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Mixed Waste Management Facility

Monthly Report
March 1994

Ronald D. Streit

April 1994

LAWRENCE LIVERMORE NATIONAL LABORATORY
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MASTER

Summary

During March, good progress continued toward completion of the Conceptual Design (CD). All engineering conceptual designs were completed; bottom-up cost and schedule estimates were completed, rolled-up, analyzed, and made consistent. A major project milestone to present a 90% CD briefing was successfully completed. The briefing was held on March 30 and 31, with no major issues noted by the review committee. Good progress on preparing the CD Report also continued, with several appendices and sections being drafted.

Considerable effort also continued to support the DOE decision process on Molten Salt Oxidation and the MWMF project. At the request of DOE, development of an MWMF Integrated Strategy Plan was initiated. This plan is to discuss risks and issues associated with the MWMF, the Building 494 upgrade, engineering development, and ES&H and permitting activities, and will form a basis for coordinating MWMF activities. Formal submission of this plan and a corresponding briefing package is due on April 15.

In preparation for a validation of the FY96 budget submittal and overall project, DOE requested an early draft of the CD report by mid-April and a series of briefings late in April. The schedule for delivering the CD report was adjusted to meet these new requests. This is in addition to the Independent Cost Validation of the Conceptual Design that will be completed by DOE during May.

The following list summarizes significant accomplishments in March.

- Completed 90% CD briefing.
- Completed bottom-up cost and schedule estimates, and integrated summaries into the Automated Estimating System (AES) for CDR.
- Developed conceptual operational transition plan for MWMF project and used as a basis for CDR cost estimate for Startup and Activation WBS elements.
- Issued approved Design Basis Operating Plan.
- Implemented formal action item tracking system.
- Provided management review of PSAR; developed plan for assuring radiological materials inventory.
- Gave an early draft of the MWMF Environmental Assessment to the DOE Project Manager for review and comment; formal release by LLNL is planned for May.
- Provided input and briefing to DOE for 5-year plan and FY96 Field submission (Activity Data Sheet).
- Provided Project Data Sheet to LLNL Budget Office for FY96 Field Budget Request.
- Issued PTS Report and MWMF Monthly Report for February, 1994.
- Successfully tested method to separate aqueous and organic portions of Trimsol systems in support of Liquids Feed Preparation process.
- Began series of yield measurements in the proposed silver recovery process for Mediated Electrochemical Oxidation.
- Successfully tested a proposed homogenizer to disperse trichloroethylene in solutions for Wet Oxidation process.
- Phase studies of ceramic waste forms continued to develop specific proposals for Final Forms.

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Project Financial Summary

The project continued to operate under the DOE reduced funding guidance (see February '94 Report). Requests by DOE for additional planning documents, briefings, and FY96 validation information continue to take senior-level management time and expense. In addition, a retroactive increase in LLNL general overhead rates and prior liens were costed in March.

Direct manpower charges have remained at about the January rate as planned, but March charges for the retroactive overhead increase and certain liens resulted in an apparent increase in March costs. Per DOE guidance the project continues to focus only on high priority work and maintaining a basic team until a DOE decision on the MWMF is made. The FY94 plan will be formally revised after a DOE decision to proceed with preliminary design. The milestones in this report have therefore not been modified to reflect revised DOE funding guidance. Impacts on near-term specific milestones are only reported where the impact can be well determined.

Additional OPEX and CENRTC funds were placed in the MWMF contract by DOE, but not in the proper amounts to help resolve the imbalance discussed last month and too late to make any corrections during March. The project submitted a plan to DOE, for funding for the remainder of the year, that reflects a rampdown and close-out of the project during 4Q FY94 if a decision is not made to proceed with the MWMF. This funding will then be supplemented if/when a decision is made to proceed with the MWMF. These funds will allow the project to complete some cost transfers to resolve the imbalance between OPEX and CENRTC authorized funds.

