review documents, acceptance documentation.

2. Evaluate Alarm/Annunciator Adequacy for 200W (\$80K) (1N3)

West Systems Engineering should evaluate the Alarm/Annunciator systems in the West Tank Farms for adequacy in preparation for pending upgrades. The evaluation will consider human factors, serviceability, effectiveness, etc.

Deliverable - Report of Adequacy of the West Farms Alarms/Annunciators.

3. Review DACs Design and Procedures (\$30K) (1N3)

The DACs designs and procedures will require West Systems Engineering review as this system is turned over to West Tank Farms Operations. West Systems Engineering shall assure that the contents of the turned over design and procedures are compatible and are integrated into the other operating documents.

Deliverable - Reviewed DACs design and procedures.

4. Support of Installation of ENRAFs (\$15K) (1N3)

West Systems Engineering's involvement in this activity should include review of documents by the Cognizant Engineers. In addition the Cognizant Engineers will become familiar with the equipment and perform the needed engineering acceptance.

Deliverables - Review documents, acceptance documentation.

5. Support of Installation of LOWs (\$10K) (1N3)

West Systems Engineering's involvement in this activity should include review of documents by the Cognizant Engineers. In addition the Cognizant Engineers will become familiar with the equipment and perform the needed engineering acceptance.

Deliverables - Reviewed documents, acceptance documentation. ..

6. Continue Dome Loading Analyses (\$850K) (?)

The Dome Loading issue that emerged in 1994 requires continued analysis. It is estimated that an additional \$850K work is needed in FY 95. This work include structural analysis of the SSTs as well as determining the actual loads on the tanks. The breakdown for the activity is estimated at 1700 hours for ICF KH doing soil and load determination, 10,000 for Central

WHC-SP-1101

Engineering to produce the analysis reports, 1,500 for West Systems Engineering to provide the oversight, coordination, and needed support to higher management.

Deliverables - Structural and Loading analysis reports.

7. Develop 4 SDDs (\$135K) (?)

System Design Descriptions are needed to support the Safety Analysis Reports. It is anticipated that 4 SDDs should be produced in FY 95.

Deliverables - Four SDDs.

8. Obtain 7 Day Photo Ability. (\$32K)

9. Conduct Electrical and Instrumentation Assessment (\$510K)

10. Revise 357 Manual (\$40K)

11. Develop WSE Performance Guidelines (\$30K)

The Performance Guidelines will be developed by the Cognizant Engineers and will incorporate (by system or facility) applicable schedules, interfaces, goals, etc. This document will be the primary performance measurement standard for WSE.

Deliverable - WSE performance guidelines.

12. Photo Engineering Support (\$220K)

The amount shown is an assessed amount, prorated to provide for our share of the Photo Engineering services.

13. Corrosion Support (\$40K)

The amount shown is an assessed amount, prorated to provide for our share of the services.

14. Shift Engineering Support (\$270K)

The amount shown is an assessed amount, prorated to provide for our share of the services.

15. Prepare Quarterly Reports of WSE Performance (\$15K)

Organizational performance will be compared to the Performance Guidelines to determine actual performance. Reports will be prepared describing performance.

Deliverable - Quarterly reports of WSE Performance.

16. Provide COG Support for Cross Site Transfer Line (\$60K) (Funded by 1N1G73)

Cognizant Engineering support will be provided for the Cross Site Transfer Line. This support will be comparable to those items of Cognizant Engineering support of the farms identified above.

17. Evaluate Systems for Revised Codes and Standards (\$30K)

This accounts for the Cognizant Engineers' time devoted to assessing the facilities and systems for compliance with revised codes and standards.

Deliverable - Timely Input in Regards to Codes and Standards.

18. Develop Part B Implementation Plan (\$10K)

A Part B Implementation Plan will be developed describing how the West Tank Farms will meet the prescribed requirements.

Deliverable - Part B Implementation Plan

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	P. Hinojosa	
Cost Account Manager	S. H. Rifaey	
Project Control Analyst	M. A. DeWitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	P. Hinojosa <i>P. Hinojosa</i>	9/19/94
Cost Account Manager	S. H. Rifaey <i>S. H. Rifaey</i>	9/19/94
Project Control Analyst	M. A. DeWitt <i>J. J. Gorman</i>	9/19/94

FDS Number

1N1G76

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor	2. DATE PREPARED September 20, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.05/V	5. WBS ELEMENT TITLE Tank Farm SST Stabilization	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NE	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) 4.2.1.1 Store Waste 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120071 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$12,973	\$15,726	\$14,384				
CENRTC	\$ 140	\$ 690					
GPP							
LINE ITEM							
TOTAL	\$13,113	\$16,416	\$14,384				

1.1.1.2.01.05

A2-269

B. TECHNICAL BASES

Goals & objectives:

1. Complete Interim Stabilization and intrusion prevention for Single-Shell Tanks (SST) with pumpable liquid (except 241-C-106).
2. Prepare for emergency pumping leaking SSTs and pump leaking SSTs if required.
3. Procure Light Duty Utility Arm (LDUA), and obtain and maintain ability to operate LDUA.
4. Install Liquid Observation Wells (LOW) in all SSTs with sufficient material to function.

The following program master schedule activities are supported by WBS 1.1.1.2.01.05:

S005275	Perform Remaining SST Interim Stabilization
S005275A	M-41-00 SST Interim Stabilization Completed
S005280	Interim Stabilization of 5 Single Shell Tanks
S005280B	M-41-02-T2 Complete Interim Stabilization of 5 SSTs
S005282	Complete Emergency Leak Response Requirements & Emergency Pumping Preparations
S005282A	M-41-02 Complete SST Emergency Leak Response
S005282D	M-41-02-T3 Issue Detailed Procedures for Emergency Pumping
S005282E	M-41-02-T4 Restore 244-U Double-Contained Receiver Tank to Compliant Operating Condition
S005294	Complete Safety Study on Interim Stabilization of Watch List Tanks
S005294A	M-41-07 Complete Safety Studies and Analysis Report on Interim Stabilization of Remaining Watch List Tanks
S005296	Perform Interim Stabilization of 1 Non Watch List Tank in 241-U Tank Farm
S005296A	M-41-08 Start Interim Stabilization of 1 Non Watch List Tank in 241-U Tank Farm
S005296B	M-41-08-T1 Complete Interim Stabilization of 1 Non Watch List Tank in 241-U Tank Farm
S005300	Perform Interim Stabilization of 7 Non Watch List Tanks in 241-S Tank Farm
S005300A	M-41-09 Start Interim Stabilization of 7 Non Watch List Tanks in 241-S Tank Farm
S005300B	M-41-09-T1 Complete Interim Stabilization of 7 Non Watch List Tanks in 241-S Tank Farm
S005306	Interim Stabilization of 2 Flammable Gas Watch List Tanks in 241-A/AX Tank Farms
S005306A	M-41-10 Start Interim Stabilization of 2 Flammable Gas Watch List Tanks in 241-A/AX Tank Farms
S005310	Perform Interim Stabilization of 4 Flammable Gas Tanks in 241-U Tank Farm
S005310A	M-41-11 Start Interim Stabilization of 4 Flammable Gas Tanks in 241-U Tank Farm
S005310B	M-41-11-T1 Complete Interim Stabilization of 4 Flammable Gas Tanks in 241-U Tank Farm
S005315	Interim Stabilization of 4 Ferrocyanide Watch List Tanks in 241-BX/BY Tank Farms
S005315A	M-41-12 Start Interim Stabilization of 4 Ferrocyanide Watch List Tanks in 241-BX/BY Tank Farms
S005321	Interim Stabilization of 3 Organic Watch List Tanks in 241-U Tank Farm
S005321A	M-41-13 Start Interim Stabilization of 3 Organic Watch List Tanks in 241-U Tank Farm
S005321B	M-41-13-T1 Complete Interim Stabilization of 3 Organic Watch List Tanks in 241-U Tank Farm
S005327	Interim Stabilization of 7 Flammable Gas Watch List Tanks in 241-S/SX Tank Farms
S005327A	M-41-14 Start Interim Stabilization of 7 Flammable Gas Watch List Tanks in 241-S/SX Tank Farms
S005333	Interim Stabilization of 2 Organic Watch List Tanks in 241-S/SX Tank Farms
S005333A	M-41-15 Start Interim Stabilization of 2 Organic Watch List Tanks in 241-S/SX Tank Farms
S005338	Interim Stabilization of 2 Non Watch List Tanks in 241-T Tank Farms
S005355	Perform SST Intrusion Prevention
S005362	Maintain SST Emergency Pumping Capabilities
S005365	Issue RFP & Obtain Delivery of High-Level Liquid Waste Transport Cask
S005365B	M-41-03B Delivery of Mobile High-Level Liquid Waste Cask

S005378 Obtain/Operate Light Duty Utility Arm
S005380 Provide SST Program Support

Major end-item deliverables:

1. Tri-Party Agreement Milestone M-41-00, Complete Single-Shell Tank Interim Stabilization. Complete Interim Stabilization activities and intrusion prevention for all SSTs except 241-C-106.
2. Removal of pumpable liquid from leaking SSTs.
3. Procure and maintain LDUA for operation when needed.
4. Complete installation of LOWs in SSTs. (Proposed Tri-Party Agreement Milestone M-43-09)
5. Deliver functional LOW monitoring systems.
6. Provide technical support for existing drywell vans until spectral gamma system becomes functional.

Acceptance criteria:

1. Verification that SSTs are interim stabilized as defined in the Hanford Federal Facility Agreement and Consent Order.
2. Verification that intrusion prevention is accomplished as defined in the Hanford Federal Facility Agreement and Consent Order.
3. Verification that the LDUA is operable and fully ready for service by FY 1997.
4. Verification that LOWs have been installed in SSTs in accordance with the Hanford Federal Facility Agreement and Consent Order.
5. Verification that emergency pumping equipment is available for service.
6. Verification that a high level liquid waste shipping cask is available and fully ready for service, along with all attendant and required support and loading/unloading means.
7. Verification that new LOW vans are functional.

C. STATEMENT OF WORK

Required activities:

1. Prepare SSTs for interim stabilization
2. Pump (interim stabilize) SSTs
3. Perform intrusion prevention activities
4. Maintain equipment and receiving facilities
5. Provide technical guidance for day-to-day operation of facilities
6. Provide safety studies for interim stabilization of Watch-List tanks
7. Perform alternate operating scenario evaluations
8. Procure, maintain and operate a mobile High Level Liquid Waste (HLLW) cask
9. Procure, fabricate and maintain loading facilities for mobile HLLW cask
10. Perform emergency response preparations for leaking SSTs.
11. Perform emergency pumping of liquids from leaking SSTs
12. Provide Health & Safety, radiological engineering, QA/QC, and crane & rigging support
13. Provide program management for interim stabilization, intrusion prevention, and emergency pumping
14. Provide interim stabilization and emergency pumping technology improvements
15. Procure LDUA and prepare for operation
16. Maintain LDUA for operation
17. Maintain SST emergency pumping capability
18. Fabricate LOWs
19. Install LOWs

WHC-SP-1101

20. Put new LOW vans into service
21. Retire existing drywell vans

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.05	Remove liquid from SSTs Maintain LDUA operational
	To This WBS From	
1	1.1.1.2.02	Safety issues will be resolved to allow pumping in accordance with Tri-Party Agreement Interim Milestones
2	1.1.1.2.03	Upgrades to SST facilities
3	1.1.1.2.04	Sample SSTs & DSTs and provide laboratory analysis for compatibility

Technologies to be assessed:

1. Interim Stabilization and emergency pumping technology improvements

Options to be considered:

1. Forced evaporation
2. Alternative pumping equipment

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- Hanford Federal Facility Agreement and Consent Order, Fourth Amendment, January 1994
- Washington Administrative Code (WAC) Chapter 4 173-303, Dangerous Waste Regulations
- Standard/Requirements Identification Documents

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.05 Tank Farm SST Stabilization	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.05.01/VI	5. WBS ELEMENT TITLE Interim Stabilization	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NE	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Waste Storage 4.2.1.2 Waste Characterization 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$7,127	\$7,719	\$6,621
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$7,127	\$7,719	\$6,621

1.1.1.2.01.05.01

A2-223

WHC-SP-1101

B. TECHNICAL BASES

Goals & objectives:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

- Provide all engineering, operations, fabrication and construction support for interim stabilization activities and initiating preparations for stabilizing SSTs.
- Install and prepare to operate interim stabilization equipment.
- Provide Health and Safety and radiological engineering support as needed, and quality engineering/quality control support for interim stabilization activities.

Status of Design Documentation:

- Pumping control equipment was redesigned in FY94, other design documentation is existing.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Complete safety studies and analysis on interim stabilization of remaining Watch List tanks and provide the report(s) to Ecology and EPA. These studies to include: a) ferrocyanide tanks; b) hydrogen/flammable gas tanks; and c) organic tanks. If these studies recommend that a Watch List tank not be pumped, WHC will submit a justification report which contains the rationale for not pumping. The rationale will be presented on a tank-by-tank basis. December 31, 1994 (Tri-Party Agreement Milestone M-41-07)
- Complete interim stabilization of Tanks 241-BY-102, -109, and 241-C-102, -107, and C-110 by December 31, 1994. (Tri-Party Agreement Milestone M-41-01-T02)
- Complete all required field preparations. Complete all required safety assessments. Start stabilization pumping of tanks 241-U-102, -106, -107, and U-111 by July 31, 1995. [Tri-Party Agreement Milestone M-41-08 (241-U-102 non-Watch List tank) and Tri-Party Agreement Milestone M-41-13 (241-U-106, -107 and U-111 organic Watch List tanks.)]
- Complete interim stabilization of 1 non-Watch List tank in 241-U tank farm by March 31, 1996. (Tri-Party Agreement Milestone M-41-08-T01)
- Complete interim stabilization of 3 organic Watch List tanks in 241-U tank farm by December 31, 1996. (Tri-Party Agreement Milestone M-41-13-T01)
- 241-U Tank Farm Field Preparations for 4 flammable gas Watch List Tanks:
 - Issue resource loaded schedule for preparation of interim stabilization to SST's U-103, 105, 108, and U-109, so that all safety studies, monitoring, and field preparations needed to commence interim stabilization of these four flammable gas Watch List tanks are completed by April 30, 1996, as required by the associated Tri-Party Agreement milestone. Provide schedule to RL. Complete field work as required to support the Tri-Party Agreement milestone (M-41-11.)
- Start interim stabilization of 4 flammable gas Watch List tanks in 241-U tank farm by April 30, 1996. (Tri-Party Agreement Milestone M-41-11)
- Complete interim stabilization of 4 flammable gas Watch List tanks in 241-U tank farm by May 31, 1997. (Tri-Party Agreement Milestone M-41-11-T01)
- S-Farm interim stabilization preparations:
 - Provide to RL a milestone for partial completion of field preparations during FY-95 in S-farm (S-101, -103, -106, -107, -108, -109, and S-110) sufficient to support the

1.1.1.2.01.05.01

A2-274

WHC-SP-1101

associated Tri-Party Agreement milestone (M-41-09.)

- Complete all field preparations and start interim stabilization of 7 non-Watch List tanks in 241-S tank farm by January 31, 1996. (Tri-Party Agreement Milestone M-41-09)
- Complete interim stabilization of 7 non-Watch List tanks in 241-S tank farm by April 30, 1997. (Tri-Party Agreement Milestone M-41-09-T01)
- 241-A & AX Tank Farms Field Preparations for 2 flammable gas Watch List Tanks:
 - Issue resource loaded schedule for preparation of interim stabilization to single-shell tanks A-101 and AX-101 so that all safety studies, monitoring, and field preparations needed to commence interim stabilization of this tank are completed by April 30, 1996, as required by the associated Tri-Party Agreement milestone. Provide schedule to RL. Complete field work as required to support the Tri-Party Agreement milestone (M-41-10.)
- Start interim stabilization of 2 flammable gas Watch List tanks in 241-A/AX tank farms by April 30, 1996. (Tri-Party Agreement Milestone M-41-10)
- 241-BX & BY Tank Farms Field Preparations for 4 ferrocyanide Watch List Tanks:
 - Issue resource loaded schedule for preparation of interim stabilization to single-shell tanks BX-106, BY-103, BY-105, and BY-106 so that all safety studies, monitoring, and field preparations needed to commence interim stabilization of this tank are completed by April 30, 1997, as required by the associated Tri-Party Agreement milestone. Provide schedule to RL. Complete field work as required to support the Tri-Party Agreement milestone (M-41-12.)
- Start interim stabilization of 4 ferrocyanide Watch List tanks in 241-BX/BY tank farms by April 30, 1997. (Tri-Party Agreement Milestone M-41-12)
- 241-S & SX Tank Farms Field Preparations for 7 flammable gas Watch List Tanks:
 - Issue resource loaded schedule for preparation of interim stabilization to single-shell tanks S-111, S-112, SX-101, SX-102, SX-103, SX-104, and SX-105 so that all safety studies, monitoring, and field preparations needed to commence interim stabilization of this tank are completed by June 30, 1997, as required by the associated Tri-Party Agreement milestone. Provide schedule to RL. Complete field work as required to support the Tri-Party Agreement milestone (M-41-14.)
- Start interim stabilization of 7 flammable gas Watch List tanks in 241-S/SX tank farms by June 30, 1997. (Tri-Party Agreement Milestone M-41-14)
- 241-S & SX Tank Farms Field Preparations for 2 organic Watch List Tanks:
 - Issue resource loaded schedule for preparation of interim stabilization to single-shell tanks S-102 and SX-106 so that all safety studies, monitoring, and field preparations needed to commence interim stabilization of this tank are completed by June 30, 1997, as required by the associated Tri-Party Agreement milestone. Provide schedule to RL. Complete field work as required to support the Tri-Party Agreement milestone (M-41-15.)
- Start interim stabilization of 2 organic Watch List tanks in 241-S/SX tank farms by June 30, 1997. (Tri-Party Agreement Milestone M-41-15)
- Continue the process test in Tank 241-C-105. This will include maintaining the evaporative air flow monitoring the technical data and performing periodic analysis of the condition of the tank. Periodic in-tank photographs will be taken as conditions warrant. Declare Tank 241-C-105 interim stabilized when criteria is met. This is supportive of the overall stabilization milestone M-41-00.
- Monitor the development of safety studies and in-tank monitoring to assess the impact that they will have on the activities within the stabilization program. This is required to assure that

WHC-SP-1101

WHC will be able to meet the other milestones listed above.

- Initiate preparation of interim stabilization of 3 tanks in 241-T Farm (Tri-Party Agreement Milestones M-41-16, M-41-17, and M-41-18).
- Complete all physical activities and comprehensive reviews required to start, and then commence interim stabilization and/or emergency pumping for six single-shell tanks (SST). This includes the testing and flushing of transfer routes from the SSTs to be interim stabilized to the Double-Contained Receiver Tanks (DCRTs). It involves the development of procedures and work plans, training, and readiness reviews are required for each tank to be pumped. The task also requires the installation and check out of the saltwell pump and the instrument control system. The milestone will be complete when as much liquid as practicable is removed from SSTs 241-BX-111, 241-BY-102, 241-BY-109, 241-C-102, 241-C-107, and 241-C-110 by November 1994. (Safety Initiative 5b)

C. STATEMENT OF WORK

Required activities:

WORK TO BE PERFORMED

See "Major End-item Deliverables" discussed in Section B above.

The work consists of all activities required to prepare each single-shelled tank (SST) and each tank farm to pump the residual fluids to a double-shelled tank (DST). Some of the activities that are included are: preparing USQ screenings/evaluations; monitoring safety reviews and tank monitoring data for impact on stabilization activities; preparation of work packages; repairing/replacing and calibrating existing equipment, instrumentation and alarms; evaluating and repairing/replacing utilities; design and procurement of materials and equipment; troubleshooting and resolution of operating problems during pumping; failure analysis; technical analysis of liquid volumes and tank status; pre- and post-pumping in-tank photography; technical support in the response to, and evaluation of unplanned events and process upsets; and identifying more cost effective ways to perform the work.

RL will be notified as each milestone is completed.

Activities which are specifically not authorized under this WBS element:

- Installation of flammable gas monitors
- Obtaining and analyzing data from flammable gas monitors
These activities are in WBS 1.1.2.02
- Obtaining and analyzing liquid samples for compatibility prior to pumping to DSTs. This activity is in WBS 1.1.2.04.

HOW WORK IS TO BE PERFORMED

WHC is becoming more knowledgeable about the conditions in the tank farms and the procedures that will be required to increase their operability. We will be able to build on previous activities and work packages and will be able to make better management decisions on how to approach problems. We will continue to be alert for activities that do not seem productive or which can be done more cost effectively. Some engineering activities will be out-sourced when it is cost effective to do so. Several

1.1.1.2.01.05.01

A2-276

WHC-SP-1101

cost saving ideas that are expected to be implemented include use of the design of the emergency overground transfer system design to replace failed lines; use of a prefabricated Pump Instrumentation Skid to replace failed and outmoded equipment; and, identifying more cost effective shielding for the overground transfer lines. The use of dedicated personnel is expected to reduce activity durations and improve efficiencies.

WHC has integrated ICF KH personnel into the project teams to supplement its resources in the areas of engineering, scheduling, and project management. ICF KH construction forces will be performing some of the field work.

WHY WORK IS TO BE PERFORMED

All work is directly in support of the Tri-Party Agreement Milestones specified in Section B above.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

Each tank will be pumped until it meets the criteria for interim stabilization specified in the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement): i.e., pumping rates fall to less than 0.05 gal/min, and the pumpable volume is reduced to less than 5000 gallons of supernate and 50,000 gallons of pumpable interstitial liquid. RL will be notified as each milestone is completed.

Safety studies of the Watch List tanks will be issued to meet the milestone.

All work will be performed in accordance with Standards/Requirements Identification Documents (S/RIDs).

MANDATORY SCHEDULE CONSTRAINTS

- A. BY & C TANK FARMS
The pumping is to be completed by December 31, 1994 (Tri-Party Agreement Milestone).
The actual volumes and pumping rates may vary significantly from the estimates.
- B. U-TANK FARM
Completion of these milestones is dependant on the availability of DST space (as a result of the cross site transfer from SY-Farm) and the satisfactory resolution of safety issues related to Watch List tanks and the development of appropriate monitoring programs.
- C. A/AX-FARMS
Completion of the pumping of these tanks will depend on the availability of DST space (continued operation of the Evaporator) and the resolution of safety and monitoring issues related to the Watch List (flammable gas) tanks.
- D. S-FARM
See U-Farm comments above.

Because of the condition of the S-Farm infra-structure WHC expects to utilize a newly developed pump instrumentation skid which is expected to reduce the over-all costs and time

WHC-SP-1101

required to prepare the farm for pumping.

H. TANK C-105

There continue to be uncertainties associated with both the volume of residual fluids and the evaporation rate.

I. GENERAL CONSTRAINTS

The start of pumping for all tanks is dependent on the liquid sampling and analysis for compatibility of each SST and its DST Receiver Tank by WBS 1.1.2.04.

The start of in tank field activities for flammable gas watch list tanks is dependent on the installation of flammable gas monitors by WBS 1.1.2.02.

The start of pumping for organic and flammable gas watch list tanks may be impacted by changes in safety constraints, and approval requirements or other regulatory changes.

Waste Tank Safety Program (WBS 1.1.2.02) is responsible for installing equipment and monitoring watch list tanks.

BUDGET FORECAST

A. BY & C TANK FARMS: M-41-01-T02	\$ 124
B. U-TANK FARM: M-41-08, M-41-08-T01, M-41-13, M-41-13-T01	1793
U-TANK FARM: M-41-11, M-41-11-T01	234
C. A/AX-FAR: M-41-10, M-41-10-T01	588
D. S-FARM: M-41-09, M-41-09-T01	4338
G. SAFETY REPORTS:	44
H. C-105:	6

MAXIMUM COST OF EACH DELIVERABLE

A. BY & C TANK FARMS: M-41-01-T02	\$ 200
B. U-TANK FARM: M-41-08, M-41-08-T01, M-41-13, M-41-13-T01	2330
U-FARM: M-41-11, M-41-11-T01	304
C. A/AX-FARMS: M-41-10, M-41-10-T01	765
D. S-FARM: M-41-09, M-41-09-T01	5650
G. SAFETY REPORTS:	60
H. C-105:	25

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see the work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor

1.1.1.2.01.05.01

A2-278

WHC-SP-1101

will refer any conflicts between the RL-TWRS guidance and guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Technologies to be assessed:

Not within this cost account

Options to be considered:

Covered in WBS 1.1.2.01.05.04/VI

1.1.1.2.01.05.01

A2-279

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	T. E. Rainey <i>N/A</i>	
Cost Account Manager	D. B. Engelman	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DMLucoff</i>	<i>9/19/94</i>
Activity Manager	T. E. Rainey <i>T.E. Rainey</i>	<i>9/19/94</i>
Cost Account Manager	D. B. Engelman <i>DB Engelman</i>	<i>9/19/94</i>
Project Control Analyst	M. A. Dewitt <i>M.A. Dewitt</i>	<i>9/21/94</i>

FDS Number

1N1E51

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.05 Tank Farm SST Stabilization	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.05.02/VI	5. WBS ELEMENT TITLE Intrusion Prevention (1N1E52)	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NE	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Waste Storage 4.2.1.2 Waste Characterization 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$282	\$1,019	\$599
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$282	\$1,019	\$599

1.1.1.2.01.05.02

A2-281

B. TECHNICAL BASES

Goals & objectives:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

To prevent intrusion into interim stabilized single-shell tanks (SST) a process is used of plugging or otherwise blocking pipelines leading into SSTs, and sealing pump or valve pits that drain back into SSTs, or installing barriers to avoid inadvertent liquid addition to a stabilized SST.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Complete intrusion prevention in 2 single-shell tanks by September 30, 1995.
- Complete intrusion prevention in 7 single-shell tanks by September 30, 1996.
- Complete intrusion prevention in 4 single-shell tanks by September 30, 1997.
- Complete intrusion prevention in all single-shell tanks except tank 241-C-106 by September 30, 2000. (Tri-Party Agreement Milestone M-41-00)

C. STATEMENT OF WORK

Required activities:

WORK TO BE PERFORMED

It is necessary to take steps to assure that additional liquids will not be added to the interim stabilized SSTs. This work is to identify all feasible routes of liquid intrusion and to provide an effective barrier to prevent such intrusion into the tanks.

HOW WORK IS TO BE PERFORMED

A comprehensive engineering review of the past practices to prevent liquid intrusion into interim stabilized tanks has been completed and recommendations for future activities were made. WHC has not been involved in this type of work for several years. We will be alert for activities that do not seem productive or which can be done more cost effectively. Specific efficiencies will be identified in detailed design. Value Engineering will be considered as a technique to develop cost reduction options.

WHY WORK IS TO BE PERFORMED

This work is required to support of the Tri-Party Agreement Milestone M-41-00. Complete interim stabilization and intrusion prevention for all SSTs except 241-C-106.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

This work will be deemed complete when all field work specified in the design is complete and verification that intrusion prevention is accomplished as defined in the *Hanford Federal Facility Agreement and Consent Order* (Tri Party Agreement).

MANDATORY SCHEDULE CONSTRAINTS

Sufficient SSTs must have interim stabilization complete to allow intrusion prevention activities.

WHC-SP-1101

Personnel identified for these tasks may be diverted if necessary to higher priority activities such as responding to an assumed tank leak.

BUDGET FORECAST (FY 95)

Intrusion Prevention: 2 tanks \$ 282

MAXIMUM COST OF EACH DELIVERABLE

Intrusion Prevention: 2 tanks \$ 370

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see the work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL-TWRS guidance and guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	T. E. Rainey <i>TE Rainey</i>	
Cost Account Manager	D. B. Engelman	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	T. E. Rainey <i>TE Rainey</i>	9/19/94
Cost Account Manager	D. B. Engelman <i>DB Engelman</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>M.A. Dewitt</i>	9/21/94

FDS Number

1N1E52

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.05 Tank Farm SST Stabilization	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.05.03/VI	5. WBS ELEMENT TITLE SST Emergency Pumping Preparation	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NE	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Waste Storage 4.2.1.2 Waste Characterization 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,214	\$1,267	\$1,100
CENRTC		\$ 690	
GPP			
LINE ITEM			
TOTAL	\$1,214	\$1,957	\$1,100

1.1.1.2.01.05.03

A2-285

B. TECHNICAL BASES

Goals & objectives:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

Prepare for emergency pumping leaking SSTs. The target is to be in a position to begin pumping within 7 days of a tank being identified as an assumed leaker.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Provide an annual plan to test all transfer lines for tanks with pumpable liquid.
- Complete ECNs to upgrade wheeled emergency jet pump control station.
- Provide staff training for emergency pumping and implement for east and west tank farms.
- Updated emergency pumping guide.
- Delivery of the mobile high-level liquid waste transport cask. This milestone is predicated on the response received to the procurement request. Upon award of contract, the contract delivery date will be established as this milestone date. It is currently estimated at 12/31/95. (Tri-Party Agreement Milestone M-41-03B)
- Design and build loading facility for HLLW cask.
- Add corrosion inhibitor to selected SSTs (FY 1996 and FY 1997).
- Complete emergency pumping procedures for remaining tanks which have pumpable liquid. This will include preparation of work packages to install all equipment needed to emergency pump these tanks, and procedures (work packages) to emergency pump the tanks themselves. Notify RL by March 31, 1995, that emergency pumping procedures for all tanks have been completed. If any tank cannot be pumped, due to safety issues, then submit other actions to be taken on these tanks. (Tri-Party Agreement Milestone M-41-02-T03)
- Implement Preventative Maintenance (PM) program for maintenance of emergency pumping equipment in operational readiness.

C. STATEMENT OF WORK

Required activities:

WORK TO BE PERFORMED

See "Major End-item Deliverables" discussed Section B above.

Funds in this account are expended with one of two goals in mind; either to reduce the risk of a tank failure (inhibitors), or to improve response time once an assumed leaker is identified.

In the first case, the scope includes design and procurement of a system to add inhibitor to SSTs and then to add inhibitor to selected SSTs in FY 1996 and FY 1997.

The second, involves a variety of activities:

- Development of a schedule and strategy to keep all necessary transfer lines tested and available for use. This will reduce delays in tank farm preparation.
- Develop the ECNs to upgrade the existing wheeled pump controls station so it is ready for immediate use if emergency pumping is required on two tanks simultaneously.
- Maintenance of a "certified" staff so that pumping will not be delay while personnel are

WHC-SP-1101

trained.

- Maintaining updated documentation (Emergency Pumping Guide) to assure that essential data is readily available.
- Procurement of the high level waste transport cask
- Design and fabrication of the mobile loading facility, and provide appropriate procedures for using the system. (FY 1996 and FY 1997)
- Preparation of O & M/ installation procedures for the emergency overground transfer system.
- Prepare all work packages and procedures that are required to pump each of the SSTs that do not meet the interim stabilization criteria.
- Complete follow up on the 244-U Restart project including any necessary permitting.
- Maintaining emergency pumping equipment according to Preventative Maintenance (PM) program.

HOW WORK IS TO BE PERFORMED

The thrust of this entire activity is to develop ways to be more efficient and effective ways to respond to assumed leakers. By doing procedures all at once we will take advantage of trained personnel and building on previous (and similar) documents.

WHY WORK IS TO BE PERFORMED

This work is required to support of the Tri-Party Agreement Milestone M-41-00, Interim Stabilization of all SSTs.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

All work will be performed in accordance with the Standards/Requirements Identification Documents (S/RIDs).

RL will be notified as each milestone is met.

MANDATORY SCHEDULE CONSTRAINTS

Emergency leak response preparations must be complete by 3/31/95. (Tri-Party Agreement Milestone M-41-02)

BUDGET FORECAST

•	EP Procedure Writing	\$511
•	Maintain EP Equipment	344
•	244-U DCRT	18
•	HLLW	149
•	HLLW SAR & Support	121

MAXIMUM COST OF EACH DELIVERABLE

•	EP Procedure Writing	\$670
•	Maintain EP Equipment	450
•	244-U DCRT	30
•	HLLW	200
•	HLLW SAR & Support	160

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see the work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL-TWRS guidance and guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Technologies to be assessed: N/A

Options to be considered:

- Alternative pumping equipment
- Increased utilization of High Level Waste Transport Cask

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	T. E. Rainey <i>TE Rainey</i>	
Cost Account Manager	D. B. Engelman <i>DB Engelman</i>	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	T. E. Rainey <i>TE Rainey</i>	9/19/94
Cost Account Manager	D. B. Engelman <i>DB Engelman</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>M.A. Dewitt</i>	9/21/94

FDS Number

1N1E53

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/ M & O Contractor 1.1.1.2.01.05 Tank Farm SST Stabilization	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.05.04/VI	5. WBS ELEMENT TITLE SST Stabilization Support	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NE	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Waste Storage 4.2.1.2 Waste Characterization 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3,051	\$3,105	\$3,395
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$3,051	\$3,105	\$3,395

1.1.1.2.01.05.04

A2-291

B. TECHNICAL BASES

Goals & objectives:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

- Provide support and program management for SST interim stabilization & intrusion prevention, emergency pumping preparations, emergency pumping, Liquid Observation Well (LOW) installation, and Light Duty Utility Arm (LDUA) testing and operations.

Status of Design Documentation:

- Technical studies will be performed to determine improvements to design improvements.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- The program management for stabilization & intrusion prevention is responsible for detailed planning and performance, including the technical quality, of the work. This workscope supports the Tri-Party Agreement Milestone M-41-00, "Complete Single-Shell Tank Interim Stabilization."
- Monthly Tri-Party Agreement status reports to Ecology and EPA.
- Technical studies to support SST interim stabilization and emergency pumping improvements.
 - Document program plan to document SST interim stabilization and intrusion prevention plans and assumption
 - Evaluation forced evaporation
 - Evaluation alternate techniques for in-tank photography
 - Reports to support various Tri-Party Agreement negotiations
- Issue 12 Tank Farm Surveillance and Waste Status Summary Reports, WHC-EP-0182-XX, annually.
- Update and deliver revised Waste Tank Data Book to distribution in FY 1996.

C. STATEMENT OF WORK

Required activities:

WORK TO BE PERFORMED

This account provides staffing for a variety of supportive functions that are required for the interim stabilization and single-shell tank (SST) program. These include funding for general studies, costs for staff training, office supplies and equipment, administrative support (budgets, cost tracking), quality assurance/quality control, general management, and support staff.

As indicated above, the studies included are:

- Documentation of the current stabilization/intrusion prevention program plan
- Evaluation of forced evaporation as a stabilization technique
- Support of Tri-Party Agreement negotiations for items such as authorization to use "repaired" transfer lines and defining criteria for "assumed" tank leaks
- Evaluate the benefits of using digital photo procession and stereo photography to enhance in-tank photography

This account includes facility site support CSSO organization. In addition, 12 Tank Farm Surveillance and Waste Status Summary Reports will be issued annually. The Waste Tank Data Book will be

WHC-SP-1101

updated and expanded to include the current tank status and additional information that was not available for previous publications in FY 1996. Monthly reports will be provided to the Tri-Party Agreement and Site Management System (SMS).

This account also provides funding for support from the Quality Assurance organizations, PNL Technical support, and for the facility costs associated with the interim stabilization field crews.

Funding for training of Stabilization and Support Engineering personnel is provided.

HOW WORK IS TO BE PERFORMED

WHC is becoming more knowledgeable about the conditions in the tank farms and the procedures that will be required to increase their operability. We will be able to build on the experience from previous activities and work packages and will be able to make better management decisions on how to approach problems. We will continue to be alert for activities that do not seem productive or which can be done more cost effectively. Several of the studies are specifically looking at the existing work processes with the intent to find more efficient and effective ways to perform the work.

ICF KH has been incorporated into the organization and is supplementing the WHC engineering, scheduling, and project management resources. Some of the field work will be performed by construction forces.

WHY THE WORK IS BEING PERFORMED

This work is all being performed to support Tri-Party Agreement Milestone M-41-00 and proposed Tri-Party Agreement Milestone M-43-09.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

To a great extent the benefits of this account will be realized in the successful completion of the activities that are directly funded in other budget accounts (i.e., 1.1.1.2.01.05.01, 1.1.1.2.01.05.02, 1.1.1.2.01.05.03, 1.1.1.2.01.05.05, and 1.1.1.2.01.05.07). Reports will be issued on all technical studies as they are issued.

MANDATORY SCHEDULE CONSTRAINTS

Many of these activities are level of effort support to the field and engineering functions. They are not specifically constrained by the external events other than funding and the availability of resources. Personnel identified for these tasks may be diverted if necessary to higher priority activities such as responding to an assumed tank leak.

BUDGET FORECAST

General Management	
• Program Plan	\$1998
• Training	\$ 83
• CSSO	\$ 284
Technical Studies	\$ 574
Quality Assurance	\$ 112

WHC-SP-1101

MAXIMUM COST OF EACH DELIVERABLE

General Management	
• Program Plan	\$2600
• Training	\$ 110
• CSSO	\$ 370
Technical Studies	\$ 750
Quality Assurance	\$ 150

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see the work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL-TWRS guidance and guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Technologies to be assessed:

- Forced evaporation
- Digital Photo Procession
- Statistical Analysis Applications/Strategies for monitoring SSTs for leaks and intrusions.

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	T. E. Rainey <i>TE Rainey</i>	
Cost Account Manager	D. B. Engelman <i>DB Engelman</i>	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	T. E. Rainey <i>TE Rainey</i>	9/19/94
Cost Account Manager	D. B. Engelman <i>DB Engelman</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>M.A. Dewitt</i>	9/21/94

FDS Number

1N1E54

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.05 Tank Farm SST Stabilization	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.05.05/VI	5. WBS ELEMENT TITLE SST Emergency Pumping							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NE							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Waste Storage 4.2.1.2 Waste Characterization 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$260	\$1,000	\$1,000
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$260	\$1,000	\$1,000

B. TECHNICAL BASES

Goals & objectives:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

- Emergency pumping of single-shell tanks if required.
- Assumes one leaking tank will occur each year.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Complete emergency pumping of tank 241-T-111 by March 31, 1995, and so inform RL. (Tri-Party Agreement Milestone M-41-16A-T01)
- Reassemble the Emergency pumping trailer and maintain all emergency pumping equipment in accordance with the Preventative Maintenance Procedures.
- Complete equilibration activities and evaluation of completion of emergency pumping of tank 241-BX-111.

C. STATEMENT OF WORK

Required activities:

WORK TO BE PERFORMED

See "Major End-item Deliverables" discussed Section B above.

WHC is currently performing Interim Stabilization on tank 241-T-111 which was determined to be an assumed leaker in the first quarter of 1994. Pumping will continue until the tank is determined to be interim stabilized.

Funding is also provided to replace pumps and jumpers which were removed from the "emergency pumping" supplies to expedite the pumping of tank 241-T-111.

No provision has been provided for emergency pumping of other assumed leaking tanks in FY 1995.

Analyze status of tank 241-BX-111.

HOW WORK IS TO BE PERFORMED

By using more standardized equipment and keeping an inventory of the equipment required to respond to an assumed leaking tank WHC will reduce the response time significantly.

ICF KH has been incorporated into the organization and is supplementing the WHC engineering, scheduling, and project management resources. The additional resources and flexibility will also help to reduce the overall response time.

These resources, as well as personnel from other interim stabilization activities will be available to be utilized to respond to any tank that is identified as an assumed leaker in FY 1995.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

Each tank will be pumped until it meets the criteria for interim stabilization specified in the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement): i.e., pumping rate falls to less than 0.05 gallons per minute, or the pumpable volume is reduced to less than 5000 gallons of supernate and 50,000 gallons of pumpable interstitial liquid. RL will be notified when this milestone is reached. The target is 3/31/95.

All material used from the emergency pumping supplies to expedite the pumping of 241-T-111 will be replaced in kind.

MANDATORY SCHEDULE CONSTRAINTS

Replacement of equipment and materials that were used to pump 241-T-111 has been impacted by FY 1994 budget constraints and may be affected by resource constraints in FY 1995.

WHC's ability to respond to an assumed leaking tank in a timely manner may be impacted by the reviews and concurrences that are required from various regulators.

BUDGET FORECAST

Pumping 241-T-111/equipment replacement	\$ 187 K
BX-111	73 K

MAXIMUM COST OF EACH DELIVERABLE

Pumping 241-T-111/equipment replacement	\$ 245 K
BX-111	100 K

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see the work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL-TWRS guidance and guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	T. E. Rainey <i>N/A</i>	
Cost Account Manager	D. B. Engelman	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DMLucoff</i>	9/19/94
Activity Manager	T. E. Rainey <i>T.E. Rainey</i>	9/19/94
Cost Account Manager	D. E. Engelman <i>D. Engelman</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>M.A. Dewitt</i>	9/21/94

FDS Number

1N1E55

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.05 Tank Farm SST Stabilization	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.05.06/VI	5. WBS ELEMENT TITLE Light Duty Utility Arm	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NE	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$293	\$898	\$925
CENRTC	\$140		
GPP			
LINE ITEM			
TOTAL	\$433	\$898	\$925

B. TECHNICAL BASES

Goals & objectives:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

The goal of this activity is to provide a functional Light Duty Utility Arm for deployment to EM-30 by 2nd quarter FY '96. Full documentation, a completed Operational Readiness Review, and adequate training for involved crafts will be included under the scope of this activity.

NOTE: Due to reduction of FY '95 budget, the above items will not be accomplished. In addition, severe impacts to EM-50 DOE-HQ milestones and deliverables will occur as a result of shifting FY '95 work to FY '96. Not only will this incrementally increase funding requirements for FY '96 and FY '97, it will also result in late deployment of the LDUA for hot test in FY '97. The attached documents provide detail of both monetary and schedule impacts to the LDUA Program. Please refer to WHC Internal Memos #94-0038-GHS, dated August 12, 1994 and #94-0040-RCE, dated August 18, 1994.

Status of Design Documentation:

The design of the LDUA is currently at approximately 50 percent complete.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

NOTE: Please refer to note on page 1 of this WBS Dictionary Sheet. Completion of the deliverables listed below will be impacted by 12 to 18 months.

During FY '95, the LDUA design will be completed, personnel training will be initiated, the ORR will be initiated, the acceptance test for the LDUA will be prepared and performed, and cold testing of the first LDUA will be initiated.

During FY '96, the ORR will be completed, cold testing of the first LDUA will be completed, storage and maintenance facilities within EM-30 will be secured, EM-30 training will be completed, required reviews will be completed and permits obtained, the first LDUA will be deployed hot and evaluated, and the second LDUA will be received, tested and turned over to EM-50.

During FY '97, the LDUA will be deployed into each of three tanks to support EM-30 activities.

QA support will be provided over the entire duration to verify that all applicable QA requirements are adequately met.

C. STATEMENT OF WORK

Required activities: N/A

Technologies to be assessed: N/A

Options to be considered: N/A

**Westinghouse
Hanford Company****Internal
Memo**

From: Facility and Equipment Engineering
Phone: 373-0996 N1-21
Date: August 12, 1994
Subject: LIGHT DUTY UTILITY ARM WORK STOPPAGE FY-1994

94-0038-GHS

To: Mr. Thomas E. Rainey R4-02

cc: J. G. Propson S4-58
LDUA File 2.1.6
GHS File/LB

It is requested that authorization be provided to continue outsourced work-in-progress in support of the Light Duty Utility Arm (LDUA) system. This work includes design and development of the LDUA H₂O Decontamination System. In addition, preparation of operations, training and maintenance procedures for the LDUA, along with at tank field surveys in support of the LDUA Deployment are scheduled to be completed. This technical support work totals \$200k, which is currently in the LDUA FY-1994 reduced budget. Performance of this work in FY-1994 is essential to the successful initiation of LDUA fabrication, testing, and operation. The impact of the work stoppage on outside sources for the LDUA shall result in the delay of U.S. Department of Energy (DOE-HQ) milestones and deliverables. This stoppage shall have significant negative impacts on the LDUA design and fabrication schedule. Work currently in progress that is jeopardized by the work stoppage is described below:

Water Decon - The H₂O decon design directly supports the SPAR Aerospace LDUA and Tank Riser Interface and Confinement sub-system design efforts. The H₂O decon design is an essential LDUA sub-system that has critical interfaces with other LDUA sub-systems. In addition, work stoppage of the H₂O Decon sub-system design shall delay design effort for the LDUA control system.

Procedures for training, operations and maintenance are required to be approved and released before cold testing, operator training and operator certification, hot deployment, and maintenance of the LDUA can be accomplished. A stoppage of the work-in-progress on the LDUA procedures will delay by 3 months preparations for the Operational Readiness Review.

It should be noted that any further reduction in LDUA funding for FY-1994 will have a direct impact on FY-1995, DOE-HQ milestones and Westinghouse Hanford (WHC) key milestones. The impacts are not only for WHC, but for the other U.S. Department of Energy sites who are key players in the design and use of the LDUA. Furthermore, budget requests for FY-1995 do not contain adequate funds to complete any FY-1994 work commitments.

T. E. Rainey
August 12, 1994

94-0038-GHS

If we are not authorized to complete the above tasks, there will be a 3 to 6 months slip of the following:

- SPAR LDUA Design
- LDUA Control System Design (Sandia National Laboratory)
- Missed DOE-HQ and WHC Milestones
- Delay in cold test
- Delay in hot test
- Delay in hot deployment
- Delays in EM-50 commitments to DOE
- Delays in EM-30 commitments to DOE

We should really think about the far reaching consequences the stoppage of Cost Account 1N1 funding for the LDUA as mentioned in this impact statement, will have on this project, as well as other projects related to the LDUA. It will also have an impact on the Award Fee Associated with the DOE-HQ milestones.

The required increase in funding for FY-1995 will be as follows:

• Complete H ₂ O decon design	80k	
• PO order for H ₂ O decon fabrication	100k	
• Procedure writers		40k
• ICF KH field survey of new tank	<u>70k</u>	
		290k

If we in (TWRS) EM-30 can not complete the design and fabrication of the H₂O decon and required procedures, one of two things will happen. First, we will not deploy the arm in the tank farms until the system is complete. Second, if the H₂O Decontamination System is not designed and fabricated, TWRS will have to secure \$700k of capital funding for the CO₂ decon system. This will double the operations setup and take down time for each hot deployment.

Should you have any questions in this matter please call me.

George H. Smith, CAM LDUA
Facility and Equipment Engineering

llh

**Westinghouse
Hanford Company****Internal
Memo**

From: Tank Technology Projects 94-0040-RCE
Phone: 376-8695 N1-21
Date: August 18, 1994
Subject: IMPACT OF DELAY IN EM-30 TECHNICAL SUPPORT TO THE LIGHT DUTY UTILITY
ARM SYSTEM DEVELOPMENT

To: George H. Smith N1-21

cc: B. A. Carteret N1-21
G. R. Kiebel N1-21
M. R. Koch R1-49
J. G. Propson S4-58
T. J. Samuel N1-21
RCE File/LB

It has recently been brought to my attention that TWRS is planning to divert funding for technical activities currently in progress that are directly in support of the Light Duty Utility Arm (LDUA) System Development. In addition, I have also heard that TWRS is considering significant reductions in funding commitments to the LDUA System development in FY-95. If what I have heard is true, it has a very significant negative impact on EM-50's efforts to complete design, fabrication, and testing of the LDUA system in support of the TWRS LDUA program.

The impacts of a TWRS interruption and or decrease in the current year and planned out year funding allotted to the development and deployment of the Light Duty Utility Arm (LDUA) System have a direct impact on EM-50's current milestones with DOE to provide a LDUA system that is fully ready for deployment in an underground waste storage tank at the Hanford site in FY-96.

TWRS ordered a Light Duty Utility Arm System on June 15, 1994 for deployment in Hanford's underground storage tanks. EM-50 has been working closely with EM-30's LDUA Program Lead Engineer to insure that the LDUA system meets all the requirements necessary for the successful initiation of a tank surveillance and inspection mission in the second quarter of FY-96.

Over the past year EM-30/50 has established a strong "teaming" relationship as we have worked together to develop a robotic arm system that can be of maximum usefulness to TWRS. Currently, DOE-HQ recognizes Hanford as the lead site for development and deployment of the LDUA system technology. Other DOE sites have made financial commitments to obtain and utilize their own LDUA systems. These sites, which presently include Idaho Falls and Oak Ridge, are depending on Westinghouse Hanford Company to complete development and testing on schedule. Idaho and Oak Ridge have directly linked their LDUA programs with successful demonstration of the LDUA System at Hanford. Idaho Falls has a DOE-HQ level goal to complete a tank assessment mission with the LDUA in FY-96. Oak Ridge has a DOE-HQ level goal to demonstrate a waste retrieval activity using LDUA in their tanks in FY-97. These sites are depending heavily on the LDUA testing that is scheduled to be performed in FY-95 and FY-96 here at the Hanford Site.

G. H. Smith
August 18, 1994

94-0040-RCE

Hanford along with Idaho and Oak Ridge have developed an integrated schedule for LDUA development. In addition, Idaho and Oak Ridge are planning to utilize and leverage off of Hanford LDUA resources, facilities and staff to successfully complete a cost effective DOE multi-site integrated demonstration of the LDUA system.

Due to TWRS funding difficulties throughout FY-94, the assignment of a Cognizant Engineer and procedure writers to support LDUA have been delayed until just recently. TWRS has initiated work to prepare documents that include; Operational Readiness Review, Operations, Maintenance, Training, and Testing documentation. TWRS has been making good progress in making up for delays incurred earlier in the year to the schedule in the preparation of these critical documents. An interruption of the funding that supports preparation of LDUA documentation activities will seriously impact EM-50 preparations to complete LDUA design. The information contained in the documents being written by TWRS will be used by EM-50 to insure that the LDUA meets TWRS requirements.

EM-50 has three milestones that are directly linked to the completion of EM-30 documentation for LDUA. Milestones MS5, "Issue LDUA Cold Test Plan for Approval" (DOE Richland Operations Office Milestone), MS7, "Issue LDUA Cold Test Procedures" (WHC Internal Milestone), and MS13, "Initiate Cold Test" (DOE Richland Operations Office Milestone) can not be met without significant support from TWRS.

In addition, the LDUA Water Decontamination System design will be unacceptably delayed if funding, currently budgeted, is not provided to complete FY-94 workscope. EM-50 has significantly altered its' plans for decontaminating the LDUA system based on commitments made by EM-30 to provide a Water Decontamination System. Both Idaho and Oak Ridge are also planning to use Water Decontamination with their LDUA systems. Without the design of the water decontamination system, EM-50 will be unable to complete design and fabrication of the LDUA Tank Riser Interface and Confinement Sub-system. This sub-system must be completed and tested as part of the LDUA acceptance tests. EM-50 has two (2) DOE-HQ milestones that will be severely impacted by delay in design work on the Water Decontamination System, they include; MS2, "Complete Detailed Design Review of LDUA" and MS10, "Complete SPAR Acceptance Testing of LDUA System".

As I mentioned earlier, several other DOE sites have provided funding to purchase their own Light Duty Utility Arm Systems. Development of other DOE site systems is currently heavily reliant on the development and testing of the Hanford LDUA as the lead site. If there are going to be reductions in TWRS support to the LDUA program, it may necessitate the shifting of EM-50 funding and personnel from the Hanford Site to other DOE sites that are adequately committed to developing and deploying the LDUA System.

It is absolutely essential to the success of the LDUA program at Hanford, that work in progress on the development of LDUA support documentation and on the design of the LDUA Water Decontamination System be maintained and even expedited if possible. More than ever we need solid, unwavering TWRS support to insure that the LDUA is a quality tool that will be available on schedule and within budget.

If you have any questions or require additional information, please do not hesitate to contact me on 376-8695 or by cc:mail.

Ronald C. Eschenbaum, Manager
Tank Technology Projects

llh

1 WBS Number 1.1.1.2.01.05.06/VI		COST ACCOUNT AUTHORIZATION				Activity Mgr. T. E. Rainey		Date 09/19/94		Rev. 0	
FDS Number 2N1E65		Title LDUA Water Decon System		PROGRAM/PROJECT Tank Farm Operations & Maint.				Original		Revised	
Resp. Org. Title/Code FACILITY EQUIP/ENG. 7E850		Original Budget (K\$)		Budget Prior Revision		Changes This Revision		Current Total Budget		Start Complete Start Complete	
Cost Acct. Mgr./Phone G. H. Smith 373-0996		224									

Funding Source: ☐ Operating Expense ☒ CENRTC FY 95 ☐ Line Item FY ☐ GPP FY ☐ Small Projects FY B&R Code 35EW31207

2 Controlled Milestones				T = TPA	M = Major DOE-HQ	K = Major RL	R = Westinghouse Key	O = Other
Milestone No.	Type	Date	Description					
OTHER	0	03/30/95	Provide a tested LDUA Water Decon system..					
OTHER	0	06/30/95	Provide "GO/NO GO" gauges.					

3 Description/Instructions (scope, objectives, approach, constraints, further milestone definition) (capital justification)			
<p>Provide engineering design and fabrication support to fabricate and test a water decontamination system for the Light Duty Utility Arm (LDUA). The system shall provide the capability to decontaminate the arm to Hanford regulated release limits when retracted from a single shell tank. Provide engineering, design and fabrication support to fabricate and test special "GO/NO GO" gauges to determine availability of SST risers to LDUA equipment.</p> <p>Deliverables shall include design drawings, fabrication specifications, the decon system test report, and the decon system hardware for the decon system and the "GO/NO GO" gauges.</p>			
ADS Number		1100-0	
Total CAP \$000	G & A/CSP \$000	Total CAA \$000	
224		224	

4 Distribution		Approvals					
	Title	Authority to Initiate Planning	Date	Title	Work Authorization	Date	
(1) Program Administration/ Project Control	Activity Manager	<i>T. E. Rainey</i>	9/24/94	Program Administration	<i>M. A. DeWitt</i>		
(2) Program Element Manager	Program Element Manager	<i>D. M. Lucore</i>	9/22/94	Program Element Manager	<i>D. M. Lucore</i>	9/22/94	
(3) Activity Manager	Program Administration	<i>M. A. DeWitt</i>		Activity Manager	<i>T. E. Rainey</i>	9/22/94	
(4) Cost Acct. Manager	Cost Account Manager	<i>George Smith</i>	9-21-94	Cost Account Manager			

42-307

WFO-SP-1101

CAPITAL EQUIPMENT COST ESTIMATE AND REVIEW

Cost Account Title LDUA Water Decon SystemCost Account Number 2N1E65Replacement ☐Addition ☒Location of Item N/AProperty Number N/A

Capital Equipment Cost Estimate

	Cost	Schedule
Design	<u>40</u>	<u>10/03/94</u> To <u>01/03/95</u>
Procurement	<u>155</u>	<u>10/03/94</u> To <u>06/30/95</u>
MPR	<u>2</u>	
Fabrication	<u> </u>	<u> </u> To <u> </u>
Material	<u> </u>	<u> </u> To <u> </u>
Labor	<u> </u>	<u> </u> To <u> </u>
Installation	<u> </u>	<u> </u> To <u> </u>
Inspection	<u> </u>	<u> </u> To <u> </u>
Contingency/Other (specify) <u>G & A 14%</u>	<u>27</u>	
Escalation	<u> </u>	
TOTAL	\$ <u>224</u>	<u>10/03/94</u> To <u>06/30/95</u>

Third Party Review

☐ Plant/Process EngineeringSign Date ☐ Safety & SecuritySign Date ☐ Industrial EngineeringSign Date ☐ TelecommunicationsSign Date ☐ Project Integration Support (Estimating)Sign Date ☐ Acquisition Planning Support (ADP)Sign Date ☐ Fleet Management (HO Coded)Sign Date ☐ Property AccountingSign Date ☐ Property Management (Office Equipment)Sign Date ☒ Other Sign Date

Schedule Identification

	Yes	Specify Schedule:	If not on schedule, explain why not and/or corrective action being taken:
Level I Schedule	☐	<u> </u>	<u> </u>
Level II Schedule	☐	<u> </u>	<u> </u>
Level III Schedule	☐	<u> </u>	<u> </u>

Approvals

Program Administrator	<u> </u>	Date <u> </u>
Program Control Manager	<u> </u>	Date <u> </u>
Program Capital Review Board	<u> </u>	Date <u> </u>

A2-308

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	T. E. Rainey	
Cost Account Manager	G. H. Smith	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	D. M. Lucoff <i>DMLucoff</i>	9/19/94
Activity Manager	T. E. Rainey <i>TE Rainey</i>	9/19/94
Cost Account Manager	G. H. Smith <i>G.H. Smith</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>M.A. Dewitt</i>	9/21/94

FDS Number

1N1E56
2N1E65

WHC-SP-1101

This page intentionally left blank.

A2-310

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.05 Tank Farm SST Stabilization	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.05.07/VI	5. WBS ELEMENT TITLE SST Monitoring Improvements (1N1E57)	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NE	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$746	\$718	\$744
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$746	\$718	\$744

1.1.1.2.01.05.07

A2-311

B. TECHNICAL BASES

Goals & objectives:

Refer to Level V Work Breakdown Structure dictionary sheets for listing of program master schedule activities supported.

