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**Mixed Waste Management Facility
FY94 Plan**

Ron Streit

January 1994

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Mixed Waste Management Facility

FY94 Plan

January 31, 1994

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**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.1.1 Quality Assurance

Task Description:

Quality Assurance provides quality assurance and safeguards support for and evaluations of the MWMF Project to ensure compliance with applicable DOE regulations, and environmental, safety, health, and NEPA/CEQA requirements. This effort includes development of the project's quality assurance documentation and oversight for conformance to the approved plan.

FY94 Plan:

This is an on-going activity by the Assurances Manager, QA manager and QA clerk. Primary activities for FY94 include development of the QA and Document Control Plans, establishment and maintenance of the project QA file, and general QA oversight.

FY94 Budget: \$180K OPEX

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
9	11	11	13	15	16	17	17	17	18	18	18

Major Procurements:

None

Key Milestones and Markers:

Item		Scheduled Date
L111-1	Develop and issue Quality Assurance Plan	Oct 93
L111-2	Develop and issue Document Control Plan	Jan 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.1.2 PSAR

Task Description:

The PSAR provides the integration of safety input, design reviews, and safety analysis for the MWMF Preliminary Safety Analysis Report. Safety analysis includes analysis, generation of documentation, and documentation review and approval. The element includes the generation of the Preliminary Safety Analysis Report (PSAR) and follow-on analysis required prior to the generation of the Final Safety Analysis Report (FSAR). This element provides additional criticality support to resolve safety issues.

FY94 Plan:

The PSAR is being prepared under contract. The document is being prepared in accordance with DOE Order 5480.23 to evaluate primary treatment processes as well as supporting systems as proposed. This effort is broken into several subtasks: development of a format and content guide; preparation of engineering chapters; preparation of safety management chapters; and preparation of the analysis chapters.

FY94 Budget: \$230K OPEX

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
59	57	50	31	22	11	0	0	0	0	0	0

Major Procurements:

Contract for services to prepare Safety Analysis Report: \$205K

Key Milestones and Markers:

Item	Scheduled Date
L112-1.1 Issue Contract	Oct 93
L112-1.2 Preliminary PSAR Review	Feb 94
L112-1 PSAR to DOE for Review	Mar 94
D112-1 PSAR Approved by DOE	Jun 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.1.3 NEPA/CEQA

Task Description:

NEPA/CEQA provides for the preparation of input to the Environmental Assessment and all required follow-up documentation required for the NEPA/CEQA and necessary permitting. The effort includes preliminary evaluations, preparation of an implementation plan, preparation of technical information to support EA preparation, and comment resolution. This element prepares and coordinates approval of State, EPA, and local permits and supports public participation activities associated with the permits approvals.

FY94 Plan:

This task is on-going activity by LLNL staff to perform the task described above. This includes an Assurance Manager, an Environmental Analyst to prepare the NEPA documentation, TID charges, costs to finish the Preliminary Hazards Analysis, and any necessary support to the state regulatory agency for CEQA documentation preparation. Costs associated with the level of effort by the LLNL staff to prepare the air and RD&D permit applications are covered by their home organization (Environmental Protection Department, Permits and Regulatory Affairs Group).

FY94 Budget: \$290K OPEX

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
9	12	36	36	37	21	18	18	13	39	39	12

Major Procurements:

None

Key Milestones and Markers:

	Item	Scheduled Date
L113-1	Environmental Assessment (EA) submitted to DOE	Mar 94
D113-1	EA approved by DOE	Aug 94
L113-2	Air permit application submitted to BAAQMD	Apr 94
L113-3	Research, Development & Demonstration (RD&D) permit application submitted to DTSC	June 94
C113-2	Authority to Construct issued by BAAQMD	Oct 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.1.4 ES&H

Task Description:

ES&H provides for Environment, Safety, and Health representation to the MWMF project to ensure that all activities are conducted in a safe and environmentally sound manner and to ensure that ES&H standards have been properly applied. This element provides for conducting and/or monitoring safety-related analyses and the resultant documentation. Specific activities include preparing and implementing various assurance plans; performing hazard evaluations and safety assessments; participating in design reviews to ensure compliance with safety and environmental standards and regulations; preparing safety and environmental procedures; and preparing input for permit applications and other documentation required for compliance with Federal and/or State requirements.