OPEX (\$K), cumulative:

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	425	820	1231	1628	2039	2423	2539	2655	2766	2905	3044	3160
Rev. Plan**	425	820	1231	1628	2076	2506	2945					
Actual	491	847	1299	1739	2232	2853						
Funding	680*	680	1630	1630	3103	3105						

CENRTC (\$K), cumulative:

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	148	273	416	593	846	1417	2154	3147	4087	5000	6332	7620
Rev. Plan**	148	273	416	593	753	913	1073					
Actual	156	275	407	538	676	798						
Funding	370*	370	470	470	870	1070						

* FY93 carry-over

** Revised Plan represents funding guidance through April from DOE/OAK (letter, K. King to R. Streit, received Feb. 25, 1994)

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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 environment, 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.

Summary of Activities:

The QA Manager developed a formal Action Item tracking system, and briefed the MWMF Steering Committee of its implementation. He also produced Revision 1 of the Document Control Procedure and routed the procedure for review and comment.

Cost Summary: FY94 Budget: \$180K OPEX

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	9	11	11	13	15	16	17	17	17	18	18	18
Actual	11	11	8	6	3	13						

FY94 Major Procurements:

None

Key Milestones and Markers:

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

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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 (PSAR). Safety analysis includes the analysis, generation of documentation, and documentation review and approval. The element includes the generation of the Preliminary Safety Analysis Report 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.

Summary of Activities:

The contractor began making revisions to the draft PSAR as needed to address LLNL review comments.

Cost Summary: FY94 Budget: \$230K OPEX

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	59	57	50	31	22	11	0	0	0	0	0	0
Actual	30	9	10	2	24	58						

The March cost reflects a contract lien payment of \$47K.

FY94 Major Procurements:

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

Key Milestones and Markers:

Item	Scheduled Date	Status
L112-1.1 Issue Contract	Oct 93	Complete
L112-1.2 Preliminary PSAR Review	Feb 94	Complete
L112-1 PSAR to DOE for Review	Apr 94 ⁽¹⁾	Open
D112-1 PSAR Approved by DOE	Jul 94 ⁽²⁾	Open

⁽¹⁾ Revised from March 94 (in Feb. '94 report)

⁽²⁾ Revised from June 94 (in Feb. '94 report)

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WBS Element: 1.1.3 NEPA/CEQA

Task Description:

NEPA/CEQA provides for the preparation of input to the Environmental Assessment (EA) 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.

Summary of Activities:

The draft EA continues to be revised to make changes identified by internal review cycles and to reflect additional details on accident analyses provided in the Preliminary Hazards Analysis and PSAR documents. A draft copy without the impact analysis chapter (in final preparation) was given to DOE/OAK for early review. The final EA will be submitted to DOE in May. We are discussing detailed review schedule with DOE/OAK.

Staff attended the 90% MWMF Conceptual Design Review to gather additional information to be reflected in the EA, as well as the RD&D and air permit applications.

Cost Summary: FY94 Budget: \$290K OPEX

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	9	12	36	36	37	21	18	18	13	39	39	12
Actual	8	10	29	11	13	25						

FY94 Major Procurements:

None

Key Milestones and Markers:

Item	Scheduled Date	Status
L113-1 Environmental Assessment (EA) submitted to DOE	May 94 ⁽¹⁾	Draft Submitted
D113-1 EA approved by DOE	Oct 94 ⁽²⁾	Open
L113-2 Air permit application submitted to BAAQMD	May 94	Open
L113-3 Research, Development & Demonstration (RD&D) permit application submitted to DTSC	Jul 94	Open
C113-2 Authority to Construct issued by BAAQMD	Oct 94	Open

(1) Revised from March '94 to match CDR progress (see above summary)

(2) Revised from August '94 to match CDR progress (see above summary)

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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.

Summary of Activities:

Members of the ES&H team have continued to attend technical meetings such as the 90% Conceptual Design Review and to consult with principal investigators and engineers on ES&H issues.

