The Mixed Waste Management Facility

Monthly Report
July 1995

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Project Summary

Overview

Significant technical progress continued within the project as preliminary design, technical reviews, engineering development, and procurements/contracts moved forward. Key accomplishments were the installation and initial operation of the MSO Engineering Development Unit (EDU), Peer Review of Analytical Services, development of Preliminary Design Baseline guidance, and formal acceptance of the *Environmental Assessment* (EA). However, due to continued DOE budget uncertainty, the reduction of FY96 budgets by \$2M, and concern over manpower, some of the system-level preliminary design reviews (PDRs) have been rescheduled for September and October, 1995. The project PDR, scheduled in November 1995, (shown in *Revised FY95 Plan*), is not impacted by these schedule adjustments (at this time).

Primary focus during July included:

- We developed a top-level integrated schedule and budget plan as guidance for developing the PDR Baseline (*Project Baseline Rev. 2*). This guidance incorporates DOE guidance to reduce FY96 budget, to maintain a "flat budget profile" in outyears, and to delete MEO. As guidance to this plan, systems have been asked to identify significant cost elements that may be shifted forward or back relative to the baseline schedule to accommodate outyear budget uncertainties. We will finalize the baseline plan as part of preparing the project PDR (in November) and will subsequently incorporate it into a baseline change request.
- We incorporated final comments from DOE/OAK into the MWMF EA. This document has now been formally sent to DOE. DOE will release the EA to the State for comment prior to a making a final NEPA determination. A second meeting of the MWMF National Review Panel (NRP) is scheduled for late August to review and address the NRP's comments on the EA.
- The collocation and integration of the MWMF and DWTF continued. We finalized facility requirements for the Title I design, and we are conducting trade studies on facility design issues (e.g., air handling, floorspace, hazard classification design)
 - Very good progress continued on assessing and solving engineering design issues in MSO. Specifically, the process off-gas system, injector design, vessel material, and the salt recycle system have each matured significantly in preliminary design. Trade studies continue to focus on finalizing the design configuration. We completed the EDU mechanical and electrical assembly. Initial start-up tests to demonstrate the controls, test the injector flange seal, and prove out the salt sucker were successful, with all systems functioning within expected ranges.

Cost Status. July expenditures are below plan, primarily due to the delay in costing the robotics manipulator arm procurement. Because of delayed work for certain WBS elements since the April '95 rebaseline, we are now projecting approximately \$200K in "Approved Work Scope" carryover into FY96. We are also projecting to carryover approximately \$400K in obligated liens (for a total of \$600K) that will not have posted by the end of the fiscal year. The estimated carryover will be revised and updated in the next PTS and monthly reports as the fiscal year end gets closer.

Schedule Status. BCWP is below planned rate to reflect accumulative delayed work for some work elements since the revised *FY95 Plan* (April '95) (see PTS report). The

Project PDR remains unaffected and is still scheduled for Nov 95. Schedule and cost guidance to the *Rev. 2.0 Project Baseline* assumes a \$10M/yr flat spending profile. This will result in stretch-out of the project into FY99 and will likely increase certain cost elements.

Significant Issues and Planned Corrective Actions

Uncertainty in outyear funding and continued reassessment of the decision to proceed with the MWMF have made it difficult to plan for and implement the Project plan, specifically, as it relates to the Preliminary Design Project Baseline development. We have written a Preliminary Design Project Baseline guidance that assumes specific budget profiles for the remainder of the project. Per DOE guidance, we have focused on keeping the spending profile relatively flat, and at approximately \$10M/yr. This will result in stretch-out of the project to FY99, but we are developing a plan to mitigate the impact of this on overall project cost.

NEPA for the MWMF poses a continued, but lessened, schedule risk for the MWMF and DWTF. The key concern remains a NEPA determination by September to allow the start of Phase I construction (and expenditure of FY95 funds), as well as to initiate Title II of Phase 2 in November; the former is on critical path. We submitted the MWMF EA, revised to reflect the DWTF/MWMF collocation, to DOE/OAK in February. Final minor revisions completed in July have now been formally accepted by DOE. DOE and LLNL are in the process of providing copies to the appropriate agencies and individuals for review. If the reviews are completed on schedule and *no* significant issues are identified, the NEPA documentation should be completed by the end of September.

Due to several reasons, a number of key personnel will be leaving the project. We are reassessing project needs and organizational structures in light of reduced budgets and will be posting for required positions. It is our intention to decrease project overhead and limit any new hires to the project to "absolutely essential" personnel.

Summary of Accomplishments

Detailed accomplishments and milestone status are reported in the Task Summaries that follow the Project Financial Summary. Below we highlight the major accomplishments during this reporting period:

- **Systems Integration:** We have answered questions and given clarification to the A&E to assist with their design effort. This includes updated HVAC and utility requirements. We updated equipment arrangements on the MWMF floor plan.
- **Feed Preparation:** We negotiated and placed the contract for the engineering development manipulator arm. We made good progress on the prototype control system for the engineering development system. An equipment layout for the engineering development workcell is being developed.
- **MEO:** We finished preliminary testing of the Automated Diluter. The results were included in the *System Design Description* document (SDD). Also concluded were tests simulating the recovery of silver and removal of dissolved solids from the MEO anolyte. We have completed and approved PFDs and P&IDs consistent with the SDD.
- **MSO:** Materials development and evaluation activities continued. We derived a test matrix for aluminized coatings on Inconel 600 applied by the Alon Co. packed-bed

process. Samples for testing are being prepared. Initial operation of EDU began. A 27-kg charge of eutectic sodium carbonate/sodium chloride salts was loaded as the first charge to test the controls, flange seals, and salt sucker. During August, we will conduct additional runs for melt testing, injector testing, and controllability evaluations. We visited 6 vendors during July to evaluate their qualifications to be on the bidder list for the salt separation system.

- Analytical Services: We completed a peer review during July. Issues identified include the need to continue iterations of types and numbers of analyses required, re-evaluation of analytical instrumentation located within the MWMF/DWTF, and document accountability for equipment related to Analytical Services.
- Final Forms: A paper based on the ceramic waste form work, "Ceramic Waste Forms for Residues from Molten Salt Oxidation of Mixed Wastes," by Richard Van Konynenburg and other project personnel, has been accepted for presentation at the Fall Meeting of the Materials Research Society.
- Supervisory I&C: MWMF/DWTF Supervisory I&C integration plans were formally documented. We met Supervisory I&C Engineering Development goals for implementing the MSO EDU control system.

Project Financial Summary

Figures 1 and 2 present graphical plots of planned-versus-actual spending for OPEX and CENRTC. Table 1 presents a more detailed financial summary of the MWMF Project for June. For reference, the monthly profiles are shown for both the original (11/94 Plan) and the revised (4/95 Plan) FY95 spending plan. There are no significant financial items to report beyond those discussed in the Cost Status paragraph of the Overview section above.

Project CENRTC Summary

MWMF Project - Monthly Financial Summary for FY95
August 1995

FY95 OPEX budget =

DOE FY95 new-BA, OPEX		
budget	guidance ^m	delta
536	2800	-2264

FY95 CENRTC budget =

DOE FY95 new-BA, CENRTC		
budget	guidance ^m	delta
5119	4856	263

FY95 TOTAL budget* =**

DOE FY95 new-BA, TOTAL		
budget	guidance ^{MM}	delta
5855	7656	.0001

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WBS Element 1.1.1 Quality Assurance**Task Description**

Quality Assurance (QA) provides quality assurance support to the MWMF Project. This effort includes development and implementation of the project's QA program and oversight for conformance to the approved plan and other quality and ES&H requirements. This WBS element covers only a fraction of the OPEX QA effort, with the CENRTC portion contained under WBS 1.3.2, Project Control.