FY94 Plan:

This is an on-going level of effort provided by staff within the Environmental Safety and Health team to perform described tasks. Team members have expertise in areas such as health physics, industrial hygiene, fire safety, radiation safety, industrial safety and environmental protection. This element will provide input to documents described in other WBS elements such as PSAR, permits, CDR, etc., and provide for an oversight committee to all formal project reviews.

FY94 Budget: \$120K OPEX

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
8	8	8	8	9	9	9	12	12	12	12	13

Major Procurements:

None

Key Milestones and Markers:

Item		Scheduled Date
114-1.1	Review of 30% Conceptual Design	Dec 93
114-1.2	Review of 90% Conceptual Design	Mar 94
114-1.3	Review 90% Preliminary Design	Sept 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.1.5 Program Support

Task Description:

Program Support provides top-level planning, control, and support of MWMF Project OPEX-funded activities. Specific activities include management of project assurances and interface with development activities. This element encompasses support for the Project Office including organization, schedule and budgeting activities, project plans and reporting, personnel hiring and housing, project operations control, Building 494 occupant relocation, and OPEX-funded technical support.

FY94 Plan:

This element provides for all project management and technical support associated with the OPEX-funded activities of the MWMF Project. FY94 activities will include the following: developing project plans, budgets and schedules; placing personnel; ensuring housing /office requirements for MWMF personnel; initiating project control functions (Project Management Plan, PTS, etc.); developing plans for Bldg. 494 occupant relocation; and providing for technical support to the Project office. During the first two quarters of FY94, the effort will be focused on instituting the project organization and controls required by DOE Order 4700.1. In addition, effort will be directed toward staffing the program office with key personnel, including the Project Control Manager, Project Engineers, and System Integration Manager, and in completing key technical documents developing the basis for technology selection, implementation, and operations. In the latter two quarters of FY94, the Project Management effort will be also supported by the CENRTC-funded activities via WBS 1.3.1, Project Management.

FY94 Budget: \$1250K OPEX

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
230	157	151	145	122	121	56	53	53	53	53	56

Major Procurements:

Service contract to SAIC for program support and independent technical and administrative reviews

Key Milestones and Markers:

Item		Scheduled Date
L115-1.1	Project Management Plan (Draft)	Oct 93
L115-2	Select Project Engineers and Project Control Manager	Dec 93
L115-3	Submit FY94 Project Plan	Jan 94
L115-4	Initiate PTS and Monthly reporting	Jan 94
L115-5	Technology Selection and Implementation Plan	Feb 94
L115-6	Develop Design Basis Operations Plan	Mar 94
L115-1	Project Management Plan (Final)	Apr 94
L115-7	Submit FY95 Project Plan (OPEX)	Sep 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.1.6 Public Participation

Task Description:

Public Participation provides for public input to the planning and execution phases of the MWMF Project. Included are a National Advisory Committee, a Community Newsletter, and preparation and coordination of press releases and community tours.

FY94 Plan:

The FY94 effort on Public Participation will be directed toward establishing the National Advisory Committee (NAC) and initiating the public outreach newsletter. A Public Participation Plan will be completed. At least one meeting is planned for the NAC to establish a panel charter and for initial introduction to the MWMF Project. At this meeting, it is anticipated that the Conceptual Design Report will be presented. Two newsletters are planned, and a third is possible by the end of the fiscal year.

FY94 Budget: \$150K OPEX

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	5	14	16	16	16	16	16	17	17	17

Major Procurements:

Contracted support for Public Participation activities

Key Milestones and Markers:

Item	Scheduled Date
L116-1.1 National Advisory Committee (NAC) formed	Feb 94
L116-2.1 Issue first public newsletter	Mar 94
L116-1.2 First meeting of NAC	Mar 94
L116-1.3 Receive comments on CDR Draft from NAC	Apr 94
L116-2.2 Issue second newsletter	Jun 94
L116-1.4 Second meeting of NAC	Jul 94
L116-2.3 Issue third newsletter	Sep 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.2.1 Conceptual Design

Task Description:

Conceptual Design provides the project technical, cost, and schedule baselines that form the basis for KD-1.

FY94 Plan:

The Conceptual Design will be completed in FY94. Activities will include identification of the requirements/criteria in the form of System Design Requirements. Complete design and documentation will support development of the project's technical baseline and conceptual design baseline cost estimate and schedule. The conceptual design will be subjected to an independent review at the 30% and 90% completion stages. A conceptual design report will be prepared which will be the basis for the KD1 by DOE.