Cost Summary: FY94 Budget: \$120K OPEX

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	8	8	8	8	9	9	9	12	12	12	12	13
Actual	2	10	12	13	16	16						

FY94 Major Procurements:

None

Key Milestones and Markers:

	Item	Scheduled Date	Status
L-114-1.1	Review of 30% Conceptual Design	Dec 93	Complete
L-114-1.2	Review of 90% Conceptual Design	Mar 94	Complete
L-114-1.3	Review 90% Preliminary Design	Sep 94	Open

WBS Element: 1.1.5. Program Support

Task Description:

Program Support provides top-level planning, control, and support of the MWMF project's 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.

Summary of Activities:

During March, the major focus of the project was to complete the technical work, cost and schedule basis for the Conceptual Design (CD). Presentation of the 90% CD briefing, a major project milestone (L121-2), was successfully completed. Good progress was also made toward issuing the CD Report, currently on schedule to issue in April.

Following the meeting with Stephen Cowan and EM-30 on March 17, 1994, development of an MWMF Integrated Strategy Plan was initiated. This plan is to coordinate activities and discuss risks and issues with the MWMF, Bldg. 494 upgrade, engineering development, and ES&H. Formal submission of this plan and the corresponding briefing package is due on 4/15/94. In addition, DOE has requested an early draft of the CD Report by mid-April and for a series of briefings for FY96 budget validation late in April.

The Design Basis Operating Plan was also approved February 24, 1994, and issued in March; this completes Milestone L115-6.

Specific activities of significance are listed below:

- Managed technical effort for CDR, presentation of 90% CDR briefing.
- Developed conceptual operational transition plan for MWMF project and used as a basis for CDR cost estimate for Startup and Activation WBS elements.
- Provided summary information for CDR cost roll-up and management review.
- Issued Design Basis Operating Plan.
- Provided management review of PSAR; developed plan for assuring radiological materials inventory.
- Presented management overview and review of project cost and schedule at 90% Conceptual Design Review.
- Provided input and briefing to DOE for a 5-year plan and FY96 Field submission (Activity Data Sheet).
- Provided Project Data Sheet to LLNL Budget Office for FY96 Field Budget Request.
- Issued PTS Report and MWMF Monthly Report for February 1994.

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Cost Summary: FY94 Budget: \$1250K OPEX

(NOTE: revised actual costs reflect revised cost data.)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	230	157	151	145	122	121	56	53	53	53	53	56
Actual	331	161	192	135	191	207						

The increased charges in March were a result of the following factors:

1. Delayed DOE funds for CENRTC. Corrective cost transfers for prior months could not occur as planned due to delayed DOE funds for CENRTC (see February '94 Report).
2. A mischarge for contractor support costs (\$70K). This will be corrected by cost transfers.
3. Additional project reviews and documentation on the implementation of MSO technology as identified in above summary.

Key Milestones and Markers:

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

⁽¹⁾ Milestone to be delayed pending DOE decision on MWMF project.

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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.

Summary of Activities:

This activity is on hold by the project due to DOE uncertainties. Charges represent a prior lien.

Cost Summary: FY94 Budget: \$150K OPEX

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	0	0	5	14	16	16	16	16	16	17	17	17
Actual	0	1	0	4	0	1						

FY94 Major Procurements:

Contracted support for Public Participation activities

Key Milestones and Markers:

		Scheduled	
Item		Date	Status
L116-1.1	Form National Advisory Committee (NAC)	N/A	On Hold
L116-2.1	Issue first public newsletter	N/A	On Hold
L116-1.2	First meeting of NAC	N/A	On Hold
L116-1.3	Receive comments on CDR Draft from NAC	N/A	On Hold
L116-2.2	Issue second newsletter	N/A	On Hold
L116-1.4	Second meeting of NAC	N/A	On Hold
L116-2.3	Issue third newsletter	N/A	On Hold

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WBS Element: 1.2.1. Conceptual Design

Task Description:

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

Summary of Activities:

The formal 90% review of the Conceptual Design was held for the independent review team. No action items were identified. The review team supports the position that the project is ready to proceed with preliminary design. Initial cost and schedule roll-ups were completed. Focus then shifted to completion of the draft Conceptual Design Report to be delivered to DOE by April 19, 1994, to support the FY96 project.