- Install liquid observation wells (LOW) in single-shell waste storage tanks where interstitial liquid level (ILL) measurements are required for primary means of leak detection.
- Restore the capability to obtain an ILL measurement from a failed LOW in single-shell tank 241-SX-104.
- Conduct acceptance and operational test procedures that result in 4 new LOW vans becoming operational and provide technical support for the operation of all LOW vans that are operational.
- Provide technical support as required for the existing drywell vans until the new spectral gamma vans become operational.

Status of Design Documentation:

- LOW design configuration documents are on record. ECN's have been issued to permit the use of steel LOWs. Additional materials are being considered for the LOWs to be placed in ferrocyanide and organic tanks in order to support moisture monitoring technologies. New LOW materials will have impact on material procurement and fabrication cost and schedules. Cost estimates are based on procurement, fabrication and installation of carbon steel LOWs using current installation procedures with the water lance. Incorporation of any other LOW materials or installation procedures are not covered in this account.
- Drywell vans are currently serving both drywell surveys and LOW interstitial liquid level measurements. Four new LOW vans have been purchased to support the expanding LOW measurement program using existing technologies and will be used to support the drywell monitoring as required for back-up leak detection. New spectral gamma drywell vans are being procured by separate funding to support the drywell monitoring independent of the LOW vans.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Upgrade Leak Detection Equipment for SSTs that do not have LOWs and have solid surfaces containing pumpable liquid by December 1995 (Safety Initiative SI-5f).
- Restore ILL measurement capability in SST 241-SX-104 failed LOW - Compliance to operating specifications leak detection requirement.
- Install LOWs in 12 SSTs in FY 1995. (Draft Tri-Party Agreement Change Request M-43-09-TO2)
- Install LOWs in 15 SSTs in FY 1996. (Draft Tri-Party Agreement Change Request M-43-09-TO3)
- Install LOWs in 15 SSTs in FY 1997. (Draft Tri-Party Agreement Change Request M-43-09-TO4)

WHC-SP-1101

- Install LOWs in all SSTs with sufficient material content to allow a LOW to function by September 1998 (Draft TPA Change Request M-43-09)
- Provide a fully operational interstitial liquid level monitoring system for four new LOW vans - Compliance to operating specifications requirement and meet additional demand.
- Provide technical support for existing drywell vans for both LOW and drywell monitoring until the new spectral gamma drywell vans become operational - Drywell vans currently are supporting both LOW and drywell activities. New technology being developed exclusive to drywell spectral gamma monitoring.
- Upgrade the leak detection equipment for single-shell tanks (SST) with pumpable liquid and a solid surface by December 1995. The interim stabilization of some SSTs, see SI-5b, will reduce the number of tanks with pumpable liquid and a solid surface requiring upgrade of the leak detection equipment to one (Tank 241-SX-104). Tank 241-SX-104 has two failed Liquid Observation Wells (LOWs). This task involves the restoration of the ability to obtain an interstitial liquid level measurement in SST 241-SX-104 with a non-typical method. If this does not allow weekly leak detection readings to be taken, a new LOW will be installed in Tank 241-SX-104. The practice of using LOWs at Hanford is an established practice that has been extensively used in the past. The task involves the safety evaluation, design, fabrication, the development of procedures, work plans, and the actual installation of the LOW in a flammable gas Watch List Tank. (Safety Initiative 5f)

C. STATEMENT OF WORK

WORK TO BE PERFORMED:

- Restore the ability to obtain an ILL measurement from a failed LOW in SST 241-SX-104. This is an alternate path that could satisfy the conditions stipulated in a Grumbly Safety Initiative requiring the upgrade of leak detection equipment for tanks having pumpable liquids with a solid waste surface. The safety initiative carries a commitment to have this accomplished by December 1995.
- Install LOWs in 12 SSTs in FY 1995. (Draft Tri-Party Agreement Change Request M-43-09-TO2)
- Install LOWs in 15 SSTs in FY 1996. (Draft Tri-Party Agreement Change Request M-43-09-TO3)
- Install LOWs in 15 SSTs in FY 1997. (Draft Tri-Party Agreement Change Request M-43-09-TO4)
- Provide a fully operational interstitial liquid level monitoring system for four new LOW vans in compliance to operating specifications and provide technical support for operational LOW equipment to satisfy primary leak detection requirements.
- Provide technical support for existing drywell vans for both LOW and drywell monitoring until the new spectral gamma drywell vans become operational.

Activities which are specifically not authorized under this cost account are:

- The determination of LOW material and installation methods for LOW installation in ferrocyanide and organic Watchlist Tanks.

WHC-SP-1101

- Design, procurement, fabrication, and installation of non-carbon steel LOWs in ferrocyanide and organic Watchlist Tanks.

HOW WORK IS TO BE PERFORMED:

The LOW effort is primarily field work that is directed through the Job Control System. Work scope and work packages will be developed by engineers in the Tank Stabilization & Engineering Support which is a part of the Waste Tank Plant Engineering organization. The field work will be managed by the Compliance Sampling and Support Operations organization with operational and maintenance support from the East and West Tank Farms Operations as required. Project management for the work is assigned to the Tank Stabilization & Engineering Support organization.

The Drywell/LOW van work consists of performing Acceptance and Operational Test Procedures to qualify and certify that the Systems will perform their tasks as designed. This effort will require support from a number of organizations including East and West Tank Farm Operations, Shift/Surveillance Engineering, Analysis & Process Improvement, Instrumentation & Control, and Chemical/Waste Software Applications. Other support consists of procedure development, QA, instrument technicians, and training.

Typical tasks are:

- LOW Installation work includes:
 - Prepare JCS work packages
 - Prepare field work instructions
 - Prepare ECNs
 - Provide technical guidance for day to day operation of the activity
 - Assist the development and tracking of the detailed activity schedules
 - Resolution of maintenance/operational problems, and alternative scenario evaluations
 - Documentation reviews
 - Failure analysis and nonconformance reports for the fabrication shops
 - Final product quality
 - Provide and acquire USQ reviews
 - Coordinate safety analysis/evaluation for watch list tank LOW installations
- Drywell/LOW van work includes:
 - System inspection
 - System testing and acceptance
 - Operator and maintenance crew training and re-certification
 - Documentation and procedure revision
 - System maintenance
 - Software support

WHY WORK IS TO BE PERFORMED:

Liquid Observation Wells (LOW) are currently the means to measure the interstitial liquid levels in single-shell storage tanks that have solid waste surface. This is the primary leak detection method. Operating specifications require periodic measurements and specify the reporting requirements and remediation action if a tank is determined to be leaking. The new LOW vans have been purchased to meet the monitoring schedule. Currently the drywell vans are used to perform both drywell logging and LOW measurements. A new spectral gamma dry well logging system is being procured as a part of a separate activity. Drywell measurements is a secondary survey method that is necessary for approximately three tanks. The existing drywell vans will need to be maintained until the new LOW vans are operational. A proposal to revise the Tri-Party agreement to include the installation of LOWs as milestones is being processed.

WHC-SP-1101

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK:

- Required to meet the operating specifications for leak detection, reporting and provides the basis for identifying tanks needing to be emergency pumped.
- Comply with the Tri-Party Agreement milestones as revised.

MANDATORY SCHEDULE CONSTRAINTS:

The proposed Tri-Party Agreement milestone change request calls for:

- 12 LOWs installed FY 95
- 15 LOWs installed FY 96
- 15 LOWs installed FY 97
- All LOWs installed in SSTs with sufficient material to allow LOW to function by September 1998

This schedule for installation is contingent upon the completion of core sampling being performed under WBS 1.1.1.4 prior to LOW installation.

A safety initiative also requires that the LOW measurement be obtained from single-shell tank 241-SX-104 by December 1995. This may be accomplished by either installing a new LOW in this tank or restoring the capability in one of the failed LOWs in this tank.

BUDGET FORECAST:

<u>DELIVERABLE</u>	<u>FY95</u>
Restore SX-104 ILL Measurement	\$ 10 K
Install 12 LOWs FY 95	527 K
Install 15 LOWs FY96	718 K
Install 15 LOWs FY 97	744 K
ATP/OTP 4 LOW Vans	134 K
Maintain Drywell Vans	75 K

MAXIMUM COST OF EACH DELIVERABLE:

<u>DELIVERABLE</u>	<u>FY95</u>
Restore SX-104 ILL Measurement	\$ 15 K
Install 12 LOWs FY 95	685 K
Install 15 LOWs FY96	950 K
Install 15 LOWs FY 97	970 K
ATP/OTP 4 LOW Vans	175 K
Maintain Drywell Vans	100 K

ROLES AND RESPONSIBILITY:

This is a new account in the 1N1E activity for ADS 1100. Project management has been assigned to the Tank Stabilization & Engineering Support organization under the direction of Waste Tank Plant Engineering.

WHC-SP-1101

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A Lead RL staff member will be appointed to over-see work in the specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL-TWRS office guidance and guidance offered by another RL office to the RL-TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible, of any impacts to work cost or schedules in this cost account that occur as the fiscal year progresses.

Technologies to be assessed:

- Alternate LOW material to accommodate moisture monitoring technologies, not funded in this cost account.

Options to be considered:

- There are no known alternatives to obtaining ILL measurements other than using a LOW.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	T. E. Rainey <i>TE Rainey</i>	
Cost Account Manager	D. B. Engelman	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	T. E. Rainey <i>TE Rainey</i>	9/19/94
Cost Account Manager	D. B. Engelman <i>DB Engelman</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>M.A. Dewitt</i>	9/21/94

FDS Number

1N1E57

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor	2. DATE PREPARED September 20, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.06/V	5. WBS ELEMENT TITLE Tank Farm Evaporator/AW & AP Tank Farm Operations	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) N/A	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$15,603	\$15,272	\$15,486				
CENRTC							
GPP							
LINE ITEM							
TOTAL	\$15,603	\$15,272	\$15,486				

B. TECHNICAL BASES

The functional product of Tank Farm Evaporator/AW & AP Tank Farm Operations is to concentrate waste through evaporation and to operate the adjacent tank farms.

Work scope planning and risk factors are expected to have only medium impacts to this activity. As infrastructure upgrades and restoration activities are completed and a final safety basis is achieved, it will transform into a low risk activity.

Goals & objectives:

1. Concentrate low-heat generating liquid wastes through evaporation (242-A), thus reducing the volume and the number double-shell tanks required to store dangerous liquid wastes.
2. Operate the AW and AP tank farms in compliance with all applicable standards and requirements.

This activity consists of performing all of the functions required for evaporation of water from dilute waste and support to the facilities and processes required to perform this activity

1. Preventive maintenance
2. Corrective maintenance (routine & non-routine)
3. Facility concentration operations including waste transfers to feed tanks
4. Routine surveillance monitoring
5. Health physics activities (radiological)
6. Industrial hygiene & safety functions
7. Engineering and analysis (eg, campaign run plans)

The following program master schedule activities are supported by WBS 1.1.1.2.01.06:

S001385	Operate 242-A Evaporator & AW/AP Farms - Ops 1
S001390	Operate 242-A Evaporator & AW/AP Farms - Ops 2
S001395	Operate 242-A Evaporator & AW/AP Farms - Ops 3
S001400	Perform 242-A & AW/AP Farms Maintenance
S001405	Perform 242-A & AW/AP Farms Engineering
S001410	Perform 242-A & AW/AP Routine Surveillance
S003117	Maintain/Update 242-A Evaporator FSAR

Major end-item deliverables:

1. Perform winter and summer weather farm & tank preparations (AP&AW farm)
2. Repair failed equipment in the 242-A evaporator
3. Repair failed equipment in the AW and AP Tank Farms
4. Repair exhausters, compressors, pumps, condensers, etc. as required
5. Implement and maintain 5th Shift for training
6. Data taking/monitoring per required frequencies and requirements
7. Continuous radiation monitoring
8. Revise as necessary, operational safety requirement (OSRs)
9. Achieve a yearly waste volume reduction goal
10. Systems and process engineering support to operation & maintenance
11. Investigation of identified anomalies
12. Evaporator outage planning and maintenance
13. Process control plans
14. Post-run documents

15. Sample plans

Acceptance criteria:

1. Achieving yearly goals of waste volume reduction and 242-A evaporator throughput on schedule
2. Achieving and maintaining regulatory and DOE Order compliance in tank farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
3. Implementation and adherence to the new Operational Safety Requirement parameters.

C. STATEMENT OF WORK

Required activities over lifetime:

1. Perform scheduled CBRSSs, Preventive Maintenance, HEPA testing, and third party inspections
2. Corrective maintenance includes identifying deficiencies, fixing failed equipment in 242-A and AW and AP Tank Farms, and replacing failed pumps on feed tanks
3. Waste tank transfers, performing jumper changes and pump removals as required, rail car & tanker truck transfers
4. Radiological control performing personnel & work place surveys, monitor source checks, and PCM1B checks
5. Obtaining panel board/MCS surveillance data, condensate basin readings, vessel ventilation system readings, ion-exchange column readings, and canyon area ventilation surveillance data (WHC)
6. Develop operating strategies/plans, process improvements, trending & review of operating data, monitoring process limits, ensuring technical accuracy, and process problem resolution (WHC/PNL)

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements. It is the base operations of managing tank waste.
	To This WBS From	
1	Other Liquid Generating Hanford Facilities	Liquid generating facilities such as PUREX, UO3, B Plant, S Plant, T Plant, PFP, etc. require tank farms for waste discharge when perform cell & basin clean out, plant processing, decontamination/deactivation, and other ongoing terminal clean out operations.
2	1.1.1.2.02 Waste Tank Safety	Mitigating and resolving tank safety issues to achieve a final safe operating condition envelop.
3	1.1.1.2.04 Characterization	Characterization of all double and single-shell tanks to achieve a final safe operation level.
4	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters.

Technologies to be assessed:

1. In-tank instrumentation replacements
2. Modern equipment replacements (e.g., pumps)
3. Waste minimization processes
4. Data-taking equipment (new monitor and control system)

Options to be considered:

1. Best Available Technology (BAT) improvements
2. New evaporator for Tank Farms
3. Evaporator capacity associated with the Pretreatment Facilities
4. Life extension upgrades to 242-A evaporator

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

COMPLIANCE AGREEMENT

- Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)
- Department of Energy Approved Standards/Requirements Identification Documents (S/RIDS)
- The S/RIDS developed and approved for TWRS Operations

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.06 242-A Evaporator/AP & AW Tank Farm Preventative Maintenance	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.06.02/VI	5. WBS ELEMENT TITLE 242-A Evaporator/AP & AW Tank Farm Preventative Maintenance							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$673	\$692	\$700
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$673	\$692	\$700

B. TECHNICAL BASES

OBJECTIVES:

Please refer to Level V Dictionary Sheet for listing of Program Master Schedule (PMS) activity supported.

The objective of 242-A Evaporator and AP/AW Tank Farm Preventative Maintenance is to ensure the availability of systems, components, and structures during operations through attaining high reliability and minimum equipment failure levels. The requirements for these activities are contained in DOE Order 4330.4A Conduct of Maintenance, the Draft Maintenance Implementation Plan (MIP), and other documents defined by the Safety/Requirements Identification Documents Phase I.

STATEMENT OF WORK:

1. Work to be Performed:

Plan, schedule, and perform all required Preventative Maintenance (PM) work packages to ensure high levels of availability of systems, components and structures in the 242-A Evaporator, AP and AW Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, and Component Based Recall System (CBRS) data base and procedures support.

Program Management:

This task will provide overall management of the 242-A Evaporator and AP/AW Tank Farm Preventative Maintenance activities including PM overall planning, development, reporting, and assessment of PM performance.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of PM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Perform a systematic review of each PM identified using Reliability Centered Maintenance (RCM) principals to determine follow on activities (ie. increase PM rate, delete PM requirement, and other options). Plan, estimate, schedule and status individual work packages. Group work packages to ensure the optimum efficiency and reduce the number of behind schedule PM's.

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field PM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform maintenance and calibration. Overtime will limited to the percent identified in the budget.

CBRS Support:

The CBRS Recall and Procedures groups will provide data base maintenance and recall notices.

Items Not Included In Scope:

The following items of work and resources are not considered in this scope:

- Spare parts and equipment inventories are to be provided by ADS 7360.
- Setpoint control program is provided by Engineering Programs (1N1G76).

2. How The Work Is To Be Performed:

All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.

Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

3. Why The Work Is To Be Performed:

This work is performed to minimize the total number and length of time equipment operating parameters are out of normal limits and to minimize the unavailability of safety systems.

4. List Of All Deliverables:

- Plan, schedule, and complete performance on all required PM work packages by September 30, 1995.

5. Mandatory Requirements For Performance Of The Work:

- DOE Order 4330.4A Conduct of Maintenance.
- Draft TWRS Maintenance Implementation Plan.

6. Mandatory Schedule Constraints:

- TWRS Integrated Schedule.
- Evaporator Plan of the Month.
- Evaporator Plan of the Week.
- Evaporator Plan of the Day.

7. Budget Forecast:

The FY 1995 through FY 1997 budget forecast is shown in section A. Cost Content.

8. Maximum Cost Of Each Deliverable:

Plan/perform PM work packages \$ 673K

9. Roles And Responsibilities:

The RL lead shall be apprised, as soon as reasonably possible, of any impacts to scope, cost or schedules in this cost account that occur during the fiscal year.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	N/A
Activity Manager	J. W. Bloom	
Cost Account Manager	K. W. Leliefeld	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	J. W. Bloom <i>JW Bloom</i>	9/17/94
Cost Account Manager	K. W. Leliefeld <i>KW Leliefeld</i>	9/18/94
Project Control Analyst	M. A. Dewitt <i>M.A. Dewitt</i>	9/21/94

FDS Number

1N1A12

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.06 242-A Evaporator/AP & AW Tank Farm Corrective Maintenance	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.06.03/VI	5. WBS ELEMENT TITLE 242-A Evaporator/AP & AW Tank Farm Corrective Maintenance	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3,584	\$3,600	\$3,686
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$3,584	\$3,600	\$3,686

B. TECHNICAL BASES

Goals & Objectives:

Please refer to Level V Dictionary Sheet for listing of Program Master Schedule (PMS) activity supported.

The objective of 242-A Evaporator and AP/AW Tank Farm Corrective Maintenance is to ensure the availability of systems, components, and structures during operations through prompt and efficient work execution to attain high availability and minimum equipment down time. The requirements for these activities are contained in DOE Order 4330.4B Conduct of Maintenance, the Draft Maintenance Implementation Plan (MIP), and other documents defined by the Safety/Requirements Identification Documents Phase I.

C. STATEMENT OF WORK:

1. Work to be Performed:

Plan, schedule, and perform all required Corrective Maintenance (CM) work packages to ensure high levels of availability of systems, components and structures in the 242-A Evaporator and AP/AW Tank Farms. All work activities will be performed in support of the overall safe and cost effective operation of the tank farm facilities. Functions provided in this account include Craft Maintenance, Production Control, Scheduling, Material Supply, Central Craft Support and Central Shop Support.

Program Management:

This task will provide overall management of the 242-A Evaporator and AP/AW Tank Farm Corrective Maintenance activities including CM overall planning, development, reporting and assessment of CM performance.

Administration:

This task will provide support to management and field activities to ensure the identification and tracking of CM performance, identification of budget resource requirements, and assessment and reporting of performance to budget in a timely and professional manner. Develop, maintain and report on key performance indicators. Track and maintain personnel training in compliance with Tank Farm and WRAM access requirements. Respond to internal and external audits and assessments.

Production Control:

This task will provide planning, work package development, estimating, scheduling, tracking, develop performance indicators, and perform performance indicator assessment. Plan, estimate, schedule, and status individual work packages.

Field Activities:

This task will provide trained maintenance supervision, Person In Charge (PIC), and craft personnel to perform the required field CM work packages. Training of supervisors, PICs and craft personnel is included in this scope. Provide field supervision, maintenance crafts, and the required materials and tools to perform repairs and restorations. Overtime will limited to the percent identified in the budget.

Material Supply:

This task will order and stage materials identified on work package Bill Of Material (BOM).

Central Craft Support:

Provide supplemental craft support for work package execution.

Central Shop Support:

Provide fabrication and material support to work packages.

Items Not Included In Scope:

The following items of work and resources are not considered in this scope:

- Spare parts and equipment inventories are to be provided by ADS 7360.
- Health Physics, Crane & Rigging, and Occupational Health & Safety are provided by 200 West Tank Farm Operations (1N1F63 & 1N1F64).

2. How The Work Is To Be Performed:

All work activities will be performed in a safe, efficient, and cost effective manner. The productivity challenge will be met through training improvements, Job Control System (JCS) improvements, and improved grouping of work by location.

Maintenance performance will be monitored, documented, and trended for future reference and to make improvements in maintenance performance and productivity. Performance indicators for key parameters will be maintained and given visibility.

3. Why The Work Is To Be Performed:

This work is performed to minimize the total number and length of time equipment operating parameters are out of normal limits and to minimize the unavailability of safety systems.

4. List Of All Deliverables:

- Plan, schedule, and complete performance of all required CM work packages per West Operations POD/POW/Integrated Schedule priorities.

5. Mandatory Requirements For Performance Of The Work:

- DOE Order 4330.4B Conduct of Maintenance.
- Draft TWRS Maintenance Implementation Plan.

6. Mandatory Schedule Constraints:

- TWRS Integrated Schedule.
- Evaporator Plan of the Month.
- Evaporator Plan of the Week.
- Evaporator Plan of the Day.

7. Budget Forecast:

The FY 1995 through FY 1997 budget forecast is shown in section A. Cost Content.

8. Maximum Cost Of Each Deliverable:

Plan/perform CM work packages	\$3,584K
-------------------------------	----------

9. Roles And Responsibilities:

The RL lead shall be apprised, as soon as reasonably possible, of any impacts to scope, cost or schedules in this cost account that occur during the fiscal year.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	N/A
Activity Manager	J. W. Bloom	✓
Cost Account Manager	K. W. Leliefeld	✓
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	J. W. Bloom <i>JW Bloom</i>	9/17/94
Cost Account Manager	K. W. Leliefeld <i>KW Leliefeld</i>	9/17/94
Project Control Analyst	M. A. Dewitt <i>MA Dewitt</i>	9/21/94

FDS Number

1N1A13

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.06 Tank Farm Evaporator/AW & AP Tank Farm Base Operations	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.06.04/VI	5. WBS ELEMENT TITLE Tank Farm Evaporator/AW & AP Tank Farm Base Operations							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1 4.2.3 4.2.5	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY1995 \$(000)	FY1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3,825	\$3,488	\$3,600
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$3,825	\$3,488	\$3,600

B. TECHNICAL BASES

The functional product of the 242-A Evaporator/AW & AP Tank Farm Base Operations is to support all non-routine activities which include maintenance, upgrades, testing, decontamination work, outage and operation management, document reviews, OSR/IOSR/OSD implementation and compliance, etc.

Goals & Objectives:

Please refer to Level V Dictionary Sheet for listing of Program Master Schedule (PMS) activity supported.

The overall objective of this cost account is to provide administrative, technical, and field related work activities within the limits of established specifications, standards, budgets and procedural guidelines, and to ensure compliance to policies and procedures or as directed by DOE-RL. Additionally, adequate staffing needs are identified and implemented to supply our customer with the safe, secure, and environmentally sound treatment and storage of hazardous waste at 242-A/AW & AP Tank Farms and to support the completion of scheduled milestones and end-item deliverables. Following are the specific goals and objectives identified within this Statement of Work.

Administration and Technical Support

The administration and technical support staff provides support to the following functions:

- Maintenance support including identifying, generating and validating work requests, prioritizing maintenance, reviewing maintenance work packages, performing as operation person-in-charge, post maintenance testing support and work package completion reviews.
- Outage planning including scheduling support, prioritizing and coordination.
- Safety, environmental, and operating document review and compliance associated with 242-A/AW & AP Tank Farms.
- Operations support for AW & AP Tank Farms including support for the tank farm transfers, inspections, audits, tours, etc.
- Operations support for 242-A Evaporator campaigns including review of run plans and process memos, review plant performance, investigating anomalies, communicating with Engineering, etc.

Day Shift Support

The day shift support staff provides support to the following functions:

- Provide operation support to field maintenance activities which includes; establishing proper plant conditions for maintenance and retest, disposing of waste, assisting in radiological controls, supervising entries into controlled areas.
- Provide sampling support during Evaporator campaign.
- Provide relief for shift routine surveillance to support training, vacations, personal illness, etc., to minimize overtime.
- Support field tours/inspections by outside organizations.
- Review/update plant operating procedures, work procedures, and work plans used in the operation and testing of 242-A/AW & AP Tank Farms.

Health Physics

Health Physics provides radiation monitoring, personnel, radiological and work place surveys to support maintenance and evaporator campaign requirements.

WORK/RESOURCES SPECIFICALLY NOT FUNDED UNDER THIS COST ACCOUNT

- Support to construction of major maintenance upgrades and projects.
- Support from Engineering, Maintenance and Planning.

HOW THE WORK WILL BE PERFORMED

All work activities shall be performed in a safe and efficient and cost effective manner.

Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators for strategic parameters maintained and given visibility appropriate to the mission of the facilities.

Minimize the total number and length of time equipment operating parameters are out of normal limits. Minimize the unavailability of safety systems. Minimize personnel errors through effective and aggressive use of 5th shift and training program. Timely completion of scheduled surveillance.

The mandatory schedule constraints are the availability of work packages to perform the field work and ability to obtain personnel with WHC or contract personnel to perform these activities.

WHY THE WORK IS TO BE PERFORMED

The work is required to provide our customers with the safe, secure, and environmentally sound treatment and storage of hazardous waste in 242-A/AW & AP Tank Farms and ensure compliance with all applicable federal, state, and local environmental regulations.

C. LIST OF DELIVERABLES

Complete Campaign 94-2

- Provide Administrative, Technical, Health Physics and Sampling support to 242-A/AW & AP Tank Farms during Campaign 94-2.

Complete Outage and Campaign 95-1

- Provide Administrative, Technical, Health Physics and Sampling support to 242-A/AW & AP Tank Farms during Outage 95-1 and Campaign 95-1.

242-A/AW & AP Tank Farm Base Operation Support

- Provide day shift support for 242-A/AW & AP Tank Farms maintenance and operational activities.

MANDATORY REQUIREMENTS OF PERFORMANCE OF WORK

- Establish and maintain regulatory and DOE Order compliance in tank farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
- Implementation and adherence to the new Interim Operational Safety Requirement parameters.
- A leak in any underground waste tank in Tank Farm East Storage Facilities shall be promptly identified.
- Workers should not be exposed to unsafe conditions working conditions. Unsafe conditions will be resolved promptly to avoid delays to projects or program work activities that involve access to tank farm facilities.

MANDATORY SCHEDULE OF CONSTRAINTS

The mandatory schedule constraints are:

- Availability of materials and work packages to perform the work.
- Ability to obtain personnel within WHC or contract personnel to perform these activities.
- Ability to support he activities associate with full compliance of the Rad Con Manual under environmental conditions that exist at East Tank Farms.
- Due to adverse weather conditions and personnel safety, the possibility exists for exceeding certain tank data periodicity requirements.

BUDGET FORECASTS

Not available at this time.

MAXIMUM COST OF EACH DELIVERABLE

242-A CAMPAIGN 94-2 (1N1A140A) [\$529,657]

242-A OUTAGE AND CAMPAIGN 95-1 (1N1A140B & 1N1A140C) [\$1,326,742]

242-A/AW & AP TANK FARM BASE OPERATIONS SUPPORT (1N1A140F) [\$3,957,452]

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements. It is the base operations of managing tank waste.
	To This WBS From	
1	Other Liquid Generating Hanford Facilities	Liquid generating facilities such as PUREX, UO3, B Plant, S Plant, T Plant, PFP, etc. require tank farms for waste discharge when performing cell & basin cleanout, plant processing, decontamination/deactivation, and other ongoing terminal cleanout operations.
2	1.1.1.2.02 Waste Tank Safety	Mitigating and resolving tank safety issues to achieve a final safe operating condition envelop.
3	1.1.1.2.04 Characterization	Characterization of all double and single-shell tanks to achieving a final safe operations level.
4	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters.

Technologies to be assessed: N/A

Options to be considered:

- Best Available Technology (BAT) improvements
- Additional double-shell tanks base DST space evaluations

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Reference the following:

Department of Energy Established

- Standards/Requirements Identification Documents (S/RIDs)

Tank Waste Remediation System Functions and Requirements

- Section 2, table F4.2.1.1, item V, paragraph B
- Section 3, table A4.2.1.1, item VIII, paragraph C
- WAC 173-303, "Dangerous Waste Requirements"

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	N/A
Activity Manager	J. W. Bloom	↓
Cost Account Manager	W. E. Ross	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DM Lucoff</i>	9/19/94
Activity Manager	J. W. Bloom <i>J. W. Bloom</i>	9/19/94
Cost Account Manager	W. E. Ross <i>W. E. Ross</i>	9/29/94
Project Control Analyst	M. A. Dewitt <i>M. A. Dewitt</i>	9/21/94

FDS Number

1N1A14

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.06 Tank Farm Evaporator/AW & AP Tank Farm Routine Surveillance & Operations	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.06.05/VI	5. WBS ELEMENT TITLE Tank Farm Evaporator/AW&AP Tank Farm Routine Surveillance & Operations							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1 4.2.3 4.2.5	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120071</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120071		
Expense	Capital	Line Item						
EW3120071								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY1995 \$(000)	FY1996 \$(000)	FY 1997 \$(000)
OPERATING	\$2,421	\$2,492	\$2,500
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$2,421	\$2,492	\$2,500

1.1.1.2.01.06.05

A2-339

B. TECHNICAL BASES

The functional product of 242-A Evaporator/AW & AP Tank Farm Routine Surveillance is to provide 24 hour data gathering/surveillance. This includes monitoring operating parameters to insure compliance with all operational safety requirements, operating specifications and environmental requirements. Shift personnel also operate the 242-A evaporator during processing campaigns.

Goals & Objectives:

Please refer to Level V Dictionary Sheet for Listing of Program Master Schedule (PMS) activity supported.

The overall objective of this cost account is to provide administrative, technical, and field related work activities within the limits of established specifications, standards, budgets and procedural guidelines, and to ensure compliance to policies and procedures or as directed by DOE-RL. Additionally, adequate staffing needs are identified and implemented to supply our customer with the safe, secure, and environmentally sound treatment and storage of hazardous waste at 242-A and AW/AP Tank Farms and to support the completion of scheduled milestones and end-item deliverables. Following are the specific goals and objectives identified within this Statement of Work.

Routine Surveillance

The routine surveillance activities outlined in this Statement of Work include Shift Managers and Operators support on a 24 hour basis. The Shift Manager is responsible for command and control of the facility during the shift. Shift Operations must maintain the facility within the safety envelope defined by the Operational Specification Documents and Operational Safety Requirements.

All data from instrumentation and equipment for Evaporator/Double-Shell tanks, leak detection pits, catch tanks, ventilation systems, etc. is taken per specified frequencies as outlined in Operating Procedures and other governing criteria. Shift Managers and Operators are required to take action to mitigate abnormal or unsafe conditions as they arise.

A 5th Shift provides adequate time for training to assure Operations personnel are qualified through education, training, certification, and on-the-job experience to safely carry out their duties and meet all DOE and RCRA requirements. They are required to follow the principles and procedures of the Conduct of Operations philosophy.

Health Physics

Health Physics provides radiation monitoring, personnel, radiological and work place surveys. They perform monitor source checks, PCM1B source checks on a daily basis as well as PCM1B efficiency checks weekly.

WORK/RESOURCES SPECIFICALLY NOT FUNDED UNDER THIS COST ACCOUNT

- Support to construction of major maintenance upgrades and projects.
- Support from Engineering, Maintenance and Planning.
- Technical Services Support

HOW THE WORK WILL BE PERFORMED

All work activities shall be performed in a safe and efficient and cost effective manner.

Operational performance will be monitored, documented, and trended for future reference and to make improvements in operational performance and productivity. Performance indicators for strategic parameters maintained and given visibility appropriate to the mission of the facilities. Overtime will be reduced and low or no value work will be eliminated to achieve productivity goals.

Minimize the total number and length of time equipment operating parameters are out of normal limits. Minimize the unavailability of safety systems. Minimize personnel errors through effective and aggressive use of 5th shift and training program. Timely completion of scheduled surveillance.

The mandatory schedule constraints are the availability of work packages to perform the field work and ability to obtain personnel with WHC or contract personnel to perform these activities.

WHY THE WORK IS TO BE PERFORMED

The work is required to provide our customers with the safe, secure, and environmentally sound treatment and storage of hazardous waste in 242-A and AP/AW Tank Farms and ensure compliance with all applicable federal, state, and local environmental regulations.

C. LIST OF DELIVERABLES

Routine Surveillance

- Data taking/monitoring per required frequencies and requirements (approximately 10,000 readings per week) to ensure compliance with operational safety and environmental requirements.

Health Physics

- Provide Operations/Health Physics support to obtain all required 242-A/DST/SST data within specified frequencies.
- Health Physics will perform required radiological surveys according to established frequencies as stated in current task descriptions, maintaining a 95% completion rate for scheduled radiological surveys.
- Health Physics will issue Monthly Radiological Status Report.
- Health Physics will maintain and update Tank Farm status maps.

242-A Operator Certification Training

- Perform classroom and on-the-job training for Evaporator Certification.

MANDATORY REQUIREMENTS OF PERFORMANCE OF WORK

- Establish and maintain regulatory and DOE Order compliance in 242-A/AW & AP tank farm facilities for the continued safe storage and treatment of radioactive/hazardous wastes.
- Implementation and adherence to the new Interim Operational Safety Requirement parameters.
- A leak in any underground waste tank in AW/AP Tank Farms shall be promptly identified.
- Workers should not be exposed to unsafe conditions working conditions. Unsafe conditions will be resolved promptly to avoid delays to projects or program work activities that involve access to tank farm facilities.

MANDATORY SCHEDULE OF CONSTRAINTS

The mandatory schedule constraints are:

- Availability of materials and work packages to perform the work.
- Ability to obtain personnel within WHC or contract personnel to perform these activities.
- Ability to support the activities associate with full compliance of the Rad Con Manual under environmental conditions that exist at 242-A AP/AW Tank Farms.
- Due to adverse weather conditions and personnel safety, the possibility exists for exceeding certain tank data periodicity requirements.

BUDGET FORECASTS

Not available at this time.

MAXIMUM COST OF EACH DELIVERABLE

Routine Surveillance (1N1A150A) [\$1,400,000.00]

Health Physics (1N1A150A) [675,000.00]

242-A Operator Certification Training (1N1A150F) [\$680,000.00]

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Interfaces:

#	From This WBS To	Item Provided
1	All other TWRS program elements	This activity directly or indirectly support all other TWRS program elements. It is the base operations of managing tank waste.
	To This WBS From	
1	Other Liquid Generating Hanford Facilities	Liquid generating facilities such as PUREX, UO3, B Plant, S Plant, T Plant, PFP, etc. require tank farms for waste discharge when performing cell & basin cleanout, plant processing, decontamination/deactivation, and other ongoing terminal cleanout operations.
2	1.1.1.2.02 Waste Tank Safety	Mitigating and resolving tank safety issues to achieve a final safe operating condition envelop.
3	1.1.1.2.04 Characterization	Characterization of all double and single-shell tanks to achieving a final safe operations level.
4	1.1.1.2.03 Tank Farm Upgrades	Upgrades in tank farms to achieve compliance with operational & technical safety requirement parameters.

Technologies to be assessed: N/AOptions to be considered:

- Best Available Technology (BAT) improvements
- Additional double-shell tanks base DST space evaluations

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Reference the following:

Department of Energy Established

- Standards/Requirements Identification Documents (S/RIDs)

Tank Waste Remediation System Functions and Requirements

- Section 2, table F4.2.1.1, item V, paragraph B
- Section 3, table A4.2.1.1, item VIII, paragraph C
- WAC 173-303, "Dangerous Waste Requirements"

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	N/A
Activity Manager	J. W. Bloom	↓
Cost Account Manager	W. E. Ross	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DMLucoff</i>	9/19/94
Activity Manager	J. M. Bloom <i>JMBloom</i>	9/19/94
Cost Account Manager	W. E. Ross <i>W.E. Ross</i>	9/19/94
Project Control Analyst	M. A. Dewitt <i>M.A. Dewitt</i>	9/21/94

FDS Number

1N1A15

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor 1.1.1.2.01.06 242-A/AW&AP Tank Farms Engineering & Analysis	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.06.07/VI	5. WBS ELEMENT TITLE 242-A/AW &AP Tank Farms Engineering & Analysis	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1)	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$5,100	\$5,000	\$5,000
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$5,100	\$5,000	\$5,000

1.1.1.2.01.06.07

A2-345

B. TECHNICAL BASES

1. Work to be Performed

The functional product of 242-A/AW & AP Tank Farms Engineering and Analysis is to provide real-time technical support to 242-A/AW & AP Tank Farm Operations to achieve the mutual goal of concentrating waste through evaporation and operation of adjacent tank farms.

Systems and process engineering support to the 242-A evaporator, and AP and AW tank farms for evaporator campaigns 94-2, 95-1, and interim maintenance outages will be provided. Successful performance will be measured by completion of type 6 readiness review prior to each campaign, issue of a process control plan document prior to each campaign, and the contribution of technical resources to achievement of campaign goals. Resolution of post-start engineering issues is included.

Principal systems engineering tasks will include design and engineering support to plant modification and maintenance, technical input to operating and transfer procedures and safety analysis documents, specification of hardware calibration parameters and frequencies, safety evaluations of design and procedure changes, maintenance of control system software, review of hardware operational performance, and field support to the maintenance zone team. Structural analysis of tank anchors to resolve 242-A integrity assessment concerns is included.

Principal process engineering tasks will include preparation of process control plans, post-campaign summary documents, and sample schedules; technical input to process-related operating procedures; implementation of data quality objectives; safety evaluation of process documents; issue of process memos providing technical advice to operations; liaison with sampling and laboratory activities; and review of process operating data. A task to enhance and improve the accuracy of the PREDICT computer model is also included.

Principal shift engineering activities will include preparation of process memos, preparation of procedure change authorizations, and real time around-the-clock engineering support to operations.

Drafting support will be provided for timely incorporation of design changes into essential drawings and to prepare new one-line and system drawings.

Laboratory support includes the RCRA protocol analysis of 242-A effluent streams, and the analysis of process control samples associated with 242-A operations.

SAR support includes the annual update of the 242-A Safety Analysis Report and the maintenance of the 242-A Safety Equipment List.

Scope which is specifically not funded includes:

- Support to construction projects
- Support to LERF
- Sampling services
- Design to upgrade fire protection and communications systems, and for resolution of integrity assessment issues
- SRIDS support
- Tank evaporation analysis in AW/AP Tank Farms
- Waste Tank Upgrades Program Support
- Waste Tank Safety Program Support
- IOSR Implementation
- System Engineering Program support
- Permitting activity support (Part B, NOD's)
- Laboratory support for tank characterization

- Shift engineering coverage.

2. How work is to be Performed

Work is to be performed primarily by WHC staff and minor participation by other contractors.

Agreement on scope for KEH tasks will be documented by formal Letters of Instruction and funded by Work Order. Other contractors activities will be defined by formal Contracts and funded by Purchase requisitions.

The Productivity Challenge is ten percent of authorized budget.

3. Why Work is to be Performed

This work is essential to the operation of the 242-A Waste Evaporator and the AW/AP Tank Farms. It supports the missions to minimize the volume of stored liquid wastes, and to safely store those wastes in a manner which ensures health and safety of the public and protection of the environment.

4. List of Deliverables

A. Deliverables

- Manage this Cost Account Plan
- Prepare one Process Control Plan
- Issue one Post-Run Document
- Provide design and field engineering support to all maintenance and modification activities
- Review/revise Sample Schedule document prior to Evaporator Campaign 95-1
- Provide point-of-contact for coordinating evaporator sampling activities
- Provide the RCRA protocol analysis of 242-A effluent streams and analysis of process control samples for two evaporator campaigns.
- Provide point-of-contact with laboratories performing analysis of evaporator feed tank, RCRA, and control samples. Receive and review analytical data for campaign planning and limit compliance.
- Provide facility specific knowledge to team formulating evaporator Data Quality Objectives
- Provide technical input to operating and transfer procedures
- Review preventive maintenance procedures
- Provide technical input to calibration procedure
- Perform Safety Reviews and USQ Evaluations of procedures and proposed changes
- Provide annual update of 242-A FSAR
- Provide 242-A Monitoring and Control System computer programming.
- Provide 242-A Control Room Simulator computer programming services
- Provide field support to operations in resolution of systems and process operational issues
- Prepare process memos providing technical advice to Operations
- Resolve four evaporator restart readiness review issues
- Resolve engineering issues resulting from pre-campaign readiness reviews
- Attend outage planning meetings as scheduled by Operations to provide Technical input and resolve engineering issues
- Provide input Operations for Campaign, outage, maintenance, transfer and other planning activities
- Provide inputs as requested to periodic waste volume projection activities.
- Review designs interfacing with 242-A/AW/AP facilities for system and process compatibility.
- Participate in technical and visitor tours and presentations
- Respond to DOE inquiries and request for information
- Provide training to maintain and enhance technical capabilities of staff
- Respond to WDOE inquiries and requests for information

WHC-SP-1101

- Disposition/resolve NCR's generated by maintenance and operational activities
- Provide technical input to preparation of Occurrence Reports and Lessons Learned bulletins
- Provide engineering support to Emergency Response Team for drills and events involving assigned facilities
- Identify and prepare technical criteria for spare parts
- Maintain Safety Equipment Lists and prepare safety class determinations
- Validate the AW/AP farm equipment tracking system
- Develop AW/AP System Performance Criteria and issue seven monthly System Performance Reports
- Review adequacy of non OSR-OSD calibration criteria for AW/AP Tank Farms and revise CBRS data base consistent with findings

B. Milestones

- 242-A FSAR update sent to DOE for approval - 12/22/94
- Complete Campaign 94-2 Engineering - 12/31/94
- Resolve four remaining post-start Engineering Issues (242-A) - 9/30/95
- Issue 95-1 Process Control Plan - 6/30/95
- Complete 95-1 Engineering Readiness Review - 6/30/95
- Review/Revise 242-A Sample Schedule - 6/30/95
- Complete Campaign 95-1 Engineering - 9/30/95
- Issue 94-2 Post Run Document - 7/31/95
- Complete Review of non OSR/OSD CBRS (AW/AP) - 9/30/95
- Technical Input to Vent & Balance Procedure Development - 9/30/95

5. Mandatory Requirements for Performance of Work

The scope of this cost account supports the operation and maintenance of the 242-A evaporator and the AP and AW Tank Farms. Therefore, the cost account is supportive of the operations and maintenance schedules and goals of these treatment and storage facilities

Upon approval by DOE, S/RIDs requirements are binding upon these facilities and activities. However, funding upon for S/RIDs implementation is not specifically provided in this account.

Update of the 242-A Evaporator FSAR will be in compliance with DOE Order 5480.23, and will be in the format required by DOE Order 5480.22.

6. Mandatory Schedule Constraints

This cost account supports the operation and maintenance of the 242-A evaporator and the AP and AW Tank Farms. The account funds sufficient resources to support the O&M schedule for these facilities as they are currently known. Successful management of this is cost account assumes that funds and headcount will be available consistent with the work package cost account plan.

A significant constraint on 242-A evaporator support is the timely availability of chemistry analysis results for feed characterization. Feed tank characterization sampling and analysis activities are not funded or managed by this cost account.

Many milestones in this Cost Account are associated with support of 242-A Evaporator Operation and Maintenance. They are consistent with the operating schedule as it is currently defined. However, if the operating schedule changes, these milestones may need to be accelerated or extended to provide timely facility support.

7. Budget Forecast

Estimated FY-95 budget for this cost account is \$5.1M.

8. Roles and Responsibilities

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

Characterization Program (ADS 1130) provides funding for sampling and analysis activities supporting evaporator feed characterization. This cost account funds operational RCRA and process control sample analysis.

A2-349

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	D. M. Lucoff	
Activity Manager	J. W. Bloom	
Cost Account Manager	R. J. Nicklas	
Project Control Analyst	M. A. Dewitt	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	D. M. Lucoff <i>DMLUCOFF</i>	9/23/94
Activity Manager	J. W. Bloom <i>DMLUCOFF FOR</i>	9/23/94
Cost Account Manager	R. J. Nicklas <i>RJ Nicklas</i>	9/22/94
Project Control Analyst	M. A. Dewitt <i>MA Dewitt</i>	9/23/94

FDS Number

1N1A17

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.01 Tank Farm Operations & Maintenance/M & O Contractor	2. DATE PREPARED September 20, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.01.07/V	5. WBS ELEMENT TITLE Tank Farm Retired Facilities	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1100-0-NH	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) 4.2.3.5 Disposition Excess Facilities	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120071	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	0	0	0				
CENRTC							
GPP							
LINE ITEM							
TOTAL	0	0	0				

B. TECHNICAL BASES

The functional product of Tank Farm Retired Facilities is the turnover to the Environmental Restoration (ER) D&D program of facilities that are no longer required for the storage or processing of tank waste. This activity is scheduled to end in the year 2028. The D&D turnover deliverable standard will be as established by EM-40 in the Office of Environmental Restoration Decontamination and Decommissioning Guidance Document. Standards to which waste must be removed from the tanks will be established by a final closure plan developed by the Retrieval Program. Work scope planning and risk factors are expected to have low impacts to this work activity.

Goals & objectives:

At the conclusion of useful operation, all tank farm facilities will be prepared for turnover to the Environmental Restoration Program to be decommissioned and decontaminated. The tank farm retired facilities support activity will perform preparations for turnover of no longer needed tank farm facilities. Facilities assigned to this activity will be assessed and transferred as rapidly as possible to Environmental Restoration.

This activity consists of performing Phase I transition activities:

1. Transition planning for each facility or system
2. Facility preparation for transfer to EM-40 (Environmental Restoration)
3. Surveillance and maintenance of retired facilities until transfer to EM-40 is accomplished
4. Safe shutdown and transfer to EM-40

The following program master schedule activities are supported by WBS 1.1.1.2.01.07:

S008429A	Initiate turnover to ER 242 T/S Evaporators
S008429G	Initiate turnover to ER 242-A Evaporator
S008430	Perform Retired Tank Farm Facilities Surveillance
S008430A	Initiate Tank Farm Retired Facilities Program
S008435	Perform Retired Tank Farm Facilities Maintenance
S008440	Perform Retired Tank Farm Facilities Engineering
S008445	Preparation of Tank Farm Facilities for Turnover to ER

Major end-item deliverables:

1. Approved plan for turnover to EM-40
2. Preliminary characterization of facilities/systems to be turned over to EM-40
3. Preliminary hazards analysis
4. Safe shutdown and deactivation of facilities/systems prior to turnover
5. Establishment and phase-in of required surveillance and maintenance (S&M) for D&D
6. Initiating EM-40 planning and budgeting for D&D
7. Transfer to EM-40 (Environmental Restoration) for D&D

Acceptance criteria:

Phase I is completed with the execution of a Memorandum of Agreement (MOA) and the completion of D&D decision 0. Decision 0 includes the signing of the MOA or other agreement document between EM-40 and EM-30.

C. STATEMENT OF WORK

Existing facilities no longer required to process or store waste will be systematically identified. Plans will be developed, approved, and executed permitting these facilities to be turned over to ER. These plans will assure that preliminary facility/system characterization and preliminary hazards analyses are completed. Operating facilities will be identified for turnover to ER sufficiently in advance of their end of life to permit adequate shutdown planning to assure safe and cost effective turnover. As facilities/systems are prepared for turnover all required surveillance and maintenance will be performed.

Required activities:

1. Identify no longer needed tank farm facilities
2. Perform an assessment of each facility to determine its status and readiness for turnover
3. Prepare and execute required work plan to complete the facility's readiness for turnover
4. Provide for all legally required surveillances of retired facilities until they have been accepted by the Environmental Restoration Program
5. Document formal turnover of retired facilities as required by the U.S. Department of Energy Office of Environmental Restoration (EM-40) Decontamination and Decommissioning Guidance Document

Interfaces:

#	From This WBS To	Item Provided
1	Environmental Restoration Program	Transfer of tank farm facilities for deactivation and decommissioning including the eventual closeout and verification.
	To This WBS From	
1	1.1.1.2.01.02; 1.1.1.2.01.03; 1.1.1.2.01.04; 1.1.1.2.01.05; 1.1.1.2.01.06	Facilities identified which are no longer needed in tank farms. These would include and be limited to the 209-E solid waste facility, 242-T/S evaporators, 244-AR vault, 204-AR unloading facility, 242-A evaporator, double-contained receiver tanks (DCRTS), misc. underground waste storage tanks, tank farm underground waste transfer lines, single-shell tanks, and double-shell tanks.

Technologies to be assessed:

1. Decommissioning processes
2. Waste minimization processes
3. Reuse and recycling
4. Radiological, physical, chemical modeling
5. Remotely operated equipment for surveillance and D&D

Options to be considered:

1. Best Available Technology (BAT) reviews
2. Dismantling options
3. Equipment removal or left in place
4. Restoration or D&D

5. Alternative uses
6. Decommission alternatives
7. Preparation for releasing area for unrestricted use
8. Keep as low as reasonably achievable (ALARA) and below prescribed limits

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

COMPLIANCE AGREEMENT

- Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement)

Department of Energy Approved Standards/Requirements Identification Documents (S/RIDS)

- The S/RIDS developed and approved for TWRS Operations

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste (M&O Contractor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02/IV	5. WBS ELEMENT TITLE Waste Tank Safety Program	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1	12. ADS/TDD BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT

Total cost of Waste Tank Safety is \$551,740,000.

B. TECHNICAL BASES

The Waste Tank Safety Program was established in mid-1990 to address the hazards associated with storage of radioactive mixed waste in the large underground radioactive waste storage double-shell and single-shell tanks at the Hanford Site. This program serves as the focal point for identification and resolution of selected high priority waste tank safety issues. Several safety issues and deficiencies have been identified, and four issues have been declared unreviewed safety questions (USQ) because they represent conditions potentially outside the existing safety envelopes. Twenty-five (six double-shell and nineteen single-shell) tanks have a significant potential to generate and release flammable gases (primarily hydrogen and ammonia) mixed with an oxidizer (nitrous oxide); twenty single-shell tanks contain greater than 1,000 g-moles of ferrocyanide; and eighteen single-shell tanks contain organic chemicals (exceeding 3 weight percent total organic carbon) mixed with sodium nitrate/nitrite. These tanks all have the potential for runaway reactions which could result in the release of high-level waste. Two single-shell tanks either have, or have had, a floating layer of organic solvent. One single-shell tank with a heat generation rate greater than 100,000 Btu/hr requires periodic water additions to prevent waste temperatures from exceeding the 300° F operating limit; in the event of a tank leak, if cooling water additions were discontinued, then the tank could fail due to high temperature, and result in the release of high-level waste. These fifty-seven tanks (nine organic tanks are also listed as flammable gas or ferrocyanide tanks) comprise the Watch List and are subject to operating restrictions in and around them to minimize the possibility of an unsafe event occurring.

One double-shell tank does not meet the tank farm operating specification for hydroxide ion (OH⁻) concentration of 0.3 moles per liter; the low OH⁻ condition can potentially cause stress corrosion cracking. Sixteen odor exposure events have occurred between July 1987 and May 1992, resulting in medical first aid and lost time incidents. The exposures are thought to be organic in nature, and due to the flammability of many organic compounds, operational restrictions and safety precautions are in place on several of the tank farms. The potential for an in-tank criticality has been analyzed and the risk determined to be low for safe storage. However, additional analyses are required for retrieval and treating the waste. Also, other waste tank safety issues may be discovered; including, but not limited to, potential issues on 50 smaller miscellaneous tanks in the 200 Areas as these tanks are characterized and evaluated.

Goals and objectives:

The goal is to mitigate and/or resolve the waste tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. The scope includes conducting safety evaluations and proposing corrective action strategies for mitigating and/or resolving the hazards.

The Waste Tank Safety Program consists of the following Level V subactivities:

- 1.1.1.2.02.01, Technical Integration and Planning
- 1.1.1.2.02.02, Hydrogen Mitigation
- 1.1.1.2.02.03, Waste Tank Ferrocyanide Safety Program
- 1.1.1.2.02.04, Waste Tank Flammable Gas Safety Program
- 1.1.1.2.02.05, Waste Tank Organic Safety Program
- 1.1.1.2.02.06, Waste Tank High-Heat Safety Program
- 1.1.1.2.02.07, Miscellaneous Underground Storage Tanks
- 1.1.1.2.02.08, Waste Tank Vapor Resolution
- 1.1.1.2.02.09, Waste Tank Nuclear Criticality
- 1.1.1.2.02.10, Other Waste Tank Safety Issues (currently inactive)
- 1.1.1.2.02.11, Waste Tank Hydroxide Control.

Major end-item deliverables:

The end-item deliverable that will complete this WBS Element is the following Tri-Party Agreement Major Milestone:

- M-40-00 (T2B-01-100) Transmit letter to DOE-RL indicating that all high priority Watch List tanks have been mitigated and/or that their safety issues have been resolved.

Supporting deliverables include the following Tri-Party Agreement Interim Milestones:

- M-40-01 (TW2-94-462) Transmit report documenting results of the Tank 241-SY-101 low speed mixer pump test to RL [Complete]
- M-40-02 (T2B-95-100) Provide letter to RL documenting completion of upgrading temperature monitoring capabilities in ferrocyanide tanks
- M-40-02A (TW2-94-435) Provide letter to RL transmitting a final cleared summary report on the criteria for upgraded temperature monitoring capabilities in ferrocyanide tanks
- M-40-02B (TW2-94-490) Issue status report to RL documenting completion of installing six of twelve new thermocouples and continuous temperature monitoring systems in ferrocyanide tanks
- M-40-03 (T2B-96-100) Transmit a cleared report to RL summarized the results of vapor characterization of all ferrocyanide Watch List tanks
- M-40-04 (T2B-95-101) Complete removal of floating organic layer from Tank 241-C-103 and transmit notice of completion to RL

- M-40-05 (T2B-95-102) Transmit cleared report to RL on the minimum liquid level and amount of water additions recommended for high-heat Tank 241-C-106 as determined by a safety alternative test
- M-40-06 (TW2-93-322) Transmit to RL the formal quantitative analysis (surrogate validated) report on vapor sampling characterization of Tank 241-C-103 [Complete]
- M-40-07 (T2B-95-103) Transmit letter to RL announcing commencement of operation of a vapor treatment system for Tank 241-C-103
- M-40-08 (T2B-96-101) Transmit a cleared report to RL summarizing the results of vapor characterization of all organic Watch List tanks
- M-40-09 (T2B-98-100) Transmit letter to RL recommending closure of the USQ for the single-shell flammable gas tanks. RL approval will close the last of the unreviewed safety questions for double-shell and single-shell tanks that had been identified as of September 30, 1993
- M-40-10 (T2B-97-100) Transmit cleared report to RL on the results of vapor space monitoring in all flammable gas generating tanks
- M-40-11 (TW2-94-445) Issue an approved criticality safety analysis and, if needed, a control plan; and support approval by DOE of criticality unreviewed safety question closure documentation by providing input as necessary [Complete]
- M-40-12 (T2B-99-100) Transmit letter to RL documenting resolution of the nuclear criticality safety issue
- M-40-13 (TW2-94-467) Transmit letter to RL documenting design and fabrication of a spare mixer pump for Tank 241-SY-101
- M-40-14 (TW2-94-493) Support approval by DOE of ferrocyanide USQ closure documentation by providing input as necessary [Complete]
- M-40-15 (TW2-94-417) Transmit letter to RL documenting installation of standard hydrogen monitoring systems in the remaining five potentially flammable double-shell tanks
- M-40-16 (TW2-94-492) Submit Draft Interim Safety Basis Level 1 topical report for RL review two months after receipt of Tank 241-C-103 dip sample draft analytical report from PNL [Complete]
- M-40-17 (TW2-94-491) Support approval by DOE of Tank 241-C-103 USQ closure documentation by providing input as necessary [Complete]

Acceptance criteria:

This program element will be complete if:

- All work described in this WBS Element is accomplished within its cost, schedule and technical baseline; and performance measurement of work actually achieved is accurately reported.
- All 4 of the unreviewed safety questions (identified as of September 30, 1993) are closed per DOE Order 5480.21.
- All 6 parts of the DNFSB 90-7 are closed as described in the "Implementation Plan for the Defense Nuclear Facilities Safety Board Recommendation 90-7, WHC-EP-0415, Revision 1.
- Approval is received from DOE for removal of approximately 57 tanks (as of September 23, 1994) from the Watch List.
- An adequate safety basis is established to bound the known hazards associated with the safety issues and deficiencies (identified as of April 15, 1994). Redefining the safe operating conditions may result in either the removal and/or addition of interim operational restrictions for waste tanks.
- Approval is received from DOE to resolve the safety issues and deficiencies (identified as of April 15, 1994) after either controlling or eliminating the hazards.