FY94 Budget: \$940K OPEX

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
110	150	150	150	190	190	0	0	0	0	0	0

Major Procurements:

Contracted services for CDR support - \$40K

Key Milestones and Markers:

Item		Scheduled Date
L121-1.1	Initiate Point Design Reviews	Oct 93
L121-1.2	Complete Point Design Reviews	Nov 93
L121-1	30% CDR Review	Dec 93
L121-2	90% CDR Review	Mar 94
L121-3	Conceptual Design Review issued	Apr 94
D121-1	Preliminary approval and funding to proceed into PD	Apr 94
D121-2	KD-1/2 decision approved by DOE	Jun 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id-1116188
WBS-1.1.5

WBS Element: 1.2.2 Plant Start-Up Management

Task Description:

Plant Start-Up Management provides (1) operations and maintenance review of system designs, (2) the development of top level plans for staffing, training, testing, and readiness review, (3) task analysis and preparation, review, and revision of site operating plan, maintenance, instrument calibration, and emergency response procedures, (4) recruiting, hiring, clearing, and providing general employee training for the plant staff, and (5) the development of training materials, training the trainers, and special technical and on-the-job training for the plant staff.

FY94 Plan:

No effort will be expended toward this element during FY94.

FY94 Budget: \$0K OPEX

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	0	0	0	0	0	0	0

Major Procurements:

None

Key Milestones and Markers:

Item	Scheduled Date
None	

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.2.3 Activation

Task Description:

Activation provides: (1) the preparation, review, revision, and release of all Operational Test Procedures (OTPs); (2) plant systems activation, integration, and performance of Operational Test Procedures in each of the technology areas including Operational Readiness Reviews; (3) technical support for the preparation of Operational Safety Requirements (OSR) and Facility Safety Requirements (FSR), as well as the identification and resolution of problems during plant operational testing, startup, and activation including finalization of design documentation for equipment and process modifications; (4) maintenance support to perform equipment or process modifications during start-up, testing, and activation; (5) all operational spares and the initial stores inventory; and (6) all manpower and materials required to deliver support services (e.g., utilities, power, etc.) during construction, testing, and activation of the MWMF.

FY94 Plan:

No effort will be expended toward this element during FY94.

FY94 Budget: \$0K OPEX

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	0	0	0	0	0	0	0

Major Procurements:

None

Key Milestones and Markers:

Item	Scheduled Date
None	

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.3.1 Project Management

Task Description:

Project Management provides top-level project planning, direction, and control of the MWMF Project CENRTC-funded systems. Specific activities include project management and support of Project Office, project assurance (including quality assurance, safeguards, environmental, and safety oversight), management overview of information management and technical activities, and interface with DOE.

FY94 Plan:

This effort will encompass project management of the CENRTC phase of the MWMF Project. The effort will initiate with approval of the CDR and KD-1/2 by DOE. This level-of-effort-funded element will include support for the Project Manager, Project secretaries and others as required. The FY94 plan calls for project management oversight of all capital-funded technical and administrative activities, placing personnel, facility integration, and other management controls to assure effective completion of the milestones and markers of the project.

FY94 Budget: \$300K CENRTC

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	0	50	50	50	50	50	50

Major Procurements:

Service contract to SAIC for project support and independent technical and administrative reviews.

Key Milestones and Markers:

Item		Scheduled Date
L131-1.1	In-House Point Design Review	Jun 94
L131-1	90% Preliminary Design Review ¹	Sep 94
L131-2	Submit FY95 Project Plan (CENRTC)	Sep 94

¹ Tied to April 1st KD-1/2 decision approval from DOE.

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.3.2 Project Control

Task Description:

Project Control provides for the project integration, configuration management, cost and schedule control, and administration of the CENRTC funded systems. It develops and maintains the management systems used to monitor progress against the established baselines and to ensure configuration control (drawings, documents, etc.).

FY94 Plan:

Primary FY94 activities include development and implementation of key project control systems. Emphasis will be on those control systems and processes required early in the Project and to support the Preliminary Design effort. Key activities include the development and implementation of processes for controlling the technical baseline (System Design Requirements, WBS, etc.), cost planning and control, schedule monitoring and control, and associated reporting activities. Activities also include the on-going support for these processes, once they are implemented.