Cost Summary: FY94 Budget: \$940K OPEX

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	110	150	150	150	190	190	0	0	0	0	0	0
Actual	111	154	198	268	250	303						

This much cost reflects additional costs associated with development of conceptual design of the process off-gas systems.

FY94 Major Procurements:

Contracted services for CDR support: \$7K

Key Milestones and Markers:

Item	Scheduled Date	Status
L121-1.1 Initiate Point Design Reviews	Oct 93	Complete
L121-1.2 Complete Point Design Reviews	Nov 93	Complete
L121-1 30% Conceptual Design Review	Dec 93	Complete
L121-2 90% Conceptual Design Review	Mar 94	Complete
L121-3 Conceptual Design Report issued	Apr 94	Open
D121-1 Preliminary Approval and Funding to proceed into Preliminary Design	Apr 94	Open
D121-2 KD-1/2 Decision approved by DOE	Jun 94	Open

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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.

Summary of Activities:

No activities are scheduled for this WBS element for FY94.

Cost Summary:: FY94 Budget: \$0K OPEX

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

FY94 Major Procurements:

None

Key Milestones and Markers:

Item	Scheduled Date	Status
None		

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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), the identification and resolution of problems during plant operational testing, start-up, 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) during construction, testing, and activation of the MWMF.

Summary of Activities:

No activities are scheduled for this WBS element for FY94.

Cost Summary: FY94 Budget: \$0K OPEX

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

FY94 Major Procurements:

None

Key Milestones and Markers:

Item	Scheduled Date	Status
None		

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WBS Element: 1.3.1. Project Management

Task Description:

Project Management provides top-level project planning, direction, and control of the MWMF project's 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.

Summary of Activities:

No activities for this reporting period.

Cost Summary: FY94 Budget: \$300K CENRTC

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

FY94 Major Procurements:

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

Key Milestones and Markers:

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

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

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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.).

Summary of Activities:

As reported in the February '94 Report, due to restricted funding guidance from DOE, only essential activities that are required for the control of important project baselines were completed under this WBS. Project Control activities for OPEX are summarized under WBS 1.1.5. There were no charges in March and corrective cost transfers for prior months could not occur due to delayed DOE funds for CENRTC (see February '94 Report).

Cost Summary: FY94 Budget: \$300K CENRTC

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

FY94 Major Procurements:

None

Key Milestones and Markers:

	Item	Scheduled Date ⁽¹⁾	Status ⁽¹⁾
L132-2.1	Prepare Configuration Control Plan	May 94 ⁽²⁾	In progress
L132-2.2	Prepare Design Review Procedure	Mar 94	On Hold
L132-1	Implement cost planning/tracking systems	June 94	Open
L132-2	Implement technical baseline control system	May 94	Open
L132-3	Implement schedule control/tracking system	Aug 94	Open

(1) All except essential activities deferred to accommodate reduced DOE funding guidance. Dates will be revised upon longer-term DOE funding guidance; see "Summary."

(2) Revised from February 94; see discussion above.

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UCRL-ID-116187-94-3

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. 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.

Summary of Activities:

No activities for this reporting period.

Cost Summary: FY94 Budget: \$300K CENRTC

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

FY94 Major Procurements:

None

Key Milestones and Markers:

		Scheduled	Status
Item		Date	
L133-1.1	Draft System Engineering Management Plan	Sep 94	Open

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WBS Element: 1.4.1. Receiving and Shipping

Task Description:

The principal objective of the Receiving and Shipping 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 Shipping provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of Receiving and Shipping equipment, Title III inspection, and acceptance test procedures (ATP). Receiving and Shipping includes both receiving and shipping equipment and systems integration.

Summary of Activities:

Initiation of activities have been delayed awaiting DOE authorization to proceed.