C. STATEMENT OF WORK

Required activities over lifetime:

Tanks with the higher risk will be evaluated and mitigated first. The logic involves a problem definition phase followed by three optional paths leading to resolution of the safety issue for a tank or group of tanks by either controlling or eliminating the hazard. The logic elements are: (1) evaluate and define the problem; (2) in-tank resolution without treatment; (3) in-tank resolution with treatment; and (4) resolution out-of-tank with or without treatment. The path followed is ultimately a function of whether the waste requires treatment and where the waste treatment takes place. The logic sequence for performing work is the same for all tanks. Much of the work within this program element is "first-of-a-kind" in nature; and all information gained and decisions made for one tank are shared with the remaining tanks. Work on many tanks and safety issues is being conducted in parallel to resolve the issues as expeditiously as possible. (WHC/PNL/LANL/ICF KH)

The problem definition phase consists of reviewing historical records; procuring laboratory and waste monitoring equipment; developing analytical methods; conducting simulant waste studies; obtaining and analyzing waste samples; interpreting characterization and monitoring data; developing predictive models; and performing safety and environmental analyses. Recommendations for closure of the USQs will be made based on updated analyses or mitigation of the hazard. In-tank resolution without treatment consists of developing, procuring, and installing additional equipment to continuously monitor tank parameters (temperature, pressure, gas concentration, surface level), which is necessary for most tanks to complete problem definition; and for some tanks, may also be adequate to resolve the safety issue. If not, corrective action plans will be prepared and implemented to control the hazard. Some of the in-tank resolution with treatment (mitigation) options being considered are moisture control; mixer pumps; sonic or perhaps ultrasonic agitation; heating and dilution; closed-loop cooling; and vapor treatment. Scope consists of concept development, design, fabrication, installation, testing, and demonstration of the equipment. The safety envelope will be redefined, operating procedures modified, control limits established, and documentation completed for recommendation of safety issue resolution. Operation of mitigation and/or monitoring equipment beyond testing, operational verification and turnover to tank farm operations is not within the scope of this Program Element, nor is resolution out-of-tank with or without treatment (remediation), if required. (WHC/PNL/LANL/ICF KH)

This program element is scheduled to be complete by 2001 with the following exception: (1) flammable gas double-shell tanks may require waste retrieval (remediation) which will delay safety issue resolution until 2005.

Several sources of risk and/or uncertainty exist for this program element. One is the tank structures (i.e., whether there are adequate risers to support characterization and enhanced monitoring; whether the tanks can support additional loads from monitoring and mitigation equipment; and whether any tanks will fail and require accelerated retrieval); there is moderate risk in this area. Another is the approval process for USQ closure and removal of tanks from the Watch List; until the approval is delegated from HQ to RL there is moderate risk in this area as well. Another is whether all hazards and issues have been identified. A revised tank farms hazards analysis is scheduled to be issued in July 1994 and there is a moderate to high risk of an USQ being declared on the miscellaneous tanks. And another is whether existing methods will be successful in controlling the hazards. Since the mixer pump in tank 241-SY-101 is considered a success in controlling the flammable gas releases and plans are in place for controlling most of the other hazards, this is considered low risk.

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.01 Tank Farm Operations & Maintenance	Mitigation/resolution of tank safety issues and/or closure of unreviewed safety questions to achieve a new safe operating condition envelope; removal of tanks from the Watch List; removal of operational restrictions; operation/maintenance of installed systems.
2	1.1.1.2.03 Tank Farm Upgrades	Mitigation/resolution of tank safety issues and/or closure of unreviewed safety questions to achieve a new safe operating condition envelope; removal of tanks from the Watch List; removal of operational restrictions.
3	1.1.1.2.04 Characterization	Data requirements and Data Quality Objective documents; Data (on tank waste behavior); Reusable Materials for Characterization (developmental instruments for testing of tank waste properties).
4	1.1.1.2.05 Waste Retrieval	Data for Retrieve Waste (results of technical investigations of waste properties); mitigation of tank safety issues and/or closure of unreviewed safety questions to allow remediation through retrieval of tank waste.
5	Solid Waste Disposal	Manage Tank Waste (MTW) System Generated (SG) solid waste (contaminated equipment removed from tanks).
#	To This WBS From	Item Provided
1	1.1.1.2.01 Tank Farm Operations & Maintenance	Operation and maintenance of waste tank plant systems.
2	1.1.1.2.03 Tank Farm Upgrades	Upgrade of waste tank facilities and systems.
3	1.1.1.2.04 Characterization	Tank Waste Analysis Plans (TWAP)/Tank Characterization Plans and Tank Characterization Reports (TCR).
4	1.1.1.2.05 Waste Retrieval	Retrieved tank waste as part of the actions necessary for safety issue resolution.

Characterization must provide representative samples and the necessary chemical, thermodynamic, and physical property data to permit completion of laboratory testing and documentation for safety issue resolution. Resolution of safety issues must not alter the waste in a manner that will adversely affect tank farm operations, retrieval operations, or pretreatment operations. The pretreatment, high-level waste, and low-level waste programs will be notified of potential chemical additions that may be used for safety issue resolution; and the pretreatment program will be notified when mitigation measures for resolving waste tank safety issues have been validated.

Technologies to be assessed:

- Synthetic waste gas generation studies for flammable gas
- Shear strength studies for flammable gas
- Gas reaction studies for flammable gas
- Waste tank physics modeling for flammable gas
- Gas release mechanisms/waste modeling for flammable gas
- Gas generation/inorganic phase equilibria for flammable gas
- Gas phase equilibria studies for flammable gas
- Modeling and design support for tank 241-SY-101 mitigation
- Modeling and design support for tank 241-SY-103 mitigation
- Modeling and design support for tank 241-AW-101 mitigation
- Modeling and design support for 241-AN farm tanks mitigation
- Waste dilution studies
- Simulated waste studies for ferrocyanide
- Aging waste studies for ferrocyanide
- Cesium uptake studies for ferrocyanide
- Special studies for ferrocyanide
- Compare actual ferrocyanide waste with simulated waste
- Cesium nickel ferrocyanide solubility tests
- Microconvection modeling for ferrocyanide
- Surface moisture retention for ferrocyanide
- Infrared speciation methods evaluation for ferrocyanide
- Cyanoferrate speciation/technology transfer
- Criteria for upgraded temperature monitoring in ferrocyanide tanks
- Surface moisture measuring in ferrocyanide tanks
- Neutron probe moisture monitor/liquid observation well development for ferrocyanide tanks
- Total organic carbon partitioning in single-shell tanks
- Organic analytical methods development
- Waste aging studies for organic
- Organic concentration mechanisms
- Organic waste moisture studies
- Lab methodology for measuring thermal conductivity and permeability

Options to be considered:

- No-action
- Store and monitor waste only
- Mitigation (in-tank)
- Remediation (out-of-tank) by other programs

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to Tank Waste Remediation System Functions and Requirements, DOE/RL-92-60 Rev. 1, dated March 1994:

- Section 2.0, Table F4.2.1.1A, Item V Function Requirements, Paragraphs and B
- Section 3, Table A4.2.1.1, Item VIII Requirements Satisfied, Paragraphs B and C.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor/PNL)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.01/V	5. WBS ELEMENT TITLE Technical Integration and Planning	
6. WBS INDEX LINE NO. Not used.	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	7,718	7,150	8,426	7,980	7,980	8,002	7,959
CENRTC	500	515	531				
GPP							
LINE ITEM							
TOTAL	8,218	7,665	8,957	7,980	7,980	8,002	7,959

B. TECHNICAL BASES

Goals and objectives:

Technical Integration and Planning provides for the overall program management of the Waste Tank Safety Program. This activity includes the management, planning, oversight and quality assurance support for the other sub-activities in this program element: Hydrogen Mitigation, Waste Tank Ferrocyanide Safety Program, Waste Tank Flammable Gas Safety Program, Waste Tank Organic Safety Program, Waste Tank High-Heat Safety Program, Miscellaneous Underground Storage Tanks, Waste Tank Vapor Resolution, Waste Tank

1.1.1.2.02.01

WHC-SP-1101

Nuclear Criticality, Other Waste Tank Safety Issues (inactive), and Waste Tank Hydroxide Control. Also provided is integration of work scope with the other Tank Waste Remediation System (TWRS) program elements.

Major end-item deliverables:

- Waste Tank Safety Programmatic Risk Assessment Report
- Manage Waste Tank Safety Program
- Provide Quality Assurance support

Acceptance criteria:

- Complete work scope within the cost, schedule and technical baseline

C. STATEMENT OF WORK

Required activities over lifetime:

Program Management includes strategic planning, such as developing budget cases and preparing plans and schedules; developing cost, schedule, and technical baselines; work scope direction; cost and schedule control; monthly performance reporting; and program briefings and presentations. Planning and integrating capital and expense upgrades to promote tank safety is also included. In addition, technical oversight for the WTSP is provided by the Waste Management External Advisory Committee. This activity will utilize a systems engineering approach to support development of the TWRS technical baseline, and a risk-based decision-making model for task prioritization. Specific work scope includes the preparation of the WTSP input for the Fiscal Year Work Plan, Multi-Year Work Plan, Activity Data Sheet submittal (Five-Year Plan), and TWRS Baseline Plan; and preparation and updates to the sub-activity program plans as requested. (WHC/PNL)

Quality Assurance, Quality Engineering and Quality Control support all WTSP activities and milestones. Scope includes quality document reviews and readiness reviews to verify that drawings, specs, and procedures are met; inspections of instrumentation upgrades to the Watch List tanks; procurement support for offsite material, equipment and services; support for engineering development related to Watch List tanks; and fab shop support. (WHC)

This activity is ongoing and will continue until all outstanding waste tank safety issues are resolved.

Interfaces:

See 1.1.1.2.02.02 thru .11

Technologies to be assessed: N/A

Options to be considered: N/A

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- Public Law 101-510
- DOE Order 5820.2A

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.01 Technical Integration and Planning (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.01.01/VI	5. WBS ELEMENT TITLE Integration and Planning							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	5,306	4,666	5,867
CENRTC	500	515	531
GPP			
LINE ITEM			
TOTAL	5,806	5,181	6,398

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve waste tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workscope includes strategic planning; developing and maintaining cost, schedule and technical baselines; performance reporting; integration; and technical oversight for the Waste Tank Safety Program. Mitigation and/or resolution of safety issues must be consistent with the overall Tank Waste Remediation System strategy.

Status of Design Documentation:

"Status Report on Resolution of Waste Tank Safety Issues at the Hanford Site", WHC-EP-0600, issued August 1993. "Waste Tank Safety Programs Overview Plan", WHC-EP-0426 Rev. 3, issued May 1992.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

09/29/95 RL Issue Final Waste Tank Safety Programmatic Risk Assessment Report (PNL) (N2A110A06)

C. STATEMENT OF WORK

Required activities:

Baseline Planning (N2A110A02, N2A110A08, N2A110A12)

- Waste Tank Safety Program planning
- Programmatic risk assessment (PNL) (N2A110A04)
- Financial analyst support
- Program scheduling support
- Program Basic Ordering Agreement (BOA)
- Integrated scheduling support

Management and Integration (N2A110B04, N2A110B08, N2A110B12)

- Waste Tank Safety Program management
- TPA milestones/Safety Initiatives management
- Project management (PNL)
- Technical editor support
- Secretarial support
- Temporary support

Advisory Support (N2A110K04, N2A110K06, N2A110K08)

- Waste Management External Advisory Committee
- Environmental interface

Technologies to be assessed:

No technologies provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>[Signature]</i>	9/21/94
Activity Manager	G. A. Hanson <i>[Signature]</i>	9/21/94
Cost Account Manager	G. A. Hanson <i>[Signature]</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>[Signature]</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>[Signature]</i>	9/21/94
Activity Manager	G. A. Hanson <i>[Signature]</i>	9/21/94
Cost Account Manager	G. A. Hanson <i>[Signature]</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>[Signature]</i>	9/20/94

FDS Number

1N2A11

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.01 Technical Integration and Planning (M&O Contractor)	2. DATE PREPARED September 14, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.01.02/VI	5. WBS ELEMENT TITLE Waste Tank Safety Quality Assurance							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072		
Expense	Capital	Line Item						
EW3120072								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	2,412	2,484	2,559
CENRTC			
GPP			
LINE ITEM			
TOTAL	2,412	2,484	2,559

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve waste tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workslope includes quality document reviews and readiness reviews to verify that drawings, specifications and procedures are met; inspections of upgrades to the Watch List tanks; procurement support for off-site material, equipment and services; support for engineering development related to Watch List tanks; fabrication shop support; and quality oversight and safety assurance for the Waste Tank Safety Program.

Status of Design Documentation:

"Status Report on Resolution of Waste Tank Safety Issues at the Hanford Site", WHC-EP-0600, issued August 1993. "Waste Tank Safety Programs Overview Plan", WHC-EP-0426 Rev. 3, issued May 1992.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS): N/A

C. STATEMENT OF WORK

Required activities:

Waste Tank Safety QA Support (N2A120A04, N2A120A06, N2A120A08)

- Quality engineering support

- Quality control support

- Quality oversight support

- Nuclear safety, procurement and overhead support

- Waste tank safety assurance support

- Fabrication shop quality control

Technologies to be assessed:

No technologies provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	G. A. Hanson <i>GA Hanson</i>	9/21/94
Cost Account Manager	G. A. Hanson <i>GA Hanson</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	G. A. Hanson <i>GA Hanson</i>	9/21/94
Cost Account Manager	G. A. Hanson <i>GA Hanson</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

FDS Number

1N2A12

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.02/V	5. WBS ELEMENT TITLE Hydrogen Mitigation							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	14,819	11,808	17,819	15,596	14,920	14,590	0
CENRTC	14,525	12,975	14,309	10,712	10,443	8,799	0
GPP							
LINE ITEM							
TOTAL	29,344	24,783	32,128	26,308	25,363	23,389	0

B. TECHNICAL BASES

Goals and objectives:

See Activity 1.1.1.2.02.04, Waste Tank Flammable Gas Safety Program, for a description of the flammable gas safety issue. During 1991, a large number of concepts for mitigating (i.e., reducing the severity or intensity of) the hazard were proposed and evaluated. The concepts were ranked according to the following factors to assist in selecting the preferred concept: confidence in effectiveness of technology; achievable risk reduction; implementation risk; complexity of data/prototype modeling needs; implementation time required; operating time to achieve mitigation; maintenance, operational and surveillance requirements; and risk affecting disposal options. Based on this ranking, four concepts were chosen for more detailed evaluation and conceptual scoping: heating; dilution; sonic or ultrasonic agitation; and mixing with a horizontal jet pump.

Near-term mitigative efforts will be directed towards eliminating the cyclic releases of flammable gas mixtures so that the gases generated and retained within certain waste tanks will be continuously released at concentrations within safe limits. Resolution of the safety issue for all 25 high-level radioactive waste tanks that accumulate and/or generate flammable gases will most likely require additional remedial actions such as ventilation system replacement, retrieval of the double shell tank (DST) waste (Retrieval 1.1.1.2.05) and either removal of some of the constituents (Pretreatment 1.1.1.3.01) or utilizing additional DST space for diluting the waste (Upgrades 1.1.1.2.03). Two of the tanks, 241-S-102 and 241-SX-106, are also listed on the organic tank Watch List and mitigation/remediation tasks, if any, involving those tanks will be coordinated with Activity 1.1.1.2.02.05.

Major end-item deliverables:

- T2B-96-301 Install Mitigation Pump in Tank 241-SY-103
- T2B-96-305 Install Mitigation Pump in Tank 241-AW-101
- T2B-96-313 Install Mitigation Pump in Tank 241-AN-104

Acceptance criteria:

- Complete work scope within cost, schedule and technical baseline
- Provide mitigation to 6 flammable gas tanks
- Maintain vapor spaces of 6 flammable gas tanks below 25 % of the lower flammability limit

C. STATEMENT OF WORK

Required activities:

The primary objective of this Activity is to eliminate gas releases that result in a hydrogen concentration in the tank dome (vapor space) that is higher than 25 percent of the lower flammability limit (LFL). The tanks will be mitigated in the following sequence: (1) tank 241-SY-101; (2) tank 241-SY-103; (3) tank 241-AW-101; (4) tank 241-AN-104; (5) tanks 241-AN-105 and -103; and (6) the 18 SSTs. (WHC/LANL/ICF KH/PNL)

Sufficient characterization, instrumentation and modeling of tank mechanisms already exist to proceed with the design, fabrication, and installation of a mitigation test device in Tank 241-SY-101. A mixer pump was selected as the preferred option, and a test pump was fabricated and installed in the tank in July 1993. Specific tasks include design, procurement, fabrication, installation and testing of a mitigation mixer pump designed to provide a continual release of hydrogen gas rather than periodic releases. Initially, limited low speed pump tests were performed to cautiously determine whether mixing could be done safely and whether it is effective in releasing hydrogen from the waste. Then a series of full-scale tests were run at higher pump speeds and longer durations to determine optimum pump operating speeds and durations. Also, a limited amount of dilution water

may be added via the pump to obtain preliminary data related to the dilution concept. Alternate mitigation concepts include the design, structural analysis and operational hazards assessment of a sonic probe and analysis of dilution as potential mitigation techniques. A spare mitigation pump will be designed, procured and fabricated for installation in tank 241-SY-101 as a replacement for the test pump in the event it fails. Mitigation pumps will also be designed, procured and fabricated for installation in the other 5 flammable gas tanks. Equipment to remove and transport pumps in the event of failure is also included. In addition, a data acquisition and control system (DACS), and gas characterization systems (GCS) are included to control pump operations. Other support equipment includes the design and procurement of: (1) a voidmeter to measure in-situ void fraction; (2) a falling ball viscometer to measure waste density and viscosity; and (3) upgrade of the DACS System to accommodate the new instrumentation. Support tasks include: scale and analytical modeling; test plans; hot test specifications; training of test engineers; safety and environmental documentation; and dilution studies. Following demonstration of the mixing concept in tank 241-SY-101, the safety of the tank will be evaluated and additional corrective actions will be taken, if necessary. After testing, operational verification and turnover, the continued operation of the mitigation equipment will be assumed by Tank Farm Operations and Maintenance (1.1.1.2.01). As the hazard evaluation and definition phase is completed for the other flammable gas tanks, similar mitigative measures will be applied. Promising technologies (e.g. sonic or dilution) will continue to be evaluated should the mixing concept prove to be ineffective. If the other technologies prove out, together with mixing, then the safest and most economical/environmentally beneficial concept will be selected. (WHC/LANL/ICF KH/PNL)

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.05 Retrieval	Tank waste for retrieval
2	1.1.1.2.01 Operations & Maintenance	Mitigation equipment for routine operation
	To This WBS From	
1	1.1.1.2.04 Characterization	Core sample analysis

Technologies to be assessed:

- Mitigation alternatives
 - sonic probe
 - dilution

Options to be considered:

- Mitigation pumps
- Sonic probe
- Dilution of waste

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- Public Law 101-510
- Tri-Party Agreement M-40
- DOE Orders 5480.21 and 5820.2A

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.02 Hydrogen Mitigation	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.02.01/VI	5. WBS ELEMENT TITLE Mitigation Program/Project Management	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AB	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120072 35EW31207	

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	8,035	6,670	8,630
CENRTC	4,425	2,416	1,592
GPP			
LINE ITEM			
TOTAL	12,460	9,086	10,222

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. The primary objective of this activity is to eliminate gas releases that result in a hydrogen concentration in the flammable gas tanks dome vapor space that is higher than 25 percent of the lower flammability limit. Specific tasks include mitigation Program/Project support, including the Mitigation Program Manager, the engineering support manager, associated lead technical personnel and ICF/KEH Program technical scheduling support. Workscope also includes 1) Battelle, Pacific Northwest Laboratories (PNL) support for modeling, test plans, test data analysis and dilution studies, and 2) Los Alamos National Laboratories (LANL) mixer pump test support, data analysis and preparation of Safety Analyses (SA) and Environmental Assessments (EA) Gas Monitoring support, and the Design/Fabrication of Gas Characterization System (GCS) and new Data Acquisition and Control Systems (DACS) for the SY, AW and AN Tank Farms.

Status of Design Documentation:

Detail design and fabrication of the DACS 2A is being done by LANL. Functional Requirement Document (FRD) and Functional Design Criteria (FDC) were completed by WHC and sent to LANL for the SY tank farm DACS 2A System. The documents will be revised and updated for the AW and AN farms as required. An FDC on the GCS will be prepared for tank 103-SY and will be updated as required for the AW and AN Tanks.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

04/95	RL	Letter report on void/viscometer characterization of Tank 101-SY (PNL)
09/95	RL	Issue safety assessment for in-tank dilution testing of Tank 103-SY
01/96	RL	Issue test plan for dilution testing of Tank 103-SY
08/96	RL	Issue Tank 104-AN Safety Assessment
11/96	RL	Issue Tank 101-AW Safety Assessment
05/97	RL	Issue Tank 105-AN safety Assessment

C. STATEMENT OF WORK

Required activities:

Mitigation program/project management support

- Program Management
- Project Management
- PNL Engineering Services (PNL)
- LANL Engineering Services (LANL)
 - DACS 2A SY Farm
 - DACS 2B 101-AW
 - DACS 2C AN Farm
 - Gas Monitoring Support
 - SA/Tech Support 101-SY
 - SA/Tech Support 103-SY
 - SA/Tech Support 101-AW
 - SA/Tech Support 104-AN
 - SA/Tech Support 105-AN

Technologies to be assessed: N/A

Options to be considered:

- * Mitigation pumps
- * Dilution

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

FDS Number

1N2B21

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.02 Hydrogen Mitigation	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.02.02/VI	5. WBS ELEMENT TITLE 101-SY Mitigation	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AB	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	3,262	693	1,021
CENRTC	422	103	106
GPP			
LINE ITEM			
TOTAL	3,684	796	1,127

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. The primary objective of this activity is to eliminate gas releases that result in a hydrogen concentration in the flammable gas tanks dome space that is higher than 25 percent of the lower flammability limit. Specific tasks include continued operation of the Tank 241-SY-101 Mitigation Test Pump and operation and maintenance of the current SY farm Data Acquisition System (DACS) and gas monitoring systems. Further support includes the Void Fraction Meter and Viscometer testing to determine tank waste density and viscosity, fabrication of a Void fraction meter transport container. Work scope also includes the development of equipment and procedures for removal of the current test pump should a failure occur.

Status of Design Documentation:

The Void Fraction meter transport container will be documented on design drawings only.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

C. STATEMENT OF WORK

Required activities:

101-SY Mitigation
 Mixer Pump Operations
 DACS Maintenance and Operation
 Instrumentation
 Void/Viscometer Testing
 Void fraction meter transport container

Technologies to be assessed: N/A

Options to be considered:

*Mitigation
*Dilution

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>Jach Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>Jach Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>Jach Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>Jach Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

FDS Number

1N2B22

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.02 Hydrogen Mitigation	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.02.03/VI	5. WBS ELEMENT TITLE 103-SY Mitigation							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AB							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1/Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	3,003	3,304	921
CENRTC	9,340	2,472	0
GYP			
LINE ITEM			
TOTAL	12,343	5,776	921

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. The primary objective of this activity is to eliminate gas releases that result in a hydrogen concentration in the tank 241-SY-103 dome vapor space that is higher than 25 percent of the lower flammability limit. Specific tasks include design, procurement/fabrication and installation, and operation of a mitigation test pump in Tank 241-SY-103. The pump will be designed to function as both a mitigation pump and as a retrieval mixer pump, thereby integrating the mitigation and retrieval program efforts. Further, the SY-103 pump will also be used to mix the tank contents for a test of the effectiveness of dilution in mitigating flammable gas releases, and on waste physical properties needed to assess the required dilution ratio for retrieval. The pump will also function as a spare pump for use in Tank 241-SY-101 should the SY-101 pump fail. Equipment to store the pump in the event of failure is also included. In addition the workscope includes 1) Design oversight, installation, operation, and maintenance of a new Data Acquisition System (DACS) for the SY tank farm, 2) A Gas Characterization System (GCS) and 3) Viscometer and Void Fraction meter testing of tank contents.

Status of Design Documentation:

A functional Design Criteria (FDC) and a pump design specification are planned for early FY 1995.. Specific schedule date TBD.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

06/30/95	RL	Complete Tank SY-103 Void fraction and Viscometer testing (PNL)
01/01/96	Key	Install Tank SY-103 Gas Characterization System (GCS)
02/01/96	Key	Install SY farm DACS 2A
07/31/96	RL	Install Tank SY-103 Mitigation Pump

C. STATEMENT OF WORK

Required activities:

103-SY Mitigation

- Design pump
- Procure/fabrication pump
- Install pump
- Install DACS 2A System
- DACS 2A maintenance and operations
- Gas Characterization System (GCS)
- Instrumentation (Void/Viscometer)
- Mixer pump operations
- Mixer pump removal/disposal system
- In-tank dilution tests

Technologies to be assessed:

- * Mitigation alternatives
 - Dilution

Options to be considered:

- * Mitigation pumps
- * Dilution of waste

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

FDS Number

1N2B23

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.02 Hydrogen Mitigation	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.02.04/VI	5. WBS ELEMENT TITLE 101-AW Mitigation	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AB	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	519	535	2,688
CENRTC	338	6,105	1,668
GPP			
LINE ITEM			
TOTAL	857	6,640	4,356

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin.

The primary objective of this activity is to eliminate gas releases that result in a hydrogen concentration in the tank 241-101-AW dome vapor space that is higher than 25 percent of the lower flammability limit. Specific tasks include design, procurement/fabrication, installation, and operation of a mitigation pump in Tank 241-101-AW. The pump will be designed to function as both a mitigation pump and as a retrieval mixer pump, thereby integrating the mitigation and retrieval program efforts. Equipment to store the pump in the event of failure is also included. In addition the workscope includes 1) Design oversight, installation, operation, and maintenance of a new Data Acquisition System (DACS) for the AW tank farm, 2) A Gas Characterization System (GCS) and 3) Viscometer and Void Fraction meter testing of tank contents.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

09/30/95	Key	Complete initial Tank AW-101 Void fraction and Viscometer testing
09/30/96	Key	Install Tank AW-101 Gas Characterization System (GCS)
01/24/97	Key	Install AW farm DACS 2B
05/13/97	RL	Install Tank AW-101 Mitigation Pump

C. STATEMENT OF WORK

Required activities:

101-AW Mitigation

- Design pump
- Procure/fabrication pump
- Install pump
- Install DACS 2B System
- DACS 2B maintenance and operations
- Gas Characterization System (GCS)
- Instrumentation (Void/Viscometer)
- Mixer pump removal/disposal system
 - Removal
 - Fences and roads

Technologies to be assessed: N/A

Options to be considered:

* Mitigation pump

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>J. W. Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>J. W. Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>M. C. Jacobsen</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>J. W. Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>J. W. Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>M. C. Jacobsen</i>	9/21/94

FDS Number

1N2B24

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.02 Hydrogen Mitigation	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930				
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.02.05/VI	5. WBS ELEMENT TITLE 104-AN Mitigation					
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994				
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AB					
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> </tr> </table>		Expense	Capital	EW3120072	35EW31207
Expense	Capital					
EW3120072	35EW31207					

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	0	606	2,209
CENRTC	0	1,879	6,471
GPP			
LINE ITEM			
TOTAL	0	2,485	8,680

B. TECHNICAL BASESGoals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. The

1.1.1.2.02.02.05

A3-37

primary objective of this activity is to eliminate gas releases that result in a hydrogen concentration in the tank 241-AN-104 dome vapor space that is higher than 25 percent of the lower flammability limit. Specific tasks include design, procurement/fabrication, installation, and operation of a mitigation pump in Tank 241-AN-104. The pump will be designed to function as both a mitigation pump and as a retrieval mixer pump, thereby integrating the mitigation and retrieval program efforts. Equipment to store the pump in the event of failure is also included. In addition the workscope includes 1) Design oversight, installation, operation, and maintenance of a Data Acquisition System (DACS) for the AN tank farm, 2) A Gas Characterization System (GCS) and 3) Viscometer and Void Fraction meter testing of tank contents.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

01/30/97	Key	Complete Tank AN-104 Void/Viscometer testing
03/31/97	Key	Install GCS in Tank AN-104
09/30/97	RL	Install Tank AN-104 Mitigation Pump

C. STATEMENT OF WORK

Required activities:

101-AN Mitigation

- Design pump
- Procure/fabrication pump
- Install pump
- Install DACS 2C System
- DACS 2C maintenance and operations
- Gas Characterization System (GCS)
- Instrumentation (Void/Viscometer)
- Mixer pump removal/disposal system
 - Removal
 - Fences and roads

Technologies to be assessed: N/A

Options to be considered:

* Mitigation pump

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>Jack Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

FDS Number

1N2B27

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.02 Hydrogen Mitigation	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.02.06/VI	5. WBS ELEMENT TITLE 103-AN Mitigation	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AB	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	0	0	739
CENRTC	0	0	0
GPP			
LINE ITEM			
TOTAL	0	0	739

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. The primary objective of this activity is to eliminate gas releases that result in a hydrogen concentration in the tank 241-AN-103 dome vapor space that is higher than 25 percent of the lower flammability limit. Fy 1997 tasks for this activity covers the Void/Viscometer testing of tank contents to determine void fraction and waste viscosity.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS): N/A

1.1.1.2.02.02.06

A3-41

C. STATEMENT OF WORK

Required activities:

103-AN Mitigation

Void/Viscometer testing

Technologies to be assessed: N/AOptions to be considered:

* Mitigation pump

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>J W Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>J W Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>J W Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>J W Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

FDS Number

1N2B26

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.02 Hydrogen Mitigation	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.02.07/VI	5. WBS ELEMENT TITLE 105-AN Mitigation	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AB	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	0	0	1,611
CENRTC	0	0	4,472
GPP			
LINE ITEM			
TOTAL	0	0	6,083

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. The primary objective of this activity is to eliminate gas releases that result in a hydrogen concentration in the

1.1.1.2.02.02.07

A3-43

WHC-SP-1101

tank 241-AN-105 dome vapor space that is higher than 25 percent of the lower flammability limit. Specific tasks include design, procurement/fabrication, installation, and operation of a mitigation pump in

Tank 241-AN-105. The pump will be designed to function as both a mitigation pump and as a retrieval mixer pump, thereby integrating the mitigation and retrieval program efforts. Equipment to store the pump in the event of failure is also included. In addition the workscope includes design oversight, installation, operation, and maintenance of a Gas Characterization System (GCS) and Viscometer and Void Fraction meter testing of tank contents.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

09/30/97 KEY Complete Tank AN-105 Void fraction and Viscometer testing

C. STATEMENT OF WORK

Required activities:

105-AN Mitigation

- Design pump
- Procure/fabrication pump
- Gas Characterization System (GCS)
- Instrumentation (Void/Viscometer)
- Mixer pump removal/disposal system

Technologies to be assessed: N/A

Options to be considered:

* Mitigation

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>J. W. Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>J. W. Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	J. W. Lentsch <i>J. W. Lentsch</i>	9/21/94
Cost Account Manager	J. W. Lentsch <i>J. W. Lentsch</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

FDS Number

1N2B28

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor)	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.03/V	5. WBS ELEMENT TITLE Waste Tank Ferrocyanide Safety Program							
6. WBS INDEX LINE NO. Not used.	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	7498	3489	3043				
CENRTC	2886	2208	1120				
GPP							
LINE ITEM							
TOTAL	10384	5697	4163				

B. TECHNICAL BASES

Goals and objectives:

In 1989, twenty-two single-shell tanks (SST), 241-BX-102, -106, -110, and -111, 241-BY-101, -103, -104, -105, -106, -107, -108, -110, -111, and -112, 241-C-108, -109, -111, and -112, 241-T-101, 241-TX-118, and 241-TY-101 and -103, were identified as potentially containing greater than 1,000 g-moles (465 pounds) of ferrocyanide precipitates resulting from three radiocesium scavenging processes ("U-Plant", "T-Plant" and "In-Farm") in the early 1950's. In 1990, two additional SSTs, 241-T-107 and 241-TY-104, were identified as having greater than 1,000 g-moles; however, six of the original 22 tanks, 241-BX-102, -106, -110, and -111, 241-BY-101, and 241-T-101, were identified as containing less than that amount. Four of the six tanks (241-T-101, BY-101, BX-110, and BX-111) have been removed from the ferrocyanide tanks Watch List and the other two are awaiting DOE concurrence. Ferrocyanide compounds can react and propagate under certain conditions, including dryness, proper chemical concentration, and elevated temperatures (240° C). A GAO study postulated dose consequences two orders of magnitude greater than those stated in the DOE 1987 Environmental Impact Statement (EIS) for a worst-case accident. In 1990, the ferrocyanide issue was declared an Unreviewed Safety Question (USQ) because the safety envelope for these tanks may no longer be bounded by the existing safety analysis report (SAR).

Three options are being considered to resolve the safety issue: (1) demonstrate that the probability and consequences of a runaway chemical reaction is acceptably small, and therefore no action other than surveillance of important tank parameters is required; (2) monitor and maintain moisture content of the waste to ensure the probability of a propagating ferrocyanide reaction does not exist, and therefore no further action is required; and (3) remove the waste from the tanks by Retrieval (1.1.1.2.05) and treat in a future facility (Pretreatment 1.1.1.3.01). Removal of pumpable liquid from SSTs for interim stabilization as stipulated in the Tri-Party Agreement will be conducted by Tank Farm Operations and Maintenance (1.1.1.2.01). Two of the tanks, 241-TX-118 and 241-TY-104, are also listed on the organic tank Watch List, and tasks involving those tanks will be coordinated with Activity 1.1.1.2.02.05.

Major end-item deliverables:

- M-40-02 Upgrade Temperature Monitoring Capabilities in Ferrocyanide Tanks
- M-40-02B Install Two of Seven New Thermocouples in Ferrocyanide Tanks
- SI 2t Complete Installation of New Thermocouples and Hookup to TMACS in Remaining Ferrocyanide Tanks

Acceptance criteria:

- Complete work scope within cost, schedule, and technical baseline
- Resolve Ferrocyanide Safety Question

C. STATEMENT OF WORK

Required activities:

The scope of this Activity includes defining the hazard of ferrocyanide waste through historical records review, simulant waste studies, tank waste monitoring, modeling and actual waste characterization, and validating the safe storage of the waste in the tanks, or to mitigate the hazard, if necessary. The objective is to apply the safety criteria developed to close the USQ on a tank-by-tank (or group of tanks) basis to resolve the ferrocyanide Safety Issue, and thus remove all of the tanks from the Watch List (by either controlling the hazard or showing that no hazard exists). Four of the six tanks found to contain less than 1000 g-moles were taken off the Watch List in July 1993. Removal of the two other tanks is pending DOE approval. For the remaining tanks, the logical sequence will be to complete safety documentation that provides an adequate safety envelope,

close the USQ (closed 3/1/94), validate via core sampling and waste characterization that the tanks are safe, and implement corrective actions, if required, to resolve the safety issue. (WHC/PNL)

Specific tasks include thermal and airflow modeling, safety analysis for pumping ferrocyanide tanks, flammability monitoring, obtaining and analyzing dome space gas samples and auger surface samples, core sampling and analysis (provided by Characterization 1.1.1.2.04), evaluating and interpreting data, development and deployment of ferrocyanide Fourier Transform infrared (FT-IR) speciation methods (development of laser Raman spectroscopy for in-situ characterization of tank waste will be provided by 1.1.1.2.04), studies to determine the effects of aging on ferrocyanide waste, determining the reactivity and reaction kinetics of simulants and actual tank waste, installation of additional instrument trees, installation of continuous pressure and gas monitoring capability, installation of tank monitor and control system (TMACS) upgrades, development and implementation of moisture monitoring and control, safety and environmental assessments to allow tank-intrusive activities, and removal of tanks from the Watch List, hazards and probabilistic risk assessments, consequence calculations, redefining tank safety envelopes, and resolution of the ferrocyanide safety issue. Obtaining tank farm readings as required for the final safety basis will be conducted by Tank Farm Operations and Maintenance, 1.1.1.2.01. (WHC/PNL)

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.01 Operations & Maintenance	Removal of tanks from the Watch List; removal of operational restrictions
2	1.1.1.2.04 Characterization	Data Quality Objectives
	To This WBS From	
1	1.1.1.2.04 Characterization	Sample analysis

Technologies to be assessed:

- Infrared speciation methods evaluation
- Neutron Probes for moisture monitoring

Options to be considered:

- Demonstrate that the probability of a propagating ferrocyanide reaction is incredible, and that no action other than surveillance is required
- Monitor and maintain moisture content to control the hazard.
- Remove and treat the waste

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- Public Law 101-510
- DNFSB 90-7
- Tri-Party Agreement M-40
- DOE Orders 5480.21 and 5820.23
- GAO Audit RCED 91-34

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.03 Waste Tank Ferrocyanide Safety Program	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.03.01/VI	5. WBS ELEMENT TITLE Evaluate & Define Technology Development for 18 Ferrocyanide Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	2704	0	0
CENRTC	161	0	0
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	2865	0	0

B. TECHNICAL BASES

Goals & objectives:

In 1989, twenty-two single-shell tanks (SST), 241-BX-102, -106, -110, and -111, 241-BY-101, -103, -104, -105, -106, -107, -108, -110, -111, and -112, 241-C-108, -109, -111, and -112, 241-T-101, 241-TX-118, and 241-TY-101 and -103, were identified as potentially containing greater than 1,000 g-moles (465 pounds) of ferrocyanide precipitates resulting from three radiocesium scavenging processes ("U-Plant", "T-Plant" and "In-Farm") in the early 1950's. In 1990, two additional SSTs, 241-T-107 and 241-TY-104, were identified as having greater than 1,000 g-moles; however, six of the original 22 tanks, 241-BX-102, -106, -110, and -111, 241-BY-101, and 241-T-101, were identified as containing less than that amount. Four of the six tanks (241-T-101, BY-101, BX-110, and BX-111) have been removed from the ferrocyanide tanks Watch List and the other two are awaiting DOE concurrence. Ferrocyanide compounds can react and propagate under certain conditions, including dryness, proper chemical concentration, and elevated temperatures (240° C). A GAO study postulated dose consequences two orders of magnitude greater than those stated in the DOE 1987 Environmental Impact Statement (EIS) for a worst-case accident. In 1990, the ferrocyanide issue was declared an Unreviewed Safety Question (USQ) because the safety envelope for these tanks may no longer be bounded by the existing safety analysis report (SAR).

Evaluating and defining the safety issue associated with the wastes containing potentially reactive mixtures of ferrocyanide compounds is necessary to establish safe operating conditions and to select an appropriate path for resolving the safety issue. Laboratory studies, mathematical analyses, analyses of historical and current monitoring data, and analyses of in-tank samples are nearing completion. The results from these studies and analyses provide the technical bases for defining, evaluating, and resolving the Ferrocyanide Safety Issue. To date, the focus has been on vapor and full-depth core sampling and characterization; catalyst, initiator, and diluent studies; sensitivity tests; adiabatic calorimetry tests; hot spot modeling; moisture retention studies; and closure of the USQ. Activities involved are ongoing and will be completed with submittal of recommendations to resolve the safety issue for all Ferrocyanide Watch List tanks. Laboratory studies, mathematical analyses, and analyses of several tank samples thus far indicate aged waste exhibits lower energetics, and the moisture content of waste precludes formation of thermal hot spots that might produce a rapid chemical reaction.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

09/29/95	Other	1N2C310A	Complete Report on all FAI Calorimetry/Propagation Tests
03/31/95	Other	1N2C310G	Issue Report on Application of Mossbauer Spectroscopy for Ferrocyanide Tanks
09/29/95	RL	1N2C310D	Issue Report on Ferrocyanide Aging Studies Single Shell Tanks
03/27/95	Other	1N2C310D	Issue Report on Cesium Uptake by the Ferrocyanide Waste Matrix
06/27/95	Other	1N2C310D	Issue Report Comparing Simulant Rheological/Physical Properties with Actual Waste Properties
03/31/95	Other	1N2C310D	Issue Final Report on Microconvection Modeling
03/27/95	Other	1N2C310D	Issue Report on the Solubility of Cesium Nickel Ferrocyanide Solubility
09/29/95	Key	1N2C310D	Issue Report on Moisture Retention Modeling of Ferrocyanide Waste
03/27/95	Key	1N2C310D	Transfer Cyanide Speciation Technology from PNL to WHC
09/29/95	Other	1N2C310H	Issue Report on Deployment of Relative Humidity Instrumentation in Ferrocyanide Tanks
09/30/95	Other	1N2C310J	Transfer Infrared Analysis Capability to WHC
09/29/95	Other	1N2C310L	Issue Report on FY95 Scanning Electron Microscope Program Results

C. STATEMENT OF WORK

The scope of this Activity includes defining the hazard of ferrocyanide waste through historical records review, simulant waste studies, tank waste monitoring, modeling and actual waste characterization, and validating the safe storage of the waste in the tanks, or to mitigate the hazard, if necessary. The objective is to apply the tank safety criteria developed to close the USQ on a tank-by-tank (or group of tanks) basis to resolve the Ferrocyanide Safety Issue and thus remove all of the tanks from the Watch List (by either controlling the hazard or showing that no hazard exists). Four tanks of the six tanks found to contain less than 1000 g-moles were taken off the Watch List in July 1993. Removal of the two other tanks is pending DOE approval. For the remaining tanks, the logical sequence has been to complete safety documentation that provides an adequate safety envelope, close the USQ (closed 3/1/94), validate via core sampling and waste characterization that the tanks are safe, and implement corrective actions, if required, to resolve the safety issue. (WHC/PNL)

The Ferrocyanide Safety Program has completed many of the tasks required to show that the waste in the tanks can be safely stored until technology is available for retrieval and processing for final disposal. Specific tasks that remain to be completed include propagation tests with stoichiometric mixtures of ferrocyanide and nitrate/nitrite as a function of water content; dryout studies with simulants as a function of relative humidity; simulant and spiked real waste aging experiments; chemical and physical comparison tests with simulants and real waste; cesium uptake experiments with simulants; sludge moisture retention/permeation modeling and experiments; determination of the solubility of sodium and cesium nickel ferrocyanide compounds at high pH; calibration and deployment of ferrocyanide Fourier Transform Infrared (FTIR) and Ion Chromatography (IC) speciation methods (development of laser Raman spectroscopy for in situ characterization of tank waste is provided by 1.1.1.2.04); particle size determinations and compositions by scanning electron microscopic techniques; application of a miniaturized Mossbauer spectrometer in ferrocyanide tank Liquid Observation Wells to help locate and characterize the ferrocyanide layers in the tanks; and engineering application of relative humidity instrumentation for continuous, on-line monitoring of dome space moisture. These technology evaluation and development tasks supported closure of the USQ that was completed on March 1, 1994, and provide the technical basis, along with data from tank waste characterization (1.1.1.2.04), that will allow the ferrocyanide tanks to be categorized as SAFE or CONDITIONALLY SAFE, and thus help to resolve the Ferrocyanide Safety Issue. This WBS Program Element directly supports WBS Element 1.1.1.2.02.03.03, "Resolution of the Ferrocyanide Safety Issue."

Required activities:

10/01/94-09/30/95	Ferrocyanide Simulated Waste Studies (Fauske)
10/01/94-03/31/95	Mossbauer Spectroscopy Evaluations (WHC)
10/01/94-09/30/95	Project Management (PNL)
10/01/94-09/30/95	Aging Waste (PNL)
10/01/94-03/31/95	Cesium Uptake (PNL)
10/01/94-09/30/95	Special Studies/Consultation (PNL)
10/01/94-06/30/95	Compare Real Waste w/Simulated Waste (PNL)
10/01/94-03/31/95	Cesium Nickel Ferrocyanide Solubility (PNL)
10/01/94-09/30/95	Sludge Moisture Modeling (PNL)
10/01/94-09/30/95	Infrared/ICP Speciation Transfer (PNL)
10/01/94-09/30/95	DNFSB/CAP Management (WHC)
10/01/94-09/30/95	Relative Humidity Instrumentation
10/01/94-09/30/95	Infrared Speciation Transfer (WHC)
10/01/94-09/30/95	Scanning Electron Microscope Investigation Support (WHC)

Technologies to be assessed:

- (1) Ferrocyanide simulated waste studies
- (2) Aging waste
- (3) Special studies
- (4) Compare real waste with simulated waste

1.1.1.2.02.03.01

A3-53

- (5) Cesium nickel ferrocyanide solubility
- (6) Infrared speciation methods evaluation
- (7) Neutron Probes for moisture monitoring
- (8) Electromagnetic induction technology for moisture monitoring

Reference "Integrated Technology Plan," DOE/RL-92-61, June 1994.

Options to be considered:

Three options are being considered to resolve the safety issue:

(1) validate that the waste in each ferrocyanide tank or group of tanks meets the safety criteria developed to close the Ferrocyanide USQ and resolve the Ferrocyanide Safety Issue. That is, complete core sampling of enough ferrocyanide tanks in accordance with the Ferrocyanide DQO to place each tank into the SAFE or CONDITIONALLY SAFE category, and therefore no action other than surveillance of important tank parameters is required; (2) monitor and maintain moisture content of the waste (if tanks are in the CONDITIONALLY SAFE category) to ensure the probability of a propagating ferrocyanide reaction does not exist, and therefore no additional actions are required; and (3) remove the waste from the tanks by Retrieval (1.1.1.2.05) and treat in a future facility (Pretreatment 1.1.1.3.01). This last option is considered unlikely because early core sampling results show that the ferrocyanide content of the waste has degraded to significantly lower values.

Removal of pumpable liquid from SSTs for interim stabilization as stipulated in the Tri-Party Agreement will be conducted by Tank Farm Operations and Maintenance (1.1.1.2.01). Two tanks, 241-TX-118 and 241-TY-104, are also listed on the Organic tank Watch List (and others such as 241-B-107, -108, and -110 are possible candidates for the Organic Watch List), and tasks involving that tank will be coordinated with Activity 1.1.1.2.02.05.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	G. T. Dukelow <i>G. T. Dukelow</i>	9/21/94
Cost Account Manager	R. J. Cash <i>R. J. Cash</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	G. T. Dukelow <i>G. T. Dukelow</i>	9/21/94
Cost Account Manager	R. J. Cash <i>R. J. Cash</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

FDS Number

1N2C31

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.03 Waste Tank Ferrocyanide Safety Program	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.03.03/VI	5. WBS ELEMENT TITLE Ferrocyanide Safety Issue Resolved							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	1595	1972	1607
CENRTC	0	0	0
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	1595	1972	1607

B. TECHNICAL BASES

Goals & objectives:

In 1989, twenty-two single-shell tanks (SST), 241-BX-102, -106, -110, and -111, 241-BY-101, -103, -104, -105, -106, -107, -108, -110, -111, and -112, 241-C-108, -109, -111, and -112, 241-T-101, 241-TX-118, and 241-TY-101 and -103, were identified as potentially containing greater than 1,000 g-moles (465 pounds) of ferrocyanide precipitates resulting from three radiocesium scavenging processes ("U-Plant", "T-Plant" and "In-Farm") in the early 1950's. In 1990, two additional SSTs, 241-T-107 and 241-TY-104, were identified as having greater than 1,000 g-moles; however, six of the original 22 tanks, 241-BX-102, -106, -110, and -111, 241-BY-101, and 241-T-101, were identified as containing less than that amount. Four of the six tanks (241-T-101, BY-101, BX-110, and BX-111) have been removed from the ferrocyanide tanks Watch List and the other two are awaiting DOE concurrence. Ferrocyanide compounds can react and propagate under certain conditions, including dryness, proper chemical concentration, and elevated temperatures (>240° C). A GAO study postulated dose consequences two orders of magnitude greater than those stated in the DOE 1987 Environmental Impact Statement (EIS) for a worst-case accident. In 1990, the ferrocyanide issue was declared an Unreviewed Safety Question (USQ) because the safety envelope for these tanks may no longer be bounded by the existing safety analysis report (SAR).

Evaluating and defining the safety issue associated with the wastes containing potentially reactive mixtures of ferrocyanide compounds is necessary to establish safe operating conditions and to select an appropriate path for resolving the safety issue. Laboratory studies, mathematical analyses, analyses of historical and current monitoring data, and analyses of in-tank samples are nearing completion. The results from these studies and analyses provide the technical bases for defining, evaluating and resolving the Ferrocyanide Safety Issue. To date, the focus has been on vapor and full-depth core sampling and characterization; catalyst, initiator, and diluent studies; sensitivity tests; adiabatic calorimetry tests; hot spot modeling; moisture retention studies; and closure of the USQ. Activities involved are ongoing and will be completed with submittal of recommendations to resolve the safety issue for all Ferrocyanide Watch List tanks. Laboratory studies, mathematical analyses, and analyses of several tank samples thus far indicate aged waste exhibits lower energetics, and the moisture content of waste precludes formation of thermal hot spots that might produce a rapid chemical reaction.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

01/31/96	RL	1N2C330C	Transmit Documentation to Resolve Safety Issue for C Farm tanks
03/31/97	RL	1N2C330E	Transmit Documentation to Resolve Safety Issue for all Remaining Tanks
09/29/95	KEY	1N2C330F	Transmit Data Interpretation Reports for Three Ferrocyanide Tanks
09/30/96	KEY	1N2C330F	Transmit Data Interpretation Reports for Five Ferrocyanide Tanks
06/27/97	KEY	1N2C330F	Transmit Data Interpretation Reports for Remaining Ferrocyanide Tanks
07/14/95	KEY	1N2C330A	Transmit Quarterly Progress Reports
07/15/96	KEY	1N2C330A	Transmit Quarterly Progress Reports
07/15/97	KEY	1N2C330A	Transmit Quarterly Progress Reports

C. STATEMENT OF WORK

The scope of this Activity includes defining the hazard of ferrocyanide waste through historical records review, simulant waste studies, tank waste monitoring, modeling and actual waste characterization, and validating the safe storage of the waste in the tanks, or to mitigate the hazard, if necessary. The objective is to apply tank safety criteria developed to close the USQ on a tank-by-tank (or group of tanks) basis to resolve the Ferrocyanide Safety Issue and remove all of the tanks from the Watch List (by either controlling or eliminating the hazard). Four tanks of the six tanks found to contain less than 1000 g-moles were taken off the Watch List in July 1993. Removal of the two other tanks is pending DOE approval. For the remaining tanks, the logical sequence has been to complete safety documentation that provides an adequate safety envelope, close the USQ

(closed 3/1/94), validate through core sampling and waste characterization that the tanks are safety, and implement corrective actions, if required, to resolve the safety issue. (WHC/PNL)

The Ferrocyanide Safety Program has completed many of the tasks required to show that the waste in the tanks can be safely stored until technology is available for retrieval and processing for final disposal. Specific tasks that remain to be completed include evaluation and interpretation of data obtained from dome space gas sample analyses, auger surface sample analyses, and full-depth core sample analyses. Tank samples (vapor and waste) are obtained and analyzed by Characterization (1.1.1.2.04) based on requirements specified by this activity through the Data Quality Objectives process. After sample analyses are available from the analytical laboratory, they are interpreted and compared to data from historical records, tank farm readings, modeling, and waste (real and simulant) studies. The work scope covered by WBS Element Code 1.1.1.2.02.03.01 (FDS Task Activity 1N2C31) provides this technical input so that data interpretation reports can be prepared for each of the ferrocyanide tanks. This information provides the technical basis for redefining tank safety criteria (Interim Safety Basis) and resolving the Ferrocyanide Safety Issue for each tank or group of tanks and removal of tanks from the Watch List. Obtaining tank farm readings as required for the Interim Safety Basis will be conducted by Tank Farm Operations and Maintenance, 1.1.1.2.01.

Required activities:

10/01/94-09/30/97	CAP Management Ferrocyanide Tank Safety
10/01/94-09/30/97	Update Safety Documentation
10/01/94-09/30/97	Tech Support - SI Resolution
10/01/94-03/31/96	Resolve SI for 4 C Farm Tanks
10/01/95-09/30/97	Resolve SI for 14 Ferrocyanide Tanks
10/01/94-03/30/97	Core Sample/Data Interpretation
10/01/95-09/30/97	Fauske Contract - SI Resolution

Technologies to be assessed:

No technologies to be assessed in the Integrated Technology Plan (DOE/RL-92-61)

Options to be considered:

Three options are being considered to resolve the safety issue:

(1) validate that the waste in each ferrocyanide tank or group of tanks meets the safety criteria developed to close the Ferrocyanide USQ and resolve the Ferrocyanide Safety Issue. That is, complete core sampling of enough ferrocyanide tanks in accordance with the Ferrocyanide DQO to place each tank into the SAFE or CONDITIONALLY SAFE category, and therefore no action other than surveillance of important tank parameters is required; (2) monitor and maintain moisture content of the waste (if tanks are in the CONDITIONALLY SAFE category) to ensure the probability of a propagating ferrocyanide reaction does not exist, and therefore no additional actions are required; and (3) remove the waste from the tanks by Retrieval (1.1.1.2.05) and treat in a future facility (Pretreatment 1.1.1.3.01). This last option is considered unlikely because early core sampling results show that the ferrocyanide content of the waste has degraded to significantly lower values.

Removal of pumpable liquid from SSTs for interim stabilization as stipulated in the Tri-Party Agreement will be conducted by Tank Farm Operations and Maintenance (1.1.1.2.01). Two tanks, 241-TX-118 and 241-TY-104, are also listed on the Organic tank Watch List (and others such as 241-B-107, -108, and -110 are possible candidates for the Organic Watch List), and tasks involving that tank will be coordinated with Activity 1.1.1.2.02.05.

1.1.1.2.02.05.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	G. T. Dukelew <i>G. T. Dukelew</i>	9/21/94
Cost Account Manager	R. J. Cash <i>R. J. Cash</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	G. T. Dukelew <i>G. T. Dukelew</i>	9/21/94
Cost Account Manager	R. J. Cash <i>R. J. Cash</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

FDS Number

1N2C33

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.03 Waste Tank Ferrocyanide Safety Program	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.03.04/VI	5. WBS ELEMENT TITLE Evaluate & Define for 18 Ferrocyanide Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	3199	1516	1436
CENRTC	2725	2208	1120
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	5924	3724	2556

B. TECHNICAL BASES

Goals & objectives:

When the DNFSB initially examined the Ferrocyanide Safety Issue, most of the ferrocyanide tanks did not have an adequate number of functioning TC elements to provide a complete vertical profile of the temperatures within the tanks, and limited information was available about the total heat generation rate of the waste. The DNFSB issued Recommendation 90-7.1, as follows:

"Immediate steps should be taken to add instrumentation as necessary to the single-shell tanks containing ferrocyanide that will establish whether hot spots exist or may develop in the future in the stored waste. The instrumentation should include, as a minimum, additional thermocouple trees. Trees should be introduced at several radial locations in all tanks containing substantial amounts of ferrocyanide, to measure the temperature as a function of elevation at these radii. The use of infrared techniques to survey the surface of waste in tanks should continue to be investigated as a priority matter, and on the assumption that this method will be found valuable, monitors based on it should be installed now in the ferrocyanide bearing tanks."

New instrument trees (Thermocouple Trees) are being added to those ferrocyanide tanks that do not have replaceable thermocouple elements. The original plan to add several temperature measurement instruments to each tank has been modified to ensure that there is at least one instrument tree with replaceable TCs or RTDs in each ferrocyanide tank. In addition, a heated vapor sampling tube has been added to the instrument tree design for the assumed leaker ferrocyanide tanks. The tube will be heated by circulating either hot water or hot gas around the sampling tube. This added feature to the new instrument trees may eliminate the need to install an additional vapor probe, which is currently required to obtain vapor space gas samples. Vapor sampling using the TC tree will reduce field efforts and the cost of vapor space characterization. The vapor sampling tube can also be used for monitoring pressure in the ferrocyanide tanks if deemed necessary.

Various techniques for measuring moisture in the tank waste are being investigated. They include use of a neutron probe in a LOW or in a cone penetrometer pushed into the waste, measuring surface moisture using infrared techniques, electrical measurements using an induction coil (EMI), phase change probes using thaw/freeze cycling and temperature measurement in the tank, and time domain reflectometry. Only the neutron probe and EMI are being funded by this program.

Determination of moisture concentrations in the ferrocyanide waste tanks is being pursued using data analysis and modification of existing surveillance systems (neutron probes in LOWs). Well-logging techniques coupled with computer modeling are being developed and applied to an existing neutron probe to assess this probe and to determine information about moisture levels, material interfaces, and other waste characteristics. Development of a new, improved neutron-diffusion-based detector system is being investigated. This improved technique would be used primarily to determine the vertical moisture concentration profile within the ferrocyanide tanks. The EMI technique was investigated as a research technique in Fiscal Year 1994 with very promising results. Further engineering is warranted to provide additional and comparative information to the neutron probe.

The University of Washington's Center for Process Analytical Chemistry (CPAC) has completed a Phase 1 study of the feasibility of measuring saltcake surface moisture with optical scattering techniques (Veltkamp 1993) and further study is planned.