Summary of Monthly Activities

- We completed and distributed QA procedure, QP-4, "QA Surveillance/Verification," fulfilling marker 1.3.2-9.2.
- We continued updating the action item tracking system/list and attended various peer and preliminary design review meetings.
- We worked with project personnel on QA issues and the QA filing system.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	3	3	3	3	3	3	3	3	3	3	3	3
4/95 Plan ²	Used actual costs through March						3	3	3	3	3	3
Monthly actual	2	3	12	-4	3	5	0	0	3	-1		
11/94 Plan cumulative ¹	3	6	8	11	13	17	19	22	25	28	31	34
4/95 Plan cumulative ²	Used actual costs						23	26	29	32	35	38
Actual cumulative	2	5	17	13	16	21	21	21	24	23		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation.

ID No.	Milestone/Marker	Scheduled Date*	Status
None	Level of effort activity		

WBS Element 1.1.2 PSAR**Task Description**

The *Preliminary Safety Analysis Report* (PSAR) provides the integration of safety input, design reviews, and safety analysis for Phases I and II of the integrated MWMF/DWTF Project. Safety analysis includes analysis, generation of documentation, and documentation review and approval. The element includes the generation of the PSAR, which must be completed prior to major procurements and follow-on analysis required for the generation of the *Final Safety Analysis Report* (FSAR). The FSAR is required after construction and prior to operation.

Summary of Monthly Activities

There were no significant activities during July on the PSAR as the document was completed and distributed in 1994.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan ²	Used actual costs through March						0	0	0	0	0	0
Monthly actual	14	2	0	-16	0	0	0	0	10	0		
11/94 Plan cumulative ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan cumulative ²	Used actual costs						0	0	0	0	0	0
Actual cumulative	14	16	16	0	0	0	0	0	10	10		
Current lien	74	73	73	73	73	73	73	73	64	64		

Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	5	5	3	2	2	2	1	0	0	0	0	0
4/95 Plan ²	Used actual costs through March						0	0	0	0	0	0
Monthly actual	0	0	2	15	0	0	0	-1	0	0		
11/94 Plan cumulative ¹	5	10	13	15	17	19	20	20	20	20	20	20
4/95 Plan cumulative ²	Used actual costs							16	16	16	16	16
Actual cumulative	0	0	2	16	16	16	16	15	15	15		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled	Status
		Date*	
L112-1	PSAR to DOE for review	Dec 94	Completed

WBS Element 1.1.3 Environmental Documentation**Task Description**

The National Environmental Policy Act (NEPA) portion of this WBS provides for the preparation of the *Environmental Assessment* (EA) and all required follow-up documentation required by DOE to make a determination about impacts. The effort includes preliminary evaluations, preparation of technical information, EA preparation, and comment resolution.

The California Environmental Quality Act (CEQA) and permitting portion of this WBS provide for the preparation of permit applications and associated environmental analysis to support the regulatory agency permitting and CEQA review process. The effort includes preliminary evaluations, preparation of technical information to support the agency CEQA document and permit evaluation, and comment resolution. This element prepares and coordinates approval of State and local permits and supports public participation activities associated with the permit approvals.

Summary of Monthly Activities

- The draft EA was reviewed by DOE in July and a decision made to release the document for public review and comment. A notice of availability is to be published in local newspapers in early August.
- The DOE Project Manager concurred on the revised permit strategy for the MWMF. The project will not pursue an RD&D permit application at this time. Work will initially be with surrogate materials only, and any tests with actual wastes will be performed under treatability study requirements.

FY95 Budget Spending profiles (OPEX): NEPA

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	5	5	5	5	1	5	5	0	0	0	0	0
4/95 Plan ²	Used actual costs through March						3	0	0	0	0	0
Monthly actual	14	12	26	-32	7	3	17	10	3	2		
11/94 Plan cumulative ¹	5	10	15	20	21	26	31	31	31	31	31	31
4/95 Plan cumulative ²	Used actual costs						33	33	33	33	33	33
Actual cumulative	14	26	52	20	27	30	47	56	60	62		
Current lien	0	0	0	0	0	0	0	0	0	0		

Spending profiles (CENRTC): CEQA, Permitting

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	40	40	40	40	10	8	8	8	8	6	5	5
4/95 Plan ²	Used actual costs through March						15	8	8	6	5	5
Monthly actual	0	0	11	109	34	15	7	-56	5	1		
11/94 Plan cumulative ¹	40	80	120	160	170	178	185	193	200	206	211	216
4/95 Plan cumulative ²	Used actual costs						185	192	200	206	211	216
Actual cumulative	0	0	11	121	155	170	177	120	125	126		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L113-4	Submit revised EA to DOE	Feb 95	Completed
L113-3	Submit RD&D permit application to DTSC	Feb 95	On hold
D113-1	EA determination by DOE	Aug 95	
L113-2	Submit air permit to BAAQMD	Apr 96	
C113-1	RD&D permit issued by DTSC	Apr 96	
C113-2	Authorization to construct issued by BAAQMD	Jul 96	

WBS Element 1.1.4 ES&H**Task Description**

ES&H provides for on-going Environment, Safety, and Health (ES&H) representation to the MWMF Project by ES&H specialists 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.

Summary of Monthly Activities

We provided on-going ES&H support to the MWMF Project as described above.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	14	14	14	14	14	14	14	14	14	14	14	14
4/95 Plan ²	Used actual costs through March						14	14	14	14	14	14
Monthly actual	11	8	14	6	12	12	9	8	19	9		
11/94 Plan cumulative ¹	14	27	41	54	68	81	95	108	122	135	149	162
4/95 Plan cumulative ²	Used actual costs						76	89	103	116	130	143
Actual cumulative	11	19	32	38	51	62	72	80	99	108		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
None	Level of effort activity		

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, facility technical support, and OPEX-funded technical support.

Summary of Monthly Activities

In response to continued budget concerns, OPEX-funded program support activities have been reduced to the extent possible. Specific areas that were addressed include:

- We completed the *Environmental Assessment* and incorporated final comments from DOE. The document will be available for public review during August, and a National Review Panel meeting will be scheduled to address public comments.
- We continued discussions with potential industrial participants in the MWMF. In particular, SEG/Synthetica has shown a strong interest in demonstrating steam reforming at LLNL. Although steam reforming has been accepted for certain rad-only waste streams, SEG/Synthetica is very interested in the ability to demonstrate on mixed waste and surrogates of mixed constituents. Additionally, we have recieved a letter from Morris Knudsen Corporation supporting the MWMF Project and indicating the importance of such a facility to evaluate alternatives to incineration.
- We continue to monitor the progress of DTSC activities in two areas:
(1) preparations for making a ruling on the status of MSO relative to incineration and (2) supporting CEQA input requests relative to the LLNL *Site Treatment Plan*. The scope of the grant to support DTSC activites was reviewed and is currently being processed by DOE.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	30	29	27	29	27	33	27	31	31	29	33	29
4/95 Plan ²	Used actual costs through March						27	25	25	25	25	25
Monthly actual	54	76	169	-48	44	-76	60	-36	18	0		
11/94 Plan cumulative ¹	30	59	86	114	141	174	201	233	264	293	326	354
4/95 Plan cumulative ²	Used actual costs						247	272	297	322	347	372
Actual cumulative	54	131	300	-251	-296	220	-280	-243	261	261		
Current lien	140	136	179	198	169	143	111	48	46	46		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L115-7	Submit FY95 Plan	Dec 94	Complete
D115-1	DOE issues Project Plan	Jan 95	Open
L115-8	Technology Selection and Implementation Plan, Part II	Apr 95	Complete
L115-9	FY97 Project Validation	Apr 95	Complete
L115-1	Submit Project Management Plan (Final)	May 95	Complete
L115-10	Submit FY96 Plan	Oct 95	

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 the National Review Panel (NRP), the MWMF Letter (a community bulletin), and preparation and coordination of press releases and community tours. The first MWMF Letter is being prepared for September release.