FY94 Budget: \$300K CENRTC

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	28	34	39	39	44	38	39	39

Major Procurements:

None

Key Milestones and Markers:

Item		Scheduled Date
L132-2.1	Prepare Configuration Control Plan	Feb 94
L132-2.2	Prepare Design Review Procedure	Mar 94
L132-1	Implement Cost planning/tracking systems	June 94
L132-2	Implement technical baseline control system	May 94
L132-3	Implement schedule control/tracking system	Aug 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.3.3 Technical Systems Integration

Task Description:

Technical Systems Integration provides the oversight and performance studies intended to verify or document system integration performance, system analysis, special process diagnostics, and planning and analysis of the process aspects of integrated tests. It also includes the responsibility for assuring that the systems aspects of the overall processes are adequately addressed in the integrated design. It includes System Engineering Management Plan and System Design Requirements coordination. Specific topics include the integration of waste treatment processes and facility, risk assessment, accountability, safety, radiation exposure, and availability.

FY94 Plan:

This effort will encompass integration of the CENRTC phase of the MWMF Project. The effort will initiate with approval of the CDR and KD1 by DOE. This level-of-effort-funded element will include support for the Integration Engineer, project secretaries and others as required. Initial emphasis will be on coordinating the establishment of the preliminary operations plan, the subsystem interface control drawing, waste acceptance criteria, and representative waste stream selection document. Key activities include the development and implementation of processes for controlling and defining interfaces between primary processes, support processes, instrumentation and control, and facility services. Activities also include the on-going support for these processes, once they are implemented.

FY94 Budget: \$300K CENRTC

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	0	50	50	50	50	50	50

Major Procurements:

None

Key Milestones and Markers:

		Scheduled Date
L133-1.1	Draft System Engineering Management Plan	Sept 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.4.1 Receiving and Characterization

Task Description:

The principal objective of the Receiving and Characterization system is to provide for the receiving, logging, identification and characterization of all incoming waste containers and to determine the acceptability for processing the waste. Receiving and Characterization provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of Receiving and Characterization equipment, Title III inspection, and acceptance test procedures (ATP). Receiving and Characterization includes both receiving and characterization equipment and systems integration.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. Design activities will focus on the receiving station, efficient data entry systems for the hazardous waste requisition and identification information, the material queuing and transport system to the facility and the container characterization equipment. Design support activities include using existing LLNL facilities to perform pilot characterization studies on statistical samples of representative waste containers expected to be received. Characterization studies will confirm design base assumptions from the conceptual design and validate the characterization approach appropriate for representative feeds.

FY94 Budget: \$200K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	20	30	30	30	30	30	30

Major Procurements:

None

Key Milestones and Markers:

Item		Scheduled Date
L141-1.1	Pilot characterization studies complete	Jun 94
L141-1.2	Equipment identified and floor plan defined	Sep 94
L141-1	90% Preliminary Design Review	Sep 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.4.2 Solids Feed Preparation

Task Description:

The principal objective of the Solids Feed Preparation system is to provide for the receipt, characterization, preparation for processing, and handling of homogeneous and heterogeneous solids received from storage and other processes in the facility. This includes segregating the incoming waste stream into combustible solids, heterogeneous solids, homogeneous inorganic solids and metals, and liquids that were not previously identified. Solids Feed Preparation provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of Solids Feed Preparation equipment, Title III inspection, and acceptance test procedures (ATP). Solids Feed Preparation includes both solids feed preparation equipment and systems integration.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. Design activities will focus on identifying and validating the characterization and segregation equipment needed for the initial suite of treatment technologies, design and specification of equipment interfaces, and preliminary design of the operator interface and control system. Following completion of the Waste Analysis Plan and pilot characterization studies, surrogate wastes will be used to validate the performance of chosen characterization and segregation equipment. In addition, tests will be performed to determine design parameters for the operator interface and item un-bag/bag procedure. Participation in the Preliminary Design will be solicited from other DOE sites.