The need for improved temperature measurements was recognized by the DNFSB and led to Recommendation 90-7.2:

"The temperature sensors referred to above should have continuous recorded readouts and alarms that would signal at a permanently manned location any abnormally high temperatures and any failed temperature instrumentation."

Continuous temperature monitoring of the ferrocyanide tanks with readout and alarms in a permanently manned location is needed. Even when the tanks are removed from the Watch List, it is expected that continuous

temperature surveillance will continue, although not dictated by the safety criteria to ensure in situ safe storage. Prudent management of the tanks, especially the SSTs, requires that the upgraded instrumentation be surveilled until the waste is finally removed from the tanks. The objective is to have continuous and more accurate temperature monitoring, data logging (recording), and alarms on all ferrocyanide tanks with readouts on the TMACS in the 2750E Building (200 East Area), which is manned 24 hours per day. This task provides the continuous monitoring of currently installed (and operable) temperature-sensing elements for the ferrocyanide tanks. New instrument trees will be connected to the system as they are installed in each tank, resulting in continuous monitoring of all trees in ferrocyanide tanks.

Public Law 101-510, Section 3137 (Wyden Bill), requires that "...the Secretary of Energy shall identify which single-shell tanks...may have a serious potential for release of high-level waste due to uncontrolled increases of... pressure. After completing such identification, the Secretary shall determine whether continuous monitoring is being carried out to detect a release or excessive...pressure at each tank so identified. If such monitoring is not being carried out, as soon as practicable the Secretary shall install such monitoring...". The ferrocyanide tanks initially were so identified, but the capability for pressure monitoring does not exist on the tanks. Because the ferrocyanide in these tanks is believed to be wet, the possibility of a rapid reaction that would generate a pressure wave is considered highly unlikely and most likely incredible. A study on evaluation of gas generation and the need for continuous pressure monitoring will be conducted. Designs will be completed for the system if deemed necessary.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

09/30/95	HQ	1N2C340B	Complete Installation of New Thermocouples and Continuous Temperature Monitoring Systems in Remaining Ferrocyanide Tanks (SI-2t)
09/30/95	TPA	1N2C340B	Upgrade Temperature Monitoring Systems in Ferrocyanide Tanks (M-40-02)
04/30/95	TPA	1N2C340B	Install Two of Seven New Thermocouples in Ferrocyanide Tanks (M-40-02B)
09/30/95	Other	1N2C340F	Complete Design and Engineering for Pressure Monitoring System for all Ferrocyanide Tanks
06/30/97	RL	1N2C340F	Complete Installation of Pressure Monitoring System
12/30/94	Other	1N2C340D	Complete Functions and Requirements Document of In-Situ Infrared Camera
03/27/95	Other	1N2C340D	Draft In-situ Infrared Camera Prototype System Design
09/30/95	Key	1N2C340D	Complete In-Situ Infrared Camera Prototype System Evaluation/Test for Surface Moisture Monitoring
09/30/96	Key	1N2C340D	In-Situ Infrared Camera Design Upgrade for Surface Moisture Measurement
09/30/97	Key	1N2C340D	Complete Upgrade of In-Situ Infrared Camera For Measurement of Surface Moisture in Ferrocyanide Tanks
04/15/95	Other	1N2C340C	Issue Status Report on Tank Moisture Data Interpretation Program
09/01/95	Key	1N2C340C	Implement Moisture Monitoring for Ferrocyanide Tanks with Existing LOWs using Dual Neutron Probes
09/30/96	Key	1N2C340C	Implement Moisture Monitoring for Ferrocyanide Tanks with Existing LOWs Using Dual Neutron Probe
09/30/97	Key	1N2C340C	Implement Moisture Monitoring for all Ferrocyanide Tanks
09/30/96	Other	1N2C340C	Obtain QA Approval for Tank Moisture Data Interpretation Program
09/30/97	Other	1N2C340C	Maintain Database of Tank Moisture Interpretation Data
09/30/96	Key	1N2C340C	Provide Interpretation Report of Neutron Probe Moisture Scans and Transition System to Operational Surveillance
09/30/97	Key	1N2C340C	Provide Interpretation Report of Neutron Probe Moisture Measurements
09/30/95	Other	1N2C340G	Issue Status Report on LOW Installation Activity
12/31/94	Other	1N2C340G	Obtain Proposals/Select Special Surveillance Van Provider
09/30/96	Other	1N2C340G	Provide Probe Compatibility Updates to Special Surveillance Van Systems
06/15/95	Other	1N2C340G	Complete Report Describing Selection and Testing of LOWs and UHP Method for Installation
09/30/96	Other	1N2C340G	Initiate Installation of LOWs in Ferrocyanide Tanks
09/30/97	RL	1N2C340G	Complete Installation of LOWs in Ferrocyanide Tanks

1.1.1.2.02.03.04

A3-43

09/30/96	Other	1N2C340H	Design Changes Required for Infrequent use of Infrared Monitoring System
06/27/97	Other	1N2C340H	Complete Required Modifications and Perform Appropriate Testing of Infrared Scan Device
09/30/95	Key	1N2C340J	Complete Engineering Testing and In-Tank Application of Electromagnetic Induction (EMI) Moisture Monitoring System and Provide Report
09/30/96	Key	1N2C340J	Implement Electromagnetic Probe Surveillance System and Correlate Measurements with Neutron Probe
09/30/97	Key	1N2C340J	Provide Routine Interpretations of Electromagnetic Probe Moisture Measurements and Transition System to Operational Surveillance

C. STATEMENT OF WORK

Specific tasks include flammability monitoring, obtaining and analyzing dome space gas samples and auger surface samples, core sampling and analysis (all provided by Characterization 1.1.1.2.04), evaluating and interpreting data, installation of additional instrument trees, installation of continuous pressure and gas monitoring capability, installation of tank monitor and control system (TMACS) upgrades, development and implementation of moisture monitoring and control, safety and environmental assessments to allow tank-intrusive activities. Obtaining tank farm readings as required for the final safety basis will be conducted by Tank Farm Operations and Maintenance, 1.1.1.2.01. (WHC/PNL)

An experimental test area in which to complete the final development, testing, and calibration of a prototype neutron diffusion-based moisture measurement system is being set up. Development of dual neutron probes with different source-to-detector spacings will be completed and the probes will be used to scan for moisture content in the ferrocyanide tanks. In addition, the possibility will be investigated of using a pulsed neutron source for obtaining additional information about the surrounding medium.

Overall, the various concepts for moisture monitoring will be evaluated, the monitoring needs evaluated from a surveillance requirement standpoint, and a decision made as to what systems should be deployed.

Required activities:

10/01/94-09/30/97	Engineering Document Control
10/01/94-09/30/97	CAP Management Ferrocyanide Tanks
10/01/94-09/30/95	Installation of TC Trees/Hookup TMACS
10/01/94-09/30/97	Pressure Monitoring Design & Installation
10/01/94-09/30/97	Surface Moisture Measuring (CPAC)
10/01/94-09/30/97	Neutron Probe Moisture Monitor LOW Engineering
10/01/94-09/30/97	Neutron Probe Moisture Monitoring LOW Install
01/01/96-06/30/97	Infrared Scan Device Modification & Scans
10/01/95-12/31/95	ISB Amendment
10/01/94-09/30/97	Electromagnetic Induction Probe

Technologies to be assessed: N/A

Options to be considered:

Three options are being considered to resolve the safety issue: (1) demonstrate that the probability and consequences of a runaway chemical reaction is acceptably small, and therefore no action other than surveillance of important tank parameters is required; (2) monitor and maintain moisture content of the waste to ensure the probability of a propagating ferrocyanide reaction does not exist, and therefore no further action is required; and

(3) remove the waste from the tanks by Retrieval (1.1.1.2.05) and treat in a future facility (Pretreatment 1.1.1.3.01). This last option is likely only for the four 241-C farm "In-Farm" flowsheet tanks. Removal of pumpable liquid from SSTs for interim stabilization as stipulated in the Tri-Party Agreement will be conducted by Tank Farm Operations and Maintenance (1.1.1.2.01). Two of the tanks, 241-TX-118 and 241-TY-104, are also listed on the organic tank Watch List, and tasks involving those tanks will be coordinated with Activity 1.1.1.2.02.05.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	G. T. Dukelow <i>G. T. Dukelow</i>	9/21/94
Cost Account Manager	G. T. Dukelow <i>G. T. Dukelow</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	G. T. Dukelow <i>G. T. Dukelow</i>	9/21/94
Cost Account Manager	G. T. Dukelow <i>G. T. Dukelow</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

FDS Number

1N2C34

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.04/V	5. WBS ELEMENT TITLE Waste Tank Flammable Gas Safety Program	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AD	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	11,091	15,412	13,741	9,265	9,148	5,322	426
CENRTC	6,423	5,906	3,616	2,221	2,119	409	
GPP							
LINE ITEM							
TOTAL	17,514	21,318	17,357	11,486	11,267	5,731	426

issue was declared an Unreviewed Safety Question (USQ) because it represents conditions outside the envelope addressed by the Safety Analysis Report (SAR). Operational restrictions were imposed to reduce the potential for ignition sources. In 1992, one additional DST, 241-AW-101, was added to the Watch List; and in 1993, one additional SST, 241-U-107, was added. The presence of a flammable gas mixture, along with an ignition source, could provide the potential for a deflagration, leading to an increased risk of the release of radioactive waste. Five double shell tanks (DSTs), tanks 241-SY-101, 241-SY-103, 241-AW-101, 241-AN-104 and 241-AN-105, entrap gas within the waste and periodically release it in a gas release event (GRE). As a result, these tanks also pose a potential risk of an unfiltered release of radioactivity to the environment from over-pressurizing the ventilation system.

Tank 241-SY-101 exhibits the largest risk and, during several GREs, has released concentrations of hydrogen that have exceeded the lower flammability limit. During these releases, over-pressurizations have been measured without resulting in any contamination spread. The venting of gases is expected to recur periodically until some form of in-tank treatment (mitigation) is taken. Mitigation of tank 241-SY-101 and the other flammable gas tanks is included in a separate Activity (1.1.1.2.02.02). Removal of pumpable liquid from single-shell tanks (SSTs) for interim stabilization as stipulated in the Tri-Party Agreement will be conducted by Tank Farm Operations and Maintenance (1.1.1.2.01). Resolution of the safety issue will most likely require retrieval of the DST waste by Retrieval (1.1.1.2.05) and treatment in a future facility (Pretreatment 1.1.1.3.01). Seven of the tanks, 241-A-101, 241-S-102, 241-S-111, 241-SX-103, 241-SX-106, 241-U-103, and 241-U-105, are listed on the organic tank Watch List and tasks involving those tanks will be coordinated with Activity 1.1.1.2.02.05.

Major end-item deliverables:

- M-40-00 Mitigate/Resolve Tank Safety Issues for High Priority Watch List Tanks
- M-40-09 Close All Unreviewed Safety Questions for Double-Shell and Single-Shell Tanks
- M-40-10 Complete Vapor Space Monitoring for All Flammable Gas Generating Tanks
- M-40-15 Install Gas Monitoring Equipment in the Remaining Five Potentially Flammable DSTs
- SI 2f Expedite Design and Construction of a Backup Portable Exhauster for Tank 241-SY-101
- SI 2h Install Gas Monitoring Equipment in the Remaining Potentially Flammable Gas Tanks
- SI 2k Replace Ventilation Fan in SY Farm to Further Reduce Spark Potential
- SI 2l Close SY Tank Farm Flammable Gas USQ

Acceptance criteria:

- Complete work scope within cost, schedule and technical baseline
- Resolve flammable gas safety issue

C. STATEMENT OF WORK

Required activities:

The scope of this activity includes defining the hazard of hydrogen and other gases through waste characterization, mechanistic studies and tank data evaluation, and identifying ways to mitigate the hazard. The objective is to develop tank safety criteria and to apply the criteria on a tank-by-tank basis to remove all of the tanks from the Watch List by either controlling or eliminating the hazard. The work will be conducted in the following sequence: (1) tank 241-SY-101; (2) other tanks that exhibit periodic gas releases; (3) remaining DSTs; and (4) SSTs. (WHC/PNL)

Specific tasks include a multi-laboratory study using synthetic waste to determine the chemical and physical mechanisms of gas generation, developing physical and numerical models to simulate gas release phenomenon and to evaluate strategies for mitigation of flammable gas releases, developing analytical techniques for characterization of chelators in tank waste that are not amenable to EPA-accepted methodology, flammability

C. STATEMENT OF WORK

Required activities:

The scope of this activity includes defining the hazard of hydrogen and other gases through waste characterization, mechanistic studies and tank data evaluation, and identifying ways to mitigate the hazard. The objective is to develop tank safety criteria and to apply the criteria on a tank-by-tank basis to remove all of the tanks from the Watch List by either controlling or eliminating the hazard. The work will be conducted in the following sequence: (1) tank 241-SY-101; (2) other tanks that exhibit periodic gas releases; (3) remaining DSTs; and (4) SSTs. (WHC/PNL)

Specific tasks include a multi-laboratory study using synthetic waste to determine the chemical and physical mechanisms of gas generation, developing physical and numerical models to simulate gas release phenomenon and to evaluate strategies for mitigation of flammable gas releases, developing analytical techniques for characterization of chelators in tank waste that are not amenable to EPA-accepted methodology, flammability monitoring, obtaining and analyzing dome space grab samples and auger surface samples, core sampling and analysis (provided by Characterization 1.1.1.2.04), evaluating and interpreting data, performance analysis of each tank, testing and repairing thermocouple trees, installing multi-functional (temperature, pressure, gas concentration) instrument trees (MIT), gas monitoring cabinets, surface level detectors, closed-circuit TV cameras, and ventilation system upgrades, hooking up instruments to the tank monitor and control system (TMACS), removing and disposing of any inoperable or interfering equipment from the tanks, preparing safety assessments (SA) and environmental assessments (EA) to allow tank-intrusive activities and to support the Interim Safety Basis (ISB), defining the process for removal of tanks from the Watch List, establishing the technical basis for the USQ, preparing hazard assessments and probabilistic risk assessments, redefining tank safety envelopes, and preparing documentation for closure of the USQ. Obtaining tank farm readings as required for the final safety basis will be conducted by Tank Farm Operations and Maintenance, 1.1.1.2.01. (WHC/PNL/LANL)

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.04 Characterization	Data requirements and Data Quality Objective documents; Data (on tank waste behavior); Reusable Materials for Characterization (developmental instruments for testing of tank waste properties).
2	1.1.1.2.05 Waste Retrieval	Data for Retrieve Waste (results of technical investigations of waste properties); closure of unreviewed safety questions to allow remediation through retrieval of tank waste.
3	1.1.1.2.01 Tank Farm Operations & Maintenance	Closure of unreviewed safety questions to achieve a new safe operating condition envelope; removal of tanks from the Watch List; removal of operational restrictions; operation/maintenance of installed systems.
	To This WBS From	
1	1.1.1.2.04 Characterization	Tank Waste Analysis Plans (TWAP)/Tank Characterization Plans and Tank Characterization Reports (TCR).
2	1.1.1.2.05 Waste Retrieval	Retrieved tank waste as part of the actions necessary for safety issue resolution

Technologies to be assessed:

- Organic analytical methods
- Organic destruction
- Retained gas sampler

Options to be considered:

- See 1.1.1.2.02.02

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- Public Law 101-510
- Tri-Party Agreement M-40
- DOE Orders 5480.21 and 5820.2A

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.04 Waste Tank Flammable Gas Safety Program (M&O Contractor)	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.04.01/VI	5. WBS ELEMENT TITLE Evaluate and Define Technology Development for Flammable Gas Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AD							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	3,743	3,920	2,267
CENRTC	230	201	106
GPP			
LINE ITEM			
TOTAL	3,973	4,121	2,373

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workslope includes laboratory studies using synthetic waste to determine the chemical and physical mechanisms of gas generation and retention in flammable gas tanks, development of tank models to simulate gas release phenomenon and evaluate strategies for mitigation of flammable gas releases, and development of analytical techniques for characterization of chelators and chelator fragments in flammable gas tank waste that are not amenable to EPA-accepted methodology.

Status of Design Documentation:

"Fiscal Year 1992 Program Plan for Evaluation and Remediation of the Generation and Release of Flammable Gases in Hanford Site Waste Tanks", WHC-EP-0537 Rev. 1, issued June 1992.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

07/31/95	Key	Issue Report on Modeling of Waste Physical Properties and Behavior (PNL) (N2D410A04)
09/05/95	Key	Issue Report on Gas Generation Studies (PNL) (N2D410C08)
09/08/95	Key	Issue Report on Gas Retention and Its Effects on Waste Properties and the Relationship to Gas Release (PNL) (N2D410E04)
09/30/96	Key	Complete Development and Transfer of Methods for Organic Analysis (N2D410J06)
09/30/97	Key	Issue Final Reports on Synthetic Waste Studies
09/30/98	Key	Issue Final Reports on Waste Behavior Modeling

C. STATEMENT OF WORK

Required activities:

- Program Management (N2D410B10, N2D410B11, N2D410B12)
 - Program/CAP Management
 - Project Management (PNL)
- Gas Retention Mechanisms (N2D410E00, N2D410E02, N2D410E06, N2D410E08)
 - Phase Equilibria Studies - Gases/Solids (PNL)
 - Gas Reaction Studies (PNL)
 - Gas Bubble Retention Studies (PNL/UT)
- Waste Behavior Modeling (N2D410A00, N2D410A02, N2D410A06, N2D410A08)
 - Waste Tank Physics Modeling (PNL)
 - Thermal/Hydraulic Analysis
 - Gas Release Mechanism/Waste Modeling (LANL)
 - Theory Development (PNL)
- Gas Generation Mechanisms (N2D410C00, N2D410C04, N2D410C20, N2D410C30)
 - 222-S Gas Generation Tests
 - 222-S Analytical Support
 - Gas Generation Studies (PNL/GIT)
- Gas Reaction Studies (N2D410H00, N2D410H20, N2D410H30)
 - USBM Tests for Mixtures/Detonation Sensitivity (LANL)
 - Benchmark USBM Experiments/Modeling (LANL)

Organic Characterization (N2D410J00, N2D410J04)
Organic Analysis and Methods Development (PNL)

Technologies to be assessed:

- (1) Synthetic waste gas generation studies.
- (2) Shear strength studies.
- (3) Gas reaction studies.
- (4) Waste tank physics modeling.
- (5) Gas release mechanisms/waste modeling.
- (6) Gas generation/inorganic phase equilibria.
- (7) Gas phase equilibria studies.

Reference "Integrated Technology Plan", DOE/RL-92-61, June 1994.

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/22/94
Activity Manager	G. D. Johnson <i>GD Johnson</i>	9/21/94
Cost Account Manager	N. G. McDuffie <i>N. G. McDuffie</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/22/94
Activity Manager	G. D. Johnson <i>GD Johnson</i>	9/21/94
Cost Account Manager	N. G. McDuffie <i>N. G. McDuffie</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

FDS Number

1N2D41

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.04 Waste Tank Flammable Gas Safety Program (M&O Contractor)	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.04.02/VI	5. WBS ELEMENT TITLE Evaluate and Define Flammable Gas Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AD							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	2,416	2,298	2,249
CENRTC	48	232	371
GPP			
LINE ITEM			
TOTAL	2,464	2,530	2,620

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workslope includes obtaining, evaluating and assimilating waste tank behavior data and analyzing the performance of all Flammable Gas Watch List Tanks. Specific activities include defining objectives for waste sample analysis, vapor sampling and monitoring, analysis of dome space vapor samples, obtaining and analyzing auger samples (if required), developing instrumentation for in-situ determination of gas content (retained gas sampler), sampling and analysis of DSTs for retained gases, data analysis and interpretation, and issuing reports on waste behavior. Activities will be consistent with the overall Tank Waste Remediation System strategy.

Status of Design Documentation:

"Fiscal Year 1992 Program Plan for Evaluation and Remediation of the Generation and Release of Flammable Gases in Hanford Site Waste Tanks", WHC-EP-0537 Rev. 1, issued June 1992. "Data Requirements Required Through the Data Quality Objectives Process for the Crust Burn Issue Associated with Flammable Gas Tanks", WHC-SD-WM-DQO-003 Rev. 1, issued 4/27/94. "Flammable Gas Safety Program: Data Requirements for the Flammable Gas Safety Issue Developed through the Data Quality Objectives Process", WHC-SD-WM-DQO-004, issued 5/13/94.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

11/30/94	Other	Vapor Sample Selected Flammable Gas Watch List DSTs (N2D420A04)
01/30/95	Key	Issue Status Report on Gas Monitoring Data for DSTs (N2D420A18)
03/31/95	Other	Utilize Retained Gas Sampler System in Tank 241-SY-101 (N2D420G10)
06/15/95	Key	Issue Interpretive Report on Tank 241-SY-103 Core Sample Data (N2D420E08)
07/14/95	Other	Vapor Sample Selected Flammable Gas Watch List SSTs (N2D420A08)
08/15/95	Key	Issue Status Report on Gas Monitoring Data for SSTs (N2D420A12)
09/29/95	Key	Issue Report on Retained Gas Sampling of Tank 241-SY-101 (N2D420G16)
01/31/97	TPA	Complete Vapor Space Monitoring for all Flammable Gas Generating Tanks (TPA M-40-10) (N2D420A38)
09/30/97	Key	Complete Data Analysis on Samples Obtained with the Retained Gas Sampler (N2D420G34)
09/30/99	Key	Issue Summary Report on Behavior of Waste in Flammable Gas Watch List Tanks
09/30/00	Key	Complete Evaluation and Definition of Flammable Gas Watch List Tanks

C. STATEMENT OF WORK

Required activities:

Vapor Space Monitoring (M-40-10) (N2D420A00, N2D420A02, N2D420A06, N2D420A10, N2D420A14, N2D420A20, N2D420A30, N2D420A34)

Program/CAP Management

Vapor Sampling

Vapor Sample Analysis with Mass Spectrometer (PNL)

Vapor Sample Data Analysis

Retained Gas Evaluation (N2D420G04, N2D420G08, N2D420G14, N2D420G20, N2D420G30)

Develop Retained Gas Sampler System

RGS Sample Analysis

222-S Analytical Support
 RGS Data Analysis
 Retained Gas Sampler Safety Assessment (LANL)
 Retained Gas Sampler Studies (PNL)
 Waste Behavior Evaluation (N2D420E00, N2D420E04, N2D420E20, N2D420E30)
 Data Quality Objectives/Technical Support
 Waste Behavior Data Evaluation (PNL)
 Auger/Core Sample Data Analysis
 Radioactive Waste Sample Analysis (PNL)
 Tank Behavior Interpretive Reports
 Data Analysis (LANL)

Technologies to be assessed:

No technologies provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/22/94
Activity Manager	G. D. Johnson <i>G.D. Johnson</i>	9/21/94
Cost Account Manager	D. J. Sherwood <i>D.J. Sherwood</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/22/94
Activity Manager	G. D. Johnson <i>G.D. Johnson</i>	9/21/94
Cost Account Manager	D. J. Sherwood <i>D.J. Sherwood</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

FDS Number

1N2D42

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.04 Waste Tank Flammable Gas Safety Program (M&O Contractor)	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.04.03/VI	5. WBS ELEMENT TITLE Close USQs for Flammable Gas Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AD							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072		
Expense	Capital	Line Item						
EW3120072								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	874	1,599	1,314
CENRTC			
GPP			
LINE ITEM			
TOTAL	874	1,599	1,314

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workscope includes establishing the technical basis for the unreviewed safety question (USQ), preparing hazard assessments and risk assessments, defining tank safety criteria, applying criteria to tanks, redefining tank safety envelopes, compiling all applicable safety documentation to support the Interim Safety Basis, and recommending closure of the USQ. Closure of the flammable gas USQ does not resolve the flammable gas safety issue. Resolution of the safety issue for SSTs will occur following completion of monitoring upgrades, and for DSTs, will not occur until retrieval and subsequent treatment of the waste. Mitigation and/or resolution of the safety issues will be consistent with the overall Tank Waste Remediation System strategy.

Status of Design Documentation:

"Fiscal Year 1992 Program Plan for Evaluation and Remediation of the Generation and Release of Flammable Gases in Hanford Site Waste Tanks", WHC-EP-0537 Rev. 1, issued June 1992.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

02/15/95	Other	Submit Request for Closure of USQ for Tank 241-SY-103 (N2D430A14)
03/31/95	HQ	Close SY Farm Flammable Gas Unreviewed Safety Question (Safety Initiative 2I) (N2D430A07)
06/30/95	Other	Submit Request for Closure of USQ for Tank 241-AW-101 (N2D430B08)
08/31/95	RL	Close AW Farm Flammable Gas USQ (N2D430B12)
02/29/96	RL	Close AN Farm Flammable Gas USQ (N2D430B16)
09/30/98	TPA	Close All Unreviewed Safety Questions (USQ) for Double-Shell Tanks and Single-Shell Tanks (TPA M-40-09)

C. STATEMENT OF WORK

Required activities:

Close SY Farm USQ (SI 2I) (N2D430A06, N2D430A10)

- USQ Closure SY Farm
 - USQ Closure
 - Hazard Evaluation
 - Safety Issue Resolution
 - LANL Oversight
- DST Bounding Analysis (LANL)

Close Remaining USQs (M-40-09) (N2D430B06, N2D430B10, N2D430B14, N2D430B18)

- Program/CAP Management
- Safety Documentation
 - USQ Closure
 - Hazard Evaluation
 - Safety Issue Resolution
 - LANL Oversight
- Environmental Support/EA
- SST Bounding Analysis (LANL)

Technologies to be assessed:

No technologies provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/24/94
Activity Manager	G. D. Johnson <i>G.D. Johnson</i>	9/22/94
Cost Account Manager	G. M. Christensen <i>G.M. Christensen</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/22/94
Activity Manager	G. D. Johnson <i>G.D. Johnson</i>	9/22/94
Cost Account Manager	G. M. Christensen <i>G.M. Christensen</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

FDS Number

1N2D43

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.04 Waste Tank Flammable Gas Safety Program (M&O Contractor)	2. DATE PREPARED September 15, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.04.04/VI	5. WBS ELEMENT TITLE Store and Monitor Flammable Gas Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AD							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	2,161	5,521	6,175
CENRTC	6,145	5,473	3,139
GPP			
LINE ITEM			
TOTAL	8,306	10,994	9,314

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workscope includes monitoring and ventilation system upgrades for all flammable gas tanks as required. Upgrades include standard hydrogen monitoring systems, multi-functional instrument trees, temperature trees, connection of instruments to the tank monitor and control system, surface level detectors, video cameras, modular exhausters, and inlet filters. Workscope may also include riser, tank farm or electrical upgrades as required to support enhanced monitoring and mitigation; and removal, storage and disposal of any damaged, inoperable or interfering equipment from the waste tanks. Activities will be consistent with the overall Tank Waste Remediation System strategy.

Status of Design Documentation:

"Fiscal Year 1992 Program Plan for Evaluation and Remediation of the Generation and Release of Flammable Gases in Hanford Site Waste Tanks", WHC-EP-0537 Rev. 1, issued June 1992. "200 Area Hydrogen Watch List Waste Tank Standard Hydrogen Monitoring System Installation Design Criteria", WHC-SD-WM-CR-053 Rev. 0, issued January 1994.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

11/30/94	Other	Issue Purchase Order for 241-AW Farm Ventilation Upgrades (N2D440G04)
12/30/94	HQ	Expedite Design and Construction of a Backup Portable Exhauster for Tank 241-SY-101 (Safety Initiative 2f) (N2D440C16)
03/31/95	Other	Install Ammonia Monitors in 241-AW and -AN Farms (N2D440K04)
03/31/95	Other	Complete Installation of Video Cameras in 3 241-AN Farm Flammable Gas Tanks (N2D440D04)
04/28/95	HQ	Install Gas Monitoring Equipment in the Remaining Potentially Flammable Gas Tanks (Safety Initiative 2h) (N2D440M04)
06/30/95	Other	Complete Installation of MITs in Flammable Gas DSTs (N2D440E18)
08/31/95	HQ	Replace Ventilation Fan in SY Farm to Further Reduce Spark Potential (Safety Initiative 2k) (N2D440B16)
09/29/95	Other	Complete Surface Level Detector Upgrades in Flammable Gas Tanks (N2D440F04)
12/31/96	Key	Complete Ventilation Upgrades for 241-AW Farm (N2D440G18)
12/31/97	Key	Complete Ventilation Upgrades for 241-AN Farm
09/30/98	Key	Complete Installation of Temperature Trees in Flammable Gas SSTs

C. STATEMENT OF WORK

Required activities:

SY Farm Exhauster (SI 2f) (N2D440C12)
 Install SY Farm Exhauster
 SY Farm Spark-Resistant Fan (SI 2k) (N2D440B12)
 Procure and Install Spark-Resistant Fan
 Gas Monitors (SI 2h) (N2D440M00)
 DST Gas Monitors Auxiliary Equipment
 SST Gas Monitors including 107-U
 Gas Monitoring Support (LANL)

Program Management (N2D440A02, N2D440A06, N2D440A10)
Program/CAP Management
Engineering Management Support
Operations Management Support
Gas Monitor Upgrades (N2D440H06, N2D440H10, N2D440H14)
SST Gas Monitors Follow On
Gas Monitoring Support (LANL)
Gas Monitor Follow On Support
Fab 6 Spare Gas Monitors
Temperature Upgrades (N2D440E10, N2D440E20, N2D440E30)
MITs for DSTs and 101-A
Temperature Trees for SSTs
Monitoring Upgrades Support
Validation Probes for MITs (LANL)
Video System Upgrades (N2D440D02, N2D440D20)
Video Cameras for DSTs
Portable Camera Systems for SSTs
Surface Level Upgrades (N2D440F02)
Surface Level Upgrades for 16 Tanks
Ventilation Upgrades
AW Farm Ventilation Upgrades (N2D440G02, N2D440G14, N2D440G16)
Facility Systems Support
Fabrication Services
AN Farm Ventilation Upgrades (N2D440G20, N2D440G24)
Portable Exhauster for SSTs (N2D440G30)
NEPA Permitting Support
Ammonia Upgrades (N2D440K02)
Ammonia Monitors AW & AN Farms
Misc Tank Farm Equipment & Upgrades (N2D440L02, N2D440L06)
Multi-Port Risers and Electrical Upgrades
Equipment Disposal (N2D440N00, N2D440N04)
Waste Disposal of Old Exhausters
Equipment Removal, Storage & Disposal

Technologies to be assessed:

No technologies provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/22/94
Activity Manager	G. D. Johnson <i>G.D. Johnson</i>	9/22/94
Cost Account Manager	C. P. Schroeder <i>C.P. Schroeder</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	G. D. Johnson <i>G.D. Johnson</i>	9/22/94
Cost Account Manager	C. P. Schroeder <i>C.P. Schroeder</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

FDS Number

1N2D44

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.04 Waste Tank Flammable Gas Safety Program (M&O Contractor)	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.04.05/VI	5. WBS ELEMENT TITLE Integrated Field Support for Flammable Gas Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AD							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120072</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072		
Expense	Capital	Line Item						
EW3120072								

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	1,897	2,074	1,736
CENRTC			
GPP			
LINE ITEM			
TOTAL	1,897	2,074	1,736

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve flammable gas tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workslope includes integrated field support for flammable gas activities. Field activities include preparation and approval of work packages; vapor sampling and retained gas sampling; and installation of standard hydrogen monitoring systems, multi-functional instrument trees, temperature trees, surface level detectors, video cameras, modular exhausters, and inlet filters; multi-port risers or electrical upgrades as required; and removal of any damaged, inoperable or interfering equipment from the waste tanks. Activities will be consistent with the overall Tank Waste Remediation System strategy.

Status of Design Documentation:

"Fiscal Year 1992 Program Plan for Evaluation and Remediation of the Generation and Release of Flammable Gases in Hanford Site Waste Tanks", WHC-EP-0537 Rev. 1, issued June 1992. "200 Area Hydrogen Watch List Waste Tank Standard Hydrogen Monitoring System Installation Design Criteria", WHC-SD-WM-CR-053 Rev. 0, issued January 1994.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

See 1.1.1.2.02.04.02 and 1.1.1.2.02.04.04 for milestones supported by this WBS Element.

C. STATEMENT OF WORK

Required activities:

Field Support for Flammable Gas Tanks (N2D450J02, N2D450J06, N2D450J10)

- West Area Operations
- Maintenance
- West Area Planning
- HPT Support
- IH Support
- East Area Operations
- East Area Planning
- Test Engineering Support
- AW Farm Operations
- Major Maintenance
- West Systems Engineering

Technologies to be assessed:

No technologies provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	G. D. Johnson <i>G.D. Johnson</i>	9/21/94
Cost Account Manager	A. E. Wilder <i>AE Wilder</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	G. D. Johnson <i>G.D. Johnson</i>	9/21/94
Cost Account Manager	A. E. Wilder <i>AE Wilder</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

FDS Number

1N2D45

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor)	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.05/V	5. WBS ELEMENT TITLE Waste Tank Organic Safety Program							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AE							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	8526	11887	11797	7502	5749		
CENRTC	1267	9972	16363	5995	7571		
GPP							
LINE ITEM							
TOTAL	9793	21859	28160	13497	13320		

B. TECHNICAL BASES

Goals and objectives:

A study in 1990 defined an upper limit of "10 weight percent organic equivalent to sodium acetate" which corresponds to 3 weight percent total organic carbon (TOC) for acceptable concentrations of TOC constituents in tank waste. At present, there are twenty organic tanks on the Watch List. Eighteen single-shell tanks (SSTs), 241-A-101, -AX-102, -B-103, -S-102, -S-111, -SX-103, -SX-106, -T-111, -TX-105 and -TX-118, -TX-104, -U-103, -U-105, -U-106, U-107, -U-111, -U-203, and -U-204, have been identified as possibly exceeding this criterion and are, therefore, included on the organic tanks Watch List. Under a scenario involving significant overheating of the waste (180 °C to 250 °C), it may be postulated that a mixture of organic-nitrate/nitrite solids might react rapidly, possibly damaging the tank and leading to releases of radioactive materials to the environment. This is believed to have a very low probability of occurrence, because the margin between the minimum ignition temperature and the measured tank temperatures is large. Tank 241-C-103 is included on the organic tanks Watch List because of the presence of a floating layer of organic solvent. Tank 241-C-102 is also included on the organic tanks Watch List because it formerly contained a floating layer of organic solvent.

Two options are possible for resolving the organic safety issue: (1) demonstrate through waste characterization and laboratory testing that the probability of a propagating, exothermic chemical reaction is acceptably small and that no further action is required; or (2) retrieval of the waste by Retrieval (1.1.1.2.05) and treatment in a future facility (Pretreatment 1.1.1.3.01). Due to the length of time before the retrieval and treatment technology is available, option 2 will require implementation of monitoring upgrades and in-tank treatment to ensure safe interim storage. Two of the eighteen tanks, 241-TX-118 and 241-TY-104, are also listed on the ferrocyanide tank Watch List and eight of the tanks, 241-A-101, -S-102, -S-111, -SX-103, -SX-106, -U-103, -U-106, and -U-107, are listed on the flammable gas tank Watch List, and tasks involving those tanks will be coordinated with Activities 1.1.1.2.02.03 and 1.1.1.2.02.04, respectively. The floating organic liquid layer will be pumped out of tank 241-C-103 in order to resolve the organic safety issue for this tank, and also to resolve the tank vapor (1.1.1.2.02.08) safety issue. Removal of pumpable liquid from SSTs for interim stabilization as stipulated in the Tri-Party Agreement will be conducted by Tank Farm Operations and Maintenance (1.1.1.2.01).

Major end-item deliverables:

- M-40-04 Complete Removal of Floating Organic Layer from Tank 241-C-103
- SI 2t Complete Installation of New Thermocouples and Connect to TMACS in All Organic Tanks
- SI 2u Complete Removal of Floating Organic Layer from Tank 241-C-103

Acceptance criteria:

- Complete work scope within cost, schedule, and technical baseline
- Resolve Organic Tanks Safety Issue

C. STATEMENT OF WORK

Required activities over lifetime:

The initial focus for this activity is on tank 241-C-103. Efforts are underway to remove and dispose of the floating layer of organic solvent. Parallel efforts focus on activities to determine if the tanks contain unacceptable concentrations of organic chemicals and to evaluate conditions necessary for a propagating organic-nitrate/nitrite reaction. The waste will be characterized and models developed for each tank to bound its safety. The organic Watch List criteria will be applied to each tank, and requirements for continued safe interim storage

identified. Specific tasks include vapor space sampling and analysis, core sampling and analysis (provided by Characterization 1.1.1.2.04), interpreting data, developing methods for characterizing organic functional groups and species, developing models, testing of waste surrogates, simulants, and actual waste to establish the safety boundaries for each tank, installing instrument trees, hooking up of instruments to the tank monitor and control system (TMACS), procuring and installing gas monitoring and ventilation system upgrades, installing moisture measurement and control systems, removal and disposal of any inoperable or interfering equipment from the waste tanks, evaluating alternative mitigation concepts, testing of the preferred mitigation alternative(s), and selection of a viable mitigation concept(s). Removal of the floating organic layer from tank 241-C-103 will be completed. Design, procurement, installation, and demonstration of mitigation will proceed on a tank-by-tank basis. Development of instruments to evaluate the performance of the in-tank mitigation is also included.

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.01 Operations & Maintenance	Removal of tanks from the Watch List; removal of operational restrictions
2	1.1.1.2.04 Characterization	Data Quality Objectives
	To This WBS From	
1	1.1.1.2.04 Characterization	Sample analysis

Technologies to be assessed:

- Organic removal from tank 241-C-103
- Organic analytical methods development
- Thermal release mechanisms and special studies
- TOC partitioning in single-shell tanks
- Organic treatment and disposal methods

Options to be considered:

- Demonstrate that the probability of a propagating, exothermic chemical reaction is acceptably small, or
- Waste retrieval and treatment

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- Public Law 101-510
- Tri-Party Agreement M-40
- DOE Orders 5480.21 and 5820.2A

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.05 Waste Tank Organic Safety Program	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.05.01/VI	5. WBS ELEMENT TITLE Technology for Evaluating Organic Tanks	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AE	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollar)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	3982	3779	2161
CENRTC	470	0	0
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	4452	3779	2161

B. TECHNICAL BASES

Goals & objectives:

Evaluating and defining the safety issue associated with uncontrolled oxidation of mixed organic chemicals by nitrate/nitrite is necessary to establish safe operating conditions and to select an appropriate path for resolving the safety issue. Laboratory studies, engineering analyses, analysis of historical data, analyses of in-tank samples, and modeling of key waste parameters will provide the technical bases for evaluating and defining the safety issue technical need.

Significant effort is currently being placed on laboratory studies using organic waste surrogates to assess potential waste energetics and to define waste moisture levels required to ensure safe storage. During fiscal year 1995, a transition to representative waste stimulants will be made for requisition of key technical parameters. A data quality objectives (DQO) process has been completed to define the waste characterization information needed to classify single-shell tank waste into "safe" and "unsafe" categories. The historical TOC data base has been thoroughly reviewed and documented; ten additional single-shell tanks have been added to the organic tanks Watch List. Waste moisture monitoring and control has been tentatively identified as the preferred method for mitigating and resolving the organic tanks safety issue.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

09/30/96	Other	1N2E510N	Issue Report--Organic Waste Energetics with Simulants.
03/31/95	Other	1N23510U	Issue Level I ISB Topical Report--SSTs That Formerly Contained Floating Organic Layers.
06/30/95	KEY	1N2E510U	Complete USQ Safety Screen/Evaluation for Tank C-102.
09/30/96	KEY	1N2E510U	Complete USQ Safety Screen/Evaluation for Tanks C-104/BY-112.
01/31/95	RL	1N2E510V	Issue Preliminary Safety Criteria for Organic Watch List Tanks.
11/30/96	RL	1N2E510V	Issue Safety Criteria for Organic Watch List Tanks.
03/31/95	Other	1N2E510V	Issue Safety Analysis Organic-Nitrate Hazards DSTs.
09/30/95	Other	1N2E510W	Issue Status Report--Organics Solubility Study.
09/30/96	KEY	1N2E510W	Issue Status Report--Organics Solubility Study.
09/30/97	Other	1N2E510W	Issue Status Report--Organics Solubility Study.

C. STATEMENT OF WORK

Required activities:

- Project Management (PNL)
- Organic Analytical Methods Development (PNL)
- Waste Aging Studies (PNL)
- Organic Concentrations Mechanisms (PNL)
- Organic Laydown Model (PNL)
- Waste Energetics (PNL)
- SST Organic Carbon Study (PNL)
- SST Waste Moisture Study (PNL)
- Analysis Tank T-111 Core Sample (PNL)
- Special Studies (PNL)
- Organic Analytical Chemistry Support (PNL)
- Waste Sample Analysis (PNL Work Order)
- Waste Energetics w/Simulants (FAI)
- Waste Moisture w/Simulants (FAI)

Basis Safe Ops SSTs - Organic/Nitrate
 Basis Safe Ops SSTs - Organic Layer
 Basis Safe Ops SSTs - Absorbed Organic
 Organic Tanks Safety Criteria
 Organics Solubility Study

Technologies to be assessed:

Organic Analytical Methods Development
 Waste Aging Studies
 Organic Concentration Mechanisms

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. W. Payne <i>M. W. Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Cost Account Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. W. Payne <i>M. W. Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Cost Account Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

FDS Number

1N2E51

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.05 Waste Tank Organic Safety Program	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.05.02/VI	5. WBS ELEMENT TITLE Evaluate and Define Organic Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AE							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	588	411	424
CENRTC	0	0	0
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	588	411	424

B. TECHNICAL BASES

Goals & objectives:

The chemical stability of the radioactive wastes in the storage tanks at the Hanford site involves many complex issues. The composition of the wastes vary greatly from tank to tank as well as within a single tank. Within a tank there may exist separately as sludge, saltcake, or liquid waste types, but are most likely intermingled. There are large horizontal and vertical inhomogeneities within the waste of a single tank. Typically the waste is stratified into various layers differing in both physical and chemical characteristics. Accurate historical records of tank activities were not always kept and changes in tank composition due to radiolysis further complicate the problem. Potential threats to chemical stability include ferrocyanide-nitrate reactions, ammonium nitrate reactions, organic vapor and hydrogen reactions, and organic-nitrate reactions. It is the purpose of this program to set forth a plan for the resolution of safety issues associated with tanks with the potential for organic-nitrate reactions, both currently identified and as yet unknown.

The Waste Tank Organic Safety Program has developed a more definitive safety criteria which creates three levels of safety based not only on presence of fuel (TOC) but also on waste temperature and moisture content (Turner, 1993). The rationale behind the development of this criteria was the strategy developed for the Hanford High-Level Waste Tank Safety Issue Resolution (Christensen, 1993). This strategy calls for the establishment of safety criteria, relating tank conditions to this criteria, and then instituting procedures and any necessary changes and controls for operating within the tank farm safety envelope. The strategy requires knowledge of the conditions necessary for propagating chemical reactions, as well as the condition of the tank waste. Evaluation of the storage of waste mixtures containing nitrates and nitrites identified four necessary conditions associated with the initiation and propagation of a propagating chemical reaction. Those conditions are: (1) sufficient fuel, (2) sufficient oxidizers, (3) low moisture values, and (4) high temperatures. Based upon these conditions the safety criteria was developed and the following three level of safety were created: (1) safe, (2) conditionally safe, and (3) unsafe. Because of the relative abundance of nitrates and nitrites in the waste tanks, oxidizer concentrations were not considered to be the limiting criterion for any of the three safety levels.

The newly defined safety criteria will be applied to both the SSTs and DSTs as the criteria takes into consideration the implication of waste moisture content on the reaction potential and measures necessary to ensure safe storage. The safety criteria also provides a mechanism for the resolution of the organic safety issue by defining terms necessary for the safe storage of wastes with high concentrations of organics. If safe storage is not achievable, then mitigation or remediation of the waste of the wastes will begin as soon as technically feasible.

The objectives of this activity are to define interim safe storage conditions for the waste with minimal risk of an accident, and to gather sufficient information to resolve the safety issues and remove all organic tanks from the Watch List; otherwise, one or more strategies must be selected to implement mitigation or remediation of the waste.

Further characterization of the SSTs may result in the declaration of additional USQs or addition of more organic tanks (i.e., tanks which are conditionally safe or unsafe) to the Watch List.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

03/31/95	HQ	1N2E52	Complete Removal of Floating Organic Layer From Tank 241-C-103 (SI-2u)
06/30/95	TPA	1N2E52	Complete Removal of Floating Organic Layer From Tank 241-C-103 (TPA M-40-04)
05/16/95	KEY	1N2E520A	Reach Decision to Interim Stabilize Tank 241-C-103 With Floating Organic Layer in Place or Proceed With Removal of Floating Organic Layer

WHC-SP-1101

03/31/95	Other	1N2E520A	Revise Organic Program Data Quality Objectives Report (WHC-SD-WM-006, Rev. 1)
06/30/95	KEY	1N2E520B	Update Program Strategy Document--Waste Tank Organic Safety Program.
06/30/96	KEY	1N2E520B	Update Program Strategy Document--Waste Tank Organic Safety Program.
06/30/97	KEY	1N2E520B	Update Program Strategy Document--Waste Tank Organic Safety Program.
02/28/95	KEY	1N2E520C	Revise Organic Tanks Watch List--Based on Preliminary Safety Criteria.
12/31/96	KEY	1N2E520C	Revise Organic Tanks Watch List--Based on Safety Criteria.
03/31/95	Other	1N2E520E	Issue Data Interpretation Report Tank C-103 Core Samples.
06/30/97	RL	1N2E520E	Complete Data Interpretation Organic Watch List Tank Core Samples.

C. STATEMENT OF WORK

Required activities:

CAP Management
Program Plan
Organic Tanks Watch List
Core Data Interpretation

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Cost Account Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Cost Account Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

FDS Number

1N2E52

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.05 Waste Tank Organic Safety Program	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.05.04/VI	5. WBS ELEMENT TITLE In-Tank Resolution of Organic Tanks Without Treatment							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AE							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	379	4305	7739
CENRTC	184	9869	16257
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	563	14174	23996

B. TECHNICAL BASES

Goals & objectives:

Ten additional single-shell tanks were added to the organic tank Watch List in May of 1994. The addition of these ten single-shell tanks was taken as a precautionary measure to ensure continued safe, interim storage based on the best available information on the tanks' waste contents. As with the Ferrocyanide tanks, most of the organic tanks do not have an adequate number of functioning TC elements to provide a complete vertical profile of the temperatures within the tanks, and limited information has been available about the total heat generation rate of the waste. New instrument trees (Thermocouple Trees) are being added to those organic tanks that do not have replaceable thermocouple elements (planning assumptions are to add thermocouple trees in 10 of the 20 total organic tanks). The plan is to ensure that there is at least one instrument tree with replaceable TCs or RTDs in each organic tank. In addition, a heated vapor sampling tube has been added to the instrument tree design for each of the organic tanks. The tube will be heated by circulating either hot water or hot gas around the sampling tube. This added feature to the new instrument trees may eliminate the need to install an additional vapor probe, which is currently required to obtain vapor space gas samples. Vapor sampling using the TC tree will reduce field efforts and the cost of vapor space characterization. The vapor sampling tube can also be used for monitoring pressure in the organic tanks if deemed necessary.

Various techniques for measuring moisture in the tank waste are being investigated. They include use of a neutron probe in a LOW or in a cone penetrometer pushed into the waste, measuring surface moisture using infrared techniques, electrical measurements using an induction coil, phase change probes using thaw/freezing cycling and temperature measurement in the tank, and time domain reflectometry.

Determination of moisture concentrations in the organic waste tanks is being pursued using data analysis and modification of existing surveillance systems (neutron probes in LOWs). Well-logging techniques coupled with computer modeling are being developed and applied to an existing neutron probe to assess this probe and to determine information about moisture levels, material interfaces, and other waste characteristics. Development of a new, improved neutron-diffusion-based detector system is being investigated. This improved technique would be used primarily to determine the vertical moisture concentration profile within the organic tanks.

The University of Washington's Center for Process Analytical Chemistry (CPAC) has completed a Phase 1 study of the feasibility of measuring saltcake surface moisture with optical scattering techniques (Velkamp 1993) and further study is planned under the Ferrocyanide Safety Program (1.1.1.2.02).

The need for improved temperature measurements is to be addressed by utilizing continuous temperature monitoring of the organic tanks with readout and alarms in a permanently manned location. Even when the tanks are removed from the Watch List, it is expected that continuous temperature surveillance will continue, although not dictated by the safety criteria to ensure in situ safe storage. Prudent management of the tanks, especially the SSTs, requires that the upgraded instrumentation be surveilled until the waste is finally removed from the tanks. The objective is to have continuous and more accurate temperature monitoring, data logging (recording), and alarms on all organic tanks with readouts at the Computer Automated Surveillance System (CASS) in the 2750E Building (200 East Area), which is manned 24 hours per day. This task provides the continuous monitoring of currently installed (and operable) temperature-sensing elements for the organic tanks. New instrument trees will be connected to the system as they are installed in each tank, resulting in continuous monitoring of all trees in organic tanks.

Public Law 101-510, Section 3137 (Wyden Bill), requires that "...the Secretary of Energy shall identify which single-shell tanks...may have a serious potential for release of high-level waste due to uncontrolled increases of... pressure. After completing such identification, the Secretary shall determine whether continuous monitoring is being carried out to detect a release or excessive...pressure at each tank so identified. If such monitoring is not being carried out, as soon as practicable the Secretary shall install such monitoring...". To meet the Wyden Bill requirements, installation of pressure monitoring is being planned in the organic tanks.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

09/30/97	RL	1N2E54	Complete Monitoring Upgrades in Organic Watch List Tanks.
09/30/96	KEY	1N2E540B	Initiate Installation of TC Trees in Organic Tanks
09/30/97	HQ	1N2E540B	Complete Installation of New Thermocouples and Connect to TMACS in All Organic Tanks (SI-2t)
09/30/96	KEY	1N2E540C	Complete Installation of Pressure Monitoring System, Appropriate Startup Activities and Initiate Monitoring for 5 Organic Tanks
09/30/97	RL	1N2E540C	Complete Installation of Pressure Monitoring System, Appropriate Startup Activities and Initiate Monitoring for Remaining Organic Tanks
09/30/95	Other	1N2E540D	Complete Engineering for Neutron Moisture Monitoring
09/30/95	Other	1N2E540D	Complete Design and Preliminary Preparations for a Moisture Monitoring and Control System in an Organic Tank
09/30/96	KEY	1N2E540E	Install a Moisture Monitoring and Control System in an Organic Tank (possibly a Ferrocyanide/Organic Tank, ie., 241-TX-118 or 241-TY-104)

C. STATEMENT OF WORK

Specific tasks include flammability monitoring, obtaining and analyzing dome space gas samples and auger surface samples, core sampling and analysis (provided by Characterization 1.1.1.2.04), evaluating and interpreting data, installation of additional instrument trees, installation of continuous pressure and gas monitoring capability, installation of tank monitor and control system (TMACS) upgrades, development and implementation of moisture monitoring and control, safety and environmental assessments to allow tank-intrusive activities. Obtaining tank farm readings as required for the final safety basis will be conducted by Tank Farm Operations and Maintenance, 1.1.1.2.01. (WHC/PNL)

An experimental test area in which to complete the final development, testing, and calibration of a prototype neutron diffusion-based moisture measurement system is being set up within the Ferrocyanide Safety Program (1.1.1.2.02.03). Development of two neutron probes with different source-to-detector spacings will be completed and the probes will be used to scan for moisture content in the ferrocyanide tanks. A single probe with two detectors may be developed later if it is necessary to reduce the time required for scanning LOWs. In addition, the possibility will be investigated of using a pulsed neutron source for obtaining additional information about the surrounding medium. After initial testing of this system has been completed within the Ferrocyanide Safety Program, the technology will be utilized on the organic waste tanks

Overall, the various concepts for moisture monitoring will be evaluated, the monitoring needs evaluated from a surveillance requirement standpoint, and a decision made as to what systems should be deployed.

Required activities:

- CAP Management
- Install TC Trees/TMACS
- Pressure Monitoring Installation
- Moisture Monitor Engineering & (LOW) Install
- Moisture Monitoring/Control Demonstration
- Safety Evaluation/LOA

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Cost Account Manager	G. T. Dukelow <i>GT Dukelow</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M.W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Cost Account Manager	G. T. Dukelow <i>GT Dukelow</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M.W. Hall</i>	9/21/94

FDS Number

1N2E54

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.05 Waste Tank Organic Safety Program	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.05.05/VI	5. WBS ELEMENT TITLE Resolve USQ for Organic Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AE							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	0	97	212
CENRTC	0	0	0
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	0	97	212

B. TECHNICAL BASES

Goals & objectives:

The ultimate objective of the Organic Safety Program has been to determine if storage of organic waste in Hanford Site tanks is safe until it can be retrieved and treated for final disposal in the Hanford Pretreatment and Vitrification Plants. Decision points identified in the Program Plan logic diagrams will be used to determine the activities that will be conducted to address high-priority issues and to use resources in an effective manner.

The strategy adopted for resolution of the organic tanks safety issue is to resolve the Unreviewed Safety Question for tank 241-C-103 first and then to resolve the remaining safety concerns. This approach is based on strategy developed for resolution of the safety issues associated with the ferrocyanide Watch List tanks. The two key steps leading to safety issue resolution are: (1) Identification of criteria for organic tanks safety issue resolution, and (2) classification of waste into appropriate safety level in compliance with criteria determined in step 1.

The Hanford Site Tank Farms Facilities Interim Safety Basis (WHC, 1993) identified the organic tank safety issues under the following four categories:

- Potential uncontrolled reactions between air and flammable gases (radiolytics, volatiles, and aerosols) in the tanks' headspace
- Potential uncontrolled reactions between a flammable liquid and air (a pool fire) in tanks that have floating organic layer
- Potential uncontrolled reactions between air and solid waste saturated with organic liquid at the air/waste interface
- Potential uncontrolled reactions between organic chemicals (fuel) and nitrate/nitrite salts (oxidizer) in solid waste.

Studies addressing the fourth category define the basis for the safety criterion by which organic Watch List tanks will be classified into the appropriate safety classifications. The first category of safety issue listed above falls under the Tank Vapor Issue Resolution Program and is addressed by that program. The second category of safety issue listed above currently exists for only one tank, 241-C-103, and is addressed in documentation directed at closing the USQ associated with that tank. The safety analysis documentation for 241-C-103 provides a basis for addressing the safety concerns related to future identification of a separate floating organic layer in another SST. Screening of tank conditions then places each tank into the appropriate safety classification. Upon demonstration of the adequacy of the safety criteria the safety issue will be detailed sufficiently for closure of the USQ.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS): N/A

C. STATEMENT OF WORK

Required activities:

USQ Closure Documentation

Technologies to be assessed: N/A

Options to be considered: N/A

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Cost Account Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Cost Account Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

FDS Number

1N2E55

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.05 Waste Tank Organic Safety Program	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.05.06/VI	5. WBS ELEMENT TITLE Resolve Safety Issue Organic Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AE							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	676	208	109
CENRTC	0	0	0
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	676	208	109

B. TECHNICAL BASES

Goals & objectives:

The ultimate objective of the Organic Safety Program has been to determine if storage of organic waste in Hanford Site tanks is safe until it can be retrieved and treated for final disposal in the Hanford Pretreatment and Vitrification Plants. Decision points identified in the Program Plan logic diagrams will be used to determine the activities that will be conducted to address high-priority issues and to use resources in an effective manner.

The strategy adopted for resolution of the organic tanks safety issue is to resolve the Unreviewed Safety Question for tank 241-C-103 first and then to resolve the remaining safety concerns. This approach is based on strategy developed for resolution of the safety issues associated with the ferrocyanide Watch List tanks. The two key steps leading to safety issue resolution are: (1) Identification of criteria for organic tanks safety issue resolution, and (2) classification of waste into appropriate safety level in compliance with criteria determined in step 1.

The Hanford Site Tank Farms Facilities Interim Safety Basis (WHC, 1993) identified the organic tank safety issues under the following four categories:

- Potential uncontrolled reactions between air and flammable gases (radiolytics, volatiles, and aerosols) in the tanks' headspace
- Potential uncontrolled reactions between a flammable liquid and air (a pool fire) in tanks that have floating organic layer
- Potential uncontrolled reactions between air and solid waste saturated with organic liquid at the air/waste interface
- Potential uncontrolled reactions between organic chemicals (fuel) and nitrate/nitrite salts (oxidizer) in solid waste.

Studies addressing the fourth category define the basis for the safety criterion by which organic Watch List tanks will be classified into the appropriate safety classifications. The first category of safety issue listed above falls under the Tank Vapor Issue Resolution Program and is addressed by that program. The second category of safety issue listed above currently exists for only one tank, 241-C-103, and is addressed in documentation directed at closing the USQ associated with that tank. The safety analysis documentation for 241-C-103 provides a basis for addressing the safety concerns related to future identification of a separate floating organic layer in another SST. Screening of tank conditions then places each tank into the appropriate safety classification. Upon demonstration of the adequacy of the safety criteria the safety issue will be detailed sufficiently for closure of the USQ.