Summary of Monthly Activities

Following the first NRP meeting held June 20, effort focused on completing the first MWMF newsletter and updating the public information fact sheet; both will be distributed in September. The next NRP meeting will be held August 23, 1995, to review the *Environmental Assessment*, which is in review by DOE and the State.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	8	8	8	8	8	8	8	8	8	8	8	8
4/95 Plan ²	Used actual costs through March						5	8	8	5	5	5
Monthly actual	10	3	3	8	11	5	7	5	14	9		
11/94 Plan cumulative ¹	8	16	24	32	40	48	56	64	72	80	88	96
4/95 Plan cumulative ²	Used actual costs						44	51	59	64	69	74
Actual cumulative	10	12	15	23	34	38	46	51	65	74		
Current lien	28	28	28	29	28	28	28	28	28	28		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L116-1.1	National Review Panel (NRP) formed	Apr 95	Complete
L116-1	First meeting of NRP	Jun 95	Complete
L116-2.1	Issue first public newsletter	Sept 95	In Progress
L116-2.2	Receive comments from NRP	Apr 95	Deleted
L116-2	Second meeting of NRP	Aug 95	
L116-3.1	Issue second newsletter	Jan 96	

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 Monthly Activities

Conceptual design activity is complete. No further activities remain in this WBS element.

FY95 Budget Spending profiles (\$0K, OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan ²	Used actual costs through March						0	0	0	0	0	0
Monthly actual	-1	-1	0	0	0	2	-2	-2	-2	0		
11/94 Plan cumulative ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan cumulative ²	Used actual costs						0	0	0	0	0	0
Actual cumulative	-1	-2	-2	-2	-2	0	-2	-2	-2	-2		
Current lien	4	4	4	4	4	3	3	3	3	2		

Charges were transfers from FY94.

Significant procurement actions this month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
None	No activity		

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 Monthly Activities

All work for this WBS element has been effectively deferred to FY96.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	0	0	0	0	0	0	10	10	10	13	13	13
4/95 Plan ²	Used actual costs through March						0	0	0	0	7	7
Monthly actual	0	0	0	0	0	0	0	0	0	0		
11/94 Plan cumulative ¹	0	0	0	0	0	0	10	20	30	43	56	69
4/95 Plan cumulative ²	Used actual costs						0	0	0	0	7	14
Actual cumulative	0	0	0	0	0	0	0	0	0	0		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

¹ Estimated date only

ID No.	Milestone/Marker	Scheduled Date*	Status
L122-1	Issue MWMF Start-Up and Activation Plan	Feb 96 ¹	

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 OTPs in each of the technology areas including Operational Readiness Reviews (ORRs); (3) technical support for the preparation of Operational Safety Requirements (OSRs) and Facility Safety Requirements (FSRs), as well as the identification and resolution of problems during plant operational testing, start-up, and activation, including finalizing 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 (utilities, power, etc.) during construction, testing, and activation of the MWMF.

Summary of Monthly Activities

There are no activities under this WBS element during FY95.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan ²	Used actual costs through March						0	0	0	0	0	0
Monthly actual	0	0	0	0	0	0	0	0	0	0		
11/94 Plan cumulative ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan cumulative ²	Used actual costs						0	0	0	0	0	0
Actual cumulative	0	0	0	0	0	0	0	0	0	0		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
None	No activity		

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 the project office, project assurance (including quality assurance, safeguards, environment, and safety oversight), management overview of information management and technical activities, and interface with DOE.

Summary of Monthly Activities

Project management for all elements of the Title I design of CENRTC-funded activities continued.

Significant technical progress continued within the project as preliminary design, technical reviews, engineering development, and procurements/contracts moved forward. Key accomplishments are the installation and initial operation of the MSO Engineering Development Unit (EDU), Peer Review of Analytical Services, development of Preliminary Design Baseline guidance, and formal acceptance of the *Environmental Assessment*. However, due to continued DOE budget uncertainty, the reduction of FY96 budgets by \$2M, and concern over manpower, a number of the system-level preliminary design reviews (PDRs) have been rescheduled for September and October, 1995. The Project PDR, scheduled in November 1995 (shown in *Revised FY95 Plan*), is not at this time impacted by these schedule adjustments.

During July, Project Management focused on a number of key areas:

- A top-level integrated schedule and budget plan was developed as guidance for developing the PDR Baseline (*Project Baseline Rev. 2*). This guidance incorporates DOE guidance to reduce FY96 budget, to maintain a "flat budget profile" in outyears, and to delete MEO. As guidance to this plan, systems have been asked to identify significant cost elements that may be shifted forward or back relative to the baseline schedule to accommodate outyear budget uncertainties. The baseline plan will be finalized as part of preparing the project PDR (in November) and will be subsequently incorporated into a baseline change request.
- The collocation and integration of the MWMF and DWTF continued. Facility requirements were finalized for the Title I design, and trade studies on facility design issues are being conducted (e.g., air handling, floorspace, hazard classification design).
- We made very good progress assessing and solving engineering design issues in the technical elements. Trade studies continue to focus on finalizing the design configuration of the primary and support process systems. The close-out of MEO continued with the completion of a series of tests and completion of the first draft of the *System Design Description* document.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	59	56	54	56	54	65	54	101	101	92	105	60
4/95 Plan ²	Used actual costs through March						55	65	55	55	80	80
Monthly actual	71	12	36	37	44	44	41	66	45	37		
11/94 Plan cumulative ¹	59	116	169	226	279	344	398	499	599	691	796	856
4/95 Plan cumulative ²	Used actual costs						299	364	419	474	554	634
Actual cumulative	71	83	119	156	200	244	285	351	396	433		
Current lien	0	0	0	0	111	37	37	35	33	30		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L131-2	Input to FY95 Plan (see 115-7)	Dec 94	Complete
L131-4	Submit MWMF Rebaseline (Revision 1.2, MWMF/DWTF Merge)	May 95	Complete
L131-1	Preliminary Design Review completed	Nov 95	
D131-2	DOE Issues KD-2	Nov 95	
L131-5	Submit PDR Project Baseline, Rev. 2.0	Jan 96	

WBS Element 1.3.2 Project Control**Task Description**

Project Control provides for the project integration, configuration management, cost and schedule control, quality assurance (see WBS 1.1.1), 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 Monthly Activities

- We received formal approval by DOE/OAK of the *Project Baseline, Revision 1.2* and of the *Revised FY95 Plan*.
- We completed all major management planning to issue guidance for preparing bottom-up estimates at the conclusion of preliminary design and for the *FY96 Plan*. The results of this work will be two documents: (1) a revised Project Baseline (*Revision 2.0*, issued as baseline change) that reflects current DOE scope and funding guidance and (2) the *FY96 Plan*. In July, we
 - Set tasks and schedule for completing this work.
 - Defined a project staging (and related funding) strategy (see first bullet item below).
 - Defined major cost elements to manage to flat FY funding profiles.
 - Prepared and issued a guidance memo for lead engineers, including scope, schedule, and cost guidance and the responsibility matrix.
- We firmed up MSO staging plans. DOE determined that an "early limited MSO demonstration" in support of the DOE November 1997 Mixed Waste Focus Area milestone was not of primary interest, and effort should be directed at completing the integrated demonstration in MWMF. Thus, only minimal assembly and checkout will be done in staging activities, with the goal of minimizing installation time in Building 695 and flattening fiscal year funding profiles.
- We completed testing and final work of the integrated cost/schedule estimating system, using Excel as user interface (input and output) sheets and Primavera as a roll-up, database, and reporting element. Transfer between Excel input sheets and Primavera is electronic to minimize human errors; however, other transfers are still done manually.
- Other significant activities and accomplishments include the following:
 - Issued the DOE PTS monthly report
 - Issued the *June Monthly Report*
 - Continued investigating several liens for possible removal from project accounts.
 - Management Reserve (MR) actions: \$20K of FY95 MR for XOG.
 - Tracked and supported work to issue a continued contract for outside engineering services to support project scheduling and control.

- Key issues:
 - Developing plan to respond to DOE FY96 and outyear funding guidance.
 - August funding levels contained in the Program Letter continue to be inconsistent with those contained in the LLNL/DOE Contract Modification. This has been pointed out to DOE.