FY94 Budget: \$600K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	130	70	90	90	70	70	80

Major Procurements:

Support contracts to NWC sites: \$100K

Mechanical segregation test equipment: \$100K

Prototype equipment for waste handling evaluations: \$100K

Key Milestones and Markers:

	Item	Scheduled Date
L142-1.1	Surrogate feeds defined	May 94
L142-1.2	Initial suite of characterization equipment identified	Jun 94
L142-1.3	Validation of characterization, isolation and segregation methods complete	Sep 94
L142-1.4	Preliminary operator control station design complete	Sep 94
L142-1	90% Preliminary Design Review	Sep 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.4.3 Liquids Feed Preparation

Task Description:

The principal objective of the Liquids Feed Preparation system is to provide for the receipt, characterization, preparation for processing and handling of homogeneous and heterogeneous liquids and solids/liquids mixtures from storage and other processes in the treatment system. This includes segregating the incoming waste stream into aqueous with Trimsol, chlorinated organic liquids, oils, scintillation cocktails and solvents. Liquids Feed Preparation provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of Liquids Feed Preparation equipment, Title III inspection, and acceptance test procedures (ATP). Liquids Feed Preparation includes both liquids feed preparation equipment and systems integration.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. Design activities will focus on identifying and validating the equipment needed for the liquid/liquid and liquid/solid separation; validating mass flow and tank capacity requirements; finalizing the general equipment arrangement of the Liquids Feed Prep area; and doing preliminary design of the operator interface and control system. Following completion of the MWMF Waste Analysis Plan and pilot characterization studies, surrogate wastes will be used to validate performance of chosen separation equipment. Participation in the Preliminary Design will be solicited from other DOE sites.

FY94 Budget: \$400K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	75	75	50	50	50	50	50

Major Procurements:

Support contracts to NWC sites: \$50K

Liquid/liquid and liquid/solid separation test equipment - \$80K

Key Milestones and Markers:

	Item	Scheduled Date
L143-1.1	Surrogate feeds defined	May 94
L143-1.2	Liquid feed prep general arrangement plan finalized	Jul 94
L143-1.3	Validation of liquid/liquid and liquid/solid separation methods complete	Sep 94
L143-1	90% Preliminary Design Review	Sep 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.5.1 Mediated Electrochemical Oxidation

Task Description:

The principle objective of Mediated Electrochemical Oxidation (MEO) is to receive appropriately characterized mixed waste streams and completely convert the organic portions to CO₂ and water, to recycle acid and silver, and to remove ash containing the radioactive constituents. The MEO project element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, and installation of the MEO equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. A preliminary Process Flow Diagram will be completed for representative MWMF waste streams. A preliminary equipment layout will be completed. In addition to the design effort, engineering development testing will continue for the MEO system. Development of supporting processes, such as nitrous acid conversion and silver recovery, will be completed during this fiscal year. Work will be initiated on bench-scale testing for flow requirements and acid concentration balance under steady-state conditions. Testing of instrumentation and controls for automated operation will also be initiated.

FY94 Budget: \$950K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
67	67	67	69	70	70	90	90	90	90	90	90

Major Procurements:
None

Key Milestones and Markers:

	Item	Scheduled Date
L151-1.1	Complete tests on turbo-aerator for nitrous acid acid conversion	Mar 94
L151-1.2	Initiate steady-state flow and chemistry balance tests	Apr 94
L151-2.1	Preliminary Process Flow Diagram	Jun 94
L151-1.3	Initiate instrumentation and control system tests	Jul 94
L151-2.2	Preliminary Equipment Layout	Sept 94
L151-1.4	Complete tests for silver recovery	Sept 94
L151-1	Engineering characterization tests complete	Sept 94
L151-2	90% Preliminary Design Review	Sept 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.5.2 Molten Salt Oxidation

Task Description:

The principal objectives of Molten Salt Oxidation (MSO) are to receive appropriately characterized mixed waste streams and completely convert the organic portions to CO₂ and water, to remove ash containing the radioactive constituents, and to recycle/process the spent salt. The MSO project element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, and installation of the MEO equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities.

FY94 Plan:

Commence Preliminary Design after Conceptual Design is complete. A preliminary Process Flow Diagram will be completed for representative MWMF waste streams. A preliminary equipment layout will be completed. Procurement of a molten salt unit and a salt recycle unit for demonstration and evaluation in the MWMF will be initiated. The acquisition of the MSO system will be in conjunction with a commercial partner, either through a purchase or CRADA. A Design Basis and Fabrication Specification will be written based on the Conceptual Design Report. A Commerce Business Daily (CBD) announcement will solicit interest, followed by a bid, selection and award cycle. The supplier, with LLNL contractual guidance, will engage in Preliminary Design activities along with addressing engineering development activities (material selection, salt recycle demonstration, etc.).