For a tank or group of tanks, a Safety Issue Resolution Safety Assessment (SA) will document results of technical and waste characterization studies. If safety analyses conclude that a reaction is not possible, the tanks will be characterized as SAFE. If samples from a certain tank or group of tanks show signs of sufficient fuel, the tanks will be characterized as CONDITIONALLY SAFE, and additional technical and waste characterization studies will be required. These studies will be directed to temperature and moisture content since the oxidizers, total nitrate and nitrite, are present in excessive quantities. Moisture is the key waste diluent present to prevent a propagating reaction (Christensen, 1993). In the event that some tanks are characterized as UNSAFE, further technical studies will be performed to support the mitigation/remediation of the unsafe condition.

If tank waste is characterized as SAFE, documentation will be prepared and submitted to DOE for administrative processing. Upon DOE's approval, appropriate actions will be taken at the site to remove identified tanks from the Watch List. If tanks are characterized as CONDITIONALLY SAFE or UNSAFE, results of the additional technical and waste characterization studies will be used to confirm that the safety

criteria are or are not met. It is expected that periodic monitoring will be necessary for tanks characterized as CONDITIONALLY SAFE. Tanks characterized as CONDITIONALLY SAFE will be subject to safety issue resolution and removal from the Watch List in the same manner as before for safe waste tanks.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

03/31/95	KEY	1N2E560A	Complete Engineering Study--Moisture Monitoring/Control Demonstration.
06/30/95	RL	1N2E560A	Select Waste Moisture Monitoring/Control Concepts for Organic Watch List Tanks.
12/31/95	Other	1N2E560A	Complete Safety Analysis--Moisture Monitoring/Control Demonstration.
06/30/96	KEY	1N2E560A	Complete Readiness Review--Moisture Monitoring/Control Demonstration.

C. STATEMENT OF WORK

Required activities:

Moisture Monitoring/Control Engineering
Safety Issue Closure Documentation

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Cost Account Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Project Control Analyst	M. W. Hall <i>M.W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Cost Account Manager	D. A. Turner <i>DA Turner</i>	9-21-94
Project Control Analyst	M. W. Hall <i>M.W. Hall</i>	9/21/94

FDS Number

1N2E56

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.05 Waste Tank Organic Safety Program	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.05.07/VI	5. WBS ELEMENT TITLE Pump and Dispose C-103 Organic Layer/Resolve Issue							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AE							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	2896	3095	1155
CENRTC	613	103	106
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	3509	3198	1261

B. TECHNICAL BASES

Goals & objectives:

Sixteen odor exposure events occurred between July 1987 and May 1992, ten of which occurred in association with the 241-C Farm, specifically tank 241-C-103. All of the odor exposures involved first aid medical consultation and some resulted in significant lost-time incidents. Management response to these events typically included a combination of: (1) initiation of forced ventilation of the tank vapor space; (2) provisions protection for workers within the tank farm and in specified boundaries; (3) initiation of area industrial hygiene (IH) monitoring; and (4) installation of filtration devices on tank vent lines. Most of the exposures are thought to be organically related and tank 241-C-103 is known to have a large organic content, including a floating organic liquid layer. Because of the volatility and flammability of many organic compounds, gas phase flammability issues are also a concern. As a result, operations around 241-C farm are restricted and explosivity meters are used to detect the presence of a hazard with 20 percent lower explosive limits (LEL) flammable level chosen as the margin of safety for performing intrusive work in the tanks.

An Unreviewed Safety Question was declared for tank C-103 on September 21, 1992, because the potential for ignition and combustion of the floating organic layer was not adequately addressed by existing safety documentation. A Justification for Continued Operations (JCO) and Environmental Assessment (EA) were prepared to support the conduct of critical tank operations, to permit vapor sampling of the tank's headspace, and retrieval of organic and aqueous supernate samples. The JCO and EA were approved in August 1993 and the liquid sampling operation was conducted during December 1993.

The headspace vapor and the organic and aqueous supernate samples were analyzed in support of a safety analysis which addressed the potential for ignition and combustion of the floating organic layer. The safety analysis was completed in March 1994 and the tank C-103 USQ was subsequently closed in May 1994. The safety analysis indicated that combustion of the organic can be precluded by imposing minimal operating controls and monitoring requirements.

Analysis of the samples of the headspace gases in Tanks 241-C-102 and 241-C-103 revealed the major constituents to be 1-butanol, NPH, TBP, acetone, and ammonia. Concentrations of all five compounds exceeded the threshold limit values for these substances. The detection of combustible organic vapors in the headspace of tank 241-C-103 and the subsequent verification of a second liquid organic phase in the tank resulted in placing Tank 241-C-103 on the Watch List of waste tanks containing high organic content. In addition to the toxicity of the vapors, the primary concerns regarding the floating organic layer are the flammability of the liquid and the explosiveness of the vapor. These latter two concerns have been the subjects of recent studies. The flammability of the organic and the potential for an in-tank fire and/or explosion, with the resultant dispersion of radioactivity to the environment, was the reason for the declaration of an unreviewed safety question.

The floating organic layer in tank C-103 was to be removed and then treated, as required, to permit final disposal. Removal of the organic layer is intended to resolve the combustibility safety issue, as well as a safety is related to the periodic release of noxious vapors from the tank. Removal of the organic layer is both a Secretarial Safety Initiative milestone (March 31, 1995) and a Hanford Federal Facility Compliance and Consent Order (Tri-Party Agreement) milestone (June 30, 1995). The waste removed from the tank is intended to be received in a 5,000 gallon trailer tank. Interim storage, until the organic can be transported to a disposal facility, may be in either the trailer tank or an existing, appropriately contained storage tank away from the tank farm. Such storage may impact both air and soil media and must then comply with hazardous waste and airborne release requirements.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

09/30/95	Other	1N2E570C	Fabricate Organic Separations Equipment for C-103
09/30/96	KEY	1N2E570C	Complete Installation of Organic Separations Equipment for C-103
06/30/95	Other	1N2E570G	Complete Design of Burial Containers for Separations Equipment from Tank 241-C-103
09/30/96	Other	1N2E570G	Complete Fabrication of Burial Containers for Separations Equipment from Tank 241-C-103
09/30/97	Other	1N2E570G	Complete Burial/Storage of Separations Equipment from Tank 241-C-103
09/30/95	Other	1N2E570J	Complete Design of Treatment System for Tank 241-C-103 Organic
06/30/96	Other	1N23570J	Complete Fabrication of Treatment System for Tank 241-C-103 Organic
09/30/96	Other	1N2E570K	Initiate Installation of Treatment System for Tank 241-C-103 Organic
09/30/97	RL	1N2E570K	Complete Operation of Treatment System for Tank 241-C-103 Organic
09/30/96	Other	1N2E570L	Complete Design of Burial Containers for Organic Treatment System Equipment
09/30/97	Other	1N2E570L	Complete Fabrication of Burial Containers for Organic Treatment System Equipment

C. STATEMENT OF WORK

Required activities:

Organic Receiver Tank
 Separations Equipment Fabrication
 Separations Equipment Install/Operations
 Organic Storage Support
 Laboratory Analysis (PNL work order)
 Engineering Support
 Separations Equipment Burial
 Safety & Permitting
 Treatment System Design/Fabrication
 Treatment System Install/Operations
 Treatment System Burial

Technologies to be assessed: N/A

Options to be considered:

A comprehensive engineering study was performed of various alternative methods for removal of the organic from tank 241-C-103 and separation of entrained aqueous, as well as decontamination of the organic from radionuclide impurities. The study considered three options for removal of the organic from the tank: large-scale pumping, surface skimming, and hydrophobic filter skimming. The study recommended use of surface skimming and use of a coalescer for separation of the organic from the aqueous. Testing with simulants has confirmed the selection and preliminary definitive design has been completed.

For decontamination of the organic from radionuclides, twelve options involving seven different facilities were considered (two options were considered involving the PUREX Plant and five options were considered that involved the use of the 204-AR Unloading Facility). A thirteenth option, the use of an ion exchange medium, was suggested too late to be included in the original study and is currently under study and inclusion of an organic decontamination step is delayed, pending the results of the study and determination of need.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Cost Account Manager	G. T. Dukelow <i>G. T. Dukelow</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	D. A. Turner <i>D. A. Turner</i>	9-21-94
Cost Account Manager	G. T. Dukelow <i>G. T. Dukelow</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

FDS Number

1N2E53

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.06/V	5. WBS ELEMENT TITLE Waste Tank High-Heat Safety Program	
6. WBS INDEX LINE NO. Not used.	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AF	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	808	339	308				
CENRTC							
GPP							
LINE ITEM							
TOTAL	808	339	308				

B. TECHNICAL BASES

Goals and objectives:

Tank 241-C-106, a 530,000-gallon capacity single-shell tank (SST), has been used for high-level radioactive waste storage since mid-1947 and currently is approximately half-full. Heat-generating sludge was inadvertently transferred into the tank in the late 1960's. The high heat generation (over 100,000 Btu/hr in 1994) resulted in a safety issue that, if left alone, the structure might fail due to high temperature, and high-level radioactive waste would release to the environment. Since mid-1971, water has been added periodically to the tank to prevent waste temperatures in excess of the 300° F operating limit by keeping a liquid cover over the sludge and promoting heat removal by evaporative cooling through active filtered ventilation. Although the cooling method is effective, it poses a potential hazard should a leak develop. In the event of a tank leak, the drainable liquid can leak into the ground and further cooling water additions would add to the environmental impact. The fraction of cooling water that exceeds the interstitial holdup liquid capacity of the sludge is defined as drainable liquid. If cooling water additions are stopped, the sludge will heat to temperatures greater than established safety limits and may cause tank structural damage and an unacceptable radioactive release to the environment. A high-heat tank is defined as a SST with a heat generation rate of 40,000 Btu/hr or greater. Of the eleven tanks that meet this criteria, only tank 241-C-106 has been placed on the safety Watch List due to the need for cooling water additions.

The logic for resolution of this high-heat generation safety issue uses a graded approach considering alternative cooling methods. Although the existing cooling method (water addition with forced ventilation) is effective, a contingency action plan is being implemented to deal with a leaking tank situation. It has been concluded that a small quantity of drainable liquid is required for contingency action.

Tri-Party Agreement Milestone M-40-05 has been established to minimize existing liquid inventory by 9/95. At this time, the only identified remediation method is retrieval of the waste. Tank 241-C-106 has been selected by Waste Retrieval (1.1.1.2.05) to satisfy Tri-Party Agreement Milestone M-07-00 for full-scale demonstration of retrieval technology in FY 1997.

Major end-item deliverables:

- M-40-05 Complete Safety Alternative Test in High-Heat Tank 241-C-106
- SI 2x Complete Contingency Cooling Tests in High-Heat Tank 241-C-106

Acceptance criteria:

- Complete work scope within cost, schedule and technical baseline
- Resolve high heat safety issue for tank 241-C-106

C. STATEMENT OF WORK

Required activities over lifetime:

The focus of initial activities for resolution of the high-heat generation safety issue consists of developing a thermal model for predicting the amount of cooling liquid required versus the temperature of the waste, and validating the model with characterization data (core sampling and analysis is provided by Characterization, 1.1.1.2.04). A safety alternative process (SAP) test was conducted in tank 241-C-106 to minimize liquid inventory. In-tank video was used to monitor the liquid-waste interface during the SAP. All work will be coordinated with the pre-retrieval activities being conducted by Waste Retrieval, 1.1.1.2.05. The thermal analysis and an updated structural analysis will be used to confirm the structural integrity of the tank. A corrosion control program is being implemented to minimize tank wall corrosion. The purpose of the corrosion control is to prevent tank leaks before and during retrieval. A hazard assessment and updated contingency

action plan for leaks will also be prepared. (WHC/PNL)

Once the minimum amount of liquid inventory for cooling is determined, activities will focus on the identification, selection, and implementation of contingency action plans. System upgrades, an in-tank sprinkler system and an air chiller, are being designed for use in contingency (leaking tank). (WHC)\

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.04 Characterization	Data requirements and Data Quality Objective documents; Data (on tank waste behavior).
2	1.1.1.2.05 Waste Retrieval	Data for Retrieve Waste (results of technical investigations of waste properties); mitigation of tank safety issue to allow remediation through retrieval of tank waste.
3	1.1.1.2.01 Tank Farm Operations & Maintenance	Mitigation/resolution of tank safety issue to achieve a new safe operating condition envelope; removal of tank from the Watch List; removal of operational restrictions; operation/maintenance of installed systems.
	To This WBS From	
1	1.1.1.2.04 Characterization	Tank Waste Analysis Plans (TWAP)/Tank Characterization Plans and Tank Characterization Reports (TCR).
2	1.1.1.2.05 Waste Retrieval	Retrieved tank waste as part of the actions necessary for safety issue resolution

Technologies to be assessed:

- Cooling systems

Options to be considered:

- Air-chiller
- Sprinkler system

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- Public Law 101-510
- Tri-Party Agreement M-40
- DOE Order 5820.2A

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.06 Waste Tank High-Heat Safety Program (M&O Contractor)	2. DATE PREPARED September 14, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.06.01/VI	5. WBS ELEMENT TITLE Evaluate and Define High Heat Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AF							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td></td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072		
Expense	Capital	Line Item						
EW3120072								

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	808	339	308
CENRTC			
GPP			
LINE ITEM			
TOTAL	808	339	308

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate/resolve high-heat tank safety issues to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workscope includes developing thermal models, identifying safety criteria, characterizing waste contents, applying criteria to data collected, monitoring liquid level and waste temperature, developing contingency plans in case of tank leak, and mitigating and/or resolving safety issues consistent with the overall Tank Waste Remediation System strategy.

Status of Design Documentation:

"High-Heat Tank Safety Issue Resolution Program Plan", WHC-EP-0532 Rev. 1, issued December 1993. Contingency system design engineering study for 106-C, WHC-SD-WM-ES-279, will be issued in June 1994.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

11/30/94	Key	Complete Tank 241-C-106 Temperature Transient Summary Report (N2F610A01)
12/30/94	Key	Update Program Plan for High-Heat Tank Safety Program (N2F610A11)
01/31/95	Key	Update Action Plan for High-Heat Tank 241-C-106 (N2F610A12)
05/31/95	RL	Complete Alternative Contingency System Designs (Air-Chiller, Sprinkler System, etc.) for High-Heat Tank 241-C-106 (N2F610A14)
05/31/95	Other	Interpret Core Sample Analysis for Tank 241-C-106 and Perform Additional Thermal Analyses to Assess Safety Margin (N2F610A21)
06/30/95	Other	Conduct In-Tank Video Camera Work in Tank 241-C-106 (N2F610A23)
06/30/95	HQ	Complete Contingency Cooling Tests in High-Heat Tank 241-C-106 (Safety Initiative 2x) and Alternative Contingency System Designs (N2F610A24)
09/29/95	TPA	Complete Safety Alternative Test in High Heat Tank 241-C-106 (TPA M-40-05) and Document in a Report Cleared for Public Release (N2F610A31)
09/30/96	Key	Review Progress of Retrieval Project W-320 and Make Recommendations on Contingency Action Planning for Tank 241-C-106 (N2F610B41)
09/30/96	RL	Review Status of High-Heat Safety Program and Provide RL with a List of Program Closure Activities (N2F610B42)
03/31/97	Key	Reassess Thermal Loads of High-Heat Tanks 241-C-106, -A-104, -SX-110 and -SX-114; and Make Specific Recommendations, such as Ventilation Level and Waste Temperature Monitoring (N2F610B61)
09/30/97	RL	Evaluate Overall High-Heat Safety Program after Retrieval of Tank 241-C-106, and Close Out Entire Program Activities (N2F610B62)

C. STATEMENT OF WORK

Required activities:

Conduct Tank 106-C Process Test (N2F610A10, N2F610A2, N2F610A20, N2F610A3)

- Program management
- Plant engineering support
- Operations support
- Video surveillance/equipment
- Contingency action planning
- Thermal model/analysis

Safety and environmental support
 Core sample data interpretation (PNL)
 Investigate 106-C anomalies (N2F610A1)
 Resolve High-Heat Safety Issue (N2F610B4, N2F610B6, N2F610B60)
 Program management
 Contingency action planning
 Tank 105-C process test support
 Safety issue resolution

Technologies to be assessed:

Develop lab methodology for measuring thermal conductivity and permeability (reference "Integrated Technology Plan", DOE/RL-92-61, June 1994).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	O. S. Wang <i>OS Wang</i>	9/21/94
Cost Account Manager	O. S. Wang <i>OS Wang</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	O. S. Wang <i>OS Wang</i>	9/21/94
Cost Account Manager	O. S. Wang <i>OS Wang</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

FDS Number

1N2F61

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.07/V	5. WBS ELEMENT TITLE Miscellaneous Underground Storage Tanks	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AG	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3120072 35EW31207	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	2,249	2,967	3,571	3,144	2,323	1,502	
CENRTC		76	78	1,468	1,338	1,208	
GPP							
LINE ITEM							
TOTAL	2,249	3,043	3,649	4,612	3,661	2,710	

B. TECHNICAL BASES

Goals and objectives:

In addition to the 177 large underground waste storage tanks at Hanford, 50 smaller tanks, ranging in capacity from 1,000 to 50,000 gallons, have been identified in the 200 Areas. These tanks contain radioactive and chemical wastes. Typically these tanks were used as settling tanks for liquid waste streams being discharged to the ground, catch tanks for spills or leaks from pipelines and diversion boxes, and collection and chemical adjustment of waste sluiced from underground storage tanks for uranium recovery. Over the years, these tanks have been removed from service, most liquids have been removed, and most have been isolated by blanking lines and are no longer actively monitored; but most still contain radioactive chemical sludge and some have a liquid heel. There is very little sampling data on the waste in the tanks. At this time, there is inadequate information to assume there are no safety issues associated with them. The tanks have potential safety concerns due to the possibility of chemically reactive waste, noxious or reactive vapors in their headspace (most have been sealed for years), nuclear criticality, and other potential safety issues.

Some of the waste is comparable to waste in some single-shell tanks (SSTs). Tank 241-T-361 is a 36,000-gallon settling tank containing 23,000 gallons of sludge and an estimated 7,600 curies of cesium-137 and 2.6 Kg of plutonium. It contains more waste than eight of the 55,000-gallon SSTs and six of the larger SSTs. It is also estimated to contain more curies of radionuclides than thirteen of the sixteen 55,000-gallon SSTs, and seventeen of the 133 other larger SSTs. Many of the other miscellaneous tanks are thought to have much smaller radionuclide inventories.

Likely actions needed for their disposal include: (1) sampling, characterization, and analysis to ensure safe condition until disposed and to determine disposal method; (2) retrieval of waste from many of the tanks; (3) immobilization and packaging for geologic disposal; (4) solidifying waste in-situ; and (5) removing the tanks and disposing of them in the burial ground. For some of the tanks, the preferred method for treating the waste is likely to be to transport it to the double-shell tanks and handle it as part of tank waste.

Major end-item deliverables:

- Issue Program Plan for Miscellaneous Underground Tanks
- Complete Sampling and Monitoring of Miscellaneous Underground Tanks
- Complete Resolution of Safety Issues for Miscellaneous Underground Tanks

Acceptance criteria:

- Complete work scope within cost, schedule and technical baseline
- Identify and resolve (or transfer) safety issues for miscellaneous tanks

C. STATEMENT OF WORK

Required activities:

Currently, 22 tanks are assigned to operable units within the Tri-Party Agreement and 28 tanks have not been identified in the Tri-Party Agreement. Some tanks are presumed empty but must be verified before transfer to Environmental Restoration for closure. (WHC/PNL)

TWRS will provide for the sampling, characterization and evaluation of the miscellaneous underground tanks. Near-term management actions involve identifying any additional tanks and meeting with regulators to inform them of tanks not currently included in the Tri-Party Agreement and plans for addressing these tanks. Specific tasks include locating and identifying the tanks; establishing access controls; prioritizing tank sampling, determining sampling methods, and developing a characterization plan; preparing safety assessments; providing

riser accessibility; collecting and analyzing samples; installing monitoring equipment, if necessary; preparing specific tank evaluation reports; and implementing corrective actions as appropriate. As reviews are completed by TWRS, this Activity (1.1.1.2.02.07) will help resolve any new waste tank safety issues on these tanks related to vapor, organics, or criticality. (WHC/PNL)

Interfaces:

#	From This WBS To	Item Provided
1	ER	Tank(s) for closure
2	1.1.1.2.04 Characterization	Data requirements and Data Quality Objective documents.
3	1.1.1.2.05 Waste Retrieval	Data for Retrieve Waste (results of technical investigations of waste properties); mitigation of tank safety issues to allow remediation through retrieval of tank waste.
	To This WBS From	
1	ER	Tank(s) for safety issue identification
2	1.1.1.2.05 Waste Retrieval	Retrieved tank waste as part of the actions necessary for safety issue resolution.
3	1.1.1.2.04 Characterization	Tank Waste Analysis Plans (TWAP)/Tank Characterization Plans and Tank Characterization Reports (TCR).

Technologies to be assessed:

- Characterization methods
- Monitoring methods

Options to be considered:

- No action
- Transfer to ER for assignment to an Operable Unit
- Transfer to Ferrocyanide, Flammable Gas or Organic Safety Program for resolution
- Transfer to Operations for reuse

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- DOE 5820.2A and 5400.5
- Tri-Party Agreement M-45
- RCRA and Washington State Dangerous Waste Regulations
- CERCLA Remedial Actions

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.07 Miscellaneous Underground Storage Tanks (M&O Contractor)	2. DATE PREPARED September 14, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.07.01/VI	5. WBS ELEMENT TITLE Evaluate Miscellaneous Underground Tanks							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AG							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	2,249	2,967	3,571
CENRTC		76	78
GPP			
LINE ITEM			
TOTAL	2,249	3,043	3,649

B. TECHNICAL BASES

Goals & objectives:

The goal is to identify, confirm and resolve safety issues associated with the inactive miscellaneous underground storage tanks (MUST) to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workscope includes collecting historical data, identifying authorization basis documents, performing unreviewed safety question (USQ) screening and evaluation, identifying safety issues, imposing operational controls and monitoring, characterizing waste contents, and mitigating and/or resolving safety issues consistent with the overall Tank Waste Remediation System strategy.

Status of Design Documentation:

"Engineering Study of 50 Miscellaneous Inactive Underground Radioactive Waste Tanks Located at the Hanford Site, Washington", WHC-SD-EN-ES-040 Rev. 0, issued May 18, 1994. "Safety Issue Resolution Strategy Plan for Inactive Miscellaneous Underground Storage Tanks", WHC-EP-0775 Rev. 0, Draft E1 dated June 1994; will be issued in July 1994.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

11/01/94	Other	Make Recommendations for Characterization and Retrieval of the MUSTs (N2G710A10)
12/30/94	Key	Identify Applicable "Authorization Basis Documents" and Perform Discovery USQ Screening for MUSTs (N2G710A11)
03/31/95	Other	Identify, Survey and Impose Access Control, if needed, to All 50 MUSTs (N2G710A12)
06/30/95	Key	Perform Additional Preliminary Hazard Analysis for MUSTs and USQ Evaluation, if required (N2G710A22)
09/29/95	Other	Revise MUST Strategy Plan based on Updated Information (N2G710A23)
09/29/95	Other	Establish and Support Riser Accessibility for MUSTs (N2G710F21)
09/29/95	Key	Verify a Large Empty MUST Using State-of-the-Art Method (in-tank video, non-invasive technique, etc.) (N2G710E21)
09/29/95	Key	Verify Liquid Level for a Representative MUST Using State-of-the-Art Method (in-tank video, non-invasive technique, etc.) (N2G710E22)
09/29/95	Key	Perform a Safety Screening Characterization and a Vapor Sample Analysis for One Large MUST (N2G710C21, N2G710B21)
09/29/95	Other	Perform a Probabilistic Risk Assessment (PRA) for the Current MUST Strategy Plan and the No-Action Alternative (N2G710A24)
09/30/96	Key	Verify Liquid Levels for 5 Tanks Using State-of-the-Art Method (N2G710E41)
09/30/96	Key	Install Liquid Level Monitoring System in One MUST (N2G710D41)
09/30/96	Key	Verify 5 Empty Tanks Using State-of-the-Art Method (N2G710E42)
09/30/96	Key	Perform 5 Safety Screening Characterizations and 5 Vapor Sample Analyses (N2G710C41, N2G710B41)
09/30/97	Key	Verify All Empty Tanks Using State-of-the-Art Method (N2G710E61)
09/30/97	Key	Verify Liquid Levels for All Applicable Tanks Using State-of-the-Art Method (N2G710E62)
09/30/97	Key	Install Liquid Level Monitoring Systems for All Applicable Tanks (N2G710D61)
09/30/97	Key	Perform 10 Safety Screening Characterizations and 10 Vapor Sample Analyses (N2G710C61, N2G710B61)
09/30/99	Key	Complete Safety Screening Characterization and Installation of Monitoring Systems, if required, for all MUSTs
09/30/00	RL	Complete Resolution of Safety Issues for MUSTs

C. STATEMENT OF WORK

Required activities:

MUST Hazards and Safety Analysis (N2G710A1, N2G710A2)

Program/CAP management

Identify tanks (KEH)

Evaluate and define

Obtain historical data and relevant information

Identify potential safety issues

Technical support

Effect of geometry on criticality

Safety analysis

Identify applicable authorization basis documents

Perform discovery USQ screening

Perform additional preliminary hazard analysis

Complete USQ evaluation

DQO review/prepare necessary safety documentation

Review safety evaluation and risk assessment

Establish controls

Establish immediate controls

Establish additional controls, if needed

MUST Characterization and Monitoring

Vapor sampling (N2G710B2, N2G710B4, N2G710B6)

Vapor sampling

Vapor sample analysis (PNL)

Safety screening sampling (N2G710C2, N2G710C4, N2G710C6)

Auger/scoop sampling

Auger/scoop sample analysis

Monitoring equipment upgrades (N2G710D4, N2G710D6)

Design engineering

Equipment

Plant engineering

Field support/installation

In-tank video/photos (N2G710E2, N2G710E4, N2G710E6)

Design engineering

Operations support

HPT support

Plant engineering

Equipment/material

Riser Accessibility (N2G710F2, N2G710F4, N2G710F6)

Construction (KEH)

Field support/installation

Plant engineering

MUST Safety Issue Resolution (N2G710G4, N2G710G6)

Program management

Safety issue confirmation/verification

Safety issue resolution

Technologies to be assessed:

No technologies provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	O. S. Wang <i>OS Wang</i>	9/21/94
Cost Account Manager	O. S. Wang <i>OS Wang</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	O. S. Wang <i>OS Wang</i>	9/21/94
Cost Account Manager	O. S. Wang <i>OS Wang</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

FDS Number

1N2G71

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor)	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.08/V	5. WBS ELEMENT TITLE Waste Tank Vapor Resolution							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AH							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	1534	974					
CENRTC	603	0					
GPP							
LINE ITEM							
TOTAL	2137	974					

B. TECHNICAL BASES

Goals and objectives:

Sixteen odor exposure events occurred between July 1987 and May 1992, ten of which occurred in association with the 241-C Farm, specifically tank 241-C-103. All of the odor exposures involved first aid medical consultation and some resulted in significant lost-time incidents. Management response to these events typically included a combination of: (1) initiation of forced ventilation of the tank vapor space; (2) provisions protection for workers within the tank farm and in specified boundaries; (3) initiation of area industrial hygiene (IH) monitoring; and (4) installation of filtration devices on tank vent lines. Because of the volatility and flammability of many organic compounds, gas phase flammability issues are also a concern. Until the issues surrounding tank vapor emissions can be resolved, conservative safety precautions have been imposed upon tank farms with the highest exposure potential.

Three major issues require continuing resolution: (1) validated vapor characterization; (2) flammability determination and success path for relaxation of supplied air restriction; and (3) IH air monitoring program. In 1992, WHC hosted a tank vapor sampling conference and a phased approach was adopted to resolve this safety issue. Phases 0, 1, and 2 addresses the characterization of tank 241-C-103 in the near-term, and development of adequate analytical methods for analyzing toxic vapors in the long-term. Phase 3 dealt with resolution of the toxic vapor problem in 241-C farm, tanks scheduled for rotary mode core drilling in fiscal year 1994, and historically high-hazard tanks (BY-104, BY-105, and BY-106). Phase 4 will deal with the remaining suspect tanks (all other ferrocyanide and organic Watch List tanks) and initiation of routine periodic monitoring and sampling. Single-shell tanks (SSTs) will receive priority over double-shell tanks (DSTs) because most SSTs are on passive ventilation, while DSTs are on active ventilation. Development of an exposure assessment workbook is a key goal of overall vapor exposure assessment and risk management.

Major end-item deliverables:

- M-40-03 Perform Vapor Characterization for All Ferrocyanide Watch List Tanks
- M-40-07 Commence Operation of a Vapor Treatment System in Tank 241-C-103
- M-40-08 Perform Vapor Characterization for All Organic Watch List Tanks
- SI 2n Evaluation of Engineering Alternatives for Treatment of Tank 241-C-103 Vapor Space
- SI 2o Sample and Characterize Remaining Suspect Tanks (Group A) by June 1995. Alter Personnel Exposure and Protective Equipment Requirements as necessary.
- SI 2p Provide Vapor Monitoring Equipment With Alarm Capability and/or Ventilation Upgrades to Tanks Where Warranted

Acceptance criteria:

- Complete work scope within cost, schedule, and technical baseline
- Resolution of vapor release problems in and around suspect tanks and reduction of respiratory protection requirements in the tank farms.

C. STATEMENT OF WORK

Required activities:

Activity scope to evaluate the tank vapor safety issue includes vapor sampling of underground waste storage tanks; characterization of tank vapors for chemical constituents, flammability; vapor release and occupational exposure modeling; development and application of atmospheric modeling; continuation of analytical methods validation; and Noxious Odor Advisory System (NOAS) (Tank Farm Operations and Maintenance 1.1.1.2.01) program for any future vapor exposures. In addition, tank vapor flow monitors will be installed, microclimatic weather stations will be installed, toxicology studies to define analytes of concern and levels of concern will be

performed; personal and vapor monitoring to gather data for occupational exposure model will be conducted; atmospheric pathways will be determined; gas tracer studies (plume dispersion) and FTIR spectroscopy will be conducted; and all fugitive emission points (except HEPA filtered emission) will be sealed (1.1.1.2.01). (WHC/PNL/ORNL)

Specific near-term tasks include: (1) vapor sampling (using several techniques simultaneously such as SUMMA[®] canisters, sorbent tubes, and direct gas chromatograph/mass spectrometer GC/MS) and analysis of Phase 4 waste tanks; (2) assessment of the toxicological impacts of vapor constituents found during Phase 4 characterization; (3) opportunistic vapor sampling of tanks as breaks of containment occur for organics, inorganics, and ammonia to screen these tanks for future characterization; (4) in-situ (Type 2) vapor sampling of tanks as breaks in containment occur for organics, inorganics, and ammonia to screen these tanks for future characterization; (5) continued validation of sampling and analysis techniques; (5) model development for air dispersion studies (exposure pathway workbook); (6) implementation of options identified in the Engineering Evaluation of Alternatives for treatment of potentially hazardous/toxic vapors being discharged from tank 241-C-103; (7) design, fabrication, testing, and installation of a tank vapor flow monitor for tank 241-C-103, volatile organic compounds head space analysis of liquid and core samples; and (9) studies to determine the atmospheric pathways of tank vapors in 241-C Farm. (WHC/PNL/ORNL)

Long-term tasks include in-tank source vapor sampling characterization of high-hazard (respiratory criteria or Watch List) tanks and recharacterization of some tanks to determine the stability of the vapors as a function of time. Other tasks include baselining of air dispersion plume models, installation of microclimatic characterization (weather) stations in all tank farms, establishment of tank monitoring protocol and strategy, and implementation of alternate treatment approaches ranging from do nothing to develop work practices, treat by passive ventilation, treat by active ventilation, chemically treat, and/or remove waste from tank. Pumping of the floating organic layer out of tank 241-C-103, if feasible, will be accomplished by 1.1.1.2.02.05, and Tank Farm Operations and Maintenance (1.1.1.2.01) will be responsible for obtaining tank farm readings required for the final safety basis, and the perpetual operation and maintenance of the vapor monitoring program once it is put in place. (WHC/PNL/ORNL)

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.04 Characterization	Data Quality Objectives
2	1.1.1.2.01 Operations & Maintenance	Performance (flammability, toxicity) baseline for tanks
	To This WBS From	
1	1.1.1.2.04 Characterization	Sample analysis

Technologies to be assessed: N/A

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- 29 CFR 1910
- Tri-Party Agreement M-40
- DOE Orders 5480.10, 5480.4B, and 5483.1B

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.08 Waste Tank Vapor Resolution	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.08.01/VI	5. WBS ELEMENT TITLE Evaluate and Define for Tank Vapor Safety							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AH							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	958	974	0
CENRTC	0	0	0
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	958	974	0

B. TECHNICAL BASES

Goals & objectives:

Sixteen odor exposure events occurred between July 1987 and May 1992, ten of which occurred in association with the 241-C Farm, specifically tank 241-C-103. All of the odor exposures involved first aid medical consultation and some resulted in significant lost-time incidents. Management response to these events typically included a combination of: (1) initiation of forced ventilation of the tank vapor space; (2) provisions protection for workers within the tank farm and in specified boundaries; (3) initiation of area industrial hygiene (IH) monitoring; and (4) installation of filtration devices on tank vent lines. Because of the volatility and flammability of many organic compounds, gas phase flammability issues are also a concern. Until the issues surrounding tank vapor emissions can be resolved, conservative safety precautions have been imposed upon tank farms with the highest exposure potential.

Three major issues require resolution: (1) validated vapor characterization; (2) flammability determination and success path for relaxation of supplied air restriction; and (3) IH monitoring program. In 1992, WHC hosted a tank vapor sampling conference and a phased approach was suggested to resolve this safety issue. Phases 0, 1, and 2 address the characterization of tank 241-C-103 in the near-term, and development of adequate analytical methods for analyzing toxic vapors in the long-term. Phase 3 will deal with resolution of the toxic vapor problem in 241-C farm, tanks scheduled for rotary mode core drilling in fiscal year 1994, and historically high-hazard tanks (BY-104, BY-105, and BY-106). Phase 4 will deal with the remaining suspect tanks (all other ferrocyanide and organic Watch List tanks) and initiation of routine periodic monitoring and sampling. Single-shell tanks (SSTs) will receive priority over double-shell tanks (DSTs) because most SSTs are on passive ventilation, while DSTs are on active ventilation.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

06/30/95	HQ	1N2H810A	Sample & Characterize Remaining Suspect Tanks (Group A) by June 1995. Alter Personnel Exposure and Protective Equipment Requirements as necessary (SI-2o)
09/30/95	Other	1N2H810B	Document Toxicological Impacts of Tank Vapor Constituents (PNL)
09/30/95	KEY	1N2H810A	Sample the Vapor Headspace of Remaining Suspect Tanks
09/30/95	KEY	1N2H810A	Alter Personal Protective Equipment Requirements as Necessary
09/30/95	KEY	1N2H810A	Characterize the Vapor Headspace of Remaining Suspect Tanks (ORNL)
09/30/95	KEY	1N2H810A	Characterize the Vapor Headspace of Remaining Suspect Tanks (PNL)
04/30/97	HQ	1N2H810A	Provide Vapor Monitoring Equipment with Alarm Capability and/or Ventilation Upgrades to Tanks Where Warranted (SI-2p)
09/30/96	Other	1N2H810B	Document Toxicological Impacts of Tank Vapor Constituents (PNL)
11/30/95	TPA	1N2H810A	Complete Vapor Headspace Characterization of all Ferrocyanide Tanks (M-40-03)
11/30/95	TPA	1N2H810A	Complete Vapor Headspace Characterization of all Organic Watch List Tanks (M-40-08)

C. STATEMENT OF WORK

Activity scope to evaluate the tank vapor safety issue includes vapor sampling of underground waste storage tanks; characterization of tank vapors for chemical constituents and flammability; vapor release and occupational exposure modeling; development and application of atmospheric modeling; continuation of analytical methods validation; and Noxious Odor Advisory System (NOAS) (Tank Farm Operations and Maintenance 1.1.1.2.01) program for any future vapor exposures. In addition, a tank vapor flow monitor will be installed on tank 241-C-103; a microclimatic weather station was installed in C-Farm; toxicology studies to define analytes of

concern and levels of concern will be performed; personal and vapor monitoring to gather data for occupational exposure model will be conducted; atmospheric pathways will be determined; gas tracer studies (plume dispersion) and FTIR spectroscopy will be conducted; and all fugitive emission points (except HEPA filtered emission) will be sealed (1.1.1.2.01). (WHC/PNL/ORNL)

Specific near-term tasks include: (1) vapor sampling (using several techniques simultaneously such as SUMMA[®] canisters, sorbent tubes, and direct gas chromatograph/mass spectrometer GC/MS) and analysis of Phase 4 waste tanks; (2) review of the toxicological impacts of vapor constituents found during Phase 3 and 4 characterization; (3) in-situ (Type 2) vapor sampling of tanks as breaks of containment occur for organics, inorganics, and ammonia to screen these tanks for future characterization; (4) validation of sampling and analysis techniques; (5) model development for air dispersion studies; (6) operation of and data gathering from a tank vapor flow monitor for tank 241-C-103; and (7) studies to determine the atmospheric pathways of tank vapors in 241-C Farm. (WHC/PNL/ORNL)

Long-term tasks include in-tank source vapor sampling characterization of high-hazard (respiratory criteria or Watch List) tanks and recharacterization of some tanks to determine the stability of the vapors as a function of time. Other tasks include baselining of air dispersion plume models, installation of microclimatic characterization (weather) stations in other tank farms, establishment of tank monitoring protocol and strategy, and implementation of alternate treatment approaches ranging from zero option to development of improved work practices, treatment by passive ventilation, treat by active ventilation, chemically treat, and/or remove waste from tank. Pumping of the floating organic layer out of tank 241-C-103 will be accomplished by the Organic Safety Program (1.1.1.2.05.03), and Tank Farm Operations and Maintenance (1.1.1.2.01) will be responsible for obtaining tank farm readings required for the final safety basis, and the perpetual operation and maintenance of the vapor monitoring program once it is put in place. (WHC/PNL/ORNL)

Required activities:

10/01/94-09/30/96	WHC Program Management
10/01/94-09/30/96	PNL Toxicology Consultation (PNL)
10/01/94-09/30/96	Weather Station Ops/Maint/Calibration (PNL)
10/01/94-09/30/95	Atmospheric Pathways (PNL)

Technologies to be assessed:

No technology provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	J. W. Osborne <i>J. W. Osborne</i>	9/21/94
Cost Account Manager	J. W. Osborne <i>J. W. Osborne</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	J. W. Osborne <i>J. W. Osborne</i>	9/21/94
Cost Account Manager	J. W. Osborne <i>J. W. Osborne</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

FDS Number

1N2H81

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.08 Waste Tank Vapor Resolution	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.08.02/VI	5. WBS ELEMENT TITLE Resolve Internal Tank Vapor Issues							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AH							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	536	0	0
CENRTC	603	0	0
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	1139	0	0

B. TECHNICAL BASES

Goals & objectives:

Sixteen odor exposure events occurred between July 1987 and May 1992, ten of which occurred in association with the 241-C Farm, specifically tank 241-C-103. All of the odor exposures involved first aid medical consultation and some resulted in significant lost-time incidents. Management response to these events typically included a combination of: (1) initiation of forced ventilation of the tank vapor space; (2) provisions protection for workers within the tank farm and in specified boundaries; (3) initiation of area industrial hygiene (IH) monitoring; and (4) installation of filtration devices on tank vent lines. Because of the volatility and flammability of many organic compounds, gas phase flammability issues are also a concern. Until the issues surrounding tank vapor emissions can be resolved, conservative safety precautions have been imposed upon tank farms with the highest exposure potential.

Three major issues require resolution: (1) validated vapor characterization; (2) flammability determination and success path for relaxation of supplied air restriction; and (3) IH monitoring program. In 1992, WHC hosted a tank vapor sampling conference and a phased approach was suggested to resolve this safety issue. Phases 0, 1, and 2 address the characterization of tank 241-C-103 in the near-term, and development of adequate analytical methods for analyzing toxic vapors in the long-term. Phase 3 will deal with resolution of the toxic vapor problem in 241-C farm, tanks scheduled for rotary mode core drilling in fiscal year 1994, and historically high-hazard tanks (BY-104, BY-105, and BY-106). Phase 4 will deal with the remaining suspect tanks (all other ferrocyanide and organic Watch List tanks) and initiation of routine periodic monitoring and sampling. Single-shell tanks (SSTs) will receive priority over double-shell tanks (DSTs) because most SSTs are on passive ventilation, while DSTs are on active ventilation.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

10/31/94	KEY	1N2H820C	Complete design baseline from Engineering Evaluation of Alternatives Recommendations
06/30/95	TPA	1N2H820D	Commence Operation of a Vapor Treatment System in Tank 241-C-103 (M-40-07)
06/10/95	KEY	1N2H820D	Design and Fabrication of a Vapor Treatment System in Tank 241-C-103
09/30/95	RL	1N2H820D	Complete Tank Farm Vapor Exposure Pathway Workbook and C Farm Estimate

C. STATEMENT OF WORK

Activity scope to evaluate the tank vapor safety issue includes vapor sampling of underground waste storage tanks; characterization of tank vapors for chemical constituents and flammability; vapor release and occupational exposure modeling; development and application of analytical methods validation; and Noxious Odor Advisory System (NOAS) (Tank Farm Operations and Maintenance 1.1.1.2.01) program for any future vapor exposures. In addition, a tank vapor flow monitor will be installed on tank 241-C-103; a microclimatic weather station was installed in C-farm; toxicology studies to define analytes of concern and levels of concern will be performed; personal and vapor monitoring to gather data for occupational exposure model will be conducted; atmospheric pathways will be determined; gas tracer studies (plume dispersion) and FTIR spectroscopy will be conducted; and all fugitive emission points (except HEPA filtered emission) will be sealed (1.1.1.2.01). (WHC/PNL/ORNL)

Specific near-term tasks include: (1) vapor sampling (using several techniques simultaneously such as SUMMA[®] canisters, sorbent tubes, and direct gas chromatograph/mass spectrometer GC/MS) and analysis of Phase 2 and Phase 3 waste tanks; (2) review of the toxicological impacts of vapor constituents found during Phase 2 and 3 characterization; (3) opportunistic vapor sampling of tanks as breaks of containment occur for organics,

inorganics, and ammonia to screen these tanks for future characterization; (4) validation of sampling and analysis techniques; (5) aerosol studies; (6) model development for air dispersion plume within 100 meters of the tanks; (7) completion of Engineering Evaluation of Alternatives for treatment of tank 241-C-103 to determine the need and options for the treatment of potentially hazardous/toxic vapors being discharged from tank 241-C-103; (8) design, fabrication, testing, and installation of a tank vapor flow monitor for tank 241-C-103 in conjunction with treatment system; and (9) studies to determine the atmospheric pathways of tank vapors in 241-C Farm. (WHC/PNL/ORNL)

Long-term tasks include in-tank source vapor sampling characterization of high-hazard (respiratory criteria or Watch List) tanks and recharacterization of some tanks to determine the stability of the vapors as a function of time. Other tasks include baselining of air dispersion plume models, installation of microclimatic characterization (weather) stations in all tank farms, establishment of tank monitoring protocol and strategy, and installation of a vapor treatment system (carbon absorber type). Pumping of the floating organic layer out of tank 241-C-103, if needed, will be accomplished by the Organic Safety Program (1.1.1.2.05.03), and Tank Farm Operations and Maintenance (1.1.1.2.01) will be responsible for obtaining tank farm readings required for the final safety basis, and the perpetual operation and maintenance of the vapor monitoring program once it is put in place. (WHC/PNL/SNL/ORNL)

Required activities:

10/01/94-12/31/94	Execute Recommendations from EEA (Design baseline)
10/01/94-06/30/95	Fabricate, Install Vapor Treatment System
10/01/94-09/30/95	Vapor Flow Monitoring Device (Engrg support)
10/01/94-09/30/95	Vapor Flow Monitor Characterization Analysis

Technologies to be assessed:

No technology provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M.A. Payne</i>	9/21/94
Activity Manager	J. W. Osborne <i>J.W. Osborne</i>	9/21/94
Cost Account Manager	J. W. Osborne <i>J.W. Osborne</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M.W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M.A. Payne</i>	9/21/94
Activity Manager	J. W. Osborne <i>J.W. Osborne</i>	9/21/94
Cost Account Manager	J. W. Osborne <i>J.W. Osborne</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M.W. Hall</i>	9/21/94

FDS Number

1N2H82

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor) 1.1.1.2.02.08 Waste Tank Vapor Resolution	2. DATE PREPARED September 21, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.08.03/VI	5. WBS ELEMENT TITLE Mitigate - Technology Development for Tank Vapor Safety							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AH							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV.1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	40	0	0
CENRTC	0	0	0
GPP	0	0	0
LINE ITEM	0	0	0
TOTAL	40	0	0

B. TECHNICAL BASES

Goals & objectives:

Sixteen odor exposure events occurred between July 1987 and May 1992, ten of which occurred in association with the 241-C Farm, specifically tank 241-C-103. All of the odor exposures involved first aid medical consultation and some resulted in significant lost-time incidents. Management response to these events typically included a combination of: (1) initiation of forced ventilation of the tank vapor space; (2) provisions protection for workers within the tank farm and in specified boundaries; (3) initiation of area industrial hygiene (IH) monitoring; and (4) installation of filtration devices on tank vent lines. Because of the volatility and flammability of many organic compounds, gas phase flammability issues are also a concern. Until the issues surrounding tank vapor emissions can be resolved, conservative safety precautions have been imposed upon tank farms with the highest exposure potential.

Three major issues require resolution: (1) validated vapor characterization; (2) flammability determination and success path for relaxation of supplied air restriction; and (3) IH monitoring program. In 1992, WHC hosted a tank vapor sampling conference and a phased approach was suggested to resolve this safety issue. Phases 0, 1, and 2 address the characterization of tank 241-C-103 in the near-term, and development of adequate analytical methods for analyzing toxic vapors in the long-term. Phase 3 will deal with resolution of the toxic vapor problem in 241-C farm, tanks scheduled for rotary mode core drilling in fiscal year 1994, and historically high-hazard tanks (BY-104, BY-105, and BY-106). Phase 4 will deal with the remaining suspect tanks (all other ferrocyanide and organic Watch List tanks) and initiation of routine periodic monitoring and sampling. Single-shell tanks (SSTs) will receive priority over double-shell tanks (DSTs) because most SSTs are on passive ventilation, while DSTs are on active ventilation.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS): N/A

C. STATEMENT OF WORK

Activity scope to evaluate the tank vapor safety issue includes vapor sampling of underground waste storage tanks; characterization of tank vapors for chemical constituents and installation of a vapor flow device to generate tank ventilation data. The rate of release of potentially toxic vapors from storage tanks is an important factor to overall worker exposures.

In order to provide early warning of hazardous vapors emanating from passively ventilated underground storage tanks and to minimize potential work expense, an understanding of the behavior of these tanks, which breathe with changes in atmospheric pressure, must be achieved. The principle challenge is to measure and record very small amounts of air flow both in and out of the tank. Unfortunately, the commercially available flowmeters require either a large pressure drop or use a hot wire, and furthermore cannot function at very low flow rates. The potential flammability of Hanford tanks excludes the use of any device that uses a hot wire detector. The flow rates to be measured are motivated by differential pressures of less than .025 cm (0.01 in.) of water and most of the low flow monitors in that range require a minimum differential pressure of 15.2 to 25.4 cm (6 to 10 in.) of water to operate.

To collect the necessary vapor flow data, the Vapor Program has authorized the design of unique flowmeters. Two flowmeters are being designed that operate at pressure drops of no more than 1 Pa (0.01 in.) of water and can measure flow rates as low as 1.4 L/min (0.05 ft³/min). One of the flowmeter designs is a very thin impeller rotating on very-low-friction, partial-magnetic bearings. The other design is based on an ultra sensitive differential in a length of pipe. Both of these designs are coupled to a computer that is programmed, after calibration, to display the instantaneous vapor flow. These data then will be recorded. Based on these flow

rates, alarms and samplers can be controlled.

Pumping of the floating organic layer out of tank 241-C-103 will be accomplished by the Organic Safety Program (1.1.1.2.05.03), and Tank Farm Operations and Maintenance (1.1.1.2.01) will be responsible for obtaining tank farm readings required for the final safety basis, and the perpetual operation and maintenance of the vapor monitoring program once it is put in place. (WHC/PNL/ORNL)

Required activities:

10/01/94-11/30/94 Vapor Flow Monitoring Device

Technologies to be assessed:

No technology provided in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	J. W. Osborne <i>J. W. Osborne</i>	9/21/94
Cost Account Manager	J. W. Osborne <i>J. W. Osborne</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>M. A. Payne</i>	9/21/94
Activity Manager	J. W. Osborne <i>J. W. Osborne</i>	9/21/94
Cost Account Manager	J. W. Osborne <i>J. W. Osborne</i>	9/21/94
Project Control Analyst	M. W. Hall <i>M. W. Hall</i>	9/21/94

FDS Number

1N2H83

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contactor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.09/V	5. WBS ELEMENT TITLE Waste Tank Nuclear Criticality							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AJ							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	1,186	946	720	985	985		
CENRTC	310	490	637	0	0		
GPP							
LINE ITEM							
TOTAL	1,496	1,436	1,357	985	985	0	0

B. TECHNICAL BASES

Goals and objectives:

Efforts are underway by the Waste Tank Safety Program (WTSP) to support resolution of the nuclear criticality USQ by: (1) gathering additional data that could support the SAR position that criticality is not credible; and (2) performing a risk assessment and determining controls that would be the basis of a revised SAR to include a criticality event. These efforts are expected to provide a basis for resolving the related safety issue at the same time that the USQ is resolved.

The effectiveness of administrative controls to determine the margin of safety in the tanks can be determined by comparing those controls to actual sampling. All sampling and analysis activities conducted by Characterization (1.1.1.2.04) will be designed properly with statistically significant protocols to establish the content of fissile material and distribution within the tanks, as well as provide quantified uncertainties.

Major end-item deliverables:

- M-40-12 Resolve Nuclear Criticality Safety Issue
- SI 2v Upgrade the Tank Waste Contents Database, Safety Documentation, and Risk Assessment Concerning Credibility of a Nuclear Criticality

Acceptance criteria:

- Complete work scope within cost, schedule and technical baseline

C. STATEMENT OF WORK

Required activities over lifetime:

Additional work beyond what is planned will be needed to implement two of the recommendations of the review team and to maintain the criticality safety assessment to assure continued subcriticality. Recommendation B states methods and analyses should be adopted to estimate fissile material inventories and distributions within the waste tanks. In addition to core sampling, alternative measurement techniques should also be considered, such as solid-state track recorders which would produce more data in a timely manner. Recommendation I states investigations of tank anomalies should include monitoring for short-lived isotopes to determine if a criticality occurred, and detection criteria should be developed to ensure that monitoring would detect in-tank criticality accidents. The development of detection criteria should include an evaluation of possible or expected "signatures" of postulated criticality events. Continuous air monitors capable of detecting and distinguishing short-lived fission products should be used. (WHC)

This Activity is responsible for development and testing of a prototype fissile material measurement system and a criticality monitoring system for waste tanks. The tests will take place in tanks 241-C-106 and 241-SY-101 (the first tanks to be retrieved) and tank 241-SY-102 (a receiver tank for Plutonium Finishing Plant waste with some significant plutonium content). Studies underway may show that these upgrades are not needed to store waste in a safe manner but will likely be needed during waste retrieval operations in those tanks with a relatively high inventory of fissile material. Installation of criticality upgrades in additional tanks is also included but may be transferred to Upgrades (1.1.1.2.03) at a later date. (WHC)

Maintenance of the criticality safety assessment as new analytical data are generated is essential to assure continued subcriticality and to provide a safety basis for other than normal operations. (WHC)

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.01 Operations & Maintenance	Safety documents supporting USQ closure; removal of operational restrictions
2	1.1.1.2.04 Characterization	Data Quality Objectives
	To This WBS From	
1	1.1.1.2.04 Characterization	Core sample analysis

Technologies to be assessed:

- Fissile material measurement system
- Criticality monitoring systems

Options to be considered:

- Perform risk assessment to determine revised SAR basis
- Upgrade fissile material measurement and criticality monitoring systems

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- DOE Order 5480.21 and 5480.24
- Tri-Party Agreement M-40

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.09 Waste Tank Nuclear Criticality	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930				
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.09.01/VI	5. WBS ELEMENT TITLE Store and Monitor Waste for Criticality					
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994				
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AJ					
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> </tr> </table>		Expense	Capital	EW3120072	35EW31207
Expense	Capital					
EW3120072	35EW31207					

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	1,186	946	720
CENRTC	310	490	637
GPP			
LINE ITEM			
TOTAL	1,496	1,436	1,357

B. TECHNICAL BASES

Goals & objectives:

The goal is to resolve criticality safety issues on watch list tanks to the fullest extent practicable. The objective is timely resolution of safety issues while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin.

Work scope includes the maintenance and upgrade of the criticality assessment for waste tanks. Criticality analysis of tank fissile material will be performed based on new data to assure maintenance of sub criticality in waste tanks. Work also includes the development and testing of a prototype fissile material measurement system and a criticality monitoring system for waste tanks and establishment of a surveillance data base. Scope includes capital funding for a pulse neutron system and surveillance equipment upgrades to assure safe storage and monitoring of tank wastes.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

1/16/95 Key	Issue evaluation report on criticality alternate measurement technology
9/29/95 RL	Issue revised criticality safety assessment
9/29/95 RL	Complete fissionable material measurements on 6 tanks
6/01/96 Key	Issue evaluation of experimental methods for criticality event detection
6/30/96 Key	Complete active neutron calibration experiments
9/30/96 RL	Issue revision of Safety Assessment to include new data and it's analysis
9/30/96 RL	Issue report on criticality noise analysis/pulse neutron tank survey
6/01/97 Key	Complete acquisition of sub-criticality monitoring and surveillance equipment
9/30/97 RL	Issue revision of Safety Assessment to include new data and it's analysis
9/30/97 Key	Complete final active neutron LOW installations and measurements
9/30/97 Key	Implement routine fissionable material surveillance
9/30/97 RL	Issue final report on criticality event characterization.

C. STATEMENT OF WORK

Required activities:

- Store and Monitor waste for criticality
 - Program management/Safety issue resolution
 - Maintenance of data base
 - Material/supplies/travel/computer
- Neutron detection/evaluation
 - Passive neutron detection
 - Active neutron detection
 - LOW installation and measurements
 - Surveillance/data acquisition
 - Contracts (LANL/ORNL)
- Criticality detection/evaluation
 - Noise analysis
 - Pulsed system studies
 - Criticality event characterization
 - Contract (LANL/ORNL)

Technologies to be assessed:

- (1) Fissile material measurement system
- (2) Criticality monitoring systems

Options to be considered:

- (1) Perform risk assessment to determine revised SAR basis
- (2) Upgrade fissile material measurement and criticality monitoring systems

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	G. M. Christensen <i>GMC</i>	9/21/94
Cost Account Manager	G. M. Christensen <i>GMC</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/21/94
Activity Manager	G. M. Christensen <i>GMC</i>	9/21/94
Cost Account Manager	G. M. Christensen <i>GMC</i>	9/21/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/21/94

FDS Number

1N2J91

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930			
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.10/V	5. WBS ELEMENT TITLE Other Waste Tank Safety Issues				
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994			
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AK				
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> </table>		Expense	Capital	Line Item
Expense	Capital	Line Item			

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING							
CENRTC							
GPP							
LINE ITEM							
TOTAL	0	0	0	0	0	0	0

B. TECHNICAL BASES

Goals and objectives:

This Activity will be inactive until, or unless, another high priority waste tank safety issue is discovered.

Associated Systems Engineering functions:

This item supports functions & requirements element "Store Waste" (4.2.1.1)

Major end-item deliverables: N/A

Acceptance criteria: N/A

C. STATEMENT OF WORK

Required activities over lifetime: N/A

Interfaces:

#	From This WBS To	Item Provided
	N/A	
	To This WBS From	
	N/A	

Technologies to be assessed: N/A

Options to be considered: N/A

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

N/A

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety (M&O Contractor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.11/V	5. WBS ELEMENT TITLE Waste Tank Hydroxide Control							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AL							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	1,382	1,569	1,518	625			
CENRTC	534	437					
GPP							
LINE ITEM							
TOTAL	1,916	2,006	1,518	625			

B. TECHNICAL BASES

Goals and objectives:

The waste in tank 241-AN-107 does not meet the tank farm composition operating specification for hydroxide ion (OH) concentration of 0.3 moles per liter (M). The low OH condition of tank 241-AN-107 (0.05 M) can potentially cause stress corrosion cracking. The near-term objective of this activity is to increase the OH concentration by adding concentrated (19 M) sodium hydroxide or caustic to adjust the waste composition and still conserve tank space, and mixing the waste uniformly to avoid exceeding the 10 M OH concentration specification limit anywhere in the tank. Mixing will present an engineering challenge because both the 930,000 gallon supernatant liquid layer and 134,000 gallon solids layer will have to be uniformly mixed to ensure that the steel liner is exposed to proper chemistry. The mixing is further complicated by the 21 airlift circulators installed in the tank and the availability of only one pump pit.