FY95 Budget Spending profiles (\$471K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	42	40	37	39	37	45	37	43	43	39	45	39
4/95 Plan ²	Used actual costs through March						37	43	43	39	45	39
Monthly actual	44	9	22	45	66	38	41	42	46	27		
11/94 Plan cumulative ¹	42	82	119	158	195	240	277	320	363	402	447	486
4/95 Plan cumulative ²	Used actual costs						262	305	348	387	432	471
Actual cumulative	44	53	76	121	187	225	266	308	354	382		
Current lien	0	0	0	42	42	38	26	26	11	11		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

The lien is for manpower support services (project scheduling).

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L132-4	Input to FY95 Plan (see 155-7)	Dec 94	Complete
L132-1	Implement cost planning/tracking systems (document)	Dec 94	Complete
L132-5	Issue Configuration Control System Document	Mar 95	Complete
L132-6.1	Input to MWMF Project Management Plan (see L115-1)	Apr 95	Complete
L132-7	Performance Management System documented	Aug 95	
L132-9.1	Records Control Procedure	Apr 95	Complete
L132-8.1	Complete support of Project PDR (see L131-1)	Nov 95	
L132-9.2	Assessment/Surveillance Procedure	Jul 95	Complete
L132-9	Complete QA Self Assessment	Aug 95	
L132-10.1	Input to FY96 Plan (see L115-10)	Oct 95	

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 covers technical issues that affect all primary and support processes. It also includes the responsibility for assuring that the integrated design addresses systems interfaces, including interfaces with LLNL Hazardous Waste Management and facility engineering. The element coordinates the System Design Requirements (SDRs), the MWMF floor plan, and the Integrated Operating Plan.

Summary of Monthly Activities

- Lead engineers updated HVAC and electrical utility requirements and gave the revised information to Parsons.
- We completed a trade-off study for the evaporator in the MSO salt recycle system resulting in the selection of steam over electrical heating.
- We updated equipment arrangements on the MWMF floor plan including MSO, MEO, Final Forms, and the feed prep areas.
- A memo is in progress providing direction and decisions as a result of the series of meetings with Hazards Control. This memo will complete the marker providing personnel egress guidance.
- We have answered questions and given clarification to Parsons to assist in their design effort.

FY95 Budget**Spending profiles (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	28	26	26	26	26	30	26	29	29	26	30	26
4/95 Plan ²	Used actual costs through March						27	27	27	27	27	27
Monthly actual	51	-1	10	18	30	18	19	20	17	22		

	28	54	80	106	132	162	188	217	246	272	302	328
11/94 Plan ¹	Used actual costs						154	181	208	235	262	289
4/95 Plan ²	51	50	60	78	108	127	146	166	183	205		
Current lien	2	0	2	0	1	3	2	1	1	1		

Significant Procurement Actions this month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L133-1.4	Input to <i>FY95 Plan</i> (see 115-7)	Nov 94	Complete
L133-2	Issue Integrated Operations Plan	Jan 95	Complete
L133-4	Issue Metrication Plan	Feb 95	Complete
L133-3	Issue Title I System Design Requirements	Aug 95	In Progress
L133-5	Input to <i>FY96 Plan</i> (see 115-10)	Oct 95	
L133-10.1	Identify emissions for air permit	Jun 95	Complete
L133-10.2	Review floorplan layout and personnel egress	Jul 95	Complete
L133-10.3	Review facility Process Flow Diagrams	Aug 95	
L133-10.4	Facility preliminary design (20%)	Aug 95	
L133-10.5	Title 1 Design Review (80%)	Sep 95	
L133-10.6	LLNL Review Title 1 Design	Oct 95	

WBS Element 1.4.1 Receiving and Shipping**Task Description**

The principal objective of the Receiving and Shipping (RAS) 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. RAS 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). RAS includes both receiving and shipping equipment and systems integration.

Summary of Monthly Activities

- We continued coordination of design efforts for the MWMF and DWTF RAS areas.
- We completed and distributed a letter to MWMF and DWTF project management describing proposed recommendations.
- We continued design activities in preparation for the upcoming System 90% PDR.

FY95 Budget Spending profile (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	18	17	16	17	16	19	14	15	15	9	10	9
4/95 Plan ²	Used actual costs through March						11	7	7	7	5	5
Monthly actual	21	2	4	12	4	11	5	9	4	4		
11/94 Plan cumulative ¹	18	35	51	68	84	103	117	132	147	156	166	175
4/95 Plan cumulative ²	Used actual costs						65	72	79	86	91	96
Actual cumulative	21	23	27	40	44	54	59	68	72	77		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L141-1.1	Complete pilot characterization studies	Dec 94	Complete
L141-1.2	Identify equipment and define floor plan	Mar 95	Complete
L141-1.3	RAS LI&C System Functional Requirements Document complete	Sep 95	
L141-1.4	RAS LI&C System PDR complete	Sep 95	
L141-1	RAS System Preliminary Design Review	Sep 95	

WBS Element 1.4.2 Solids Feed Preparation**Task Description**

The principal objective of the Solids Feed Preparation (SFP) 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 not previously identified. SFP provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of SFP equipment, Title III inspection, and acceptance test procedures (ATP). SFP includes both solids feed preparation equipment and systems integration.

Summary of Monthly Activities

- Activities this month focused on detailing the revised floor plan. This new layout provides a more flexible layout by using the area that was previously removed from RAS. This change addresses concerns related to support equipment and process transport and storage requirements by providing adequate space for these operations. Drawings (BFD, PFD, and P&ID) have been updated to reflect these changes.
- The contract for the engineering development manipulator arm was negotiated and placed. Based on a review of the technical specification, the arm is expected to be suitable for actual use in the MWMF. Delivery is expected in mid-September.
- We have expended a great deal of effort attempting to use the SMART software from Sandia National Laboratories, Albuquerque (SNLA). The software has a number of limitations that SNLA has not yet been able to overcome. We have obtained Control Shell, a recently released commercial product, free of charge for evaluation as an alternative to SMART. Progress with Control Shell has been very rapid and a prototype control system for the Phase I engineering development system is nearly complete after only three weeks of work.
- We have made improvements to the collision detection algorithm to increase the speed of by a factor of two. Although more improvements are needed, the speed is now able to support on-line collision avoidance during operator-controlled moves. The 3D computer stereovision system has been restructured and is ready to be ported to the DATACUBE image processing hardware. We have developed a Cybernet hand controller interface to "plug into" the control system in place of the force ball hand controller. An error in the vendor software is being addressed by us the vendor.
- We are developing an equipment layout for the engineering development workcell.
- We have continued design activities in preparation for the upcoming System 90% PDR. The first draft of the P&IDs have been reviewed and marked up. Block diagrams have been submitted for drafting.
- We have continued activities to complete the *Functional Requirements Document for the SFP System*.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	95	91	86	91	87	104	87	100	100	36	41	36
4/95 Plan ²	Used actual costs through March						52	57	105	232	42	167
Monthly actual	83	31	31	76	92	85	44	38	125	32		
11/94 Plan cumulative ¹	95	186	272	363	450	554	641	741	841	877	918	954
4/95 Plan cumulative ²	Used actual costs						449	506	611	843	885	1,052
Actual cumulative	83	114	144	220	312	397	441	479	604	636		
Current lien	21	0	0	0	639	275	275	307	228	408		

¹ Original FY95 Plan shown to illustrate changes² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L142-1.2	Identify initial suite of characterization equipment	Jan 95	Complete
L142-1.5	Process Vision/Robline bilateral communication link demonstrated	Feb 95	Complete
L142-1.6	Process Vision/Robline bilateral message handling demonstrated	Mar 95	Complete
L142-1.3	Complete validation of characterization, isolation and segregation methods	Apr 95	Complete
L142-1.4	Complete preliminary operator control station design	Apr 95	Complete
L142-1.7	SFP workcell control architecture designed	May 95	Complete
L142-1.8	SFP LI&C System Functional Requirements Document complete	Sep 95	
L142-1.9	SFP LI&C System Preliminary Design review complete	Sep 95	
L142-1.10	Locate user interface stations and required functionality	Aug 95	
L142-1.11	Draft FP control console layout	Aug 95	
L142-1	SFP System Preliminary Design Review	Sep 95	
L142-2	Telerobotics Preliminary Design Review	Sep 95	