Cost Summary: FY94 Budget: \$200K CENRTC

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

FY94 Major Procurements:

None

Key Milestones and Markers:

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

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UCRL-ID-116187-94-2

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.

Summary of Activities:

Initiation of activities has been delayed and awaits DOE authorization to proceed.

Cost Summary: FY94 Budget: \$600K CENRTC

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

FY94 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	Status
L142-1.1	Surrogate feeds defined	May 94	Open
L142-1.2	Initial suite of characterization equipment identified	Jun 94	Open
L142-1.3	Validation of characterization, isolation and segregation methods complete	Sep 94	Open
L142-1.4	Preliminary operator control station design complete	Sep 94	Open
L142-1	90% Preliminary Design Review	Sep 94	Open

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.

Summary of Activities:

Initial tests to validate the use of magnesium sulfate as a de-emulsifier for separating Trimsol cutting fluid into aqueous and organic portions were completed. Successful results led to selection of de-emulsification and gravity settling, rather than the high-speed centrifuge concept. Further activities have been suspended, awaiting DOE authorization to proceed.

Cost Summary: FY94 Budget: \$400K CENRTC

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	0	0	0	0	0	75	75	50	50	50	50	50
Actual	12	5	1	0	1	8						

FY94 Major Procurements:

Support contracts to NWC sites: \$50K

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

Key Milestones and Markers:

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

WBS Element: 1.5.1. Mediated Electrochemical Oxidation

Task Description:

The principal 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.

Summary of Activities:

During March 1994, the following activities took place in addition to the Conceptual Design effort. Experiments continued on the hydroxide-peroxide process to recover silver from silver chloride. Tests were performed to see if there was a change in yield due to salt (sodium chloride) build-up in the hydroxide solution. Sodium hydroxide solution at 6 M was continuously reused to dissolve silver chloride and reduce it to silver with hydrogen peroxide. The sodium hydroxide consumed at each step was replenished to maintain an initial concentration of 6 M NaOH. The tests were repeated through six steps. The results indicated no significant change in yield due to sodium chloride buildup. However, the yields were low—approximately 50%. Hence, the tests will be repeated at higher sodium hydroxide concentrations.

The turbo-aerator scale-up tests are awaiting fabrication of parts.

Cost Summary: FY94 Budget: \$950K CENRTC

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	67	67	67	69	70	70	90	90	90	90	90	90
Actual	57	56	70	54	47	45						

FY94 Major Procurements:

None

Key Milestones and Markers:

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

(1) All except essential activities deferred to accommodate reduced DOE funding guidance. Dates will be revised upon longer-term DOE funding guidance; see "Summary."

(2) Revised from March 94; see discussion above.

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.

Summary of Activities:

Engineering development needs and action plans were completed and documented. The initial arrangement of process equipment and a vendor survey for the applicability of commercial components were continued. Conceived a reactor vessel concept that addresses many of the key outstanding materials and operations issues. Initiated work on system specification.

Cost Summary: FY94 Budget: \$1260K CENRTC

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	29	15	17	22	25	24	34	34	56	83	431	490
Actual	16	12	6	18	22	21						

FY94 Major Procurements:

Contract for MSO system definitive design: \$750K

Key Milestones and Markers:

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

WBS Element: 1.5.3. Wet Oxidation**Task Description:**

The principal objective of Wet Oxidation (WOX) is to demonstrate treatment of organic mixed wastes using a wet oxidation process to convert the organic portions to CO₂, 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.

Summary of Activities:

To see if adequate reaction time in a wet oxidation reactor could be obtained for this compound even though its nominal boiling point is 87°C, we evaluated the ability of a high shear homogenizer to create and maintain a dispersion of trichloroethylene (TCE) in water at 100°C. A recirculating loop containing an in-line homogenizer produced the dispersion and provided the pumping action for recirculation in a 55-gallon drum. 100 ml of liquid TCE was introduced into the system at the homogenizer inlet to immediately reduce its vapor to tiny bubbles. TCE that escaped from the water and exceeded the gas volume in the drum was vented to a condenser. After condensation the TCE and some water were collected in a graduated cylinder; after an hour of 100°C operation, only ~10% of the TCE added was collected. It was concluded that adequate residence time can be provided for wet oxidation reactions to destroy dispersed TCE.