FY94 Budget: \$1260K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
29	15	17	22	25	24	34	34	56	83	431	490

Major Procurements:

Contract for MSO system definitive design: \$750K

Key Milestones and Markers:

		Scheduled Date
Item		Date
L152-1	Complete bench scale rubber destruction tests	Dec 93
L152-2.1	Advertise in the CBD	Apr 94
L152-2.2	Complete Specification	May 94
L152-3.1	Preliminary Process Flow Diagram complete	Jun 94
L152-2.3	Select industrial partner	Jul 94
L152-2	Award contract	Aug 94
L152-3.2	Initiate Preliminary Design	Aug 94
L152-3	30% Preliminary Design Review	Sept 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.5.3 Wet Oxidation

Task Description:

The principle objective of Wet Oxidation (WOX) is to demonstrate treatment of organic mixed wastes using a wet oxidation process to convert the organic portions to carbon dioxide, water, and inorganic ions, leaving ash, salts, metals, and radionuclides in a residual solution/slurry. The WOX project element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, and installation of the WOX equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. A preliminary Process Flow Diagram will be completed for representative MWMF waste streams. A preliminary equipment layout will be completed. Dispersion system testing, begun in FY93, will identify and demonstrate a waste dispersion system. Treatability tests, in-house and/or commissioned from an expert wet oxidation vendor, will confirm treatment rates, output stream compositions, reagent requirements, and operating strategy for the selected waste feed streams. A preliminary Piping and Instrument Diagram (P&ID) will be completed for the WOX Support System, which includes preliminary equipment specifications for tankage, piping, pumps, valves, sampling ports, instruments and controls.

FY94 Budget: \$560K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11	11	11	7	16	32	77	55	56	64	162	58

Major Procurements:

Treatability Tests, if commissioned from vendor (incl. analytical costs): \$90K
Dispersion test equipment: \$30K

Key Milestones and Markers:

Item	Scheduled Date
L153-1.1 Advertise in the CBD	Apr 94
L153-2.1 Dispersion system test and design complete	May 94
L153-2.2 Preliminary treatability tests complete	Jun 94
L153-1.2 Issue RFQ for treatment unit w/ completed specification	Jun 94
L153-2.3 Preliminary Process Flow Diagram complete	Jun 94
L153-2.4 Preliminary P&ID for Support System complete	Jul 94
L153-1 Award contract	Sept 94
L153-2 30% Preliminary Design Review	Sept 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.5.4 Ultraviolet Photolysis

Task Description:

The principle objective of Ultraviolet Photolysis (UVP) is to demonstrate ultraviolet-driven treatment of the hazardous and toxic organic constituents in the condensate from the Wet Oxidation process (WBS 1.5.3) to produce a sewerable water stream. The UVP project element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, and installation of the UVP equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. A preliminary Process Flow Diagram will be completed for representative MWMF waste streams. A preliminary equipment layout will be completed. Treatability tests, both in-house and commissioned from expert UV photolysis vendors, will establish the best reactor configuration, expected treatment rates, output stream compositions, reagent requirements, and operating conditions for the Wet Oxidation condensate produced from treating the selected waste feed streams. A preliminary Piping and Instrument Diagram (P&ID) will be completed for the UVP Support System, which includes preliminary equipment specifications for tankage, piping, pumps, valves, sampling ports, instruments and controls.

FY94 Budget: \$300K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	2	2	5	6	12	26	33	99	42	36	35

Major Procurements:

Treatability Tests, commissioned from vendor (incl. analytical costs): \$55K

Key Milestones and Markers:

Item		Scheduled Date
L154-1	Preliminary treatability tests complete	Jul 94
L154-2.1	UVP Process Flow Diagram	Jul 94
L154-2.2	P&ID for UVP Support System	Jul 94
L154-2.3	UVP Equipment Layout	Aug 94
L154-2	UVP 90% Preliminary Design Review	Sept 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.5.5 Experimental Off-Gas

Task Description:

The objective of the Experimental Off-Gas Treatment (XOGT) is to demonstrate advanced, more effective off-gas treatment technologies that minimize secondary waste. These are improved Selective Catalytic Reduction (SCR) of NO_x to nitrogen in gaseous phase; conversion of NO_x to nitrogen in aqueous urea; and use of cleanable metal HEPA filters. The XOGT project element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, and installation of XOGT equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities. XOGT will be backed by the process off-gas system representing best available control technology (BACT).