WBS Element 1.4.3 Liquids Feed Preparation**Task Description**

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

Summary of Monthly Activities

- We continued LFP equipment layouts based upon the revised floor plan generated during April '95.
- We continued acquiring further information for PDR trade-off matrix. Preliminary work on matrix is finished.
- We finished the Hazards Analysis Matrix for LFP.
- We continued efforts on generating the *System Design Description*.
- We finished a rough draft of the *Liquids Characterization Report*. It is in review.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	38	36	34	36	34	41	34	40	40	18	21	18
4/95 Plan ²	Used actual costs through March						22	20	20	14	14	14
Monthly actual	37	6	14	22	28	22	22	20	20	14		
11/94 Plan cumulative ¹	38	74	108	144	178	219	253	293	333	351	372	390
4/95 Plan cumulative ²	Used actual costs						152	172	192	206	220	234
Actual cumulative	37	43	57	79	108	130	152	172	192	206		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

ID No.	Milestone/Marker	Scheduled Date	Status
L143-1.1	Define surrogate feeds	Nov 94	Complete
L143-1.3	Complete validation of characterization and segregation methods	Apr 95	Complete
L143-1.4	LFP LI&C System Functional Requirements document	Sep 95	
L143-1.5	LFP LI&C System Preliminary Design Review	Sep 95	
L143-1	90% Preliminary Design Review	Sep 95	

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 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 Monthly Activities

As directed by DOE, MEO is undergoing close-out. We have deleted a number of milestones and focused effort on completing tests and documentation.

- We finished preliminary testing of the Automated Diluter in Bldg. 161. Measurements of acid concentrations were within a range of $\pm 0.03M$, better than the desired $0.1M$. The results were included in the *System Design Description* (SDD). The Johnson Yokagawa magnetic flow meter has been configured and tested. It shows no harmful effects from stray electrical currents from the cell power supply and otherwise appears to work well with the MEO anolyte.
- We have concluded tests simulating the recovery of silver and removal of dissolved solids from the MEO anolyte. We use HCl to precipitate the silver from the anolyte so it can be separated from the other dissolved solids by centrifugation. The results show that with no excess HCl, silver levels as low as 0.35% wt. of the solids sent to Final Forms can be achieved. Lower levels are possible with a small excess of HCl. The results have been documented and can be referenced either in the MWMF LURMS system as L-19911-01 or in the SDD.
- We performed tests using the Bldg. 161 bench-scale system, simulating the continuous operation of MEO involving transfer of catholyte to anolyte, catholyte make-up, and anolyte extraction. These tests are intended to verify the MEO MWMF mass flow balance calculations and to quantify silver transport mechanisms within the MEO cell. The results are currently being analyzed.
- Design effort included the following:
 - The SDD documenting the MEO design and development to this point has been reviewed and is with the Technical Information Department for final editing and publication.
 - Completed PFDs & P&IDs consistent with the SDD have been reviewed and approved and are archived in the LLNL Mechanical Engineering print room. The drawing numbers are listed in the SDD.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	79	98	94	113	102	91	81	73	73	73	73	73
4/95 Plan ²	Used actual costs through March						81	73	73	53	25	25
Monthly actual	103	32	68	76	82	91	75	71	48	30		
11/94 Plan cumulative ¹	79	177	271	384	486	577	658	731	804	877	950	1023
4/95 Plan cumulative ²	Used actual costs						534	607	680	733	758	783
Actual cumulative	103	136	203	279	361	453	527	598	647	677		
Current lien	22	21	14	9	6	7	13	3	3	3		

¹ Original FY95 Plan shown for information only² Current FY95 Plan (April, '95) uses actual costs through March

Significant procurement actions this month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID no.	Milestone/Marker	Scheduled Date*	Status
L151-1.1	Complete tests on turbo-aerator for nitrous-acid conversion (document)	Jan 95	Complete
L151-1.4	Summarize silver recovery chemistry results to date (document)	Apr 95	Complete
L151-1.6	Report on NaOH-AgCl recovery (document)	Apr 95	Complete
L151-1.7	Computer simulation of the combined MEO and Acid Recovery control systems (document)	Mar 95	Complete
L151-1.8	Final Report on steady-state flow and chemistry balance tests (document)	Aug 95	In Progress
L151-1.9	Demonstrate prototype cellulose feeder (document)	Jun 95	deleted
L151-1.12	LI&C Functional Requirements Document complete	Aug 95	
L151-1.10	P&ID drawings (document)	Sep 95	Complete
L151-1.11	Layout drawings of major equipment items (document)	Sep 95	Complete
L151-1.13	LI&C System Preliminary Design review	Sep 95	deleted
L-151-2	MEO System Preliminary Design review	Sep 95	deleted
L-151-3	MEO System Design Description document	Jul 95	Complete

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 element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, and installation of the MSO equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities.

Summary of Monthly Activities

- **Materials Development and Evaluation**
 - *Aluminized coatings of nickel alloy.* A test matrix was developed for aluminized coatings on Inconel 600 applied by the Alon Co. (Tarentum, PA), a packed-bed process. The matrix integrates the corrosion consequences of welding, aging, preoxidation of the coating, corrosion temperature, and NaCl content. Alon is in the process of coating the 33 samples of the matrix.
 - *Corrosion of bare Inconel 600 (in collaboration with ETEC).* Corrosion testing was completed in eutectic 45 Na₂CO₃—55 NaCl (mol%) salt at 750, 800, 850, and 900°C. Visual inspection indicates that a tight, gray oxide developed on the surfaces. Cross-section metallographic evaluation will be done next.
 - *Corrosion test facility at LLNL (with guidance from ETEC).* Gas leaks required us to replace the silicone stoppers in the tube tops of both the water bath and furnace tubes. A different sealing configuration based on elastomer washers will be tried.
 - *PVD oxide coatings.* We applied five oxide coatings about 1 μm thick by plasma-assisted physical vapor deposition on rods of Inconel 600. The oxides were Al₂O₃, Cr₂O₃, Ta₂O₅, Y₂O₃, and (Al,Cr)₂O₃. These are slated for corrosion testing.
- **Engineering Demonstration Unit (EDU)**
 - We completed the EDU mechanical and electrical assembly. We tested the vessel by heating it with its heaters and control system to 950°C. A 27-kg charge of a eutectic of Na₂CO₃ and K₂CO₃ was loaded as the first charge to demonstrate the controls, test the injector flange seal, and prove out the salt sucker. All functioned within the expected ranges. Next month the EDU will be loaded with a charge of pure Na₂CO₃ for melt testing, injector testing.
 - We completed the salt sucker, with the insulated and trace heated siphon tube.
- **Injector Development**
 - We completed the first injector. We also completed the injector cart containing the injector pumping system and flow readout.
 - We started bench-scale testing of a solid feed injector.
 - ETEC, through an integrated contractor order, is designing and fabricating a top-feeding injector for evaluation on the EDU. A design review was held at LLNL. ETEC has started fabrication.
- **Primary Unit Design**
 - Due to the effort to get the EDU completed, manpower was temporarily deferred from the primary unit. However, work on the P&ID continued.