A two-phased approach is planned for solving the tank 241-AN-107 caustic safety deficiency. Phase 1 will add caustic to the liquid layer and mix the contents to the extent possible with readily available equipment. This will correct the waste chemistry at over 87 percent of the tank wall surface. Phase 2, if necessary, will develop, demonstrate, and implement a process that uniformly mixes the total tank contents (liquid and solid layers). This development will be integrated with Waste Retrieval (1.1.1.2.05) since the objectives of both programs could be satisfied by a single process. Tank Farm Operations and Maintenance (1.1.1.2.01) will obtain tank readings required for the final safety basis.

Major end-item deliverables:

- Complete Tank 241-AN-107 Caustic Mixing Operations and Evaluate Performance
- Complete Tank 241-AZ-102 Caustic Mixing Operations and Evaluate Performance
- Complete Tank 241-AN-102 Caustic Mixing Operations and Evaluate Performance

Acceptance criteria:

- Complete work scope within cost, schedule and technical baseline
- Increase hydroxide ion concentration to a uniform 0.5 M

C. STATEMENT OF WORK

Required activities over lifetime:

Phase 1 activities will consist of identifying methods for adding and mixing caustic; sampling and analyzing liquid and solid layers; conducting structural analysis of hydraulic loads; designing, procuring, and/or modifying equipment and process control instrumentation; preparing safety and environmental documentation; preparing procedures; completing tank farm electrical and riser upgrades; installing equipment; procuring and injecting caustic; conducting mixing operations; and evaluating the performance of the process. It is possible that Phase 1 performance will eliminate the need for Phase 2. (WHC)

Phase 2 activities, if necessary, will begin with small-scale testing to model the performance of various pump configurations, and an engineering study utilizing core sample analyses (core sampling and analysis is provided by Characterization 1.1.1.2.04) and results from Phase 1 mixing operations to evaluate the alternatives and to identify the technology that needs to be developed before a final mitigation method is selected and implemented. Currently, the preferred alternative is an in-tank mixer pump. Selection of a mitigation concept will be followed by conceptual design, definitive design, procurement, fabrication, construction, and implementation in tank 241-AN-107. (WHC)

This activity will also address the caustic requirements, if any, in other tanks; specifically, tank 241-AN-102

and tank 241-AZ-102. (WHC)

Interfaces:

#	From This WBS To	Item Provided
1	1.1.1.2.04 Characterization	Data requirements and Data Quality Objective documents; Data (on tank waste behavior); Reusable Materials for Characterization (developmental instruments for testing of tank waste properties).
2	1.1.1.2.01 Tank Farm Operations & Maintenance	Mitigation/resolution of tank safety issue to achieve compliance with tank waste composition operating specification; removal of operational restrictions; operation/maintenance of installed systems.
	To This WBS From	
1	1.1.1.2.04 Characterization	Tank Waste Analysis Plans (TWAP)/Tank Characterization Plans and Tank Characterization Reports (TCR).

Technologies to be assessed:

- Caustic injection systems
- Mixing systems
- Complexant destruction

Options to be considered:

- Transfer
- Evaporator
- In-tank air-lift circulators
- In-tank sluicer
- Recirculate

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

- WAC 173-303
- 40 CFR 265

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.02 Waste Tank Safety 1.1.1.2.02.11 Waste Tank Hydroxide Control (M&O Contractor)	2. DATE PREPARED September 22, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.02.11.01/VI	5. WBS ELEMENT TITLE Mitigate Hydroxide Consumption							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1110-0-AL							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3120072</td> <td>35EW31207</td> <td></td> </tr> </table>		Expense	Capital	Line Item	EW3120072	35EW31207	
Expense	Capital	Line Item						
EW3120072	35EW31207							

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	1,382	1,569	1,518
CENRTC	534	437	
GPP			
LINE ITEM			
TOTAL	1,916	2,006	1,518

B. TECHNICAL BASES

Goals & objectives:

The goal is to mitigate hydroxide deficiencies in certain waste tanks by adding concentrated sodium hydroxide (caustic) and mixing to the extent possible with readily available equipment to adjust the waste composition. The objective is timely resolution of deficiencies while ensuring safe storage of tank waste with minimum impact to the environment during the interim period until retrieval for treatment and/or disposal operations begin. Workscope includes laboratory process characterization studies, waste sampling and analysis, evaluating mitigation alternatives, design of injection and mixing systems, safety and environmental evaluations, design of process monitoring instrumentation, fabrication and installation of equipment, conducting mixing operations, and evaluating performance in mitigating waste tank deficiencies consistent with the overall Tank Waste Remediation System strategy.

Status of Design Documentation:

H-2 drawings have been completed for (1) Electrical - Caustic Addition Project, H-2-85259, 1/10/94 (2) Pump Stand Caustic Mixer Pump Tank 107-AN, H-2-85261, 7/12/93 (3) Nozzle Extensions Mixer Pump Caustic Addition Tank 107-AN, H-2-85263, 7/12/93 (4) Assembly Mixer Pump Caustic Addition Tank 107-AN, H-2-85264, 7/12/93 and (5) Caustic Injection Skid, H-2-85348.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

01/31/95	Key	Complete Installation of Caustic Injection and Mixing System in Tank 241-AN-107 (FY94 Carryover: TW2-94-423) (N2L110A21)
06/30/95	Other	Complete Hydroxide Addition Operations for Tank 241-AN-107 (N2L110A22)
07/14/95	Other	Obtain Grab Sample from Tank 241-AZ-102 (N2L110B21)
07/31/95	Other	Obtain Grab Sample from Tank 241-AN-102 (N2L110C21)
09/30/96	RL	Complete Tank 241-AN-107 Caustic Mixing Operations and Evaluate Performance (N2L110A41)
09/30/97	RL	Complete Tank 241-AZ-102 Caustic Mixing Operations and Evaluate Performance (N2L110B61)
12/31/98	RL	Complete Tank 241-AN-102 Caustic Mixing Operations and Evaluate Performance

C. STATEMENT OF WORK

Required activities:

Mitigate Tank 107-AN Hydroxide (N2L110A2, N2L110A4)

- Lab process/sample analysis
- Procedures/training/readiness review
- Monitoring instrumentation
- Install mixing system
- Caustic addition operations
- Conduct mixing operations/evaluate performance
- Disposal cask

Mitigate Tank 102-AZ Hydroxide (N2L110B2, N2L110B4, N2L110B6)

- Grab sampling
- Lab process/sample analysis
- Engineering evaluation of mitigation alternatives

Design caustic system
 Install caustic system
 Conduct caustic addition operations
 Conduct mixing operations/evaluate performance
 Mitigate Tank 102-AN Hydroxide (N2L110C2, N2L110C4, N2L110C6)
 Grab sampling
 Lab process/sample analysis
 Design/install corrosion probe
 Engineering evaluation of mitigation alternatives
 Procure mixer pump
 Design caustic system
~~Data quality objectives~~
 Install caustic system

Technologies to be assessed:

No technologies assessed in the Integrated Technology Plan (DOE/RL-92-61).

Options to be considered:

No options provided in the Integrated Technology Plan (DOE/RL-92-61).

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/22/94
Activity Manager	D. A. Turner <i>DA Turner</i>	9-22-94
Cost Account Manager	K. G. Carothers <i>KG Carothers</i>	9/22/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	M. A. Payne <i>MA Payne</i>	9/22/94
Activity Manager	D. A. Turner <i>DA Turner</i>	9-22-94
Cost Account Manager	K. G. Carothers <i>KG Carothers</i>	9/22/94
Project Control Analyst	M. C. Jacobsen <i>MC Jacobsen</i>	9/20/94

FDS Number
1N2L11

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste (M&O Contractor)	2. DATE PREPARED August 24, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03/IV	5. WBS ELEMENT TITLE Tank Farm Upgrades	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120, 1120-2, 1120-4, 1120-6, 1120-7, 1280-0-AA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOED/RL-92-60 REV.1) 4.2.1.1 Store Waste 4.2.1.2 Characterize Waste 4.2.1.3 Retrieve Waste 4.2.1.4 Transfer Waste 4.2.1.5 Concentrate Waste 4.2.2.1 Pretreat Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW30130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT

Total cost of Tank Farm Upgrades is 1,891,878,000.

B. TECHNICAL BASES

Goals and objectives:

- Manage and control expense and capital funded upgrade activities to Tank Farms Facilities, Electrical, Instrumentation, and Mechanical Systems, and Tank Farm Configuration Management.
- Complement the Tank Farm Operations and Maintenance program element so that major policy, work philosophy and changes to training, conduct of operations, facility support activities, and capital projects are coordinated with the Tank Farm Plant Management.

WHC-SP-1101

- Enhance the safety of facility operations and prepare the tank farm facilities for future mission objectives such as waste retrieval.

Major end-item deliverables:

- Completion of upgrade projects for ventilation, transfer systems, electrical, instrument, and equipment
- Turnover of facilities and systems for operational use
- TPA M-42-00, Provide Additional Double Shell Tank Capacity
- Final Activity: TPA M-43-00, Tank Farm upgrades are to be completed and turned over to Operations in the year 2005

NOTE: All interim Tri-Party Agreement milestones are addressed in the Level V WBS Dictionary Sheets.

Acceptance criteria:

- Successful completion of technical, cost, and schedule baseline
- Completion of Acceptance Test Procedure (ATP), Operational Test Procedure (OTP), and Acceptance for Beneficial Use (ABU).

C. STATEMENT OF WORK

Required activities over lifetime:

1.1.1.2.03.01, Technical Integration and Planning (ADS 1120-0)

- Program element and baseline management
- System engineering, trade studies, and analysis

1.1.1.2.03.02, Configuration Management (ADS 1120-0)

- Upgrade of operating, alarm response, administrative, and operator round sheets
- Design Basis Reconstitution
- Component labeling
- Field verify essential drawings, piping and instrumentation drawing updates, as-built drawing update
- Development of master equipment list and safety equipment list

1.1.1.2.03.03, Life Management (ADS 1120-0)

Conduct analyses, testing and surveillances to effectively manage aging mechanisms. This will include identification of applicable codes and standards; identification of degradation mechanisms and quantification of degradation rates; interface activities with site safety analysis and configuration management programs; acceptance criteria development and component service life calculation; development and implementation of confirmatory testing, inservice inspection and surveillance program requirements; component relative risk assessment; and development of mitigation, upgrades and retirement strategies. Integration with integrity assessment activities to demonstrate structural integrity and establish a technical basis to assure safe storage operations of the Double Shell.

1.1.1.2.03.04, Multi-Function Waste Tank Facility, W-234A (ADS 1280-0-AA)

Evaluation, design and construction of high-level waste interim storage for continued retrieval and operations activities.

1.1.1.2.03.05, Inactive WBS number

1.1.1.2.03.06, Instrument and Control/Electrical Upgrades (ADS 1120-0)

- Upgrade/replace alarm panels, control room equipment, generators
- Site Electrical Assessments
- In tank monitoring and control systems (TMACS)
- Portable terminal entry of tank farms operator rounds information (HDAT)
- Installation of liquid level gauges
- Miscellaneous small projects as identified to increase productivity and support safe conduct of operations

1.1.1.2.03.07, Tank Farm Restoration and Safe Operations MSA, Project W-314 (ADS 1120-6)

- Re-instrumentation of the 200 Area Tank Farm SSTs and DSTs
- Replace Computer Automated Surveillance System (CASS) and augment the Surveillance Analysis Computer System (SACS) with Tank Monitoring and Control System (TMACS)
- Double shell tank ventilation upgrades evaluation for all existing DSTs primary and annulus ventilation systems and evaluation of the A-105, SX farm and DCRTs.
- Electrical upgrades to modify voltage lines and/or equipment, replacement of substation equipment, motor control centers, backup generators and low voltage AC/DC distribution systems and provide structures to house the electrical equipment.
- Evaluate and replace selected waste transfer systems to ensure compliance with RCRA containment and leak detection requirements and to extend the transfer system's life

1.1.1.2.03.08 Inactive WBS number

1.1.1.2.03.09 Mechanical Upgrades (ADS 1120-0)

- Restoration/remediation of equipment and facilities including: compressors, compressed air systems, design and construction of long-length equipment transfer port, design and construction of a long-length equipment storage facility, modification of a cold test facility for development testing and operator training, design and construction of a controlled storage yard for long-length equipment, modification of facilities to minimize effluent waste water generation, HVAC engineering design and replacement of tank farm passive vent systems, develop protocol and hardware for cradle-to-grave approach to the disposal of long-length contaminated equipment, develop engineering for transfer pumps, development of design guide for the equipment to be installed in tanks and development of generic engineered equipment to be used for tank farm transfer of liquid radioactive waste.
- Miscellaneous small projects as identified to increase productivity and support safe conduct of operations.

1.1.1.2.03.10, Ventilation Upgrades, Project W-030 (ADS 1120-2)

Ventilation upgrades to provide essential safety class systems for the AY and AZ Tank Farms. Upgrades and improvements will be made to the ventilation cooling, electrical standby power, and instrumentation/control systems.

WHC-SP-1101

1.1.1.2.03.11, Replacement of the Cross-Site Transfer System, W-058 (ADS 1120-4)

Connect the 200 West Area DSTs with the 200 East Area DSTs with transfer lines which meet operations needs and regulator requirements. Connect the 241-SY-A and 241-SY-B valve boxes in the 200 West Area with the 244-A DCRT in the 200 East Area with new, compliance transfer lines.

1.1.1.2.03.12, Aging Waste Transfer Line, W-028 (ADS 1120-7)

Provide waste transfer system from the aging waste facility (241-AY and 241-AZ) to the Multifunction Waste Tank Facility (MWTF) and RCRA compliance waste lines for B Plant.

1.1.1.2.03.13, Inactive WBS number

1.1.1.2.03.14, Inactive WBS number

1.1.1.2.03.15, Inactive WBS number

1.1.1.2.03.16, Facility Upgrades (ADS 1120-0)

- Installation of 209E septic upgrades (General Plant Project W-364)
- SY farm and C farm lighting and lightning system (W-280)
- Centralized Maintenance Facility (W-226) for the packing of solid waste, where tools and equipment can be maintained/repaired and stored and contaminated tools and equipment can be decontaminated.
- Miscellaneous small projects as identified to increase productivity and support safe conduct of operations

1.1.1.2.03.17 Radiological Support Facility W-188 (ADS 1120-1)

Provide 10 radiologic support facilities at the major tank farm operations areas in the 200 Areas to support the continued operations requirements and future retrieval/decommissioning effort.

Interfaces:

#	From This WBS To	Item Provided
1	Tank Farm Maintenance & Operations 1.1.1.2.01	Upgrade facilities and systems to achieve compliance with operations and technical safety requirement parameters.
2	All other TWRS program elements	This activity directly or indirectly supports all other TWRS program elements through the upgrade of facilities and systems necessary for the safe storage, treatment, and transfer of waste in the tank farms.
	To This WBS From	
1	Tank Farm Maintenance & Operations 1.1.1.2.01	Maintenance and operation of tank farm facilities to maintain compliance with operational and safety requirement parameters
2	Waste Tank Safety 1.1.1.2.02	Mitigating and resolving tank safety issues to achieve a final safe operation condition envelope.
3	Characterization 1.1.1.2.04	Characterization of all double and single-shell tanks to ensure safe operations.

Technologies to be assessed:

- New technology for equipment (e.g., pumps, generators, compressors, in-tank instrumentation, electrical requirements, etc.)
- ALARA practices
- Double-Shell Tank qualification life extension
- Waste transfer line configuration (size, number, location, materials)

Options to be considered: N/A

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);

Table F4.2.1.1 (Store Waste), item V, paragraph B (Constraints)

Table F4.2.1.2 (Characterize Waste), item V, paragraph B (Constraints)

Table F4.2.1.3 (Retrieve Waste), item V, paragraph B (Constraints)

Table F4.2.1.4 (Transfer Waste), item V, paragraph B (Constraints)

Table F4.2.1.5 (Concentrate Waste), item V, paragraph B (Constraints)

Table F4.2.2.1 (Pretreat Waste), item V, paragraph B (Constraints)

WHC-SP-1101

- Section 3 (Tank Waste Remediation System Architecture)

Table A4.2.1.1 (Waste Storage System), item VIII, paragraph C (Constraints)

Table A4.2.1.2 (Waste Characterization System), item VIII, paragraph C (Constraints)

Table A4.2.1.3 (Waste Retrieval System), item VIII, paragraph C (Constraints)

Table A4.2.1.4 (Waste Transfer System), item VIII, paragraph C (Constraints)

Table A4.2.1.5 (Waste Concentration System), item VIII, paragraph C (Constraints)

Table A4.2.2.1 (Pretreatment System), item VIII, paragraph C (Constraints)

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.01/V	5. WBS ELEMENT TITLE Technical Integration and Planning							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60-REV.1) N/A	12. BUDGET AND REPORTING NUMBER <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$2,244	\$1,711	\$3,094	N/A	N/A	N/A	N/A
CENRTC							
GPP							
LINE ITEM							
TOTAL	\$2,244	\$1,711	\$3,094	N/A	N/A	N/A	N/A

A4-7

B. TECHNICAL BASES

Goals and objectives:

- Provide the technical integration and planning required to manage the upgrades to TWRS facilities, systems, and projects
- Provide System Engineering support and trade studies and required analysis as required to support the Tank Farm Upgrades Program.

Major end-item deliverables:

- Multi-year baseline plan
- Fiscal year work plan

Acceptance criteria: N/A

C. STATEMENT OF WORK

Required activities over lifetime:

- System engineering support
- Multi-Year and Fiscal Year planning and guidance
- Support to monthly reports (Monthly Performance Report, Site Management System, etc.)

Interfaces:

#	From This WBS To	Item Provided
1	Business management	Monthly report input
	To This WBS From	
	N/A	

Technologies to be assessed: N/AOptions to be considered: N/A

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

N/A

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.01 Technical Planning and Integration (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.01.01/VI	5. WBS ELEMENT TITLE Technical Planning and Integration	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) N/A	12. BUDGET AND REPORTING NUMBER(S) Expense EW3130010	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$2,244	\$1,711	\$3,094
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$2,244	\$1,711	\$3,094

B. TECHNICAL BASES

Goals & objectives:

This cost account is comprised of three segments of work which are 1) program management, 2) baseline management, and 3) systems engineering.

The program management work is done to support the Upgrades Program Office and is required for the overall management of this TWRS program.

The baseline management effort is done to support the Upgrades Program Office and is responsible to manage the program baselines (cost, schedule, technical) including cost analysis and reporting, schedule and milestone development and reporting, reporting of technical progress and status in support of the program element mission and the overall TWRS Mission. Also, this activity ensures that the program baseline workscope will be done within the budget as authorized by the Department of Energy.

The systems engineering effort is responsible to guide the programmatic efforts in the implementation of systems engineering within the Upgrades Program and Projects and in the overall support of the TWRS Mission.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- * Annual update of the Multi-Year Work Plan (MYWP)
- * Annual update of the Activity Data Sheets (ADS's) 1120
- * Annual update of the Program Validation for Upgrades Program
- * Prepare a Technical Strategy for Instrumentation Upgrades
- * Prepare a Technical Strategy for Ventilation Upgrades
- * Prepare a Technical Strategy for Electrical Upgrades
- * Prepare a Technical Strategy for Transfer Lines
- * Prepare a Technical Strategy for Life Extension
- * Prepare a Technical Strategy for Configuration Management

C. STATEMENT OF WORK

Required activities:

Program Management
Baseline Management
System engineering support
Multi-Year and Fiscal Year planning and guidance
Support to monthly reports (Monthly Performance Report, Site Management System, etc.)

Technologies to be assessed:

System engineering in support of the TWRS missions and program deliverables.

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	E. C. Ladd	
Program Element Manager	J. D. Thomson	
Activity Manager	J. D. Thomson	
Program Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J. D. Thomson</i>	9/22/94
Activity Manager	J. D. Thomson	
Cost Account Manager	E. C. Ladd <i>E. C. Ladd</i>	9/21/94
Program Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9/22/94

FDS Number

1N3D41

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.02/V	5. WBS ELEMENT TITLE Configuration Management	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60-REV.1) 4.2.1 Manage Tank Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$3,364	\$3,213	\$8,237	N/A	N/A	N/A	N/A
CENRTC							
GPP							
LINE ITEM							
TOTAL	\$3,364	\$3,213	\$8,237	N/A	N/A	N/A	N/A

B. TECHNICAL BASES

Goals and objectives:

- Provide technical support for Tank Farms configuration management
 - procedure upgrades
 - conduct of engineering
 - design basis reconstitution
 - material procurement engineering.

Major end-item deliverables:

- Complete accelerated walkdowns and field verify essential drawings (Safety Initiative 4c42)
- System P&ID's for all DSTs and SSTs
- Upgrade of operating, alarm response, and operator round sheet procedures
- Master data model of Tank Farms

Acceptance criteria:

- Field verification of drawings
- Verification by ATPs and OTPs

C. STATEMENT OF WORK

Required activities over lifetime:

- Identify and complete upgrades required to fully implement DOE Order 5480.14, and DOE Order 4200.1, develop programs necessary to implement these upgrades and ensure these upgrades are reflected in operating procedures and practices.
- Tank Farm drawings will be field verified, consolidated, and converted to the CADD and component labeling of electrical distribution and instrumentation systems.
- Upgrade operating procedures, operator round sheets, and administrative procedures required for safe operations and maintenance activities.
- Conduct of Operations provides for establishment of work plans, desk instructions, and training plans to enhance the performance of Tank Farm activities in a safe and environmental compliant manner.
- Design Basis Reconstitution provides for the development and implementation of a program plan to identify tasks for the reconstitution of waste tank design.

Interfaces:

#	From This WBS To	Item Provided
1	Operations and Maintenance 1.1.1.2.01	Upgrade to procedures, work plans, P&IDs, as built drawings to achieve compliance with operations and technical safety requirements
	To This WBS From	
	N/A	

Technologies to be assessed:

- Design basis criteria
- Assess quality, applicability of current procedures (plant operating, alarm response, and operator round sheets).

Options to be considered: N/A

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.1 (Store Waste), item V, paragraph B (Constraints)
- Section 3 (Tank Waste Remediation System Architecture)
Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.1 (Waste Storage System), item VIII, Paragraph C (Constraints)

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.02 Configuration Management (M&O Contractor)	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.02.01/VI	5. WBS ELEMENT TITLE Configuration Management	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OC	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2 Remediate Waste 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$2,325	\$3,002	\$8,058
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$2,325	\$3,002	\$8,058

B. TECHNICAL BASES

Goals & objectives:

Provide Technical Support For Tank Farms & 242-A Evaporator Configuration Management

- Implement Selected Portions of WHC-SD-WM-CM-008, "Configuration Management Plan for Waste Tank Farms and the 242-A Evaporator of Tank Waste Remediation System."
- Assess the FY-1994 Component labeling, Master Equipment List (MEL) Data Entries, and development of H-14 System Drawings under Maintenance Procedure 6-TF-100, "Waste Tank Labeling Procedure" for Double-Shell Tanks (DST), Single-Shell Tanks (SST), and Supporting Facilities.
- Continue the H-2 Essential & Support Drawing Field Verification Program as initialized under WHC-SD-WM-ETP-002, "FY-94 Engineering Task Plan Engineering Drawing Verification."
- Implement Selected Portions of WHC-SD-WM-CM-009, "Design Reconstitution Program Plan for Waste Tank Farms and the 242-A evaporator of Tank Waste Remediation Systems."

Status of Design Documentation:

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

DELIVERABLES FOR FY-1995

1. Field Verification

- Continue FY 94 Field Verification effort into FY 95:
 - Field verify, CADD convert, and issue a minimum total of 150 Essential/Support drawings.

2. Component Labeling

- Perform study describing (1) the FY 1994 Labeling Program, (2) the Self Assessment results, and (3) provide recommendations for improving the Labeling Effort.

3. Configuration Management (CM) Data Base Requirements

- Conduct Facilitated Meeting to:
 - Define User Needs and Data Sets To Establish CM Data Base.
 - Define Data Set and CM Data Base Requirements.
- Evaluate, Recommend, and Issue Supporting Document.

4. Configuration Management (CM) Implementation

- Develop CM Implementation Action Plan.
- Develop "Systems List" with Identified "System Boundaries."

5. Design Reconstitution (DR) Implementation

- Develop Design Reconstitution Action Plan.
- Conduct Facilitated Meeting to:
 - Develop integrated "Grading Criteria" for CM and Restoration activities and processes.

DELIVERABLES FOR FY-1996

1. Field Verification

- Continue FY-95 Field Verification Program Into FY-96:
 - Field verify, CADD convert, and issue minimum of 175 Essential/Support Drawings.
- Issue Statement of Completion For DOE-HQ Milestone Safety Initiative.

2. Component labeling

- Develop an Engineering Task Plan Which Considers:
 - Roles & Responsibilities For Labeling, System Drawings, and MEL
 - Possible Privatization
 - Privatization WBS Specification (If Required)

3. Configuration Management (CM) Data Base Requirements

- Issue Action Plan To Implement SD For CM Data Base Resulting from Facilitated Meeting(s).

4. Configuration Management (CM) Implementation

- Issue SD That Identifies Tank Farm & Evaporator SSCs and Applies Grading Criteria.

5. Design Reconstitution (DR) Implementation

- Issue Revisions To The SD Action Plans For CM & DR Programs.

DELIVERABLES FOR FY-1997

1. Field Verification

- Perform Assessment to Determine Program Effectiveness and Issue Assessment Results White Paper With Recommendations, if Any.

2. Component Labeling

- Continue Labeling Program In an Effort To Complete:
 - Labeling of Components
 - Development of an Master Equipment List (MEL)
 - Development of H-14 Drawings

3. Establish Configuration Management (CM) Data Base

- Produce an Operational CM Database.
- 4. Configuration Management (CM) Implementation
 - Start Working to CM Implementation Action Plan - Issue Status Report.
- 5. Design Reconstitution (DR) Implementation
 - Start Working to DR Implementation Action Plan - Issue Status Report.

C. STATEMENT OF WORK FOR FY-1995

Required activities:

FIELD VERIFICATION PROGRAM FY 95

WORK TO BE PERFORMED

The work to be performed is to resolve TWRS Safety Initiative 4c. The description and completion of this commitment is to field verify, CADD convert, and issue a minimum of 150 Essential and/or Support drawings into the WHC drawing archive system. The drawings on which "Field Verification" is to be performed are listed in the Tank Farm Essential Drawing Plan, WHC-SD-WM-PC-002. The 150 drawing minimum may include H-14 system drawings to support tank farm component labeling.

Note:

Essential/Support dwgs. issued in FY 91 = 358
Essential/Support dwgs. issued in FY 92 = 170
Essential/Support dwgs. issued in FY 93 = 100
Essential/Support dwgs. issued in FY 94 = 150
Essential/Support dwgs. issued in FY 95 ≥ 150
Total dwgs issued from FY 91 thru FY 95 ≥ 928

HOW WORK IS TO BE PERFORMED

The productivity challenge in this task will entail drawings being scanned and converted to AutoCAD off-site. Drawings can be converted to CADD off-site faster and more cost efficiently than on-site. A pilot program of 10 drawings was sent off-site in FY 94 to a minority owned small business.

WHY WORK IS TO BE PERFORMED

This task is a TWRS Safety Initiative, #4C42, and was implemented by a Tiger Team Assessment, TTA-90-0000-OA.7-3 subset 5, in 1990 to "implement planned engineering as-built drawing upgrade program for the waste tank safety, operations and remediation facilities". The schedule has been accelerated by 24 months and is now scheduled to be complete September 1996.

In addition, the Field Verification Program is included in Configuration management with its five program elements and two adjunct programs provides a vital function to improve conduct of operations and excellence in facility condition. This is accomplished by providing programmatic assurance that the Tank Farms facility physical configuration is consistent with facility design requirements and documentation, and that this consistency is maintained throughout the life cycle of the various Tank Farm facilities. Configuration management, therefore, meets the intent of the following WHC/DOE documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals -- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal of the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT
 - 3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. NOTE: Configuration management performs a vital role in the Systems Engineering process.

LIST OF ALL DELIVERABLES

At least 150 Essential and Support drawings that are listed on the Tank Farm Essential drawing plan will be field verified and released in FY 95.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF WORK

This task is a TWRS Safety Initiative and was implemented by a Tiger Team Assessment, TTA-90-0000-OA.7-3 subset 5, in 1990. The schedule has been accelerated by 24 months and is now scheduled to be complete September 1996.

MANDATORY SCHEDULE CONSTRAINTS

The TWRS Safety Initiative is scheduled to be complete September 1996 at which time approximately 1100 Essential/Support drawings will be complete. The actual field verification and drafting work is performed by ICF KH. Access to the tank farms or required facilities depend upon available resources. At this time there are no resource constraints. The minimum number of drawings to be field verified in FY 95 will be 150. The drawings will be selected from the Tank Farm Essential Drawing Plan, WHC-SD-WM-WP-072, and will have not been previously field verified.

BUDGET FORECAST

The budget for the Field Verification Program for FY 95 is 1730K.

MAXIMUM COST OF EACH DELIVERABLE

The maximum cost for all deliverables is 1730K.

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work cost or schedules in this cost account that occur as the fiscal progresses.

Support from the RL TWRS office will be required in the form signature approval for contract employee extensions.

COMPONENT LABELING PROGRAM FY 95

WORK TO BE PERFORMED

Component labeling, master equipment list (MEL), and system drawing work began in 1994. A self-assessment was performed at the end of FY 94. Documentation of the self-assessment and recommendations for further improvement of the labeling program will be issued.

HOW WORK IS TO BE PERFORMED

Recommendations on the Component Labeling Program will be based on the self-assessment performed in FY 94.

WHY WORK IS TO BE PERFORMED

The Labeling Program is included in Configuration management with its five program elements and two adjunct programs provides a vital function to improve conduct of operations and excellence in facility condition. This is accomplished by providing programmatic assurance that the Tank Farms facility physical configuration is consistent with facility design requirements and documentation, and that this consistency is maintained throughout the life cycle of the various Tank Farm facilities. Configuration management, therefore, meets the intent of the following WHC/DOE documents.

- A. WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- B. Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals — and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).

C. Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.

D. DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT

3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. NOTE: Configuration management performs a vital role in the Systems Engineering process.

LIST OF ALL DELIVERABLES

Recommendations on the Component Labeling Program based on the self-assessment performed in FY 94.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF WORK

DOE-STD-1073-93 in Section 2.2.2.3, "Component-Level Grading", requires that a validated MEL should be combined with CM Equipment Data to form a single complete equipment list for the facility.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Budget provided for this activity is \$80K.

MAXIMUM COST OF EACH DELIVERABLE

The maximum cost for this activity is \$80K.

- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT

3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. Configuration management is a vital element in the Systems Engineering process.

Furthermore, this work is required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."

LIST OF ALL DELIVERABLES

Issue a status report identifying the tasks that have been completed to establish the DR program per the scope of work developed to implement WHC-SD-CM-009.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

As identified by DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Budget provided for this activity is \$900K.

MAXIMUM COST OF EACH DELIVERABLE

The Maximum Cost Goal for this activity is \$900K.

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL.

No specific support required.

Significant Interfaces.

None.

CM DATA BASE FY 95

WORK TO BE PERFORMED

The work to be performed is to initiate a "Facilitated" meeting(s) with representatives from Configuration Management, Engineering, Maintenance, and others to determine user needs and which data sets are required to establish a CM Data Base and the requirements for the CM Data Base and data sets. The CM Data Base will link component numbers with ECN's, MELs, SARs, OSRs, ISELs, Sis, design basis, vendor files, procedures, spare parts, etc.

HOW WORK IS TO BE PERFORMED

An initial study will be conducted to identify existing equipment and document data bases, their contents and uses, responsible organizations, and locations. After the initial study a plan will be developed to consolidate or eliminate as many data base as possible and establish criteria for a CM Data Base.

WHY IS WORK TO BE PERFORMED

The CM Data Base Program is included in Configuration management with its five program elements and two adjunct programs provides a vital function to improve conduct of operations and excellence in facility condition. This is accomplished by providing programmatic assurance that the Tank Farms facility physical configuration is consistent with facility design requirements and documentation, and that this consistency is maintained

WHC-SP-1101

throughout the life cycle of the various Tank Farm facilities. Configuration management, therefore, meets the intent of the following WHC/DOE documents:

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT

3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. NOTE: Configuration management performs a vital role in the Systems Engineering process.

The CM Data Base will cross reference the CM SSC's with their design requirements, design basis, and data sets. The CM Data Base provides a cost effective and efficient means to monitor specific parts of the DOE-STD-1073-93 program elements of "Design Requirements", "Document Control", and "Change Control"

LIST OF ALL DELIVERABLES

A supporting document will be issued with the results and recommendations from the WestTIP session.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF WORK

The establishment of a CM Data Base in the "Guide for Operational Configuration Management Program" in conformance to DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS

None

BUDGET FORECAST

Funding for this task for FY 95 is 150K.

MAXIMUM COST FOR EACH DELIVERABLE

The maximum cost for total deliverable is 150K.

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work cost or schedules in this cost account that occur as the fiscal progresses.

No significant interfaces are required.

CONFIGURATION MANAGEMENT IMPLEMENTATION FY-1995

A. DEVELOP CONFIGURATION MANAGEMENT (CM) IMPLEMENTATION ACTION PLAN

WORK TO BE PERFORMED

The work to be performed is to issue a Implementation Action Plan that:

- Follows the general format of the Tank Waste Remediation System Restoration and Upgrades, Desk Instruction #1, " Engineering Task Plan."
- Will implement the intent of the WHC-SD-WM-CM-008, "Configuration Management Plan for Waste Tank Farms and the 242-A Evaporator of Tank Waste Remediation System."

HOW WORK IS TO BE PERFORMED

The Action Plan is to define the following:

- Work scope
- Expected deliverables
- Cost estimates
- Resource loaded schedules
- Additional information as required

This information is necessary to ensure (and document) agreement(s) between the Configuration Management Group of Waste Tanks Upgrades Support, the customers, and other support organizations.

The agreement(s) are needed to establish and implement the CM program elements needed to meet the intent of WHC-SD-WM-CM-008.

WHY WORK IS TO BE PERFORMED

Configuration management, with its five program elements and two adjunct programs, provides a vital function to improve conduct of operations and excellence in facility conditions. This is accomplished by providing programmatic assurance that the Tank Farms physical configuration is consistent with its design requirements and documentation. Also, that this consistency is maintained throughout the life cycle of the farm.

Configuration management meets the intent of the following Westinghouse Hanford Company and Department of Energy documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT
 - 3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. Configuration management is a vital element in the Systems Engineering process.

Furthermore, the work is required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."

LIST OF ALL DELIVERABLES

Issue an Action Plan that will implement the intent of the WHC-SD-WM-CM-008, "Configuration Management Plan for Waste Tank Farms and the 242-A Evaporator of Tank Waste Remediation System."

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK.

As identified by DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS.

None.

BUDGET FORECAST.

Budget provided for this activity is \$86K.

MAXIMUM COST OF EACH DELIVERABLE.

The Maximum Cost Goal for this activity is \$86K.

ROLES AND RESPONSIBILITIES.

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL.

No specific support required.

Significant Interfaces.

None.

B. DEVELOP "SYSTEMS LIST" WITH IDENTIFIED "SYSTEMS BOUNDARIES"

WORK TO BE PERFORMED

The work to be performed is to issue a Supporting Document (SD) that lists identified systems (process, transfer, water, air, etc) with their boundaries (end points) for Tank Farms and the 242-A Evaporator.

HOW WORK IS TO BE PERFORMED.

WHC-SP-1101

The following documents, as a minimum, will be reviewed in the development of the systems list with boundaries. After review and evaluation, a SD will be issued for review, comment and approval.

- WHC-SD-WM-CM-005, Rev. 0, "List of Structures and Systems for Tank Farm & Evaporator Configuration Management Program. "
 - This document provides a list of structures and systems (no boundaries), and is the beginning of a Structures, Systems, and Components (SSC) list as required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."
- WHC-SD-WM-RPT-058, "Tank Farm Facility Boundary Evaluation Report."
 - This document depicts the interface and boundaries between the waste generating facilities, Tank Farms and auxiliary structures and systems.
- The 242-A Evaporator system boundaries as identified in a "White Paper" document entitled, "242-A System Boundary Identification," dated April 15, 1994.
 - This document defines the various 242-A evaporator systems.
- WHC-SD-WM-SEL-020, "Aging Waste Facility Interim Safety Classification."
 - This document identifies the safety classification of the systems and selected equipment, components, parts, and structures of the Aging Waste Facility (AY and AZ Tank Farms).
- WHC-SD-WM-ISEL-026, "Double-Shell Tanks Interim Safety Equipment List."
 - This document identifies the safety classification of the systems and selected equipment, components, parts and structures of the Double-Shell Tank Farm Facility (AN, AP, AW, and SY Tank Farms).
- WHC-SD-WM-ISEL-027, "Single-Shell Waste Tanks Interim Safety Equipment List."
 - This document identifies the safety classification of the systems and selected equipment, components, parts, and structures of the Single-Shell Tank Farm Facility (SST Tank Farms).
- WHC-SD-WM-SEL-028, "Safety Equipment List 242-A Evaporator."
 - This document identifies the safety class 2 components of each safety class 2 system designated in the revised 242-A SAR (WHC, 1992A). This safety class 2 component list is designated the Safety Equipment List for 242-A Evaporator.
- Controlled Manual Waiver, "H-14 Significant Drawing Number Assignment Procedure and Implementation Plan."
 - This document, issued May 1994, against WHC-CM-6-3, Drafting Standards Manual, gives a system numbers table, identified as Attachment 2, System Numbers.

WHY WORK IS TO BE PERFORMED

Configuration management, with its five program elements and two adjunct programs, provides a vital function to improve conduct of operations and excellence in facility conditions. This is accomplished by providing programmatic assurance that the Tank Farms physical configuration is consistent with its design requirements and documentation. Also, that this consistency is maintained throughout the life cycle of the farm.

Configuration management meets the intent of the following Westinghouse Hanford Company and Department of Energy documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals — and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT
- 3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. Configuration management is a vital element in the Systems Engineering process.

Furthermore, The "Systems List With Boundaries" is the bases for the Structures, Systems, and Components (SSC) list as required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."

This activity is also in response, in part, to the Configuration Management Standards/Requirements Technical Assessments Document program (S/RID) assessment, section 3.0 and section 3.B.2, Technical Baseline. The S/RID program is in response to the Defense Nuclear Safety Board (DNFSB) Recommendation 90-2.

LIST OF ALL DELIVERABLES

Issue a Supporting Document (SD) that lists identified systems (process, transfer, water, air, etc) with their boundaries (end points) for Tank Farms and the 242-A Evaporator.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

As identified by DOE-STD-1073-93.

The boundaries for each system or process should be established in such a manner as to contain the components necessary to satisfy the operational requirements for that system or process.

MANDATORY SCHEDULE CONSTRAINTS.

None.

BUDGET FORECAST

Budget provided for this activity is \$86K.

MAXIMUM COST OF EACH DELIVERABLE

The Maximum Cost Goal for this activity is \$86K.

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL

No specific support required.

Significant Interfaces.

None.

DESIGN RECONSTITUTION IMPLEMENTATION FY-1995

A. DEVELOP DESIGN RECONSTITUTION (DR) ACTION PLAN

WORK TO BE PERFORMED

The work to be performed is to issue a Design Base Reconstitution (DR) Implementation Action Plan (ETP) that:

- Follows the general format of the Tank Waste Remediation System Restoration and Upgrades, Desk Instruction #1, " Engineering Task Plan."
- Implements the intent of WHC-SD-WM-CM-009, "Design Reconstitution Program Plan Waste Tank Farms and the 242-A Evaporator of Tank Waste Remediation System."

HOW WORK IS TO BE PERFORMED

The Action Plan is to define the following:

- Work scope
- Expected deliverables
- Cost estimates
- Resource loaded schedules
- Additional information as required

This information is necessary to ensure (and document) agreement(s) between the Configuration Management Group of Waste Tanks Upgrades Support, the customers, and other support organizations.

The agreement(s) are needed to establish and implement the DR program elements needed to meet the intent of WHC-SD-WM-CM-009.

WHY WORK IS TO BE PERFORMED

Configuration management, with its five program elements and two adjunct programs, provides a vital function to improve conduct of operations and excellence in facility conditions. This is accomplished by providing programmatic assurance that the Tank Farms physical configuration is consistent with its design requirements and documentation. Also, that this consistency is maintained throughout the life cycle of the farm.

Configuration management meets the intent of the following Westinghouse Hanford Company and Department of Energy documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.

■ DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance." DRAFT

3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. Configuration management is a vital element in the Systems Engineering process.

Furthermore, the work is required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."

LIST OF ALL DELIVERABLES

Issue an ETP that documents the actions required to implement the DR program for Tank Farm facilities and meets the intent of WHC-SD-CM-009.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

As identified by DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Budget provided for this activity is \$86K.

MAXIMUM COST OF EACH DELIVERABLE

The Maximum Cost Goal for this activity is \$86K.

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL.

No specific support required.

Significant Interfaces.

None.

B. DEVELOP INTEGRATED "GRADING CRITERIA" FOR CM & DR ACTIVITIES AND PROCESSES

WORK TO BE PERFORMED

The work to be performed is to issue a Supporting Document (SD) that provides an integrated "Grading Criteria" for the Configuration Management (CM) Program and the Design Base Reconstitution (DR) Program activities and processes.

HOW WORK IS TO BE PERFORMED

The "Grading Criteria" is a graded approach methodology to determine how much Configuration Management and/or Design Reconstitution is to be applied to facilities and Systems, Structures and Components (SSC). The "Grading Criteria" will take into account the following requirements:

- Design requirements (nuclear safety, mission, environmental, fire protection, and security).
- Operational requirements (OSR/TSR).
- Mission requirements (active, static, and inactive).

It is our intent that the "Grading Criteria" be determined through a WesTip which would involve all pertinent parties.

The following documents, as a minimum, will be reviewed in the development of the "Grading Criteria":

- WHC-CM-1-3, Section MRP 5.46, "Safety Classification of Systems, Components, and Structures."
 - This MRP provides the criteria and methodology for the identification and safety classification of SSCs in accordance with DOE requirements.

The safety classification of items provides a graded approach to applicable design and quality assurance requirements. This graded approach assigns requirements to items commensurate with the function of each system, component, and structure (item) in preventing or mitigating the consequences of hazards and postulated design basis accidents.
- WHC-SD-WM-ISB-001, "Hanford Site Tank Farm Facilities Interim Safety Basis."

- This document is used to facilitate the understanding of the safety envelope and its corresponding justification. The document defines the acceptance criteria that the safety envelope is designed to achieve.

WHY WORK IS TO BE PERFORMED

Configuration management, with its five program elements and two adjunct programs, provides a vital function to improve conduct of operations and excellence in facility conditions. This is accomplished by providing programmatic assurance that the Tank Farms physical configuration is consistent with its design requirements and documentation, and that this consistency is maintained throughout the life cycle of the farm. Configuration management, therefore, meets the intent of the following Westinghouse Hanford Company and Department of Energy documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT
 - 3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. Configuration management is a vital element in the Systems Engineering process.

Furthermore, this work is required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."

LIST OF ALL DELIVERABLES

Issue a Supporting Document that establishes the "Grading Criteria" that is to be used by the CM Program and the DR Program.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

As identified by DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Budget provided for this activity is \$86K.

MAXIMUM COST OF EACH DELIVERABLE

The Maximum Cost Goal for this activity is \$86K.

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL.

No specific support required.

Significant Interfaces.

None.

C. STATEMENT OF WORK FOR FY-1996

Required activities:

FIELD VERIFICATION/LABELING PROGRAM FY 96

WORK TO BE PERFORMED

The work to be performed is to resolve TWRS Safety Initiative 4c. The description and completion of this commitment is to field verify, CADD convert, and issue a minimum of 175 Essential and/or Support drawings

into the WHC drawing archive system. The drawings on which "Field Verification" is to be performed are listed in the Tank Farm Essential Drawing Plan, WHC-SD-WM-PC-002. The 175 drawing minimum may include H-14 system drawings to support tank farm component labeling.

Note:

Essential/Support dwgs. issued in FY 91 = 358
 Essential/Support dwgs. issued in FY 92 = 170
 Essential/Support dwgs. issued in FY 93 = 100
 Essential/Support dwgs. issued in FY 94 = 150
 Essential/Support dwgs. issued in FY 95 ≥ 150
 Essential/Support dwgs. issued in FY 96 ≥ 175
 Total dwgs issued from FY 91 thru FY 96 ≥ 1103

HOW WORK IS TO BE PERFORMED

The productivity challenge in this task will entail drawings being scanned and converted to AutoCAD off-site. Drawings can be converted to CADD off-site faster and more cost efficiently than on-site.

WHY WORK IS TO BE PERFORMED

This task is a TWRS Safety Initiative, #4C42, and was implemented by a Tiger Team Assessment, TTA-90-0000-OA.7-3 subset 5, in 1990 to "implement planned engineering as-built drawing upgrade program for the waste tank safety, operations and remediation facilities". The schedule has been accelerated by 24 months and is now scheduled to be complete September 1996.

The Field Verification/Labeling Program is included in Configuration management with its five program elements and two adjunct programs provides a vital function to improve conduct of operations and excellence in facility condition. This is accomplished by providing programmatic assurance that the Tank Farms facility physical configuration is consistent with facility design requirements and documentation, and that this consistency is maintained throughout the life cycle of the various Tank Farm facilities. Configuration management, therefore, meets the intent of the following WHC/DOE documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other

activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.

- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT

3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. NOTE: Configuration management performs a vital role in the Systems Engineering process.

LIST OF ALL DELIVERABLES

At least 175 Essential and Support drawings that are listed on the Tank Farm Essential drawing plan will be field verified and released into the WHC drawing archive system in FY 96. This action will complete the TWRS Safety Initiative 4c.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF WORK

This task is a TWRS Safety Initiative and was implemented by a Tiger Team Assessment, TTA-90-0000-OA.7-3 subset 5, in 1990. The schedule has been accelerated by 24 months and is now scheduled to be complete September 1996.

MANDATORY SCHEDULE CONSTRAINTS

The TWRS Safety Initiative is scheduled to be complete September 1996 at which time approximately 1200 Essential/Support drawings will be complete. The actual field verification and drafting work is performed by ICF KH. Access to the tank farms or required facilities depend upon available resources. At this time there are no resource constraints.

The minimum number drawings to be field verified in FY 96 will be 175. The drawings will be selected from the Tank Farm Essential Drawing Plan, WHC-SD-WM-WP-072, and will have not been previously field verified.

BUDGET FORECAST

The budget for the Field Verification Program for FY 96 is 2100K.

MAXIMUM COST OF EACH DELIVERABLE

The maximum cost for all deliverables is 2100K.

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work cost or schedules in this cost account that occur as the fiscal progresses. Support from the RL TWRS office will be required for signature approval of contract employees.

COMPONENT LABELING PROGRAM FY 96

WORK TO BE PERFORMED

An Engineering Task Plan (ETP) will be written to address the following:

- The roles and responsibilities associated with the Component Labeling Program including Component Labeling, Master Equipment List (MEL), and System drawings.
- Privatization feasibility.
- Privatization WBS specification (if required).

HOW WORK IS TO BE PERFORMED

An ETP will be written that will address roles and responsibilities associated with the Component Labeling Program.

WHY WORK IS TO BE PERFORMED

The Labeling Program is included in Configuration management with its five program elements and two adjunct programs provides a vital function to improve conduct of operations and excellence in facility condition. This is accomplished by providing programmatic assurance that the Tank Farms facility physical configuration is consistent with facility design requirements and documentation, and that this consistency is maintained throughout the life cycle of the various Tank Farm facilities. Configuration management, therefore, meets the intent of the following WHC/DOE documents.

- A. WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- B. Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals — and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- C. Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

- 1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- D. DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT
- 3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to

accomplish the Hanford Site mission. NOTE: Configuration management performs a vital role in the Systems Engineering process.

LIST OF ALL DELIVERABLES

An Engineering Task Plan (ETP) will be written to address the following:

- The roles and responsibilities associated with the Component Labeling Program including Component Labeling, Master Equipment List (MEL), and System drawings.
- Privatization feasibility.
- Privatization WBS specification (if required).

MANDATORY REQUIREMENTS FOR PERFORMANCE OF WORK

DOE-STD-1073-93 in Section 2.2.2.3, "Component-Level Grading", requires that a validated MEL should be combined with CM Equipment Data to form a single complete equipment list for the facility.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Budget provided for this activity is \$300K.

MAXIMUM COST OF EACH DELIVERABLE

The maximum cost for this activity is \$300K.

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL.

No specific support required.

Significant Interfaces.

None.

CM DATA BASE FY 96

WORK TO BE PERFORMED

The work to be performed is to develop an Action Plan from the results and recommendations of the WesTip session in FY 95.

HOW WORK IS TO BE PERFORMED

The Action Plan will address the how the CM Data Base will correlate the following information:

- System designator
- Component designator
- Component description information
- Design requirements
- SSC grade
- Design basis references
- Design topical area references (eg. seismic, environmental, fire protection)
- Facility document references (eg. drawings, ECN's, procedures, SAR's, OSR's, vendor files, spare parts, etc.)
- Other information as required from WesTip.

WHY IS WORK TO BE PERFORMED

The CM Data Base Program is included in Configuration management with its five program elements and two adjunct programs provides a vital function to improve conduct of operations and excellence in facility condition. This is accomplished by providing programmatic assurance that the Tank Farms facility physical configuration is consistent with facility design requirements and documentation, and that this consistency is maintained throughout the life cycle of the various Tank Farm facilities. Configuration management, therefore, meets the intent of the following WHC/DOE documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals — and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.

■ DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT

3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. NOTE: Configuration management performs a vital role in the Systems Engineering process.

A typical facility has many separate data bases containing similar information, with minimal interfacing or administrative controls. As a result, these data bases develop errors and inconsistencies, which contribute to configuration problems. A desirable approach is to have all facility information computerized, residing in a master data base, and accessible from most locations within the facility.

LIST OF ALL DELIVERABLES

An action plan that will describe how existing data bases will be consolidated or eliminated where possible; and how the CM Data Base will inter-relate with other data bases to effect CM element control.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF WORK

The establishment of a CM Data Base in the "Guide for Operational Configuration Management Program" in conformance to DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Funding for this task for FY 96 is 200K.

MAXIMUM COST OF EACH DELIVERABLE

The maximum cost for the total deliverable is 200K.

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work cost or schedules in this cost account that occur as the fiscal progresses.

There is no support required from the RL office for this activity.

CONFIGURATION MANAGEMENT IMPLEMENTATION FY-1996

WORK TO BE PERFORMED

The work to be performed is to issue a Structure, Systems and Components (SSC) List Supporting Document (SD) that:

- Meets the requirements of WHC-SD-WM-CM-008, "Configuration Management Plan for Waste Tank Farms and 242-A Evaporator of TWRS."
- Meets the requirements of WHC-SD-WM-CM-009, "Design Base Reconstitution Program Plan for Waste Tank Farms and the 242-A Evaporator of Tank Waste Remediation System."
- Provides a listing of the structures, systems and components (SSC).
- Grades the SSC list by applying the "Grading Criteria" developed in the supporting document from the Fiscal Year 1995 Milestone Control No: N3C312105M to grade the SSCs.

HOW WORK IS TO BE PERFORMED

The Supporting Document is to:

- Identify SSCs which will meet the intent of WHC-SD-WM-CM-008 and WHC-SD-WM-CM-009.
- Grade the SSCs by applying the "Grading Criteria" developed in the supporting document under the Fiscal Year 1995 Milestone Control No: N3C312105M.

The following documents, as a minimum, will be reviewed in the development of the structures, systems and components list:

- WHC-SD-WM-CM-005, Rev. 0, "List of Structures and Systems for Tank Farm & Evaporator Configuration Management Program. "
 - This document provides a list of structures and systems, and is the beginning of a Structures, Systems, and Components (SSC) list as required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."
- WHC-SD-WM-RPT-058, "Tank Farm Facility Boundary Evaluation Report."
 - This document depicts the boundaries between the waste generating facilities, Tank Farms and auxiliary structures and systems.
- The 242-A Evaporator system boundaries as identified in a "White Paper" document entitled, "242-A System Boundary Identification," dated April 15, 1994.
 - This document defines the various 242-A evaporator systems.
- WHC-SD-WM-SEL-020, "Aging Waste Facility Interim Safety Classification."
 - This document identifies the safety classification of the systems and selected equipment, components, parts, and structures of the Aging Waste Facility (AY and AZ Tank Farms).

WHC-SP-1101

- WHC-SD-WM-ISEL-026, "Double-Shell Tanks Interim Safety Equipment List."
 - This document identifies the safety classification of the systems and selected equipment, components, parts and structures of the Double-Shell Tank Farm Facility (AN, AP, AW, and SY Tank Farms).
- WHC-SD-WM-ISEL-027, "Single-Shell Waste Tanks Interim Safety Equipment List."
 - This document identifies the safety classification of the systems and selected equipment, components, parts, and structures of the Single-Shell Tank Farm Facility (SST Tank Farms).
- WHC-SD-WM-SEL-028, "Safety Equipment List 242-A Evaporator."
 - This document identifies the safety class 2 components of each safety class 2 system designated in the revised 242-A SAR (WHC, 1992A). This safety class 2 component list is designated the Safety Equipment List for 242-A Evaporator.
- Controlled Manual Waiver, "H-14 Significant Drawing Number Assignment Procedure and Implementation Plan."
 - This document, issued May 1994, against WHC-CM-6-3, Drafting Standards Manual, gives a system numbers table, identified as Attachment 2, System Numbers.

WHY WORK IS TO BE PERFORMED

Configuration management, with its five program elements and two adjunct programs, provides a vital function to improve conduct of operations and excellence in facility conditions. This is accomplished by providing programmatic assurance that the Tank Farms physical configuration is consistent with its design requirements and documentation, and that this consistency is maintained throughout the life cycle of the farm. Configuration management, therefore, meets the intent of the following Westinghouse Hanford Company and Department of Energy documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition)."
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

WHC-SP-1101

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.

■ DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT

3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. Configuration management is a vital element in the Systems Engineering process.

Furthermore, the work is required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."

LIST OF ALL DELIVERABLES

Issue a Structure, Systems and Components (SSC) List Supporting Document (SD) for Tank Farms and 242-A Evaporator Facilities that:

- Meets the requirements of WHC-SD-WM-CM-008.
- Meets the requirements of WHC-SD-WM-CM-009.
- Providing a listing of the structures, systems and components (SSC).
- Grades the SSC list.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

As identified by DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Budget provided for this activity is \$200K.

MAXIMUM COST OF EACH DELIVERABLE

The Maximum Cost Goal for this activity is \$200K.

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL.

No specific support required.

Significant interfaces
None.

DESIGN RECONSTITUTION IMPLEMENTATION FY-1996

WORK TO BE PERFORMED

The work to be performed is to issue revisions to the Implementation Action Plans for:

- The Design Base Reconstitution (DR) Program Implementation Action Plan developed from the Fiscal Year 1995 Milestone Control No: N3C312503M.
- The Configuration Management (CM) Program Implementation Action Plan developed from the Fiscal Year 1995 Milestone Control No: N3C310130M.
- Resolve any " To Be Determined" (TBD) actions.

HOW WORK IS TO BE PERFORMED

The Implementation Action Plans for the DR Program and the CM Program are to be revised in Fiscal Year 1996 to take into account following additional information:

- The Grading Criteria supporting document developed in Fiscal Year 1995 which is Milestone Control No: N3C310707M.
- The Systems with Boundaries supporting document developed in Fiscal Year 1995 which is Milestone Control No: N3C310205M.
- The Structures, Systems and Components (SSC) List supporting document developed in Fiscal Year 1996 which is Milestone Control No: N3C312105M.

WHY WORK IS TO BE PERFORMED

Configuration management, with its five program elements and two adjunct programs, provides a vital function to improve conduct of operations and excellence in facility conditions. This is accomplished by providing programmatic assurance that the Tank Farms physical configuration is consistent with its design requirements and documentation, and that this consistency is maintained throughout the life cycle of the farm. Configuration management, therefore, meets the intent of the following Westinghouse Hanford Company and Department of Energy documents.

WHC-SP-1101

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT

3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. Configuration management is a vital element in the Systems Engineering process.

Furthermore, the work is required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."