Cost Summary: FY94 Budget: \$560K CENRTC

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	7	7	7	7	16	32	76	56	60	67	165	60
Actual	21	8	5	10	6	7						

FY94 Major Procurements:

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

Dispersion test equipment: \$30K

Key Milestones and Markers:

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

(1) All except essential activities deferred to accommodate reduced DOE funding guidance. Dates will be revised upon longer-term DOE funding guidance; see "Summary."

(2) To be revised pending DOE budget decision.

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WBS Element: 1.5.4. UV Photolysis

Task Description:

The principal objective of UV 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.

Summary of Activities:

Initiation of activities has been delayed and awaits DOE authorization to proceed.

Cost Summary: FY94 Budget: \$300K CENRTC

(NOTE: revised actual costs reflect revised cost data.)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	2	2	2	5	6	12	26	33	99	42	36	35
Actual	3	3	2	-2	0	0						

FY94 Major Procurements:

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

Key Milestones and Markers:

		Scheduled	
	Item	Date	Status
L154-1	Preliminary treatability tests complete	Jul 94	Open
L154-2.1	UVP Process Flow Diagram	Jul 94	Open
L154-2.2	Piping and instrumentation drawings for UVP support system	Jul 94	Open
L154-2.3	UVP equipment layout	Aug 94	Open
L154-2	UVP 90% Preliminary Design Review	Sep 94	Open

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WBS Element: 1.5.5. Experimental Off-Gas

Task Description:

The objective of the Experimental Off-Gas (XOG) treatment 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 XOG project element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, and installation of XOG equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities. The XOG will be backed by the Process off-gas system representing best available control technology (BACT).

Summary of Activities:

Initiation of activities has been delayed and awaits DOE authorization to proceed.

Cost Summary: FY94 Budget: \$250K CENRTC

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	5	5	5	12	22	32	28	29	30	29	27	26
Actual	9	7	4	2	4	-1						

FY94 Major Procurements:

Catalyst blocks: \$6K

gas/liquid contactor: \$13K

gas analyzer lease: \$25K

Key Milestones and Markers:

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

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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 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.

Summary of Activities:

Initiation of activities has been delayed and awaits DOE authorization to proceed.

Cost Summary: FY94 Budget: \$250K CENRTC

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

FY94 Major Procurements:

Equipment for material transport interface development: \$75K

Key Milestones and Markers:

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

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WBS Element: 1.6.2. Analytical Laboratory

Task Description:

The principal objective of the Analytical Laboratory is to provide analysis for process control, material control, and regulatory requirements. Analytical Laboratory provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of Analytical Laboratory equipment, Title III inspection, and acceptance test procedures (ATP). Analytical Laboratory includes Analytical Laboratory Equipment, Local Process I&C, and Process Off-Gas.

Summary of Activities:

Initiation of activities has been delayed and awaits DOE authorization to proceed.

Cost Summary: FY94 Budget: \$50K CENRTC

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

Major Procurements:

None

Key Milestones and Markers:⁽¹⁾

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

⁽¹⁾ As part of the CDR activities, the title and description for this WBS element was revised from "Analytical Laboratory Transport and Storage" to better reflect this project work element. Milestones and markers will be revised to reflect detailed tasks when the MWMF project is authorized.

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WBS Element: 1.6.3. Water Treatment

Task Description:

The principal 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.

Summary of Activities:

Initiation of activities has been delayed and awaits DOE authorization to proceed.

Cost Summary: FY94 Budget: \$150k CENRTC

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

FY94 Major Procurements:

None for this reporting period.