- Process Off-Gas
 - The total cost for the Process Off-Gas System is currently being estimated. We have obtained cost estimates for the modified electric soot (MES) blower, gas solid separation (GSS) filter, heat exchanger, condenser, chiller, circulation heater, HEPA filter, and blower. We have contacted vendors to provide cost estimates for the piping, valves, bellows, sensors, and flow controllers.
 - The cooling jackets now have a double wall between the process off-gas and the cooling water to prevent leaks into the off-gas and the vessels if a crack occurs in the inner pipe. The addition of the second wall increased the length of the cooling jacket by approximately 0.6 m (2 ft). This is mainly due to the small air gap between the two walls.
 - The Process Flow Diagram (PFD) for the process off-gas system has been completed. The P&ID for the system is underway.
- Salt Recycle
 - We visited six vendors during July to evaluate their qualifications to be on our bidder list for the salt separation system. The goal was to find vendors capable of providing a turn-key system for salt separation. Trip reports documenting the findings were written. Three of the vendors are qualified to bid on the salt separation work and will be solicited for further work.
 - Continuing discussions with LLNL procurement led to an addition to the procurement plan developed in June. Each of the qualified vendors will be asked to do a preliminary design effort before bids are solicited for the complete salt separation system. This preliminary design effort is expected to be about one person-month effort. The goal of this effort is for each vendor to provide a preliminary PFD and process description, a project plan that they suggest to tackle the complete system (including identification of additional design information needed and a preliminary plan for getting it), an equipment arrangement sketch, and a cost estimate. We completed a work description (procurement specification) for this task.
 - We continued extensive work to define the performance requirements for the salt separation system. Of particular concern is accurate prediction of the identities and amounts of contaminants likely to be present in the spent salt. This is important because it allows the vendors to address the full problem in the preliminary design effort discussed above. If the spent salt specification is too simple, the results of the preliminary design effort will be misleading and will not address the complexity of the real problem.
 - Effort also continued to appropriately specify the purity of the separated recycle salt, salt residue, and mineral residue produced by the salt separation system.
 - Laboratory work continued in July to determine separation efficiencies of high chloride salt (55 mol% NaCl) by crystallization process. The NaCl composition in the recycled salt after the separation was less than 10 mol%. Laboratory work also demonstrated the scaling effect of crystallization process. Also, a bigger batch of salt mixture/water (2.5 times previous size) was prepared and the separation efficiency was similar to that of smaller batches run previously.
 - We prepared to demonstrate the separation efficiencies of chloride salts < 0°C.

- Process modeling
 - ASPEN PLUS is a process modeling code that prepares process flow diagrams and material and heat balances for process streams based on known performance characteristics of each operation. The code contains thermodynamic data, such as reaction rate and equilibrium constants, so will, ideally, produce material and heat balances based on chemical names only. When running the code, we found that it had a bug that resulted in incorrect results on salt solubility, making it useless in predicting the results of salt recovery. Now that we have gained experience with ASPEN PLUS, we will be able to use it in the future to perform material balances using known reactor outputs based on experimentation or other codes.
 - EQ3/6 is a code developed by geochemicsts at LLNL. It is based on the Pitzer model of salt solubility at high ionic strengths. It also contains databases of a multitude of species that are valid only at low concentrations. The two databases that supply data important to us are the Harvie, Moller, and Weare, including sodium, chloride, carbonate, sulfate, and other common ions at 25°C only, and Pitzer, containing information on almost all the RCRA and other metals we will encounter, at varying temperatures, but nothing on carbonate, our major ion. EQ3/6 resides on a computer in Earth Sciences and is accessed by Telnet. Therefore, we made a blend of the two databases. We are now in a shakedown mode, verifying that the new combined database produces the same results as the original databases on selected species.

FY95 Budget**Spending profiles (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	140	147	194	210	209	196	235	221	153	202	279	242
4/95 Plan ²	Used actual costs through March						285	221	153	202	279	242
Monthly actual	139	27	83	101	124	222	221	245	190	200		
11/94 Plan cumulative ¹	140	287	481	691	900	1,096	1,331	1,552	1,705	1,907	2,186	2,428
4/95 Plan cumulative ²	Used actual costs						981	1,202	1,355	1,557	1,836	2,078
Actual cumulative	139	166	249	350	474	696	917	1,163	1,352	1,552		
Current lien	3	36	47	52	154	154	110	181	181	165		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate

ID No.	Milestone/Marker	Scheduled Date*	Status
L152-3.3	Initiate vessel material study	Oct 94	Complete
L152-2.2	Complete Design Specification	Jan 95	Complete
L152-2.3	Conduct Industrial Partner meeting	Jan 95	Complete
L152-3.5	LI&C Functional Requirements Document complete	Oct 95	
L152-3.6	LI&C System Preliminary Design complete	Oct 95	
L152-2	Select Industrial Participation method for Primary Unit	Jun 95	Complete
L152-3.4	Install development unit	Jun 95	Complete
L152-3	MSO System MWMF PDR	Oct 95	
L152-5	Start Title II design	Nov 95	
L152-6	Select Industrial Participation method for Salt Recycle	Nov 95	

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 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 Monthly Activities

This activity has been closed out. No FY95 activities.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan ²	Used actual costs through March						0	0	0	0	0	0
Monthly actual	0	0	0	0	0	1	1	1	1	0		
11/94 Plan cumulative ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan cumulative ²	Used actual costs						0	0	0	0	0	0
Actual cumulative	0	0	0	0	0	1	0	0	0	1		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant procurement actions this month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
None	No activity		

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 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 Monthly Activities

This activity has been closed out. No FY95 activities.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan ²	Used actual costs through March						0	0	0	0	0	0
Monthly actual	0	0	0	0	0	0	0	0	0	0		
11/94 Plan cumulative ¹	0	0	0	0	0	0	0	0	0	0	0	0
4/95 Plan cumulative ²	Used actual costs						0	0	0	0	0	0
Actual cumulative	0	0	0	0	0	0	0	0	0	0		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant procurement actions this month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
None	No activity		

WBS Element 1.5.5 Experimental Off-Gas**Task Description**

The principal objective of 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, acidic urea DeNO_x scrubbing, and advanced metal filters. The second objective is to demonstrate feasibility and effectiveness of off-gas treatment at or near to the source of the gas where the treatment can be tailored to that specific source. The XOGT 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 facility off-gas system.

In January 1995, FY95 activities for this element were downscoped to reflect future-year budget reductions. Activities are to be leveled out in June 1995 and restarted late in the Project. The milestones have been updated to reflect this.

Summary of Monthly Activities

- We successfully completed testing and debugging of the gas-liquid contactor (hardware and I&C) for destruction of NO_x with acidic urea.
- We initiated the parametric study of NO_x-urea chemistry.
- We delayed completion of Milestone L155-1 due to a number of corrections that needed to be made during the contactor testing.
- Marker L155-3.1 will be delayed awaiting completion of milestone.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	13	13	12	13	12	15	12	14	14	13	14	13
4/95 Plan ²	Used actual costs through March						6	6	6	6	0	0
Monthly actual	18	12	19	9	6	2	21	6	3	0		
11/94 Plan cumulative ¹	13	26	38	51	63	78	90	104	118	131	145	158
4/95 Plan cumulative ²	Used actual costs						72	78	84	90	90	90
Actual cumulative	18	29	49	58	63	66	86	93	95	98		
Current lien	0	1	0	4	0	17	2	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L155-1.1	Fabricate prototype gas-liquid contactor for acidic urea DeNO _x scrubbing	Jun 95	Complete
L155-3.2	Initiate systematic catalysts testing	Jan 95	Deleted
L155-2.1	Initiate instrumentation and control system test	Feb 95	Deleted
L155-3.3	I&C Functional Requirements Document complete	May 95	Deleted
L155-1	Summarize Gas Liquid Contactor Tests (document)	Aug 95	In progress
L155-3.4	LI&C System Preliminary Design review	Jun 95	Deleted
L155-3	XOG System Preliminary Design review	Jun 95	Deleted
L155-3.1	Summarize NO _x -urea chemistry to date (document)	Sep 95	

WBS Element 1.6.1 Process Transport and Storage**Task Description**

The principal objective of the Process Transport and Storage (PTS) system is to collect, transfer, deposit, store, and handle containers, discrete items, dry and wet bulk materials, slurries, and liquids. PTS 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). PTS includes both process transport and storage equipment and systems integration.