LIST OF ALL DELIVERABLES

Issue revisions to the Implementation Action Plans for:

- The Design Base Reconstitution (DR) Program Implementation Action Plan developed from the Fiscal Year 1995 Milestone Control No: N3C312503M.
- The Configuration Management (CM) Program Implementation Action Plan ETP developed from the Fiscal Year 1995 Milestone Control No: N3C310130M.
- Resolution of any "To Be Determined" (TBD) actions.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

As identified by DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Budget provided for this activity is \$172K.

MAXIMUM COST OF EACH DELIVERABLE

The Maximum Cost Goal for this activity is \$172K.

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL

No specific support required.

Significant Interfaces

None.

C. STATEMENT OF WORK FOR FY-1997

Required activities:

FIELD VERIFICATION/LABELING PROGRAM FY 96

WORK TO BE PERFORMED

The work to be performed is to conduct an assessment to determine the effectiveness of the Field Verification Program and recommend any follow-up actions.

HOW WORK IS TO BE PERFORMED

The productivity challenge in this task will show that drawings being scanned and converted to AutoCAD off-site have been done faster and more cost efficiently than on-site.

WHY WORK IS TO BE PERFORMED

Per the Assessment Element requirement of DOE-STD-1073-93, assessment of the Field Verification Program will be performed to determine the program effectiveness and recommend any follow-up actions.

The Field Verification/Labeling task is TWRS Safety Initiative, #4C42, and was implemented by a Tiger Team Assessment, TTA-90-0000-OA.7-3 subset 5, in 1990 to "implement planned engineering as-built drawing upgrade program for the waste tank safety, operations and remediation facilities". The schedule has been accelerated by 24 months and is now scheduled to be complete September 1996.

The Field Verification/Labeling Program is included in Configuration management with its five program elements and two adjunct programs provides a vital function to improve conduct of operations and excellence in facility condition. This is accomplished by providing programmatic assurance that the Tank Farms facility physical configuration is consistent with facility design requirements and documentation, and that this consistency is maintained throughout the life cycle of the various Tank Farm facilities. Configuration management, therefore, meets the intent of the following WHC/DOE documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals — and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT
- 3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. NOTE: Configuration management performs a vital role in the Systems Engineering process.

LIST OF ALL DELIVERABLES

The deliverable is a "White Paper" which detail the assessment of the Field Verification/Labeling Programs and recommendations for follow-on activities, if any.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF WORK

The Field Verification Program is a TWRS Safety Initiative and was implemented by a Tiger Team Assessment, TTA-90-0000-OA.7-3 subset 5, in 1990. The schedule has been accelerated by 24 months and was completed September 1996.

MANDATORY SCHEDULE CONSTRAINTS

None for this activity.

BUDGET FORECAST

The budget for the assessment activity for FY 97 is 190K.

MAXIMUM COST OF EACH DELIVERABLE

The maximum cost for the assessment activity and "White Paper" deliverable is 190K.

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work cost or schedules in this cost account that occur as the fiscal progresses.

There is no significant interface requirements.

LABELING PROGRAM FY 97

WORK TO BE PERFORMED

Unique identification numbers will be assigned to components in Single-Shell (SST) Tank and Double-Shell (DST) Tank Farms. System drawings will also be issued into the WHC drawing archive system. In addition, data will be gathered to develop a Master Equipment List (MEL).

HOW WORK IS TO BE PERFORMED

Component labels will be installed in SST and DST Tank Farms, System drawing will be developed and issued into the WHC drawing archive system, and a MEL will be developed. All of these activities will be developed using existing or new procedures as required.

WHY WORK IS TO BE PERFORMED

The Labeling Program is included in Configuration management with its five program elements and two adjunct programs provides a vital function to improve conduct of operations and excellence in facility condition. This is accomplished by providing programmatic assurance that the Tank Farms facility physical configuration is consistent with facility design requirements and documentation, and that this consistency is maintained throughout the life cycle of the various Tank Farm facilities. Configuration management, therefore, meets the intent of the following WHC/DOE documents.

- A. WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- B. Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- C. Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

- 1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- D. DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT
- 3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. NOTE: Configuration management performs a vital role in the Systems Engineering process.

LIST OF ALL DELIVERABLES

The deliverables are:

- Installation of component labels on all accessible components in SST and DST Tank Farms.
- Issuance of System drawings in support of the labeling effort.
- The completion of a MEL to support the system drawings.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF WORK

DOE-STD-1073-93 in Section 2.2.2.3, "Component-Level Grading", requires that a validated MEL should be combined with CM Equipment Data to form a single complete equipment list for the facility.

MANDATORY SCHEDULE CONSTRAINTS

None. However, access to the tank farms or required facilities depend upon available resources. At this time there are no resource constraints.

BUDGET FORECAST

Budget provided for this activity is \$5168K.

MAXIMUM COST OF EACH DELIVERABLE

The maximum cost for this activity is \$5168K.

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL.

No specific support required.

Significant Interfaces.

None.

CONFIGURATION MANAGEMENT DATA BASE FY 97

WORK TO BE PERFORMED

The work to be performed is to establish a working CM Data Base based on the FY 95 WestTip recommendations and the action plan developed in FY 96.

HOW WORK IS TO BE PERFORMED

At this time it is our thinking to "program" an existing data base such as CATIA to be able to query other data bases (data sets) to accomplish the DOE-STD-1073-93 objectives for a CM Equipment Data Base. An appropriate consultant(s) will be used to accomplish this objective.

WHY IS WORK TO BE PERFORMED

The CM Data Base Program is included in Configuration management with its five program elements and two adjunct programs provides a vital function to improve conduct of operations and excellence in facility condition. This is accomplished by providing programmatic assurance that the Tank Farms facility physical configuration is consistent with facility design requirements and documentation, and that this consistency is maintained throughout the life cycle of the various Tank Farm facilities. Configuration management, therefore, meets the intent of the following WHC/DOE documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT
 - 3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. NOTE: Configuration management performs a vital role in the Systems Engineering process.

A typical facility has many separate data bases containing similar information, with minimal interfacing or administrative controls. As a result, these data bases develop errors and inconsistencies, which contribute to configuration problems. A desirable approach is to have all facility information computerized, residing in a master data base, and accessible from most locations within the facility.

LIST OF ALL DELIVERABLES

The deliverable is an operational CM Data Base.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF WORK

The establishment of a CM Data Base in the "Guide for Operational Configuration Management Program" in conformance to DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Funding for this task for FY 97 is 900K.

MAXIMUM COST OF EACH DELIVERABLE

The CM Data Base will cost 900K to deliver.

ROLES AND RESPONSIBILITIES

Programmatic direction for this effort shall in all cases and at all times be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

THE CONTRACTOR SHALL NOT FOLLOW GUIDANCE OR DIRECTION PROVIDED BY ANY OTHER RL OFFICE. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonably possible, of any impacts to work cost or schedules in this cost account that occur as the fiscal progresses.

There is no support required from the RL office for this activity.

CONFIGURATION MANAGEMENT IMPLEMENTATION FY-1997

WORK TO BE PERFORMED

Perform the scope of work to the resource loaded schedule of the Implementation Configuration Management (CM) Action Plan developed under Fiscal Year 1996 Milestone Control No: N3C312506M, which is to implement WHC-SD-WM-CM-008, "Configuration Management Plan for Waste Tanks and 242-A Evaporator of Tank Waste Remediation System."

HOW WORK IS TO BE PERFORMED

The Implementation Action Plan is required to bring the existing Tank Farm and 242-A Evaporator Configuration Management effort to meet the intent of WHC-SD-WM-CM-008, which is based upon DOE-STD-1073-93, "Guide For Operation Configuration Management Program."

The implementation of the ETP will integrate the control elements of:

- Program Management
- Design Requirements
- Document Control
- Change Control

- Assessments
- Design Reconstitution
- Material Condition and Aging Management

WHY WORK IS TO BE PERFORMED

Configuration management, with its five program elements and two adjunct programs, provides a vital function to improve conduct of operations and excellence in facility conditions. This is accomplished by providing programmatic assurance that the Tank Farms physical configuration is consistent with its design requirements and documentation, and that this consistency is maintained throughout the life cycle of the farm. Configuration management, therefore, meets the intent of the following Westinghouse Hanford Company and Department of Energy documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy,

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.
- DOE/RL-93-102, "Fiscal Year 1995 Hanford Mission Plan, Volume 1, Site Guidance," DRAFT
 - 3.1.4.1 Site Systems Engineering. The Systems Engineering process is being applied at the Hanford Site to establish and maintain the integrated Hanford Site Technical Baseline, which is necessary to accomplish the Hanford Site mission. Configuration management is a vital element in the Systems Engineering process.

Furthermore, this work is required by DOE-STD-1073-93, "GUIDE FOR OPERATIONAL CONFIGURATION MANAGEMENT PROGRAM."

LIST OF ALL DELIVERABLES

Issue a status report that identifies the tasks that have been implemented to establish the CM program for 200 E & 200 W Tank Farms, and 242-A Evaporator Facilities to meet the intent of DOE-STD-1073-93.

MANDATORY REQUIREMENTS FOR PERFORMANCE OF THE WORK

As identified by DOE-STD-1073-93.

MANDATORY SCHEDULE CONSTRAINTS

None.

BUDGET FORECAST

Budget provided for this activity is \$900K.

MAXIMUM COST OF EACH DELIVERABLE

The Maximum Cost Goal for this activity is \$900K.

ROLES AND RESPONSIBILITIES

RL-TWRS Office

Programmatic direction for this effort shall in all cases, and at all times, be provided by the RL-TWRS office. A lead RL staff member will be appointed to over-see work in a specific account. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the contractor to perform the requested work.

The contractor shall not follow guidance or direction provided by any other RL office. The contractor will refer any conflicts between the RL TWRS office guidance and guidance offered by another RL office to the RL TWRS office for resolution.

The RL lead for this cost account shall be apprised, as soon as reasonable possible, of any impacts to work costs or schedules in this cost account that occur as the fiscal year progresses.

WHC-TWRS Office

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL

No specific support required.

Significant Interfaces

None.

DESIGN RECONSTITUTION IMPLEMENTATION FY-1997

WORK TO BE PERFORMED

Perform the scope of work to the resource loaded schedule of the Design Reconstitution (DR) Implementation Action Plan developed under Fiscal Year 1996 Milestone Control No: N3C312506M, to implement WHC-SD-WM-CM-009, "Design Reconstitution Program Plan for Waste Tank Farms and the 242-A Evaporator of Tank Waste Remediation system."

HOW WORK IS TO BE PERFORMED

The implementation of the ETP is required to bring the existing Tank Farm and 242-A Evaporator Design Reconstitution effort to meet the intent of WHC-SD-WM-CM-009, "Design Reconstitution Program Plan" is based upon DOE-STD-1073-93, "Guide For Operation Configuration Management Program."

The implementation of the ETP will require preparation of process procedures for:

- Design Information Recovery and Extraction.
- Verification and Validation of retrieved information.
- Disposition and Regeneration of open items.
- Preparation of Design Information Summaries.
- Graded Approval process and criteria.

The preparation of a training module on the process procedure applications and identify target audience is also required.

WHY WORK IS TO BE PERFORMED

Configuration management, with its five program elements and two adjunct programs, provides a vital function to improve conduct of operations and excellence in facility conditions. This is accomplished by providing programmatic assurance that the Tank Farms physical configuration is consistent with its design requirements and documentation, and that this consistency is maintained throughout the life cycle of the farm. Configuration management, therefore, meets the intent of the following Westinghouse Hanford Company and Department of Energy documents.

- WHC-CM-1, Company Policies and Charters, "Mission and Commitments Policy," No. 7, "Requiring excellence in our conduct of operations and excellence in facility conditions."
- Hanford Strategic Plan, Draft 07/11/94, "Work Force Effectiveness," Strategies, "We will accomplish the mission through quality leadership principals --- and process management (i.e. continuous improvement, systems thinking, measuring results, challenging tradition).
- Hanford Site tank Waste Remediation System Technical Strategy.

MISSION:

The TWRS program mission is to store, treat, immobilize, and dispose or prepare for disposal the Hanford radioactive tank waste in an environmentally sound, safe and cost-effective manner.

OBJECTIVES:

The TWRS program must achieve these objectives to successfully accomplish the mission.

1. Establish a comprehensive safety basis for (1) resolving safety issues; (2) operating facilities; (3) maintaining restoring, and upgrading facilities and equipment; and (4) for all other activities. This basis will also ensure that all activities will comply with environmental regulations and result in safe and environmentally sound operations.

WHC-SP-1101

Programmatic responsibility for this effort shall in all cases, and at all times, be provided by the WHC-TWRS office. A lead WHC staff member will be appointed to over-see work. This individual is responsible for ensuring that sufficient clear guidance and direction is at all times available to the work force to perform the requested work.

Specific Support From RL

No specific support required.

Significant Interfaces.

None.

Technologies to be assessed:

Subcontracted Technology Infusion Paperwork has been Initiated With the Work for the Field Verification Program

Options to be Considered:

How to combine "Field Verification" and "Labeling Programs."

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	T. Moleff <i>T Moleff</i>	9-22-94
Program Element Manager	J. D. Thomson	
Activity Manager	K. L. Morris	
Project Business Representative	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J D Thomson</i>	9/22/94
Activity Manager	K. L. Morris <i>K L Morris</i>	9-22-94
Cost Account Manager	T. Moleff <i>T Moleff</i>	9-22-94
Project Business Representative	R. S. Schubert <i>R S Schubert</i>	9/22/94

FDS Number
1N3C31

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.02 Configuration Management (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.02.02/VI	5. WBS ELEMENT TITLE Tank Farm Procedure Upgrades	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2 Remediate Waste 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense EW30130010	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,039	\$ 210	\$ 179
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$1,039	\$ 210	\$ 179

B. TECHNICAL BASES

Goals & objectives:

Tank Farms Upgrades provides expense modifications and capital improvements aimed at restoring the 200 Area Tank Farm to a currently acceptable design basis. Mechanical and Instrumentation & Control/Electrical Upgrades address individual issues and complements the Tank Farm Restoration Major System Acquisition (MSA). The MSA takes a comprehensive approach. The upgrades effort will restore those areas not addressed by the MSA. Both will be fully integrated to ensure that Upgrades adequately supports the overall TWRS mission.

Configuration Management ensures that the objectives of Mechanical and Instrumentation & Control/Electrical Upgrades are met by providing adequate procedures for controlling operation, maintenance, and surveillance of these upgrades. The goal of this cost account is to prepare new and revised procedures for all equipment upgrades. Procedures, Plant Operating Procedures, Operator Rounds Procedures, Alarm Response Procedures, and Operating Safety Documents, are prepared in parallel with installation so that they are available to support the turnover process.

The procedures will be prepared in support of the approved fiscal year baselines for Mechanical and Instrumentation & Control/Electrical Upgrades.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Thus far 124 new or revised Plant Operating Procedures, 19 revised Operator Rounds Procedures, 21 new and revised Alarm Response Procedures, and 3 Operational Safety Documents have been identified for FY 95 installation activities. Procedure quantities for FY 96 and FY 97 have not been tabulated.

C. STATEMENT OF WORK

Required activities:

Prepare or revise all required operating procedures for turnover of upgraded equipment for approved upgrade projects identified in the TWRS Mechanical and Instrumentation & Control/Electrical Upgrades baseline. This cost account only funds the actual preparation and approval of the procedures including the preparation/revision of the first procedure draft, the table top discussion and comment incorporation, writer field verification and comment incorporation and the approval cycle of the procedure. This cost account does not fund activity or reviews by engineering or oversight organizations required to support the issuance of the procedure. The following upgrade projects will require procedure support:

FY 95

- 241-701-A Compressor
- 241-701-A MCC
- 241-AP Closed Loop Cooling
- 241-TX/TY Modular Compressor
- 242-S Evaporator Alarm Upgrade
- 242-S Liquid Waste Minimization
- BX/BY Compressor
- 241-T Compressor
- 241-U Compressor

FY 96

- SY Diesel Generator
- T Complex Alarm

FY 97

- 271-CR MCC Upgrade

Technologies to be assessed: N/AOptions to be considered: N/A**D. AUTHORIZATION**

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Program Element Manager	J. D. Thomson	
Activity Manager	K. L. Morris	
Cost Account Manager	E. Biebesheimer	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	J. D. Thomson <i>[Signature]</i>	9/22/94
Activity Manager	K. L. Morris <i>[Signature]</i>	9/22/94
Cost Account Manager	E. Biebesheimer <i>[Signature]</i>	9/22/94
Project Control Analyst	R. S. Schubert <i>[Signature]</i>	9/22/94

FDS Number

1N3C36

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.03 Life Management (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.03.01/VI	5. WBS ELEMENT TITLE DST Qualification Life Extension	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW30130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,000	\$1,016	\$1,143
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$1,000	\$1,016	\$1,143

B. TECHNICAL BASES

Goals & objectives:

Manage degradation of existing DST storage and transfer system in a cost effective environmentally sound manner.

Provide information necessary to maximize flexibility in use of the entire system thus minimizing replacement costs and less than optimal retrieval/disposal strategies.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Engineering Design for CP Upgrades

Confirmatory corrosion data from laboratory experiments

Technical reports dispositioning non-significant failure mechanisms.

Required activities:

Development of Electronic Engineering Archival

Design of laboratory experiments

Writing of technical reports

Technologies to be assessed:

Corrosion probes

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	P. C. Ohl	
Program Element Manager	J. D. Thomson	
Activity Manager	N. G. Awadalla	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J.D. Thomson</i>	9/22/94
Activity Manager	N. G. Adwadlla <i>N.G. Adwadlla</i>	9-22-94
Cost Account Manager	P. C. Ohl <i>P.C. Ohl</i>	9/22/94
Project Control Analyst	R. S. Schubert <i>R.S. Schubert</i>	9/22/94

FDS Number

1N3E51

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.04/V	5. WBS ELEMENT TITLE Multi-Function Waste Tank Facility, W-236A							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1280-0-AA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60-REV.1) 4.2.1.1 Store Waste 4.2.1.4 Transfer Waste 4.2.2.1 Pretreat Waste	12. BUDGET AND REPORTING NUMBER <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$ 969	\$ 890	\$ 840	N/A	N/A	N/A	N/A
CENRTC							
GPP							
LINE ITEM	68,009	97,820	93,890				
TOTAL	\$68,978	\$ 98,710	\$95,570	N/A	N/A	N/A	N/A

B. TECHNICAL BASES

Goals and objectives:

- Provide additional high-level waste (HLW) interim storage capacity to support resolution/remediation of the tank safety issues and continued retrieval and operations activities. As the highest level Work Breakdown Structure element all work on the Project: technology, plant design, construction and startup, regulatory/compliance, and Project management is included in this scope.

Major end-item deliverables:

- TPA 42-00 Provide Additional Double-Shell Tank Capacity
- TPA 42-01 Initiate "hot" operation of MWTF 200W Area Tanks
- TPA 42-02 Complete Construction of the MWTF 200E Area Tanks

Acceptance criteria:

- Verification by Acceptance Test Procedure and Operational Test Procedure
- Receipt of Key Decision 4

C. STATEMENT OF WORK

Required activities over lifetime:

- Detail Design of MWTF
- Construction of MWTF

Interfaces:

#	From This WBS To	Item Provided
1	Waste Tank Safety 1.1.1.2.02	
2	Waste Retrieval 1.1.1.2.05	
3	Waste Pretreatment 1.1.1.2.01	
	To This WBS From	
	Cross Site Transfer Line 1.1.1.2.03.11	
	Aging Waste Transfer Lines 1.1.1.2.03.12	

Technologies to be assessed: N/AOptions to be considered: N/A

1.1.1.2.03.04

AH-70

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.1 (Store Waste), item V, paragraph B (Constraints)
Table F4.2.1.4 (Transfer Waste), item V, paragraph B (Constraints)
Table F4.2.2.1 (Pretreat Waste), item V, paragraph B (Constraints)
- Section 3 (Tank Waste Remediation System Architecture)

Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.1 (Waste Storage System), item VIII, paragraph C (Constraints)
Table A4.2.1.4 (Waste Transfer System), item VIII, paragraph C (Constraints)
Table A4.2.2.1 (Pretreatment System), item VIII, paragraph C (Constraints)

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.04 Multi-Function Waste Tank Facility (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.04.01/VI	5. WBS ELEMENT TITLE Multi-Waste Tank Facility	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1280-0-AA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2 Remediate Waste 4.2.1.1 Store Waste 4.2.1.2 Characterize Waste 4.2.1.3 Retrieve Waste 4.2.1.4 Transfer Waste 4.2.1.5 Concentrate Waste 4.2.2.1 Pretreat Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW30130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$ 969	\$ 890	\$ 840
CENRTC			
GPP			
LINE ITEM	68,009	97,820	93,890
TOTAL	\$68,979	\$98,710	\$94,730

1.1.1.2.03.04.01

A4-73

B. TECHNICAL BASES

Goals & objectives:

The MWTF will provide additional high-level waste (HLW) interim confinement (storage) to support resolution/remediation of the tank safety issues and continued retrieval and operations activities. The MWTF mission will be accomplished through the construction of six one million gallon underground storage tanks.

The objective of the MWTF is to provide facilities capable of safe, environmentally acceptable tank capacity for wastes from single- and double-shell tank safety issues/mitigation and tank remediation/retrieval activities.

Status of Design Documentation:

Title I Design completed June 1994

Title II Design started May 1994, Scheduled Completion 2nd Qtr FY 96

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Project W-236A Multi-Function Waste Tank Facility - The MWTF will construct six one million gallon underground storage tanks to support resolution/remediation of the tank safety issues and continued retrieval and operations activities.

TPA 42-00 Provide Additional Double-Shell Tank Capacity

TPA 42-01 Initiate "hot" operation of MWTF 200W Area Tanks

TPA 42-02 Complete Construction of the MWTF 200E Area Tanks

C. STATEMENT OF WORK

Required activities:

<u>Activity</u>	<u>Start</u>	<u>Complete</u>
Prel. Design (Title I)	January 1993	4th Qtr FY94
Dtl Design (Title II)	2nd Qtr FY94	2nd Qtr FY96
Construction		
200 West Area	4th Qtr FY94	2nd Qtr FY97
200 East Area	3rd Qtr FY95	1st Qtr FY99
Operations Test		
200 West Area	2nd Qtr FY97	2nd Qtr FY98
200 East Area	1st Qtr FY99	1st Qtr FY00
Hot Startup		
200 West Area	2nd Qtr FY98	
200 East Area	1st Qtr FY00	

Technologies to be assessed:

No new technologies are being considered.

Options to be considered:

No new options are being considered.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	R. L. Fritz	
Program Element Manager	J. D. Thomson	
Activity Manager	R. L. Fritz	
Project Control Analyst	M. A. Rossiter	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J. D. Thomson</i>	9/26/94
Activity Manager	R. L. Fritz <i>E. C. Hall per telegram</i>	9/26/94
Cost Account Manager	R. L. Fritz <i>E. C. Hall per telegram</i>	9/26/94
Project Control Analyst	M. A. Rossiter <i>E. C. Hall per telegram</i>	9/26/94

FDS Number

1D8101

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.06/V	5. WBS ELEMENT TITLE Instrument and Control/Electrical Upgrades	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60-REV.1) 4.2.1.1 Store Waste 4.2.1.3 Retrieve Waste 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$6,467	\$6,246	\$ 6,779	N/A	N/A	N/A	N/A
CENRTC	3,063	2,634	4,150	N/A	N/A	N/A	N/A
GPP							
LINE ITEM							
TOTAL	\$9,630	\$8,880	\$10,929	N/A	N/A	N/A	N/A

B. TECHNICAL BASES

Goals and objectives:

- Provide the engineering, management, liaison, contractor/sub-contractor interface and engineering support to accomplish instrument/electrical upgrades to facilities and equipment and
- Identification of future Line Items and General Plant Projects associated with instrumentation and electrical upgrades.

Major end-item deliverables:

- SI 4a34 Replace Alarm Panels in 7 tank farms
- Installation of TMACs
- Installation of liquid level gauges
- Replacement of generators

Acceptance criteria:

- Verification by Acceptance Test Procedure and Operational Test Procedures

C. STATEMENT OF WORK

Required activities over lifetime:

- Replacement/upgrades of alarm panels, control room equipment, generators, Site Electrical Assessments, installation of tank monitoring and control systems, and tank thermocouple and sector switches, implementation of portable terminal entry of tank farm data operator round information, installation of new liquid level gauges on all double shell tanks and single shell tanks with surface liquid.
- Define future instrument/electrical Line Items and General Plant Projects.

Interfaces:

#	From This WBS To	Item Provided
1	Operations & Maintenance 1.1.1.2.01	Supports final safe operations bases.
	To This WBS From	
	N/A	

Technologies to be assessed:

New technologies for generators, compressors, in-tank instrumentation and electrical requirements

Options to be considered: N/A

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.1 (Store Waste), item V, paragraph B (Constraints)
Table F4.2.1.3 (Retrieve Waste), item V, paragraph B (Constraints)
Table F4.2.1.4 (Transfer Waste), item V, paragraph B (Constraints)
- Section 3 (Tank Waste Remediation System Architecture)

Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.1 (Waste Storage System), item VIII, paragraph C (Constraints)
Table A4.2.1.3 (Waste Retrieval System), item VIII, paragraph C (Constraints)
Table A4.2.1.4 (Waste Transfer System), item VIII, paragraph C (Constraints)

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.06 Instrumentation & Control/Electrical Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.06.01/VI	5. WBS ELEMENT TITLE Instrument/Electrical Upgrades	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.2 Characterize Waste 4.2.1.3 Retrieve Waste 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital EW3130010 35EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,874	\$1,278	\$1,226
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$1,874	\$1,278	\$1,226

B. TECHNICAL BASES

Goals & objectives:

Tank Farms Upgrades provides expense modifications and capital improvements aimed at restoring the 200 Area Tank Farm to a currently acceptable design basis. Mechanical and Instrumentation & Control/Electrical Upgrades address individual issues and complements the Tank Farm Restoration Major System Acquisition (MSA). The MSA takes a comprehensive approach. The Upgrades effort will restore those areas not addressed by the MSA. Both will be fully integrated to ensure that Upgrades adequately supports the overall TWRS mission.

Fiscal year '95 through '97 goals and objectives continue prior year initiatives as envisioned in the MYPP. Support of TWRS Safety Initiatives (SI) and the TPA is continuing. Specifically, in FY 95 Instrumentation & Control/Electrical Upgrades will complete the requirements for the "Upgrade Seven Tank Farm Control Room Alarm Panels" (SI 4a34) milestone and support completion of the "Upgrade Ten Tank Farm Compressed Air Systems" (SI 4b35) milestone. Related testing and turnover will also be completed in FY 95. The SY diesel generator and T Complex Alarms will be installed in FY 96. Turnover for the SY diesel generator will be in FY 96 and T-Complex alarms in FY 97. Also, in FY 97 the 271-CR Motor Control Center will be installed and turned over.

Instrumentation & Control/Electrical Upgrades provides engineering, management, liaison, contractor/sub-contractor interfaces, installation, testing, and turnover coordination supporting these goals and objectives.

Status of design documentation:

The FY 94 design satisfies the requirements for FY 95, FY 96, and FY 97 installation, testing and turnover.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS)

Alarm Safety Initiative (4a34) supported in FY 95 by:

- 242-S Evaporator Alarm Upgrade installation, testing, and turnover.

Compressed Air Safety Initiative (4b35) supported in FY 95 by:

- 241-701-A MCC installation, testing, and turnover

FY 96 annual milestones:

- SY Diesel Generator installation, testing and turnover
- T Complex Alarm installation and operational testing

FY 97 annual milestones:

- T Complex Alarm operational testing and turnover
- 271-CR MCC Upgrade installation, operational testing, and turnover

C. Statement of Work

Required Activities:

Upgrades restoration and remediation of Tank Farm equipment and facilities include three major activities 1) design, 2) installation, and 3) testing and turnover. Each of these include several tasks. Listed then are the

major activities scheduled for each fiscal year; followed by a listing typical activities included in the major activities.

Fiscal Year List:

FY 95

- 241-701-A MCC installation, testing, and turnover
- 242-S Evaporator Alarm Upgrade installation, testing, and turnover

FY 96

- SY Diesel Generator installation, testing and turnover
- T Complex Alarm installation and acceptance testing

FY 97

- T Complex operational testing and turnover
- 271-CR MCC Upgrade installation, operational testing, and turnover

Major Upgrade Activity Inclusions:

- Design
 - task planning
 - requirements definition
 - acceptance for beneficial use (ABU) process initiation
 - walkdowns
 - preliminary design
 - drafting
 - design documentation including ECNs and drawings
 - USQ and other design reviews
 - long lead/major equipment procurement
- Installation
 - pre-job walkdown
 - JCS package preparation
 - material procurement
 - prefabrication
 - HTP and OPS support
 - permit preparation and approval
 - hardware removal and installation
 - installation documentation
 - field engineering support
 - acceptance testing
- Test and Turnover
 - operational testing
 - acceptance and operational test report preparation and release
 - design and system engineering test support
 - ABU package assembly and review
 - Operations acceptance

It is a specific requirement that these activities be coordinated with the Tank Farm Restoration and Safe Operations MSA.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	E. Biebesheimer	
Program Element Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J. D. Thomson</i>	9-22-94
Activity Manager	N. R. Croskrey <i>N. R. Croskrey</i>	9-22-94
Cost Account Manager	E. Biebesheimer <i>E. Biebesheimer</i>	9-22-94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9-22-94

FDS Number

1N3T12

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.06 Instrumentation & Control/Electrical Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.06.02/VI	5. WBS ELEMENT TITLE Site Electrical Assessments							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.2 Characterize Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW30130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW30130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW30130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,598	\$2,584	\$2,020
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$1,598	\$2,584	\$2,020

1.1.1.2.03.06.02

A4-85

B. TECHNICAL BASES

Goals & objectives:

Provide engineering, management, liaison, contractor/sub-contractor interfaces, and installation and turnover support to accomplish site electrical assessments for the Tank Farm facilities and equipment.

Status of design documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Annual baseline milestones

C. Statement of Work

Required Activities: N/A

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	C. M. Towne	
Program Element Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J. D. Thomson</i>	9/22/94
Activity Manager	N. R. Croskrey <i>N. R. Croskrey</i>	9/23/94
Cost Account Manager	C. M. Towne <i>C. M. Towne</i>	9/22/94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9/22/94

FDS Number

1N3T13

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.06 Instrumentation & Control/Electrical Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.06.03/VI	5. WBS ELEMENT TITLE In-Tank Instrumentation							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OC							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.2 Characterize Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION

A. COST CONTENT

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3,095	\$2,384	\$3,533
CENRTC	3,063	2,634	4,150
GPP			
LINE ITEM			
TOTAL	\$6,158	\$5,018	\$7,863

B: TECHNICAL BASES

Goals & objectives:

The goal is to upgrade tank monitoring instrumentation to the fullest extent practicable. The existing instrumentation in the tanks is generally in poor condition and requires upgrading in order to provide the necessary information to assess and assure their safety. The focus is on surveillance parameters required to verify and maintain tank safety.

Instrumentation upgrades include measurement of temperature, tank pressure, surface level, and other operating parameters. Improved automatic data acquisition with semi-automatic backup is being implemented for the tank farms and associated facilities. This results in a phased replacement of an existing obsolete data acquisition system. The new data acquisition system is general purpose allowing connection of other process and surveillance instrumentation. Continued implementation of an existing data management system provides a permanent data repository as well as engineering analysis capability.

The strategy provides for a systems approach to upgrading tank farm instrumentation. It includes sensors, data acquisition, and data management software. The instrumentation upgrades are prioritized on a tank basis. The priority is determined by considering the following:

- The hazard posed, i. e. Watch List tank or other safety consideration
- The condition of the existing instrumentation and data acquisition equipment
- For data acquisition, the location relative to other tanks being upgraded

As would be expected, the priority for upgrade of instrumentation for any one tank depends on the type of instrumentation. For example, the priority for receiving a level gauge on a particular tank may be very different than the priority for upgrading the temperature monitoring. As a result it is not always possible to upgrade the data acquisition and the level monitoring simultaneously. The inclusion of a tank for a particular instrument upgrade is a reflection of the tank priority based on the above parameters. As implementation progresses, it is expected that priorities will be modified as a result of not only new information on the tank status but also as a result of any work restrictions and regulatory requirements.

These instrumentation upgrades are focused on improvements in temperature sensing, tank pressure monitoring, and level monitoring. The Tank Monitor and Control System (TMACS) upgrade involves expanding an existing system initially installed for monitoring of temperatures in the ferrocyanide (FeCN) tanks. Data management is being improved by continuing the implementation of the Surveillance Analysis Computer System (SACS). This system will archive data, allow user access, and provide data analysis tools. This ensures that hardware is strategically placed to allow the future connection of other tank farm parameters. The strategy is to migrate sensors presently being monitored by the Computer Automated Surveillance System (CASS) to TMACS over a period of years. This will allow the retirement of the CASS which is old and difficult to maintain. During FY 95 the focus for connection will continue to expand to other parameters. In addition to new tank level gauges, some alarm annunciators and tank farm water meters (raw water usage) will be moved from CASS to TMACS.

In addition, improvements are being made in the manual data collection by implementing use of a portable data entry terminal; HDAT. The Handheld Data Acquisition for Tank Farms system automates the procedures and data sheets that Operators previously used to complete manual tank temperature data collection. The HDAT objectives are to improve manual data collection, beginning with tank temperatures, but eventually evolving to Rounds, implement a system that performs safety limit checks in the field, perform business more efficiently by automating the data sheets (over 75) and operating procedures (approximately 40) that guide data collection, and serve as a backup data collection device to the TMACS.

Many of the existing temperature measuring devices that were installed in the waste tanks have failed or have

been abandoned. The tank temperature measurement capability is being improved by reconnecting and repairing existing temperature devices when possible and by installing new sensors.

Status of design documentation:

Upgrades are being performed in accordance with Tank Farm Instrumentation and Data Acquisition/Management Upgrade Plan; WHC-SD-WM-WP-132.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Design, procure and construct TMACS in 6 Farms; S, SX, U, AW, A, AX	9/30/95
Design, procure and install of level gage installation for 48 tanks	9/30/95
Design, procure and install TMACS communication network	7/31/95
Design, procure and construction TMACS in 4 Farms; AP, AY, AZ, TX	9/30/96
Design, procure and install of level gage installation for 28 tanks	9/30/96
Design, procure and construction TMACS in 1 Farm; B	9/30/97
Design, procure and install of level gage installation for 70 tanks	9/30/97
Prepare Instrumentation Upgrades Plan update and revision	3/30/95
Prepare Instrumentation Upgrades Plan update and revision	9/30/95
Prepare Instrumentation Upgrades Plan update and revision	9/30/97
Prepare Instrument Technical Integration Plan and implementation	9/30/95
HDAT fully operational on S, SX, SY, C, TY farms	9/30/95
HDAT fully operational on B, BX, BY, U farms	9/30/96
HDAT fully operational on A, AX, AN, AP, AW, AY, AZ farms	9/30/97

C. STATEMENT OF WORK

Required activities:

Instrumentation Upgrade Plan
Engineering

Tank Instrument Test/Repair
Engineering
Operations

Tank Monitor & Control System
Engineering Design
Engineering Design
Engineering Drafting
Procure and Install KEH
Construction Coordination
Operations

Tank Level Gage Replacement
Engineering Design
Engineering Design
Engineering Drafting
Procure and Install

Handheld Data Acquisition Tanks
HDAT Support
Operations Support

WHC-SP-1101

Management & Administrative

CAP Management
Engineering Management Support
Technical Support
Instrumentation Technical Integration Planning and Implementation
Engineering

Field Support for Upgrades

West Area Ops
Maintenance
West Area Planning
HPT Support
IH Support
East Area Ops
East Area Planning

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	C. P. Schroeder	
Program Element Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J. D. Thomson</i>	9/23/94
Activity Manager	N. R. Croskrey <i>N. R. Croskrey</i>	1/23/94
Cost Account Manager	C. P. Schroeder <i>C. P. Schroeder</i>	9-22-94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9.22.94

FDS Number
1) <u>1N3T14</u>
2) <u>2N3T45</u>

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.07/V	5. WBS ELEMENT TITLE Tank Farm Restoration and Safe Operation MSA, Project W-314	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-6	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60-REV.1) 4.2.1.1 Store Waste 4.2.1.3 Retrieve Waste 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$12,417	\$ 5,398	\$ 1,042	N/A	N/A	N/A	N/A
CENRTC							
GPP							
LINE ITEM		23,125	63,779	N/A	N/A	N/A	N/A
TOTAL	\$12,417	\$28,523	\$64,821	N/A	N/A	N/A	N/A

B. TECHNICAL BASES

Goals and objectives:

- Integrated Instrument Upgrades. Full scale re-instrumentation of the 200 Area Tank Farms SSTs and DSTs. Existing instrumentation will be examined to determine if the parameters currently being measured are adequate and what updated instrumentation is best suited to the tank farm environment. Many of the instrumentation arrays in both the SSTs and DSTs need to be updated or replaced. Additional instrumentation is required in most of the tanks.
- Replace the existing Computer Automated Surveillance System (CASS) and augment the Surveillance Analysis Computer System (SACS) with a new Tank Monitoring and Control system (TMACS). A new system will be developed and installed to assist Tank Farm Operations. A central facility will be built to house the tank farms TMACS host computers and man-machine interface equipment. Several operator control stations will provide the capability to monitor and control the 200 East and West Area Tank Farm Operations. Termination cabinets, multiplexers, data concentrators, remote operator units, and telecommunications interface equipment will be located at various field locations.

A data acquisition system will provide real-time alarm monitoring and status of Tank Farm facilities. In addition, the system will collect data for automatic transfer to a management information system for engineering analysis and archiving. Automatic data collection will provide data in a timely manner. It will also help achieve as low as reasonably achievable exposure goals by reducing entry into radiation areas for data collection.

A new local area network (LAN) will be dedicated to the transfer of Tank Farm instrument data and scientific information pertinent to the operation of the Tank Farm complex. This network system will be required to connect the various file servers and operator and engineering workstations. The main interconnects within the 200 Areas will be analytical laboratories., the 2750E Building, central operations control facility, and operations support facilities.

The Spectral Gamma Analysis System will detect and analyze leakage plumes beneath the Hanford waste storage tanks.

- DST Ventilation Upgrade will provide safe, compliant ventilation systems designed to last for the duration of the DST waste disposal mission. Planned upgrades will be determined on a tank farm specific basis. Evaluate the condition of all existing DST primary and annulus ventilation systems and replace or upgrade as required. Evaluate the ventilation systems in A-105, SX farm and DCRTs.
- Waste Transfer System Upgrade. Waste transfers between SSTs, DSTs, operating facilities, and future disposal facilities will continue until completion of the waste disposal mission. Construction of new waste transfer pipelines is necessary to ensure compliance with RCRA containment and leak detection requirements and to extend the transfer system's life.
- The Tank Farm Electrical Upgrade will modify incoming medium voltage lines and/or equipment, replace substation equipment (load centers), motor control centers, backup generators (as required), and low voltage AC/DC distribution systems, and provide structures to house the electrical equipment that are required to support Tank Farm Operations. Alternate power supplies and additional system capacity will be provided as required. This project will address tank farms with similar characteristics as a group. This project will be managed to ensure availability of power when required for new electrical loads as well as provide the most economical approach to the overall upgrade while meeting specific project

requirements.

- The Centralized Maintenance Facility (W-226) will provide a centrally located facility for the packaging of solid waste and where tools and equipment maintained/repaired, and stored and contaminated tools and equipment can be decontaminated.
- The SST Ventilation Upgrade (W-230) will Evaluate the conditional of all existing SST primary and annulus ventilation systems and replace or upgrade as required.
- The Radiation Zone Lighting (GPPs) will upgrade the area lighting in all the tank farms except 241-SY and C tank farms. Upgrades will replace existing lighting towers with new towers located on the perimeter of the farms.

Major end-item deliverables:

- TPA 43-04, Integrated Instrumentation Upgrade
- TPA 43-05, Transfer System Upgrades
- TPA 43-06, Tank Farm Electrical Upgrade
- TPA 43-02, Double Shell Tank Ventilation Upgrade

Acceptance criteria:

- Verification by Acceptance Test Procedures and Operational Test Procedures
- Receipt of Key Decision 4

C. STATEMENT OF WORK

Required activities over lifetime:

- Engineering studies, conceptual design report, definitive design, construction and start of operations.

Interfaces:

#	From This WBS To	Item Provided
1	Operations and Maintenance 1.1.1.2.01	Supports final safe operation bases and final safe routine surveillance
	To This WBS From	
	N/A	

Technologies to be assessed:

- Current industrial practice

Options to be considered:

- Funding, Procurement, design and construction strategies

1.1.1.2.03.07

A4-93

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.1 (Store Waste), item V, paragraph B (Constraints)
Table F4.2.1.3 (Retrieve Waste), item V, paragraph B (Constraints)
Table F4.2.1.4 (Transfer Waste), item V, paragraph B (Constraints)
- Section 3 (Tank Waste Remediation System Architecture)

Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.1 (Waste Storage System), item VIII, paragraph C (Constraints)
Table A4.2.1.3 (Waste Retrieval System), item VIII, paragraph C (Constraints)
Table A4.2.1.4 (Waste Transfer System), item VIII, paragraph C (Constraints)

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.07 TF Restoration & Safe Operations MSA Project W-314 (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.07.01/VI	5. WBS ELEMENT TITLE Project W-314, Restoration & Safe Operations MSA							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-6							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2 Remediate Waste 4.2.1 Manage Tank Waste 4.2.1.1 Store Waste 4.2.1.4 Transfer Waste 4.2.3 Manage System Generated Waste & Excess Facilities 4.2.3.2 Disposition Gaseous Effluent 4.2.3.3 Disposition Liquid Effluent 4.2.3.4 Disposition Solid Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="1"> <thead> <tr> <th>Expense</th> <th>Capital</th> <th>Line Item</th> </tr> </thead> <tbody> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </tbody> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$12,417	\$ 5,398	\$ 1,042
CENRTC			
GPP			
LINE ITEM	0	23,125	63,779
TOTAL	\$12,417	\$28,523	\$64,821

1.1.1.2.03.07.01

A4-95

B. TECHNICAL BASES

Goals & objectives:

Radioactive liquid waste resulting from the chemical processing of irradiated nuclear reactor fuel has been stored in underground tanks at the Hanford Site since 1944. The tanks contain liquids of varying chemical composition and sludge and/or salt cake formed during evaporation processes. Between 1943 and 1986, 149 single-shell tanks (SSTs) and 28 double-shell (DSTs) were constructed and entered into service. Numerous external audits and internal self-assessments of Tank Farms have revealed that they required extensive restoration in order to meet the overall TWRS mission goals and support safe operation and maintenance activities. Due to their age, many infrastructure systems and components have either: exceeded their useful service life and can be expected to fail in the near-term; have deteriorated beyond repair and must be replaced to ensure continued reliable operation; have already failed; or operate outside current environmental, health, and safety regulations. Deteriorating infrastructure and a poorly defined physical baseline could increase long-term operation and support costs and possibly limit the number of viable alternatives for retrieval, pretreatment and disposal of tank waste.

The Tank Farm Restoration and Safe Operations Major System Acquisition (MSA) will provide capital improvements aimed at restoring the 200 Area Tank Farm infrastructure to an acceptable design basis. This MSA will be integrated with other planned/ongoing upgrades, waste retrieval, and major maintenance activities to ensure that the combined upgrades will adequately support the overall TWRS mission. In order to support TWRS operations, this project focuses on upgrades needed to sustain continued safe operation of Hanford's existing double-shell tanks (DST) and some upgrades for selected single-shell tanks (SST) and other related facilities. The Tank Farm Restoration and Safe Operations MSA will provide major upgrades to Hanford's existing Tank Farm facilities in the major areas of instrumentation, tank ventilation, electrical distribution, and waste transfer.

Work to Be Performed:

FY 95:

- Complete development of Design Requirements Baseline:
The Design Requirements Baseline will be produced in accordance with the TWRS SEMP, to support request for KD-1. It will establish the initial cost, schedule, and technical base lines for the project. Several of these documents exist, see Status of Design Documentation, during DRB development, these documents will be revised to reflect greater detail developed in FY 95. The following will comprise the DRB package:
 - Functions & Operational Requirements
 - Decision Analysis - Identifies required Trade Studies
 - Trade Studies - as required
 - Project Design Concepts - Drawings, sketches, and text.
 - Risk Management Plan - Identify critical information needs, high risk areas, and develop a plan for mitigating risk cost effectively.
 - Interface Control Document - Documents control points with other projects and programmatic activities.
 - Project Performance Specification - The specification for the performance of Title I design by the A&E.

WHC-SP-1101

- Test & Evaluation Plan - Identify any needed test to support the project, and initiate basis for ATP, OTP, and start-up activities.
- Work Breakdown Structure - Develop the Project specific WBS.
- Cost Estimate - Develop the conceptual level cost estimate with appropriate contingency to address the development stage of the project.
- Schedule - Develop the conceptual level schedule with appropriate contingency to address the development stage of the project.
- Select off-site A&E/CM contractor and award contract for ACD & Title I Design. WHC will have the option to extend the contract for Title II Design and construction. This is the preferred method of performance, while maintaining flexibility in project management.
- Issue Priority (Title II Design & Construction Sequence) Plan - Define programmatic, safety, and operational criteria for determining the optimal design and construction sequence. Current plans are to design all farms as a system during Title I, and produce Title II designs to support construction on a farm by farm basis.
- Initiate Advanced Conceptual Design - This is the initial work performed by the off site A&E. Evaluate DRB documentation, develop detailed Title I design plan, and begin to resolve high risk technical activities.
- Prepare Preliminary Safety Evaluation - Perform Hazard Classification, Preliminary Safety Equipment Lists, and Preliminary Safety Evaluation. This effort will utilize the existing Interim Safety Equipment Lists, and will parallel the development of the Safety Equipment Lists for Tank Farms under the 1N1 Program Element. The W-314 project specific analysis will evaluate the incremental impacts on safety (the existing safety basis) from improvements made by the project, and evaluate any new risks.
- Prepare Permitting Plan - Identifies the permitting activities required to support design, construction, and start up. Defines the schedule and resources to support permitting, primarily Clean Air Act permits.
- Prepare Quality Assurance Program Plan - Defines the Quality Assurance requirements for the project.
- Prepare Project Plan, and Project Management Plan - Define how the project will be managed and controlled both at the WHC and DOE/RL levels.
- Construction Plan - Defines the interface points, roles, and responsibilities, especially with Operations and Projects, for the construction phase of the project.

FY 96:

- Complete Advanced Conceptual Design
- Start Title I design - Preliminary definitive design done for all farms as a system to achieve the benefits of commonality for spare parts, maintenance, and operation.
- Initiate Preliminary Safety Analysis Report - Detailed safety analysis, as required, of the incremental effects to the safety basis of the project.

WHC-SP-1101

FY 97:

- Complete Title I design
- Initiate Title II design - Detailed design on a farm by farm basis.

How the Work is to be Performed:

WHC Projects has design and management responsibility for the project. Fixed price contracting methods will be used to control costs.

Under an existing BOA contract, LATA/BNFL/TRW will be developing the Design Requirements Baseline. This BOA was utilized because of the participants experience in developing the TWRS Systems Engineering process.

An off site A&E will be selected to perform Advanced Conceptual Design and Title I Design. The contract will contain options for continuing with the selected A&E for Title II, Title III, and Construction Management.

WHC Engineering will be used as a part of the Design Requirements development team. WHC Engineering will also be used to support documentation and information development for the project.

Why the work is to be Performed:

Project W-314 contributes to the TWRS Mission as defined in WHC-SP-1101 The TWRS FY 95,96, & 97 Multi-Year Work Plan, Section 1.2 by correcting both operational and compliance deficiencies in systems used to safely store radioactive waste until the time it can be retrieved for treatment. Safe storage of radioactive wastes is one of the three principal mission parameters as defined in the first sentence of this mission statement.

The TWRS Strategic Plan draft from the Office of Hanford Programs 7/12/94 internal review copy, when addressing Near Term Strategic Issues speaks about "Upgrade the physical system - Targeted upgrades (based on systems engineering and analysis of safety, environmental, and programmatic risks) will be made on tanks, transfer lines, utilities, ventilation systems, and monitoring and control systems, etc. The objective would be to deal not only with deteriorating infrastructure, but also to strengthen the infrastructure to be responsive to evolving operational and technological requirements for future waste storage, retrieval, treatment, immobilization, and disposal."

This work is currently addressed by TPA milestones M-43-02, 04, 05, & 06. These milestones were negotiated very early in the TWRS System Engineering development process. Since that time the documents, and their timing, required to support the Systems Engineering paradigm have changed. Further the project itself was initially to be managed as a number of "sub-projects". Since that time the project management strategy has changed. The former sub-projects W-314 A, B, C, & D have been combined into a single integrated project and accelerated to the former W-314A schedule. All other former sub-projects, have been removed from project W-314. By discussion with the State, the current TPA milestones will remain in place, with credit being given for accomplishing multiple milestones with single deliverables. Once the project baseline is established, the need for a TPA change will be reviewed.

The Systems Engineering Process as applied to the project responds to the developing TWRS Systems Engineering process, and DNFSB 92-4.

This project will support the first two Environmental Management Program Goals established by the Assistant Secretary for Environmental Restoration and Waste Management:

- Manage and eliminate urgent risk and inherent threats
- Provide a safe work place free from accidents, injuries, and adverse health effects.

The upgrades also support the Secretary of Energy's TWRS Safety Initiatives:

- Infrastructure upgrades
- Improved worker safety/conduct of operations

TWRS Technical Strategy - Rev 0 of the TWRS Technical Strategy, Section IV Strategy and Assumptions, A. Manage Tank Waste, 1. Tank Farm Operation & Upgrades, last bullet Calls for "facilities and systems will be restored and upgraded to improve facility operations and surveillance"

Section 3.1.1.1 TF Operations & Upgrades Strategy, of DOE/RL-92-58 TWRS Program Plan says in item 3. "Restore and upgrade tank farm facilities and systems, using a graded approach, to meet the established safety envelopes and improve facility operations."

DOE/RL-92-59 Draft Program Management Plan, Section 4.1.2.3 Tank Farm Upgrades specifically lists project W-314 as an integral part of the strategy to accomplish the upgrade of Tank Farms.

DOE/RL-92-58 TWRS Program Implementation Plan, Volume II Section 4.0 Tank Farm Upgrades, also shows project W-314 as an integral portion of the strategy for accomplishing the necessary tank farm improvements.

TWRS Systems Engineering Functions

This project will resolve system deficiencies in the existing equipment in meeting the requirements for the following function as taken from DOE/RL-92-60 Rev 1, the TWRS Functions & Requirements:

- Store Waste (4.2.1.1)
- Transfer Waste (4.2.1.4).

In resolving those deficiencies, the project must also meet the requirements allocated to the following functions, also from the TWRS Functions & Requirements:

- Disposition Gaseous Effluent (4.2.3.2)
- Disposition Liquid Effluent (4.2.3.3)
- Disposition Solid Waste (4.2.3.4).

Mandatory Schedule Constraints

Development of this project is following the DOE and DOE/RL 4700 process, as modified by the TWRS Systems Engineering paradigm. Therefore, critical schedule hold points occur at the Key Decision points. As these hold points must be cleared before the next project stage can occur, it is vital that WHC prepare the basis for the Key decision requests as scheduled, and it is equally important that the DOE decision makers take prompt action on those requests.

For example Key Decision 0 was delayed on this project because the Justification of Mission Need had not been approved at DOE HQ. The process of approval of the JMN has been both too long and too iterative. The first draft of the JMN was submitted to DOE HQ on March 31, 1993, since that time no less than 10 revision have been made to that document over the 17 months to date, and it is still not approved. Clearly WHC, DOE/RL, and DOE/HQ must find a way to work more effectively as a team if the project is to move forward and meet it critical schedule TPA milestones.

Roles and Responsibilities

See the section above "How the work will be performed"

WHC-SP-1101

List of Deliverables:

FY 1995-97 DELIVERABLES AND MILESTONES FOR PROJECT W-314

DUE DATE	DESCRIPTION	MAX. COST	ACCEPTANCE CRITERIA
2/15/95	Approve W-314 Tank Farm Prioritization Study	\$64.8K	WHC approval of plan documenting the criteria and analysis used to determine W-314 construction sequence
2/28/95	Provide WDOE The Engineering Study/Scope Statement for Project W-314C (M-43-05-T01)	1	The submittal of the Project W-314C Engineering Study and Scope Statement to the Washington Department of Ecology.
4/28/95	Approve W-314 Conceptual Design Requirements Baseline (DRB)	4	Formal submittal of the completed W-314 conceptual design documentation (Design Requirements Baseline) for WHC review/approval (by the BOA Contractor)
4/30/95	Provide WDOE the Functions & Requirements For Project W-314C (M-43-05-T02)	1	The submittal of the approved Project W-314C Functions and Requirements to the Washington State Department of Ecology.
5/01/95	Issue request to RL for approval of A-E/CM letter order	2	WHC submittal to RL requesting approval of the A-E/CM letter order.
5/30/95	Complete W-314 Permitting Plan	3	WHC approval of plan documenting permitting actions req'd to support W-314 construction and startup
5/31/95	Provide WDOE and DOH Project W-314B Conceptual Design Report (M-43-02A)	4	Formal submittal of the RL-approved W-314 conceptual design documentation (Design Requirements Baseline)
5/31/95	Provide WDOE and DOH Project W-314A Conceptual Design Report (M-43-04-04A)	4	Formal submittal of the RL-approved W-314 conceptual design documentation (Design Requirements Baseline)
5/31/95	Submit W-314 Validation Package to DOE-RL	3	Submission of project W-314 Validation Package to DOE-RL.
5/31/95	Issue W-314 QAPP to RL for approval	\$81.7K	WHC approved QAPP formally submitted to RL for approval
5/31/95	Issue W-314 Preliminary Safety Evaluation (PSE)	\$389.3K	WHC approval of W-314 PSE document, including Hazard Classification and Preliminary Safety Equipment List
6/1/95	RL Approve A-E/CM Letter Order	2	Receive formal notification from DOE-RL approving A-E/CM letter order.

WHC-SP-1101

DUE DATE	DESCRIPTION	MAX. COST	ACCEPTANCE CRITERIA
6/30/95	Receive DOE-HQ Project W-314B Validation to request Congressional Funding (M-43-02-T06)	3	Receive formal notification from DOE-HQ of validation approval.
6/30/95	Receive DOE-HQ Project W-314A Validation to request Congressional Funding (M-43-02-T05)	3	Receive formal notification from DOE-HQ of validation approval.
6/30/95	Provide WDOE the Project Conceptual Design SOW for W-314C (M-43-05-T03)	1	The submittal of the Project W-314 conceptual design statement of work to the Washington State Department of Ecology
6/30/95	Issue Final W-314 Project Plan to RL	3	WHC approved Project Plan, prepared in accordance with DOE 4700.1, submitted to RL for approval
7/31/95	Issue W-314 Project Management Plan to RL	3	WHC approved Project Management Plan, prepared in accordance with DOE 4700.1, submitted to RL for approval
9/1/95	Approve/issue A-E/CM Contract for W-314 ACD and Title I Design	2	RL approval of the negotiated A-E/CM contract amount.
9/30/95	Issue W-314 Construction Plan/Schedule	3	WHC approval of W-314 construction plan and schedule
12/1/95	Approve Key Decision 1 (KD-1) for Project W-314	6	RL/WHC receipt of KD-1 approval from DOE-HQ
12/31/95	Issue W-314 Advanced Conceptual Design Report	\$5,124.5K	WHC approval of A-E/CM's ACDR
12/31/95	Issue W-314 Title I Design Plan	6	WHC approval of A-E/CM's Title I design plan and schedule documentation
1/31/96	Start Definitive Design for W-314A (M-43-04-T06)	6	Official WHC authorization for A-E/CM contractor to begin W-314 Title I design work
2/28/96	Provide WDOE the Engineering Study/Scope Statement for Project W-314D (M-43-06-T01)	1	The submittal of the Project W-314D Electrical Upgrade Engineering Study to the Washington State Department of Ecology
4/30/96	Provide WDOE the Functions & Requirements for Project W-314D	1	The submittal of the approved Project W-314D Functions and Requirements to the Washington State Department of Ecology

WHC-SP-1101

DUE DATE	DESCRIPTION	MAX. COST	ACCEPTANCE CRITERIA
5/31/96	Provide WDOE and DOH Project W-314C Conceptual Design Report (M-43-05A)	4	Formal submittal of the RL-approved W-314 conceptual design documentation (Design Requirements Baseline)
6/30/96	Receive DOE-HQ Project W-314C Validation to request Congressional Funding (M-43-05-T06)	6	Receive formal notification from DOE-HQ of validation approval.
6/30/96	Provide WDOE the Project Conceptual Design SOW for W-314D (M-43-06-T03)	1	The submittal of the Project W-314 statement of work to the Washington State Department of Ecology
9/30/96	Issue draft W-314 Preliminary Safety Analysis Report (PSAR)	\$2,610.0K	Issue draft W-314 PSAR for WHC review
12/13/96	Approve Key Decision 2 (KD-2) for Project W-314	7	RL/WHC receipt of KD-2 approval from DOE-HQ
1/31/97	Start Definitive Design for W-314B (M-43-02-T07)	7	Official WHC authorization for A-E/CM contractor to begin W-314 Title I design work
1/31/97	Complete Title I Design	5	WHC receipt/approval of the A-E/CM's Preliminary Design Report and supporting documentation
2/3/97	Start W-314 Title II Design	TBD	Approved A-E/CM contract modification for the Title II work effort.
5/31/97	Provide WDOE and DOH Project W-314D Conceptual Design Report (M-43-06A)	4	Formal submittal of the RL-approved W-314 conceptual design documentation (Design Requirements Baseline)
6/30/97	Issue Final W-314 PSAR	\$2,675.1K	WHC approval of final W-314 PSAR documentation
6/30/97	Receive DOE-HQ Project W-314D Validation to request Congressional Funding (M-43-06-T06)	7	Receive formal notification from DOE-HQ of validation approval.