Key Milestones and Markers:

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

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WBS Element: 1.6.4. Final Forms

Task Description:

The Final Forms task will immobilize the solid residues from the primary treatment processes as solid waste forms. Final Forms will also condition the wastes resulting from secondary support processes that are integral to the primary treatment processes. The waste forms types are (1) ceramics for ash, (2) thermosetting-polymer encapsulation for salt, and (3) sulfur-polymer cement for volatiles.

Summary of Activities:

Studies of ceramic waste forms simulating residues from the primary treatments are continuing, as outlined in the February '94 report. In addition, attempts are being made (1) to identify one of the minor phases (a Ca-Al-Ti oxide) found in the experimental waste forms, and (2) to synthesize whitlockite ($3\text{CaO} \cdot 2\text{P}_2\text{O}_5$), which may be the fate of phosphates from the waste streams.

Cost Summary: FY94 Budget: \$550K CENRTC
(NOTE: revised actual costs reflect revised cost data.)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	18	9	25	27	31	29	31	44	114	109	61	52
Actual	18	9	19	38	36	21						

FY94 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:

		Scheduled	
Item		Date	Status
L164-1.1	Preliminary process flow diagram complete	Jul 94	Open
L164-1.2	Preliminary equipment layout complete	Aug 94	Open
L164-1.1	Preliminary process parameters for ceramic forms complete	Sep 94	In Progress
L164-1	90% Preliminary Design Review	Sep 94	Open
L164-2	NaCl encapsulation evaluation complete	Sep 94	Proposal in hand

WBS Element: 1.6.4. Final Forms**Task Description:**

The Final Forms task will immobilize the solid residues from the primary treatment processes as solid waste forms. Final Forms will also condition the wastes resulting from secondary support processes that are integral to the primary treatment process. The waste forms types are (1) ceramics for ash, (2) thermosetting-polymer encapsulation for salt, and (3) sulfur-polymer cement for volatiles.

Summary of Activities:

Studies of ceramic waste forms simulating residues from the primary treatments are continuing, as outlined in the February '94 report. In addition, attempts are being made (1) to identify one of the minor phases (a Ca-Al-Ti oxide) found in the experimental waste forms, and (2) to synthesize whitlockite ($3\text{CaO} \cdot 2\text{P}_2\text{O}_5$), which may be the fate of phosphates from the waste streams.

Cost Summary: FY94 Budget: \$550K CENRTC

(NOTE: revised actual costs reflect revised cost data.)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	18	9	25	27	31	29	31	44	114	109	61	52
Actual	18	9	19	38	36	21						

FY94 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	Status
L164-1.1	Preliminary process flow diagram complete	Jul 94	Open
L164-1.2	Preliminary equipment layout complete	Aug 94	Open
L164-1.1	Preliminary process parameters for ceramic forms complete	Sep 94	In Progress
L164-1	90% Preliminary Design Review	Sep 94	Open
L164-2	NaCl encapsulation evaluation complete	Sep 94	Proposed in hand

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WBS Element: 1.6.3. Water Treatment

Task Description:

The principal 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.

Summary of Activities:

Initiation of activities has been delayed and awaits DOE authorization to proceed.

Cost Summary: FY94 Budget: \$150k CENRTC

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

FY94 Major Procurements:

None for this reporting period.

Key Milestones and Markers:

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

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.

Summary of Activities:

- Completed identification of system interfaces, requirements, and criteria. Completed compilation of an I&C Plan Task summary modeled on the Project Plan Task Summary.
- Completed conceptual design activities for all Control System subsystem elements. Continued cost estimation efforts. Prepared and presented the 90% conceptual design on March 30-31.
- Completed General Arrangement Plan development activities (Marker L115-1.1).
- Continued low-level effort evaluation of front-end processors (FEP).
- Continued low-level effort evaluation of supervisory control systems (DCS and SCADA). Arranged vendor demonstration for Industrial Systems Inc. process data system.

Cost Summary: FY94 Budget: \$1200K CENRTC

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plan	20	20	20	35	55	70	90	315	90	140	170	175
Actual	19	21	25	11	22	17						

FY94 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:

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

DATE

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7/12/94

END