Summary of Monthly Activities

- We have identified material transfer requirements for contaminated and hazardous materials. The number and location of interfaces at each process are being finalized.
- We have defined and documented all PTS operations.
- Title I design documentation for PTS is nearly complete. Drafts of the following design documents are complete:
 - Block flow diagrams
 - Process flow diagrams
 - P&IDs
 - Parts lists
- Preliminary design cost estimates are in progress.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	6	6	5	6	8	10	9	10	10	6	7	6
4/95 Plan ²	Used actual costs through March						9	6	6	6	6	6
Monthly actual	15	6	3	4	4	-1	9	4	7	3		
11/94 Plan cumulative ¹	6	12	17	23	31	41	50	60	70	76	83	89
4/95 Plan cumulative ²	Used actual costs						40	45	51	57	63	69
Actual cumulative	15	21	24	27	31	30	39	43	50	54		
Current lien	0	0	0	0	0	5	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

<u>ID No.</u>	<u>Milestone/Marker</u>	<u>Scheduled Date*</u>	<u>Status</u>
L161-1.1	Select standard transport container designs	Jul 95	Complete
L161-1.2	Floor plan layout complete	Aug 95	In Process
L161-1.3	LI&C Functional Requirements Doc. complete	Sep 95	
L161-1.4	PTS LI&C System Preliminary Design review	Sep 95	
L161-1	PTS System Preliminary Design Review	Sep 95	

WBS Element 1.6.2 Analytical Services**Task Description**

The principal objective of Analytical Services is to provide chemical analysis support for process control and characterization, material control, and regulatory requirements. Analytical Services 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 Services includes Analytical Laboratory Equipment, Local Process I&C, and Process Off-Gas.

Summary of Monthly Activities

- We continued collecting data from and chemically analyzing samples from six drums of waste in support of LFP. We have completed rad and organic analyses; inorganic results are still pending. We will measure both RCRA and non-RCRA constituents, as well as various chemical and physical parameters of interest to LFP for process design.
- Final preparations for the Peer Review; Peer Review was held July 27, 1995. Some issues identified included: continue iterations of types and numbers of analyses required by the various primary and support processes housed within MWMF/DWTF; re-evaluation of analytical instrumentation to be located within MWMF/DWTF; document accountability for equipment related to Analytical Services;
- We distributed the document *Minimum Capabilities Required within Analytical Services*, L-19808-1.

FY95 Budget**Spending profiles (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	10	9	9	9	9	11	9	10	10	9	27	18
4/95 Plan ²	Used actual costs through March						9	10	10	9	10	10
Monthly actual	19	-2	8	8	9	9	9	10	5	8		
11/94 Plan cumulative ¹	10	19	28	37	46	57	66	76	86	95	122	140
4/95 Plan cumulative ²	Used actual costs						60	70	80	89	99	109
Actual cumulative	19	16	24	32	41	51	60	71	76	83		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L162-4	Define MEO on-line analysis requirements	Feb 95	Complete
L162-3	Define facility off-gas monitoring requirements	Feb 95	Complete
L162-6	Define DWTF analysis requirements	Mar 95	Complete
L162-2	Define analysis tests based on process acceptance criteria	Aug 95	Partial
L162-5	Define MSO on-line analysis requirements	Mar 95	Complete
L162-7.1	LI&C Functional Requirements Document complete	Aug 95	Partial
L162-7.2	LI&C System Preliminary Design review	Aug 95	
L162-7	Analytical Lab System Preliminary Design review	Sep 95	

WBS Element 1.6.3 Water Treatment**Task Description**

Water Treatment (WTR) is an integral part of treatment train demonstrations, continuing treatment of aqueous byproducts as part of demonstration tests to produce solid residuals suitable for Final Forms and fully treated water that meets treatment standards and sewer limits. WTR provides the management, system analysis and support, design and engineering (Title I, II, III), procurement, and installation of the WT equipment necessary to demonstrate treatment trains, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities.

Summary of Monthly Activities

The HWM design team continued Title I design work on the MWMF WTR process equipment specification and cost estimating.

FY95 Budget**Spending profiles (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	0	14	13	14	13	16	13	15	5	5	10	8
4/95 Plan ²	Used actual costs through March						13	15	5	5	5	5
Monthly actual	0	0	2	3	3	2	3	2	3	1		
11/94 Plan cumulative ¹	0	14	27	41	54	70	83	98	103	108	117	126
4/95 Plan cumulative ²	Used actual costs						22	37	42	47	52	56
Actual cumulative	0	0	2	5	7	9	12	14	16	17		
Current lien	0	0	0	0	0	0	0	0	0	0		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant procurement actions this month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L163-1.1	Water Treatment Trade-off Study Revision	Feb 95	Complete
L163-2	Memorandum of Understanding with HWM	Jan 95	Complete
163-3.1	LI&C Functional Requirements Document complete	Oct 95	
L163-3.2	LI&C System Preliminary Design review	Oct 95	
L163-3	WT System Preliminary Design Review	Oct 95	
L163-4	Begin Final (Title II) Design	Nov 95	

WBS Element 1.6.4 Final Forms**Task Description**

The Final Forms (FF) task is to immobilize the residues from the treatment of the mixed waste input streams by the primary processes, and residue resulting from secondary support processes that are integral to the primary treatment processes. The FF types are (1) ceramics for mineral residues, (2) polymer microencapsulation for salt, and (3) sulfur-polymer microencapsulation for volatile inorganic solids.

Summary of Monthly Activities

- Much of the month's activities focused on preparations for the PDR scheduled for August. This included additional work on local off-gas processing and local I&C.
- The poor leach resistance with respect to Cd is now believed to be associated with phosphate concentrations. New ceramic formulations, designed to eliminate—or at least elucidate—Cd leaching are in progress. Ion microprobe analysis has shown that the Be in our ceramics is present as BeO. (Be leaching was satisfactory. Mineral residues from MEO are expected to contain some Ag. The concentrations are coupled to the pH of MEO waste water, the Ag level rising as the acidity diminishes. In comparing the leaching of Ag from these samples, we concluded that FF can easily immobilize the Ag in MEO residues even when the MEO waste water's pH is high enough that the water is sewerable.
- The polyethylene microencapsulation work to be performed at Rocky Flats must be funded under a subcontract (rather than an ICO), which is leading to further delays.
- A paper based on the ceramic waste form work, "Ceramic Waste Forms for Residues from Molten Salt Oxidation of Mixed Wastes," by R. Van Konynenburg and other project personnel, has been accepted for presentation at the Fall Meeting of the Materials Research Society (MRS). It will subsequently appear in an MRS symposium proceedings.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	34	33	33	33	33	34	33	33	33	33	33	34
4/95 Plan ²	Used actual costs through March						33	33	33	33	33	34
Monthly actual	59	13	23	26	38	35	32	33	30	27		
11/94 Plan cumulative ¹	34	67	100	133	166	200	233	266	299	332	365	399
4/95 Plan cumulative ²	Used actual costs						226	259	292	325	358	392
Actual cumulative	59	72	95	120	158	193	224	257	286	314		
Current lien	-1	-1	-2	-1	-1	-1	-1	-1	-1	-1		

¹ Original FY95 Plan shown to illustrate changes

² Current FY95 Plan (April '95) uses actual costs through March

Significant Procurement Actions this Month

None

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L164-1.3	Report status of immobilization evaluations	May 95	Complete
L164-2.1	Final Forms subsystem design status peer review	May 95	Complete
L164-1	Evaluations of immobilization technologies done	Jun 95	Complete
L164-2.2	LI&C Functional Requirements Document done	Aug 95	
L164-2.3	LI&C System Preliminary Design review	Aug 95	
L164-2	Final Forms System Preliminary Design review	Aug 95	
L164-3	Report: Design of polymer microencapsulation system	Oct 95	
L164-4.1	Report: Volatile residue components and the design of ceramic waste form system	Sep 95	
L164-4.2	Report: Interim status of ceramic waste form compositions and process parameters	Sep 95	

WBS Element 1.6.5 Supervisory Instrumentation and Control (SI&C)**Task Description**

Supervisory Instrumentation and Control (I&C) systems will be provided and integrated to 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: Facility database management, safety control, process I&C standards, supervisory control, and ancillary systems and equipment including the instrumentation and equipment database, intercom communication, process and surveillance CCTV, cable and power distribution and grounding, and control room facilities.