- 1 FY 94 work, expected to be accomplished in Sept 94.
- 2 Costs part of the A-E/CM selection process - \$311.6K
- 3 Costs part of FY 95 Project Management - \$1,222.4K
- 4 Costs part of Design Requirements Baseline development - \$6,511.2K
- 5 Part of Title I Design - \$28,740.5K
- 6 Part of FY 96 Project Management - \$1,632.3K
- 7 Part of FY 97 Project Management - \$2,299.5K

Status of Design Documentation:

The following Engineering Studies have been performed:

WHC-SD-W314A-ES-001, Rev 0 W-314A TF Integrated Instrumentation System Upgrade Engineering Study
WHC-SD-W314A-ES-002, Rev 0 W-314A Study Comparison to Cost Trade Off Options
WHC-SD-WM-ES-284, Rev 0 W-314B Double Shell Tank Ventilation Upgrades
WHC-SD-W314C-ES-001, Rev 0 Engineering Study Transfer System Upgrade Project W-314C
WHC-SD-W314D-ES-001, Rev 0 Tank Farms Electrical Upgrades Engineering Study (Tank Farm Restoration and Safe Operations/W-314)

The following Systems Engineering Documents have been produced, or are in work at this time (8/16/94), to form the basis for the project:

WHC-SD-W314-MAR-001 Rev 0 Mission Analysis Report for Project W-314, Tank Farm Restoration and Safe Operations
WHC-SD-W314-ICD-001 Rev 0 Interface Control Document, Project W-314
WHC-SD-W314-FRD-001 Rev 2 Function and Requirements for Tank Farm Restorations and Safe Operations, Project W-314
Draft in Work Project W-314 Specific Systems Engineering Management Plan (title approximate)
Draft in work Project W-314 Specific Design Requirements Document (title approximate)

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

See table above in list of deliverables.

C. STATEMENT OF WORK

Required activities:

Design Requirements Baseline
Permitting Activities
Project Management
A&E Selection
Design
Construction
Inspection

Technologies to be assessed:

Electrical Distribution mission needs, functions, and requirements
Tank Ventilation (cooling and confinement as required) system mission needs, functions, and requirements
Instrumentation mission needs, function and requirements
Waste Transfer mission needs, functions, and requirements

Options to be considered:

See the referenced Engineering studies (above) for a detailed description of technical alternatives considered.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	W. W. Rutherford	
Program Element Manager	J. D. Thomson	
Activity Manager	G. L. Crawford	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	J. D. Thomson <i>J. D. Thomson</i>	9/22/94
Activity Manager	G. L. Crawford <i>G. L. Crawford</i>	9/21/94
Cost Account Manager	W. W. Rutherford <i>W. W. Rutherford</i>	9/21/94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9/22/94

FDS Number

- 1) 1N3F71
- 2) 3N3F72

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.09/V	5. WBS ELEMENT TITLE Mechanical Upgrades	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - SUFFIX - SUBACTIVITY NUMBER 1120-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOED/RL-92-60-REV.1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$ 7,106	\$3,905	\$3,697	N/A	N/A	N/A	N/A
CENRTC	4,214	1,492	2,300	N/A	N/A	N/A	N/A
GPP	981	0	0	N/A	N/A	N/A	N/A
LINE ITEM							
TOTAL	\$12,031	\$5,397	\$5,907	N/A	N/A	N/A	N/A

1.1.1.2.03.09

A4-105

B. TECHNICAL BASES

Goals and objectives:

- Provide the engineering, management, liaison, contractor/sub-contractor interface, and engineering support to accomplish upgrades to Tank Farm facilities and equipment.

Major end-item deliverables:

- Long length contaminated equipment disposal infrastructure and protocol
- SI 4b35 Replace Compressed air systems in 10 tank farms

Acceptance criteria:

- Completion of Acceptance Test Procedures, Operational Test Procedure and Acceptance for Beneficial Use (ABU)

C. STATEMENT OF WORK

Required activities over lifetime:

- Upgrades that will be done to accomplish the restoration/remediation of equipment and facilities will include the following: compressors, compressed air systems, design and construction of a long-length equipment transfer port, design and construction of a long-length equipment storage facility, modification of a cold test facility for development testing and operator training, design and construction of a controlled storage yard for long-length equipment, modification of facilities to minimize effluent waste water generation, HVAC engineering design and replacement of Tank Farm passive vent systems, develop protocol and hardware for a cradle-to-grave approach to the disposal of long-length contaminated equipment, develop transfer pumps engineering for tank farm waste and development of design guide for the equipment to be installed in tanks and the development of generic engineered equipment to be used for Tank Farm transfer of liquid radioactive waste.

Interfaces:

#	From This WBS To	Item Provided
1	Operations and Maintenance 1.1.1.2.01	Support final safe operations with long length contaminated equipment disposal infrastructure and protocol
	To This WBS From	
	N/A	

Technologies to be assessed:

- Equipment removal and transfer systems

Options to be considered:

- Removal, transfer, and disposal strategies

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.1 (Store Waste), item V, paragraph B (Constraints)
- Section 3 (Tank Waste Remediation System Architecture)
Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.1 (Waste Storage System), item VIII, paragraph C (Constraints)

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.09 Mechanical Upgrades (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.09.02/VI	5. WBS ELEMENT TITLE Long-Length Contaminated Equipment Storage Facility (W-373)							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING			
CENRTC			
GPP	\$ 490		
LINE ITEM			
TOTAL	\$ 490		

B. TECHNICAL BASES

Goals & objectives:

Construct and permit a storage building or structure at the CWC to provide easy access and storage for long-length contaminated equipment containers from TWRS.

Status of Design Documentation:

Central Waste Complex is working to release these the Functional Design Criteria on June 30, 1994

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Completion of Definitive Design
- Completion of Construction
- Acceptance criteria:
Signoff of Official Acceptance of Construction

C. STATEMENT OF WORK

Required activities:

- Functional Design Criteria Complete
- Conceptual Design Media Complete
- Definitive Design Media Complete
- Construction Activity Complete
- Signoff of Official Acceptance of Construction

Technologies to be assessed:

- Container Loading and Unloading Equipment
- Moveable and Permanent Buildings

Options to be considered:

- Straddle Lift Cranes
- Transport Trailer Movement Strategies

D. AUTHORIZATION

COST ACCOUNT AUTHORIZATION WILL BE APPROVED ONCE PROJECT AUTHORIZATION IS APPROVED BY RL.

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	J. B. Witt	
Program Element Manager	J. D. Thomson	
Activity Manager	S. D. Riesenweber	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson	
Activity Manager	S. D. Riesenweber	
Cost Account Manager	J. B. Witt	
Project Control Analyst	R. S. Schubert	

FDS Number

4N3K92

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.09 Mechanical Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.09.04/VI	5. WBS ELEMENT TITLE Long-Length Contaminated Equipment/Empty Container Storage Facility (W-374)							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING			
CENRTC			
GPP	\$ 490		
LINE ITEM			
TOTAL	\$ 490		

1.1.1.2.03.09.04

A4-113

B. TECHNICAL BASES

Goals & objectives:

This project will provide a fenced storage area and covered structure to store empty reusable transport/storage containers, cradles and carriages. It will also be used to store Component Removal Equipment (ie: Flexible Receiver Assemblies, (FRA)) and Transport Trailers (ie: Receiver Trailers and Transport Trailers). The equipment used to load and unload Shielding for the containers will be stored here. The equipment needed to modify the FRA to fit the various riser configurations will be stored here.

Status of Design Documentation:

The Conceptual Design Report is to be released for approval on July 28, 1994.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Completion of Definitive Design
- Completion of Construction and Signoff of Official Acceptance of Construction
- Acceptance criteria:
 - Signoff Official Acceptance of Construction

C. STATEMENT OF WORK

Required activities:

- Conceptual Design Media Complete
- Definitive Design Media Complete
- Construction Activity Complete
- Signoff of Official Acceptance of Construction

Technologies to be assessed:

- Container/Carriage Loading and Unloading
- Carriage and Cradle Removal and Loading

Options to be considered:

- Straddle Lift Cranes and Pick Cranes
- Transport Trailer and Container Movement Strategies

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	J. B. Witt	
Program Element Manager	J. D. Thomson	
Activity Manager	S. D. Riesenweber	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J. D. Thomson</i>	9/22/94
Activity Manager	S. D. Riesenweber <i>S. D. Riesenweber</i>	9/22/94
Cost Account Manager	J. B. Witt <i>J. B. Witt</i>	9-22-94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9/22/94

FDS Number

4N3K94

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.09 Mechanical Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.09.05/VI	5. WBS ELEMENT TITLE Mechanical Upgrades	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-OA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3,599	\$ 627	\$1,153
CENRTC	\$ 69		
GPP			
LINE ITEM			
TOTAL	\$3,668	\$ 627	\$1,153

1.1.1.2.03.09.05

A4-117

B. TECHNICAL BASES

Goals and Objectives:

Tank Farms Upgrades provides expense modifications and capital improvements aimed at restoring the 200 Area Tank Farm to a currently acceptable design basis. Mechanical and Instrumentation & Control/Electrical Upgrades address individual issues and complements the Tank Farm Restoration Major System Acquisition (MSA). The MSA takes a comprehensive approach. The upgrades effort will restore those areas not addressed by the MSA. Both will be fully integrated to ensure that Upgrades adequately supports the overall TWRS mission.

Fiscal year '95 through '97 goals and objectives continue prior year initiatives as envisioned in the MYPP. Support of TWRS Safety Initiatives (SI) and the TPA is continuing. Specifically, Mechanical Upgrades will complete the requirements for the "Upgrade Ten Tank Farm Compressed Air Systems" (SI 4b35) milestone and support effluent reduction (TPA M-17-08B) milestone in FY 95. Related testing and turnover will also be completed in FY 95. Change trailer modifications are slated during FY 96. In FY 97 design efforts will focus on the Tank Farm steam system, a personnel safety issue.

Mechanical Upgrades provides engineering, management, liaison, contractor/sub-contractor interfaces, installation, testing, and turnover coordination supporting these goals and objectives.

Status of design documentation:

Design for FY 95 installation/testing/turnover completed in FY 94, except for the site specific design needed for the TX/TY modular compressor. Change trailer design will be worked with modification in FY 96. In FY 97 Mechanical Upgrades will focus on design.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Compressed Air Safety Initiative (4b35) supported in FY 95 by:

- 241-701-A Compressor installation, testing and turnover
- 241-AP Closed Loop Cooling installation, testing and turnover
- 241-TX/TY Modular Compressor design & installation, testing, and turnover
- 241-T Compressor operational testing and turnover
- 241-U Compressor turnover
- B/BY/BX Modular Compressor operational testing and turnover

TPA Effluent Reduction milestone (M-17-08B) supported in FY 95 by:

- 242-S Liquid Waste Minimization installation, testing and turnover

FY 96 annual milestones:

- 200 E/W Change Trailer modifications
(includes design and turnover)

FY 97 annual milestones:

- East Steam Line Upgrade evaluation and design
- West Steam Line Upgrade evaluation and design

C. Statement of Work

Required Activities:

Upgrades restoration and remediation of Tank Farm equipment and facilities include three major activities

1) design, 2) installation, and 3) testing and turnover. Each of these include several tasks. Listed then are the major activities scheduled for each fiscal year; followed by a listing typical activities included in the major activities.

Fiscal Year List:

FY 95

- 241-701-A Compressor installation, testing and turnover
- 241-AP Closed Loop Cooling installation, testing and turnover
- 241-TX/TY Modular Compressor design, installation, testing and turnover
- 242-S Liquid Waste Minimization installation, testing, and turnover
- 241-T Compressor operational testing and turnover
- 241-U Compressor turnover
- B/BY/BX Modular Compressor operational testing and turnover

FY 96

- 200 E/W Change Trailer modifications (includes design and turnover)

FY 97

- East Steam Line Upgrade evaluation and design
- West Steam Line Upgrade evaluation and design

Major Upgrade Activity Inclusions:

- Design
 - task planning
 - requirements definition
 - acceptance for beneficial use (ABU) process initiation
 - walkdowns
 - preliminary design
 - drafting
 - design documentation including ECNs and drawings
 - USQ and other design reviews
 - long lead/major equipment procurement
- Installation
 - pre-job walkdown
 - JCS package preparation
 - material procurement
 - prefabrication
 - HTP and OPS support
 - permit preparation and approval
 - hardware removal and installation
 - installation documentation
 - field engineering support
 - acceptance testing
- Test and Turnover
 - operational testing
 - acceptance and operational test report preparation and release
 - design and system engineering test support
 - ABU package assembly and review
 - Operations acceptance

It is a specific requirement that these activities be coordinated with the Tank Farm Restoration and Safe Operations MSA.

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	E. Biebesheimer	
Program Element Manager	J. D. Thomson	
Activity Manager	S. D. Riesenweber	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J. D. Thomson</i>	9/22/94
Activity Manager	S. D. Riesenweber <i>S. D. Riesenweber</i>	9/22/94
Cost Account Manager	E. Biebesheimer <i>E. Biebesheimer</i>	9/22/94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9/22/94

FDS Number

- 1) 1N3K95
- 2) 2N3K55

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.09 Mechanical Upgrades (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.09.07/VI	5. WBS ELEMENT TITLE Long-Length Contaminated Equipment Disposal							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.3 Retrieve Waste	12. BUDGET AND REPORTING NUMBER(S) <table style="width: 100%; border: none;"> <tr> <td style="text-align: left;">Expense</td> <td style="text-align: left;">Capital</td> <td style="text-align: left;">Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>35EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	35EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	35EW31301						

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$3,200	\$2,469	\$ 934
CENRTC	2,590	0	1,006
GPP			
LINE ITEM			
TOTAL	\$5,790	\$2,469	\$1,940

B. TECHNICAL BASES

Goals & objectives:

The removal of three air lances from tank 101-SY made it clear that TWRS does not have adequate protocol and hardware in place for the retrieval, packaging, or transportation of long-length contaminated equipment removed from waste tanks. This removal effort incurred costs in excess of \$1,000,000 for each item. Additional case specific equipment retrieval efforts are experiencing similar costs. Approximately 1300 long-length items are currently installed in tanks, most of which will likely require removal and disposal sometime during the operation, remediation, or decommissioning of the tanks.

The objective of the Long-Length Contaminated Equipment Disposal element is to transform retrieval, packaging and transports tasks from case specific engineered efforts into standard operations at Tank Farms. This will be accomplished by developing generic equipment and procedures that will facilitate simplified removal for 90 - 95% of long-length equipment. Further, these efforts will be accomplished in cooperation with Solid Waste Disposal to assure that an integrated cradle-to-grave plan for the disposal of this waste stream is in place.

The goal is to have a useable TWRS system and process in place by December of 1995.

Status of Design Documentation:

Preliminary investigative work began on the Long-Length Contaminated Equipment Disposal initiative toward the end of FY 1993. Work completed through the end of FY 1994 includes:

- Completion of WHC Key Milestone TW3-94-441, Disposal Strategic Plan, Options Study. Supporting Document WHC-SD-WM-ES-265. The Title of the Document is Alternative Options Study and Engineering Support Information.
- Completion of WHC Key Milestone TW3-94-440, Release Long-Length Equipment Disposal Functional Design Criteria Document. Supporting Document; WHC-SD-WM-FDC-029. The Title of the Document is Functional Design Criteria: Auxiliary Equipment To Support Removal Of Tank Farm Long-Length Equipment.
- Completion of WHC Reportable Milestone, Prepare Overall Test Plan Supporting Document. Supporting Document WHC-SD-WM-TP-188, The title of the document is Test Plan for Tank Farms Long Length Contaminated Equipment Removal and Transport.
- Completion of WHC Key Milestone TW3-94-438, Release Container Packaging Design Criteria Document. Supporting Document WHC-SD-TP-PDC-020. The Title of the Document is Packaging Design Criteria, Transfer and Disposal of Contaminated Long-Length Tank Farm Equipment.
- Completion of WHC Key Milestone TW3-94-437, Long-Length Waste Transport/Storage Container Conceptual Design. Supporting Document WHC-SD-TP-DB-002. The Title of the Document is Meeting Minutes and Design Basis for the Conceptual Design Review of Containers and Carriages.
- Completion of WHC Key Milestone TW3-94-436, Release Conceptual design Review Report for Transport Equipment.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Milestones

- Waste Generator Characterization Plan (WHC Other, FY 1995)
- Release of a process path document for the removal, transport, and storage of long-length contaminated equipment (WHC Other, FY 1995)
- Completion of the Cold Test Facility preparation for total system testing (QTP) (WHC Key, FY 1995)
- Release of the final design for Component Removal Equipment (DOE-RL, FY 1995)
- Completion of Flexible Receiver Assembly platform modifications and 2 riser adapters (WHC Key, FY 1995)
- Complete fabrication of Component Removal Equipment (FY 1996)
- Complete fabrication and testing of Assessment Verification System (FY 1996)
- Complete design of in-farm cut up equipment (FY 1997)
- Release final design for transport/storage containers (WHC Other, FY 1995)
- Fabricate and deliver 2 transport/storage containers (WHC Key, FY 1995)
- Fabricate and receive remaining transport/storage containers (FY 1996)
- Perform qualification test procedure (FY 1996)
- Complete generic operating procedures for LLCE total retrieval system (FY 1996)
- Award contract for design and fabrication of receiver trailer and transport trailer (WHC Other, FY 1995)
- Complete final design of receiver trailer and transport trailer (WHC Other, FY 1995)
- Receive and inspect receiver trailer and transport trailer (FY 1996)
- Develop first draft Safety Analysis Report for Packaging (SARP) (WHC Other, FY 1995)
- Release all SARPs (FY 1996)

Other Deliverables

- Release a qualification test plan (FY 1995)
- Identify Neutron monitoring system for waste characterization system verification (FY 1995)
- Begin fabrication of container transport trailers (FY 1995)
- Evaluate regulatory options and alternatives (FY 1996)
- Complete safety evaluation and necessary document modifications (FY 1995)

C. STATEMENT OF WORK

The sole purpose of this cost account is to develop standard protocol and hardware for the Disposal of Long-Length Contaminated Equipment (LLCE). Interfaces will be established to assure that the TWRS system will easily mesh with Solid Waste Disposal requirements and capabilities.

The work scope will include the following basic tasks. A more detailed description may be found in work plan WHC-SD-WM-WP-215 Rev 1.

- 1) Study and recommendation of optimal alternatives for Waste Tank Equipment Removal, Transport and Storage. Identify ties to Treatment and Disposal facilities.
- 2) Design and modifications of existing equipment to be used site wide for the removal of LLCE from tanks
- 3) Preparation of the Cold Test Facility for testing and training on the system developed
- 4) Design and Procure reusable Transport/Storage Containers and Carriages that meet all applicable regulations and acceptance requirements for the Central Waste Complex

5) Design and Procure Transport Trailers that meet all applicable regulations and acceptance requirements for the Hanford site.

6) Negotiate and facilitate generic acceptance documentation with Solid Waste Disposal. Cooperate to assure that acceptable storage, treatment, and disposal facilities are available for long-length contaminated equipment

Required activities:

FY 1995

Studies, Plans, Mockups, Criteria

Develop waste generator characterization plan, prepare cold test facility for total system QTP, develop total system operating procedures, perform safety documentation evaluation,

Component Removal Equipment

Provide design, modifications, acceptance testing and operating procedures for the Flexible Receiver Assembly needed to support system qualification testing.

Packaging System

Complete final design of transport/storage containers, initiate construction, and fabricate 2 containers. Prepare Safety Analysis Report for Packaging--draft and review.

Transport System

Award a design and build contract, design and fabricate transport trailers, perform ATP

FY 1996

Studies, Plans, Mockups, Criteria

Evaluate regulatory requirements and negotiate cost effective alternatives

Component Removal Equipment

Complete ATP on Flexible Receiver Apparatus

Packaging System

Complete fabrication and inspection of remaining transport storage containers, release SARPs

Transport System

Complete fabrication of transport trailers, perform ATP, receive on site

FY 1997

Component Removal Equipment

Design and fabricate in-farm cut up equipment

Technologies to be assessed:

- Disposal of Equipment that has been in contact with tank waste
- Receiver and transport trailer alignment and leveling systems

Options to be considered:

- Alternate cleaning approaches (ie CO2 blasting)
- Means of exiting RCRA in the farms

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	B. R. Kemp <i>B R Kemp</i>	9/22/94
Program Element Manager	J. D. Thomson	
Activity Manager	S. D. Riesenweber	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J D Thomson</i>	9/22/94
Activity Manager	S. D. Riesenweber <i>SD Riesenweber</i>	9/22/94
Cost Account Manager	B. R. Kemp <i>B R Kemp</i>	9/22/94
Project Control Analyst	R. S. Schubert <i>R S Schubert</i>	9/22/94

FDS Number

- 1) 1N3K96
- 2) 2N3K56

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.09 Mechanical Upgrades (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.09.08/VI	5. WBS ELEMENT TITLE Engineered Tank Farm Hardware	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$ 307	\$ 809	\$ 383
CENRTC	1,555	1,492	1,294
GPP			
LINE ITEM			
TOTAL	\$1,862	\$2,301	\$1,677

1.1.1.2.03.09.08

A4-127

B. TECHNICAL BASES

Goals & objectives:

- New requirements for the treatment and disposal of equipment removed from tanks have made existing tank farm transfer pumps inadequate and obsolete by today's standards and requirements. Current pumps have extremely short average life cycle (approximately 2.5M gallons), are not repairable, and are not easily disassembled for decontamination and inspection before disposal. Current retrieval and disposal costs are estimated to be greater than \$1,500,000 per item. Furthermore, the head and flow capacities of existing pumps do not ensure consistent operation at the minimum flow rate deemed necessary to alleviate the possibility of transfer line plugging.

The Engineered Tank Farm Hardware cost account is developing a new generation transfer pump for use in the tank farms. The goal is to design a nuclear waste pump that will be generic enough in design for use in most transfer pumping applications for TWRS operations and retrieval activities.

Many new and important features are being pursued in the new pumps. For example, the pumps will be equipped with variable speed drives to allow use in a variety of applications and conditions while assuring minimum flow rates. This will allow the pump to operate within its operational parametric envelope at all times, thereby reducing or eliminating cavitation and other stresses which shorten pump life. This and other features designed into the pumps are expected to result in a life cycle extension of greater than 95%.

The pumps will be of the canned submersible type meaning that the pump and motor unit will be submerged in tank waste. Components will be modular and replaceable eliminating the current practice of disposing of the entire unit. This feature will reduce the length of the component requiring replacement if a pump fails or needs repair resulting in a 90 - 95% waste volume reduction.

The pump will also be suitable for remote handling for ease of repair and decontamination for disposal.

The second primary task within Engineered Tank Farm Hardware is sponsorship of the third annual Pump Users Technology Exchange in line with the Savings Through Sharing Program. This event is held in conjunction with the International Pump User's Symposium in Houston, Texas which is sponsored by Texas A&M University's Turbo Machinery Lab. Past technical exchanges have proven to be an excellent opportunity for engineers to share ongoing work, problems, and solutions that are unique to pumping nuclear waste. As a result, there is beginning to be greater communication between sites, and integration and consistency between separate projects on the Hanford site.

Status of Design Documentation:

A contract was awarded to Westinghouse Electro-Mechanical Division (WEMD) on May 16, 1994 via Purchase Order MKH-SXP-342098 to develop a definitive design for engineered transfer pumps. This completed WHC Key Milestone TW3-94-442 two weeks ahead of schedule. Conceptual design will be completed in FY 1994. Final Design will begin and be completed in FY 1995—Milestone Control Number T2C-95-600 and fabrication on the pump will begin.

All testing requirements at the manufacturer's facility (ATP) will be developed during the Final Design stage of the program. Preliminary packaging and shipping requirements will be outlined at this time also.

Final packaging and shipping requirements will be agreed upon and approved by WHC a minimum of 30 days before shipment of the initial unit in FY96.

A Qualification Test Procedure (QTP) will be developed and the tests are to be conducted in FY96. This procedure will outline additional testing by WHC engineers after the pump is received on site. The purpose of

this testing is to study the pump's performance under a variety of simulated tank farm conditions. It will also be tested for remoteability, disassembly, and reassembly. After testing this pump will be used as plant unit.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Milestones

- Completion of Final Design (FY95)
- Receipt of Prototype Transfer Pump (FY96)
- Completion of site QTP (FY96)
- Receipt of four plant units (FY97)

Other Deliverables

- Begin fabrication of Prototype Transfer Pump (FY95)
- Organize and Sponsor Third Annual GOCO Pump Technology Exchange (FY95)
- Place Option 3 for four Plant Units (FY96)
- Place Option 4 for four additional Plant Units (FY96)
- Organize and Sponsor FY96 & FY97 GOCO Pump Technology Exchanges

C. STATEMENT OF WORK

The development of engineered transfer pumps is being pursued under contract with Westinghouse Electromechanical Corporation (WEMD) in an option based approach. Option 1 includes preliminary and definitive design. WHC will evaluate the completed definitive design and exercise, or not, an option for WEMD to fabricate and test a field useable prototype pump. Provided test proves successful and the new pump exhibits the desired attributes, Option 3 will result in the fabrication of 4 plant unit pumps. Option 4 provides for WHC to exercise the further procurement of up to 4 more plant unit pumps.

Required activities:

FY95

Coordinate Final Design Review Team activities from site engineering, operations, and Quality Control personnel. The final design will include vendor testing and performance tests. Preliminary packaging and shipping requirements will be identified. As fabrication begins, the required members of the team will consult and oversee fabrication and testing activities as needed.

Coordinate and sponsor the Third Annual GOCO Pump User's Technology Exchange.

Sponsor 3 Hanford engineer's participation in the International Pump User's Symposium Discussion Group "Overcoming Problems Associated with Pumping Nuclear Waste".

FY96

Ensure completion of fabrication and testing of the prototype transfer pump and coordinate shipment to Hanford. Issue letter of completion after final receiving & inspection by Quality Control Personnel. Complete site QTP development and testing. Exercise Option 3 for four Plant Units if QTP tests are acceptable.

Continue to promote and sponsor GOCO activities.

FY97

Oversee fabrication & testing of Option 3 purchase. Ensure shipment of Option 3 pumps. Exercise Option 4, for four additional plant units to be delivered in FY98.

Continue to promote GOCO activities.

Technologies to be assessed:

- Features to enhance life cycle of transfer pumps
- Application of high radiation/high temperature motor insulation to the transfer pump
- Development of an adjustable suction level device

Options to be considered:

- Different decontamination techniques
- Optimal materials and surface finishes

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	B. R. Kemp	
Program Element Manager	J. D. Thomson	
Activity Manager	S. D. Riesenweber	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	J. D. Thomson <i>J. D. Thomson</i>	9/22/94
Activity Manager	S. D. Riesenweber <i>S. D. Riesenweber</i>	9/22/94
Cost Account Manager	B. R. Kemp <i>B. R. Kemp</i>	9/22/94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9/22/94

FDS Number

- 1) 1N3K97
- 2) 2N2K57

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.09 Mechanical Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.09.10/VI	5. WBS ELEMENT TITLE SST Ventilation, Project W-230							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2 Remediate Waste 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING			\$1,137
CENRTC			
GPP			
LINE ITEM			
TOTAL			\$1,137

B. TECHNICAL BASES

Goals & objectives:

Currently there are three SSTs (101-A, 101-AX, and 103-AX) in the 200 East Area and 15 SSTs (102-S, 112-S, 101 through 106-SX, 109-SX, 110-T, 103-U, 105-U, and 109-U) in the 200 West Area in the hydrogen category of the Safety Watch List. Periodic releases of hydrogen within these tanks has increased the need for higher ventilation system flow rates beyond the existing exhaust system capacity. These tanks have been declared to have an Unreviewed Safety Question (USQ) because of the potential consequences of a radiological release from hydrogen burning and secondary crust reaction, an event not analyzed in the current Safety Analysis Report (SAR).

There are also 18 SSTs in the 200 East Area (102-BX, 106-BX, 110-BX, 111-BX, 101-BY, 103 through 108-BY, 110-BY through 112-BY, 108-C, 109-C, 111-C, and 112-C) and six SSTs in the 200 West Area (101-T, 107-T, 118-TX, 101-TY, 103-TY, and 104-TY) that are monitored in the ferrocyanide category of the Safety Watch List. These tanks have been declared an Unreviewed Safety Question because of the potential for an explosion if tank contents were allowed to heat up or if an uncontrolled exothermic reaction occurred. The tanks and their ventilation systems do not meet RCRA requirements.

This project will add equipment that provides adequate flow rates, filtration, and exhaust monitoring to these tanks to eliminate the safety concerns associated with hydrogen and ferrocyanide issues. It will also address the release of potentially harmful vapors to the environment. Tanks already on active ventilation will be evaluated for adequacy, and tanks on passive ventilation will be evaluated to see if active ventilation will be required.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS): N/A

C. STATEMENT OF WORK

Required activities: N/A

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	J. L. Homan	
Program Element Manager	J. D. Thomson	
Activity Manager	S. D. Riesenweber	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J. D. Thomson</i>	9/22/94
Activity Manager	S. D. Riesenweber <i>S. D. Riesenweber</i>	9/22/94
Cost Account Manager	J. L. Homan	
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9/22/94

FDS Number

1N3K99

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.10/V	5. WBS ELEMENT TITLE W-030, Ventilation Upgrades							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-2							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60-REV.1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$1,954	\$1,950	\$ 594	N/A	N/A	N/A	N/A
CENRTC							
GPP							
LINE ITEM							
TOTAL	\$1,954	\$1,950	\$ 594	N/A	N/A	N/A	N/A

B. TECHNICAL BASES

Goals and objectives:

- Current Hanford Site waste volume projections identify a need to use the four tanks past the year 2000. Upgrades to, or replacement of, some of the Tank Farm subsystems, such as the ventilation system and cooling system components, are required to extend their useful life and comply with current codes, standards, and regulations. Project W-030 will enhance the overall safety and reliability of the critical Tank Farm ventilation system and provide protection against failure of the systems due to a single component failure in the event of an earthquake or high winds.

Major end-item deliverables:

- Upgrades to the primary ventilation and cooling system of the AY/AZ tank farms
- Standby power system
- Instrumentation and control system utility service
- TPA M-43-01, Complete Project W-030, Tank Farm Ventilation Upgrades

Acceptance criteria:

- Verification by Acceptance Test Procedures and Operational Test Procedures
- Receipt of Key Decision 4

C. STATEMENT OF WORK

Required activities over lifetime:

- This project will provide the essential safety class systems for the AY and AZ Tank Farms to provide for safe efficient storage of high-level radioactive liquid waste. Upgrades and improvements will be made to the ventilation and cooling, electrical standby power, and instrumentation/control systems. The proposed construction site is within and adjacent to the AY and AZ Tank Farms. The facilities and equipment will be constructed on the West side, with associated piping and electrical/instrumentation lines extending to the 241-AZ and -AY Tank Farms.
- Definitive Design
- Construction is scheduled for completion during the first quarter of FY 1997.

Interfaces:

#	From This WBS To	Item Provided
1	Operations and Maintenance 1.1.1.2.01	Upgrade critical ventilation system to support safe operations
	To This WBS From	
	N/A	

Technologies to be assessed: N/AOptions to be considered: N/A

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.1 (Store Waste), item V, paragraph B (Constraints)
- Section 3 (Tank Waste Remediation System Architecture)

Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.1 (Waste Storage System), item VIII, paragraph C (Constraints)

WHC-SP-1101

This page intentionally left blank.

A4-138

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.10 Ventilation Upgrades, W-030 (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-AC06-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.10.01/VI	5. WBS ELEMENT TITLE W-030, Ventilation Upgrades							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OG							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2 Remediate Waste 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$1,954	\$1,950	\$ 594
CENRTC			
GPP			
LINE ITEM	0	800	0
TOTAL	\$1,954*	\$2,750	\$ 594

* Additional budget of \$80K for FY 94 workscope is reflected in the FY 94 P3 Scheduling database resulting in total funding amount of \$2,034 in FY 95.

B. TECHNICAL BASES

Goals & objectives:

Provide a new primary tank ventilation and recirculation cooling system for the AY/AZ tanks. This will bring the facility into safety and code compliance, reduce environmental releases and support retrieval.

Status of Design Documentation:

- Definitive design was completed 05/20/94.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Safe and compliant primary ventilation and cooling system in the AY/AZ farms
- Standby power system
- Instrumentation and control system
- Milestone RL-TW3-94-505, complete procurement
- TPA M-43-01A, start construction
- TPA M-43-01B, complete construction
- TPA M-43-01C, begin operation

C. STATEMENT OF WORK

Required activities:

- RL-TW3-94-505 complete procurement 09/30/94
- Complete fixed price construction 12/29/95
- TPA M-43-01B, complete construction 10/31/96
- Complete testing and startup activities 12/31/96
- TPA M-43-01C, begin operation 12/31/96

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	K. A. Colosi	
Program Element Manager	J. D. Thomson	
Activity Manager	K. L. Morris	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	J. D. Thomson <i>J. D. Thomson</i>	9/22/94
Activity Manager	K. L. Morris <i>K. L. Morris</i>	9/22/94
Cost Account Manager	K. A. Colosi <i>K. A. Colosi</i>	9/22/94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9/22/94

FDS Number

1) 1N3G24

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.11/V	5. WBS ELEMENT TITLE W-058 of Cross-Site Transfer System	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-4	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60-REV.1) 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$ 841	\$ 1,023	\$ 540	N/A	N/A	N/A	N/A
CENRTC							
GPP							
LINE ITEM	14,843	19,388	13,168	N/A	N/A	N/A	N/A
TOTAL	\$15,684	\$20,411	\$3,708	N/A	N/A	N/A	N/A

1.1.1.2.03.11

A4-143

B. TECHNICAL BASES

Goals and objectives:

- Connect the 200 West Area DSTs with the 200 East Area DSTs with transfer lines which meet operational needs and regulatory requirements. Connect the 241-SY-A and 241-SY-B valve boxes in the 200 West Area with the 244-A DCRT in the 200 East Area with new, compliant transfer lines.

Major end-item deliverables:

- Compliant cross site transfer lines (two parallel pipe-in-pipe pipelines)
- Remote leak detection
- Diversion boxes
- Vent Station
- Booster pump assemblies
- TPA M-43-07, Project W-058, Replacement of Cross-Site Transfer System

Acceptance criteria:

- Verification by Acceptance Test Procedure and Operational Test Procedure

C. STATEMENT OF WORK

Required activities over lifetime:

- Provide support for the procurement and definitive design activities for the cross-site transfer system to meet the projected completion date of FY 1997.

Interfaces:

#	From This WBS To	Item Provided
1	Waste Retrieval 1.1.1.2.05	Compliant transfer lines for retrieval
2	Operations and Maintenance 1.1.1.2.01	Compliant transfer lines for retrieval
	To This WBS From	
	N/A	

Technologies to be assessed:

- Pump Design

Options to be considered:

- Size/number/material of transfer lines

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.4 (Transfer Waste), item V, paragraph B (Constraints)
- Section 3 (Tank Waste Remediation System Architecture)
Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.4 (Waste Transfer System), item VIII, paragraph C (Constraints)

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.11 Cross Site Transfer System, W-058 (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.11.01/VI	5. WBS ELEMENT TITLE W-058, Replacement of Cross-Site Transfer System	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-4-OH	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.3 Retrieve Waste 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$ 841	\$ 1,023	\$ 594
CENRTC			
GPP			
LINE ITEM	14,843	19,388	13,168
TOTAL	\$15,684	\$20,410	\$13,708

1.1.1.2.03.11.01

A4-147

B. TECHNICAL BASES

Goals & objectives:

- Provide an environmentally compliant transfer system connecting the 200 West area DSTs with the 200 East area DSTs. Connect the 241-SY-A and 241-SY-B valve boxes in the 200 West area with the 244-A DCRT in the 200 East area with new compliant transfer lines.

Status of Design Documentation:

- Title I completed 08/09/93. Title II design started 04/01/94.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- Environmentally compliant site transfer system with two parallel pipe-in-pipe transfer lines
- Leak detection system
- Diversion boxes and vent station
- Transfer slurry pump assemblies
- RL-TW3-94-415, Transmit NOC to WA DOH
- TPA M-43-07-T01, complete definitive design
- TPA-M-43-07B, complete construction
- Provide support for design, procurement and construction activities

C. STATEMENT OF WORK

Required activities:

- TPA-M-43-07-T01, complete definitive design 08/30/95
- KD 3 approval 11/30/95
- TPA M-43-07A, start construction 11/30/95
- Complete procurement activities 04/30/96
- TPA M-43-07B, complete construction 08/30/97
- Provide support for the design, procurement and construction activities

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	G. L. Parsons	
Program Element Manager	J. D. Thomson	
Activity Manager	S. R. Riesenweber	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	J. D. Thomson <i>J. D. Thomson</i>	9/22/94
Activity Manager	S. R. Riesenweber <i>S. R. Riesenweber</i>	9/20/94
Cost Account Manager	G. L. Parsons <i>S. R. Riesenweber FOR G. L. PARSONS PER TELEPHONE</i>	9/22/94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9/22/94

FDS Number

- 1) 1N3H26
- 2) 3N3H26

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank farm Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.12/V	5. WBS ELEMENT TITLE W-028, Aging Waste Transfer Lines	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-7	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60-REV.1) 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$ 502	\$ 687	\$ 424	N/A	N/A	N/A	N/A
CENRTC							
GPP							
LINE ITEM	\$ 814	4,998	3,706	N/A	N/A	N/A	N/A
TOTAL	\$ 1,315	\$ 5,685	\$4,129	N/A	N/A	N/A	N/A

B. TECHNICAL BASES

Goals and objectives:

- Provide a waste transfer system from the aging-waste facilities (241-AY and 241-AZ) to the Multi-Function Waste Tank Facility (MWTF). In addition, it provides RCRA-compliant waste lines for B Plant.

Major end-item deliverables:

- Compliant cross site transfer lines (pipe-in-pipe pipeline)
- Diversion Boxes
- Leak detection system

Acceptance criteria:

- Verification by Acceptance Test Procedure (ATP) and Operational Test Procedure (OTP)

C. STATEMENT OF WORK

Required activities over lifetime:

- Construct double-containment pipelines, valves, and a diversion box to connect the 151-AR diversion box to the new cross-site transfer system and B Plant.

Interfaces:

#	From This WBS To	Item Provided
1	Waste Retrieval 1.1.1.2.05	Compliant transfer line for retrieval
2	Operations and Maintenance 1.1.1.2.01	Compliant transfer line to support retrieval
	To This WBS From	
	N/A	

Technologies to be assessed:

- Pump Design

Options to be considered:

- Size/number/material of transfer lines

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.4 (Transfer Waste), item V, paragraph B (Constraints)
- Section 3 (Tank Waste Remediation System Architecture)
Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.4 (Waste Transfer System), item VIII, paragraph C (Constraints)

This page intentionally left blank.

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2. Manage Tank Waste 1.1.1.2.03 Tank Farms Upgrades 1.1.1.2.03.12 W-028, Aging Waste Transfer Lines	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.12.01/VI	5. WBS ELEMENT TITLE W-028, Aging Waste Transfer Lines	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-7-OM	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste 4.2.1.3 Retrieve Waste 4.2.1.4 Transfer Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$ 502	\$ 687	\$ 424
CENRTC			
GPP			
LINE ITEM	814	4,998	3,706
TOTAL	\$1,315	\$5,685	\$4,129

B. TECHNICAL BASES

Goals & objectives:

- Provide an environmentally compliant waste transfer system from the aging waste facilities to the cross site transfer system and B plant.

Status of Design Documentation:

- Title I design completed. Title II design restarted 06/01/94.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

- A compliant transfer system with pipe-in-pipe construction
- Diversion boxes
- Leak detection system
- Transmit NOC to WA DOH, RL-TW3-94-411, 01/30/95

C. STATEMENT OF WORK

Required activities:

- Complete definitive design 11/30/95
- Initiate construction 12/01/95
- Complete procurement 11/29/96
- Complete construction 08/04/97
- Complete testing and startup activities 09/30/97
- Provide support for design, procurement, construction and testing activities 09/30/97

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	G. L. Parsons	
Program Element Manager	J. D. Thomson	
Activity Manager	S. D. Riesenweber	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J.D. Thomson</i>	9/22/94
Activity Manager	S. D. Riesenweber <i>SD Riesenweber</i>	9/20/94
Cost Account Manager	G. L. Parsons <i>SD Riesenweber FOR G.L. PARSONS PER TELEPHONE</i>	9/22/94
Project Control Analyst	R. S. Schubert <i>R.S. Schubert</i>	9/22/94

FDS Number

N3M81

This page intentionally left blank.

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (M&O Contractor)	2. DATE PREPARED September 19, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.16/V	5. WBS ELEMENT TITLE Facility Upgrades	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60-REV.1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$ 989	\$1,886	\$1,801	N/A	N/A	N/A	N/A
CENRTC							
GPP	\$,1921	\$6,527	\$6,882	N/A	N/A	N/A	N/A
LINE ITEM							
TOTAL	\$2,910	\$8,413	\$8,683	N/A	N/A	N/A	N/A

1.1.1.2.03.16

A4-159

B. TECHNICAL BASES

Goals and objectives:

- Provide the engineering, management, liaison, contractor/sub-contractor interface, and engineering support to accomplish upgrades to Tank Farm facilities and equipment.

Major end-item deliverables:

- Acceptable tank farm lighting levels in SY & C Farms
- New septic and drain field for 209E bldg.

Acceptance criteria:

- Acceptance for Beneficial Use (ABU)

C. STATEMENT OF WORK

Required activities over lifetime:

- Installation of new septic tank and drain field for 209E building, upgrade facility lighting at SY and C farms

Interfaces:

#	From This WBS To	Item Provided
1	Operations and Maintenance 1.1.1.2.01	209E Septic Upgrade, SY 7 C farm facility lighting
	To This WBS From	
	N/A	

Technologies to be assessed: N/AOptions to be considered: N/A

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.1 (Store Waste), item V, paragraph B (Constraints)
- Section 3 (Tank Waste Remediation System Architecture)
Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.1 (Waste Storage System), item VIII, paragraph C (Constraints)

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.16 Facility Upgrades (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.16.02/VI	5. WBS ELEMENT TITLE GPP Definition Support	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.1.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$ 989	\$1,886	\$1,801
CENRTC			
GPP			
LINE ITEM			
TOTAL	\$ 989	\$1,886	\$1,801

1.1.1.2.03.16.02

A4-161

B. TECHNICAL BASES

Goals & objectives:

Provide the expense support for the definition, planning, implementation, and control of capital facility upgrades for ongoing and projected General Plant Projects (GPP's) and Capital Work Orders (CWO's).
Complete project W-322, 242-S Substation upgrades

Status of Design Documentation:

N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Prepare Project Data Sheets
Prepare Candidate Project Support Sheets

C. STATEMENT OF WORK

Required activities:

Identification of needed General Plant Projects (requests/prioritization by Operations and Maintenance)
Development of documented project need and technical basis
Development of engineering studies, Functions and Requirements, design criteria, and conceptual design report
Development of appropriate level of System Engineering Documentation
Submittal for project authorization
Prepare project data sheets and candidate project support sheets

Technologies to be assessed:

The technologies associated with individual projects will be evaluated as the projects are identified based on the requirements and workscope.

Options to be considered:

Options will be developed and evaluated in the engineering studies and conceptual design report based on the individual requirements/workscope of each project.

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	J. B. Witt	
Program Element Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Element Manager	J. D. Thomson <i>J. D. Thomson</i>	9/26/94
Activity Manager	N. R. Croskrey <i>N. R. Croskrey</i>	9/23/94
Cost Account Manager	J. B. Witt <i>J. B. Witt</i>	9-26-94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9-26-94

FDS Number

1N3B22

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.16 Facility Upgrades (M&O Contractor)	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.16.03/VI	5. WBS ELEMENT TITLE 209E Septic Tank Upgrade (W-364) (GPP)	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.1.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)*

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$		
CENRTC			
GPP			
LINE ITEM			
TOTAL			

* This activity is a General Plant Project (GPP) for which the budget was allocated in FY 94, the spending profile carries the work over fiscal year boundaries, however the budget remains in FY 94.

B. TECHNICAL BASES

Goals & objectives:

General Plant Project (GPP) will upgrade the 2607-E5, 2607-E, and the 2607-E7 Septic Systems that serve the 209E, 276C, 2704C, 2718E, MO337, MO434, and MO543 Facilities.

Status of Design Documentation:

Definitive design will be prepared during FY 94.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Signed Construction Completion and Cost Closing statement.

C. STATEMENT OF WORK

Required activities:

Construction completion and Project Closeout during FY 95.

Technologies to be assessed:

Septic system will comply with latest codes and standards.

Options to be considered: N/A

D. AUTHORIZATION

The Cost Account Authorization for this project was approved in FY 94.

FDS Number
<u>4N3B24</u>

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.16 Facility Upgrades (M&O Contractor)	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.16.04/VI	5. WBS ELEMENT TITLE SY & C Tank Farm Lighting (W-280) (GPP)	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)*

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING			
CENRTC			
GPP			
LINE ITEM			
TOTAL			

* This activity is General Plant Project (GPP) budgeted with capital funds in FY 94. The spending profile carries the work over fiscal year boundaries.

B. TECHNICAL BASES

Goals & objectives:

Install a lighting system that will provide general site area lighting for the SY and C Tank Farms. Project W-289 will provide new lighting systems to support Operations, Maintenance, Safety, Health Physics, Quality Assurance, and Construction activities performed during non-daylight hours.

Status of Design Documentation:

Design to be completed in FY 94.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Signed Construction Completion and Cost Closing statement.

C. STATEMENT OF WORK

Required activities:

Construction and Closeout of Project.

Technologies to be assessed:

Modern energy efficient lights.

Options to be considered: N/A

D. AUTHORIZATION

The Cost Account Authorization for this project was approved in FY 94.

FDS Number
<u>4N3B27</u>

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.16 Facility Upgrades (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.16.05/VI	5. WBS ELEMENT TITLE Facility Upgrades General Plant Projects (GPPs)	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2 Remediate Waste 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING			
CENRTC			
GPP	\$5,596	\$6,527	\$6,882
LINE ITEM			
TOTAL	\$5,596*	\$6,527	\$6,882

* The workscope described in this dictionary is written to a budget amount of \$2.9 million, based on DOE-RL submittal.

B. TECHNICAL BASES

Goals & objectives:

Complete Project W-414, BX and BY Tank Farm Area Lighting Upgrade.
Completed the design for project W-415, S and SX Tank Farm Lighting Upgrade.
Complete capital work order project based on need established by Operations.

C. Work Content

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS): N/A

Sumbirtal of Project Authorization for W-414 and W-415.

C. STATEMENT OF WORK

Required activities:

Functions and Requirments for W-414 and W-415
Conceptual Designs for W-414 and W-415
Definitive Design for W-414 and W-415
Construction of W-414 (close-out to occur in FY 96)

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

INDIVIDUAL COST ACCOUNT AUTHORIZATIONS WILL BE APPROVED ONCE PROJECT AUTHORIZATION IS APPROVED BY DOE-RL FOR SPECIFIC PROJECTS.

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	J. B. Witt	
Program Element Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Cost Account Manager	J. B. Witt	
Project Control Analyst	R. S. Schubert	

FDS Number

4N3B28

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.16 Facility Upgrades (M&O Contractor)	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.16.06/VI	5. WBS ELEMENT TITLE W-266, Centralized Maintenance Facility	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)*

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING			
CENRTC			
GPP			
LINE ITEM			
TOTAL			

* Post FY 97 workscope, no budget allocated for the period covered by this work plan.

B. TECHNICAL BASES

Goals & objectives:

NO ACTIVITIES DURING MULTI-YEAR WORK PLAN (FY 1995-FY 1997) PERIOD.

It is envisioned that this facility will provide the capability to perform minor maintenance (all disciplines) packaging and handling of equipment for transportation to other areas, waste drum handling and support equipment storage capability. Development of this project is scheduled to begin in FY 2000.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS): N/A

C. STATEMENT OF WORK

Required activities: N/A

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

NO FUNDING IS AUTHORIZED FOR FY 95 - FY 97

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	J. L. Homan	
Program Element Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Project Control Analyst	R. S. Schubert	
COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Cost Account Manager	J. L. Homan	
Project Control Analyst	R. S. Schubert	

FDS Number

4N3B29

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.16 Facility Upgrades (M&O Contractor)	2. DATE PREPARED August 30, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.16.07/VI	5. WBS ELEMENT TITLE Radiation Zone Lighting	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE August 31, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-0-OA	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)*

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING			
CENRTC			
GPP			
LINE ITEM			
TOTAL			

* NO BUDGET ALLOCATED FOR THIS ACTIVITY

B. TECHNICAL BASES

Goals & objectives:

Radiation Zone Lighting Upgrades were originally within the scope of W-314G, which was canceled. The scope of this activity will be pursued as a series of General Plant Projects. This Work Breakdown Structure element will be deleted and replaced by elements containing the tank farm specific lighting upgrades as they receive project authorization.

Status of Design Documentation: N/A

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS): n/a

C. STATEMENT OF WORK

Required activities: N/A

Technologies to be assessed: N/A

Options to be considered: N/A

D. AUTHORIZATION

NO FUNDS ARE AUTHORIZED FOR THIS ACTIVITY

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	J. B. Witt	
Program Element Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Cost Account Manager	J. B. Witt	
Project Control Analyst	R. S. Schubert	

FDS Number
<u>4N3B30</u>

WHC-SP-1101

Tank Waste Remediation System Work Breakdown Structure
Dictionary.

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades (O&M Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.17/V	5. WBS ELEMENT TITLE W-188, Radiological Support Facility	
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-1	
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER / TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOED/RL-92-60-REV.1) 4.2.1.1 Store Waste 4.2.1.3 Retrieve Waste	12. BUDGET AND REPORTING NUMBER Expense Capital Line Item EW3130010 35EW31301 39EW31301	

13. ELEMENT DESCRIPTION

A. COST CONTENT (Escalated Dollars)

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)	FY 1998 \$(000)	FY 1999 \$(000)	FY 2000 \$(000)	FY 2001 \$(000)
OPERATING	\$ 16	\$ 69	\$ 24	N/A	N/A	N/A	N/A
CENRTC							
GPP							
LINE ITEM	\$ 0	\$ 0	\$1,801	N/A	N/A	N/A	N/A
TOTAL	\$ 16	\$ 69	\$1,825	N/A	N/A	N/A	N/A

1.1.1.2.03.17

A4-177

B. TECHNICAL BASES

Goals and objectives:

Project W-188 was terminated per RL Letter August 26, 1994. Expense funds for FY 96 and FY 97 will be reprogrammed. Project W-188 was scoped to provide 10 radiological support facilities at the major tank farm operational areas in 200 Areas to support continued operations requirements and future retrieval/decommissioning efforts. These change facilities will bring these areas into compliance with DOE Orders for safety and contamination control. All utilities and personnel access requirements to support these facilities were to be provided by this project.

The FY 95 funds will be used to develop a position paper on how to deal with the scope identified within Project W-188.

Major end-item deliverables:

Needs Analysis/Position Paper

C. STATEMENT OF WORK

Required activities:

Engineering studies.

Acceptance criteria: N/A

Interfaces:

#	From This WBS To	Item Provided
1	Operations & Maintenance 1.1.1.2.01	Radiation Support Facilities
	To This WBS From	
	N/A	

Technologies to be assessed: N/A

Options to be considered:

Co-location/utilizing radiation support facilities scoped in projected projects
Maintain less than adequate operation's change facilities

D. OTHER LEGAL DRIVERS AND ORDER REQUIREMENTS

Refer to DOE/RL-92-60, Rev 1, Tank Waste Remediation System Functions and Requirements:

- Section 2 (Tank Waste Remediation System Functions and Requirements Description);
Table F4.2 (Remediate Tank Waste), item V, paragraph B (Constraints)
Table F4.2.1.1 (Store Waste), item V, paragraph B (Constraints)

Table F4.2.1.3 (Retrieve Waste), item V, paragraph B (Constraints)

- Section 3 (Tank Waste Remediation System Architecture)
Table A4.2 (Tank Waste Remediation System), item VIII, paragraph C (Constraints)
Table A4.2.1.1 (Waste Storage System), item VII, paragraph C (Constraints)
Table A4.2.1.3 (Waste Retrieval System), item VIII, paragraph C (Constraints)

This page intentionally left blank.

**Tank Waste Remediation System Work Breakdown Structure
Dictionary.**

1. PROGRAM TITLE/PARTICIPANT 1.1.1 TWRS Program 1.1.1.2 Manage Tank Waste 1.1.1.2.03 Tank Farm Upgrades 1.1.1.2.03.17 Radiological Support Facility (W-188) (M&O Contractor)	2. DATE PREPARED September 23, 1994	3. IDENTIFICATION NUMBER DE-ACO6-87RL10930						
4. WBS ELEMENT CODE/LEVEL 1.1.1.2.03.17.01/VI	5. WBS ELEMENT TITLE Radiological Support Facility, Project W-188							
6. WBS INDEX LINE NO. Not used	7. CURRENT REV NO. 0	8. EFFECTIVE REVISION DATE September 23, 1994						
9. APPROVED CHANGES N/A	10. ADS ID - ADS SUFFIX - SUBACTIVITY NUMBER 1120-1-OJ							
11. SYSTEM ENGINEERING ARCHITECTURE REFERENCE NUMBER/TITLE FROM TWRS FUNCTIONS AND REQUIREMENTS DOCUMENT (DOE/RL-92-60 REV. 1) 4.2.1.1 Store Waste	12. BUDGET AND REPORTING NUMBER(S) <table border="0"> <tr> <td>Expense</td> <td>Capital</td> <td>Line Item</td> </tr> <tr> <td>EW3130010</td> <td>35EW31301</td> <td>39EW31301</td> </tr> </table>		Expense	Capital	Line Item	EW3130010	35EW31301	39EW31301
Expense	Capital	Line Item						
EW3130010	35EW31301	39EW31301						

13. ELEMENT DESCRIPTION**A. COST CONTENT (Escalated Dollars)**

	FY 1995 \$(000)	FY 1996 \$(000)	FY 1997 \$(000)
OPERATING	\$ 16	\$ 69	\$ 24
CENRTC			
GPP			
LINE ITEM			1,800
TOTAL	\$ 16	\$ 69	\$1,800

B. TECHNICAL BASES

Goals & objectives:

Project W-188 was terminated per RL Letter August 26, 1994. Expense funds for FY 96 and FY 97 will be reprogrammed. Project W-188 was scoped to provide 10 radiological support facilities at the major tank farm operational areas in 200 Areas to support continued operations requirements and future retrieval/decommissioning efforts. These change facilities will bring these areas into compliance with DOE Orders for safety and contamination control. All utilities and personnel access requirements to support these facilities were to be provided by this project.

The FY 95 funds will be used to develop a position paper on how to deal with the scope identified within Project W-188.

Status of Design Documentation:

The Conceptual Design Report was submitted to DOE-RL on May 20, 1994.

Major end-item deliverables (related to milestones and interfaces appropriate to this level of the WBS):

Needs Analysis/Position Paper

C. STATEMENT OF WORK

Required activities:

Engineering studies.

Technologies to be assessed: N/A

Options to be considered:

Co-location/utilizing radiation support facilities scoped in projected projects
Maintain less than adequate operation's change facilities

D. AUTHORIZATION

INITIAL PLANNING		
Title	Authority to Institute Planning (Name/Signature)	Date
Cost Account Manager	W. W. Rutherford	
Program Element Manager	J. D. Thomson	
Activity Manager	N. R. Croskrey	
Project Control Analyst	R. S. Schubert	

COST ACCOUNT AUTHORIZATION		
Title	Cost Account Plan Acceptance (Name/Signature)	Date
Program Manager	J. D. Thomson <i>J. D. Thomson</i>	9/26/94
Activity Manager	N. R. Croskrey <i>NR Croskrey</i>	9/23/94
Cost Account Manager	W. W. Rutherford <i>W. W. Rutherford</i>	9/26/94
Project Control Analyst	R. S. Schubert <i>R. S. Schubert</i>	9-26-94

FDS Number

1N3J27

This page intentionally left blank.