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. A preliminary Process Flow Diagram will be completed for representative MWMF waste streams. The results of a nitrous acid conversion experiment for mediated electrochemical oxidation (MEO) utilizing a gas-liquid contactor with a turbo-aerator will be used to scale-up, design and fabricate a similar contactor that will be used in experiments on destruction of NO_x with acidic urea. New more robust and efficient SCR catalysts will also be tested in the existing Testing Unit. Preliminary equipment layouts will examine the installation of these items in MWMF. Evaluation and specification of instrumentation and controls for automated operation will be initiated.

FY94 Budget: \$250K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
5	5	5	12	22	32	28	29	30	29	27	26

Major Procurements:

Catalyst blocks: \$6K
gas/liquid contactor: \$13K
gas analyzer lease: \$25K

Key Milestones and Markers:

	Item	Scheduled Date
L155-1.1	Fabricate prototype gas-liquid contactor for acidic urea NO _x destruction	Jun 94
L155-1.2	Complete tests on urea and SCR DeNO _x	Jul 94
L155-1	Engineering characterization tests complete	Jul 94
L155-2.1	Initiate instrumentation and control system test	Aug 94
L154-2.2	Preliminary Equipment Layout	Sept 94
L155-2	90% Preliminary Design Review	Sept 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.6.1 Process Transport and Storage

Task Description:

The principal objective of the Process Transport and Storage system is to collect, transfer, deposit, store and handle containers, discrete items, dry and wet bulk materials, slurries, and liquids. Process Transport and Storage provides the management, system analysis and support, design (Title I, II, and III) engineering, procurement, installation of Process Support Systems equipment, Title III inspection, and acceptance test procedures (ATP). Process Transport and Storage includes both process transport and storage equipment and systems integration.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. Design activities focus on validating size, weight, and frequency of material transfer, storage area size, floor plan configuration and key equipment selection. Design support activities include testing of contamination-free interface concepts to validate potential cost impacts.

FY94 Budget: \$250K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	25	30	55	55	35	25	25

Major Procurements:

Equipment for material transport interface development: \$75K

Key Milestones and Markers:

	Item	Scheduled Date
L161-1.1	Select standard transport container designs	Jun 94
L161-1.2	Finalize transport handling capacity	Jul 94
L161-1.3	Finalize transport equipment selection	Aug 94
L161-1.4	Validation of bagless interface complete	Sep 94
L161-1	60% Preliminary Design Review	Sep 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id- 116188
WBS-1.1.5

WBS Element: 1.6.2 Analytical Laboratory Transport and Storage

Task Description:

The principal objective of the Analytical Lab Transport and Storage system is to transport and store both liquid and solid samples within the process areas. Analytical Lab Transport and Storage provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of Analytical Lab Transport equipment, Title III inspection, and Acceptance Test Procedures (ATP). Analytical Lab Transport and Storage includes both analytical lab transport and storage equipment and systems integration.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. Design activities will focus on validating size, weight, and frequency of material transfer, storage area size, general equipment configuration and key equipment selection based on the Waste Analysis Plan. Extensive use of design information from existing analytical lab transport and storage systems that have been developed at other sites is planned, accounting for the expected low level of effort during Preliminary Design.

FY94 Budget: \$50K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	7	7	7	7	7	7	8

Major Procurements:

None

Key Milestones and Markers:

	Item	Scheduled Date
L162-1.1	Select standard transport container designs	Jun 94
L162-1.2	Finalize transport handling capacity	Jun 94
L162-1.3	Finalize transport equipment selection	Aug 94
L162-1	90% Preliminary Design Review	Sep 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id-116188
WBS-1.1.5

WBS Element: 1.6.3 Water Treatment

Task Description:

The principle objectives of Water Treatment are to manage aqueous streams to meet discharge requirements and address future waste water management regulations that would affect an operating mixed waste treatment facility. The Water Treatment project element provides the management, system analysis and support, design (Title I, II, III), engineering, procurement, and installation of the Water Treatment equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities.

FY94 Plan:

FY94 Budget: \$150K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
0	0	0	0	0	11	11	21	25	23	31	28

Major Procurements:

None for this reporting period.

Key Milestones and Markers:

Item		Scheduled Date
L163-1	Water Treatment Process Flow Diagram	Jun 94
L163-2.1	P&ID for Water Treatment	Jul 94
L163-2.2	Tanks and Water Treatment Units Layout	Aug 94
L163-2	90% Preliminary Design Review	Sep 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id-116188
WBS-1.1.5

WBS Element: 1.6.4 Final Forms

Task Description:

The Final Forms task will immobilize the residues from treatment of the mixed waste input streams. The waste form for primary treatment residues will be a high durability ceramic. Final Forms will also condition the wastes resulting from secondary support processes that are integral to the primary treatment processes.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. A preliminary Process Flow Diagram will be completed for representative MWMF waste streams. A preliminary equipment layout will be completed. Engineering process development to allow conversion of bench-top preparation methods to facility scale will be conducted. Partitioning of waste elements between primary and secondary waste streams will be evaluated to allow optimization of secondary waste forms. Volatility of RCRA metals will be established using theoretical modeling and selected experiments to verify the model results. A demonstration of polymer encapsulation for immobilization of NaCl residues from molten salt oxidation treatment will be conducted. For this contract, Commerce Business Daily announcement will solicit interest, followed by a bid, selection and award cycle. The supplier, with LLNL contractual guidance, will support Preliminary Design activities.

FY94 Budget: \$550K CENRTC

Estimated spending profile

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
18	9	25	27	31	29	31	44	114	109	61	52

Major Procurements:

Polymer immobilization evaluation for NaCl wastes: \$20K

Blender/granular (trial unit): \$20K

Furnace (trial unit): \$20K

Rotary calciner (trial unit): \$20K

Key Milestones and Markers:

Item		Scheduled Date
L164-1.1	Preliminary process flow diagram complete	Jul 94
L164-1.2	Preliminary equipment layout complete	Aug 94
L164-1.1	Preliminary process parameters for ceramic forms complete	Sept 94
L164-1	90% Preliminary Design Review	Sept 94
L164-2	NaCl encapsulation evaluation complete	Sept 94

**MWMF Project
FY94 Plan Task Summary**

ucrl-id-' 116188
WBS-1.1.5

WBS Element: 1.6.5 Supervisory Instrumentation and Control

Task Description:

Instrumentation and Control (I&C) systems will provide and integrate controls to develop, demonstrate, test, and evaluate mixed waste destruction technologies in a safe, environmentally acceptable, reliable, and cost-effective manner. I&C systems provide the management, system analysis and support, design (Title I, II, III) engineering, procurement, equipment installation, Title III inspection, and acceptance test procedures (ATP) covering equipment and system integration activities for Central Monitoring and Control, Safety Control Systems, Standard Process I&C, Analytical Laboratory I&C, and intercom communication, surveillance CCTV, and telepresence systems.

FY94 Plan:

Following completion of the Conceptual Design, Preliminary Design will be initiated. Design activities focus on completing system requirements in conjunction with evaluation, selection, and procurement of hardware and software platforms, and validation of preliminary system designs through rapid prototyping.

FY94 Budget: \$1200K CENRTC

Estimated spending profile (\$K)

Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
20	20	20	35	55	70	90	315	90	140	170	175

Major Procurements:

Process Control System front-end-processor hardware/software, fast prototype: \$45K
 Supervisory Control System hardware/software, fast prototype components: \$135K
 Handling system open architecture controller, fast prototype components: \$30K
 Telerobotics platform, fast prototype components: \$60K
 Teleoperator controller, fast prototype components: \$60K

Key Milestones and Markers:

Item	Scheduled Date
L165-1.1 General arrangement plan complete	Mar 94
L165-1.2 Process Control System FEP hardware/software selected	Apr 94
L165-1.3 Supervisory Control System hardware/software selected	Apr 94
L165-1.4 Handling Systems open architecture controller selected	Jul 94
L165-1.5 Analytical laboratory LIMS selected	Jul 94
L165-1.6 Telerobotics platform selected	Aug 94
L165-1.7 Teleoperator controller selected	Sep 94
L165-1 90% Preliminary Design Review	Sep 94

DATE

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6 / 10 / 94

END