Summary of Monthly Activities

- We continued activities to answer action items identified during the *Integrated Control System Peer Review* of March 9th.
- We completed responses to action items identified during the *Safety Control System Issues Peer Review* of May 23rd and the *Control Room and Operations Concept Peer Review* of June 13th.
- We formally documented MWMF/DWTF SI&C integration plans.
- We continued integrated control system testing activities. The ProcessPartner database gateway is now fully functional and performance testing (Engr. Dev. Phase 5) has been resumed. Design of a test configuration to test ICS throughput is in progress.
- We started a study to determine applicability of Allen-Bradley DeviceNet products.
- SI&C Engineering Development goals for implementing the MSO EDU control system have been met.
- We issued the *MWMF Grounding Guidelines* document.
- The *Functional Requirements Document for the MWMF CCTV System* is drafted and is now in the review cycle.
- We held technical computer communications network discussions with a representative from Cabletron, Inc. Cabletron will respond with facility design configuration and costing options.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	50	94	60	43	40	38	48	38	38	40	37	45
4/95 Plan ²	Used actual costs through March						40	38	38	40	37	44
Monthly actual	70	41	35	43	75	68	50	30	32	25		
11/94 Plan cumulative ¹	50	144	204	247	287	325	373	411	449	489	526	571
4/95 Plan cumulative ²	Used actual costs						372	410	448	488	525	569
Actual cumulative	70	112	146	189	264	332	381	411	443	468		
Current lien	37	23	19	18	8	11	5	3	0	0		

¹ Original FY95 Plan shown for information only² Current FY95 Plan (April '95) uses actual costs through March

Significant procurement actions this month

None.

Milestones and Markers

*See "Milestone/Marker Log" for original dates and reconciliation, if appropriate.

ID No.	Milestone/Marker	Scheduled Date*	Status
L165-1.9	Engineering Development System operational	Jan 95	Complete
L165-1.10	Rapid prototype Engineering Development testing complete, report written	Feb 95	Complete
L165-1.11	Integrated control system design peer review	Mar 95	Complete
L165-2.1	Instrumentation and Equipment Database operational	Apr 95	Complete
L165-1.12	SI&C Functional Requirements Document complete	Sep 95	In Progress
L165-1	SI&C System 90% Preliminary Design Review	Jun 95	Complete
L165-1.13	Engineering Development tasks complete, documented	Sep 95	
L165-1.14	Preliminary Design activities complete, documented	Sep 95	
L165-2.2	Process I&C Standards established	Sep 95	

Appendix A

Milestone/Marker Log

MWMT Milestone/Marker Log

For Jul 95 Monthly Report - Sorted by Number

Number	Item	PTS	Orig. Date	Date	Status	Comments
X	= changes in this revision					
C13-1	RD&D permit issued by DTSC	X	Apr-96	Jul-96	deleted	date required by DWTF schedule. Better est. after DTSC review applic.
C13-2	Authorization to construct issued by BAAQMD	X	Oct-94	Jun-94	deleted	Schedule change as a result of permitting strategy change.
D12-1	PSAR Approved by DOE	X	Jun-94	Nov-94	deleted	EA draft submitted. Rev. due to MMWF/DWTF merge. Rev. EA 2/95.
D13-1	EA determination by DOE	X	Aug-94	Aug-95	complete	Compliance Office.
D15-1	DOE issue Project Plan	X	Jan-95	Jan-95	Open	No revised date available from DOE. LLNL preparing PMP w/o PP.
D121-1	Preliminary approval and funding for Preliminary Design	X	Apr-94	Jun-94	complete	delayed decision by DOE
D121-2	KD 1/2 Approval by DOE	X	Jun-94	Jun-94	complete	received KD-1 only
D131-2	DOE issues KD-2	X	Jun-94	Nov-95	complete	Delayed due to reduced DOE funding.
L111-1	Develop and issue Quality Assurance Plan		Oct-93	Jan-94	complete	
L111-2	Develop and issue Document Control Plan		Jan-94	Jan-94	complete	
L111-3	Issue Design Review Procedure		Sep-94	Sep-94	complete	
L112-1	PSAR to DOE for Review	X	Mar-94	Dec-94	complete	delayed to include CDR information and due to DOE decision to merge MMWF & DWTF
L112-1.1	Issue PSAR Contract		Oct-93	Oct-93	complete	
L112-1.2	Preliminary PSAR Review		Feb-94	Feb-94	complete	
L113-1	Environmental Assessment (EA) submitted to DOE	X	Mar-94	Jun-94	complete	delayed to include CDR information, draft submitted
L113-2	Submit air permit to BAAQMD	X	May-94	Apr-96	complete	Schedule change as a result of permitting strategy change.
L113-3	Submit RD&D permit application to DTSC	X	Jul-94	Feb-95	on hold	Draft application complete. Permit application may not be submitted if revised strategy is approved.
L113-4	Submit revised EA to DOE (for MMWF/DWTF merge)	X	Dec-94	Feb-95	complete	Delayed to allow coordination with permitting efforts (L113-3).
L114-1.1	ES&H review of 30% CDR		Dec-93	Dec-93	complete	
L114-1.2	ES&H review of 90% CDR		Mar-94	Mar-94	complete	
L114-1.3	ES&H review of 90% PDR		Sep-94	Jan-95	deleted	changed to reflect level of effort work
L114-2	Complete review of PSAR		Aug-94	Aug-94	complete	
L115-1	Submit Project Management Plan (Final)	X	Jan-95	May-95	complete	Delayed due to unavailability of DOE Project Plan.
L115-1.1	Project Management Plan (Draft)		Oct-93	Oct-93	complete	
L115-10	Submit FY96 Plan	X	Oct-95	Oct-95	complete	
L115-2	Select Project Engineers and Project Control Manager		Dec-93	Dec-93	complete	
L115-3	Submit FY94 Plan	X	Jan-94	Jan-94	complete	
L115-4	Initiate PTS and Monthly reporting		Jan-94	Jan-94	complete	
L115-5	Technology Selection and Implementation Plan	X	Feb-94	Feb-94	complete	
L115-6	Develop Design Basis Operations Plan		Mar-94	Mar-94	complete	
L115-7	Submit FY95 Plan		Dec-94	Dec-94	complete	
L115-8	Technology Selection and Implementation Plan, Part II	X	Sep-94	Dec-94	complete	delayed due to LLNL accounting changes and higher DOE priorities
L115-9	FY97 Project Validation		Mar-95	Apr-95	complete	Document in TID for publication. Release expected in Apr-95.

X = changes in this revision

EA determination by DOE

Preliminary approval and funding for Preliminary Design

X

delayed decision by DOE

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MMMF & PWTF

הפרטים נא להשאיר את הטופס למען המערכת

Figure 1. The effect of the concentration of the polymer solution on the surface morphology of the polymer film. The polymer solution was prepared by dissolving 0.5 g of polymer in 10 mL of solvent. The concentration of the polymer solution was 0.5 g/10 mL. The surface morphology of the polymer film was observed by SEM. The surface morphology of the polymer film was observed by SEM. The surface morphology of the polymer film was observed by SEM.

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MWMF Milestone/Marker Log

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	Number	Item	PTS	Orig. Date	Date	Status	Comments
	L116-1	First meeting of NRP	X	Feb-95	Jun-95	complete	Delayed while key regulatory issues were resolved and the detail strategy for NEPA and CEQA finalized. Now scheduled for 6/20/95.
	L116-1.1	National Review Panel (NRP) formed		Dec-94	Apr-95	Complete	Activity delayed while key regulatory issues relative to MSO are resolved and the detail strategy for NEPA and CEQA finalized.
X	L116-2	Second meeting of NRP		Aug-95	Aug-95		Date affected by review of EA by DOE and State(Ca.).
X	L116-2.1	Issue first public newsletter		Mar-95	Sep-95		Date affected by review of EA by DOE and State(Ca.).
	L116-2.2	Receive comments from NRP			Apr-95	Deleted	Comments and action items will be received as part of NRP meeting minutes.
	L116-3.1	Issue second newsletter		Sep-95	Jan-96		Date changed to allow time to prepare and publish newsletter following NRP meeting.
	L121-1	30% CDR Review			Dec-93	complete	
	L121-1.1	Initiate Point Design Reviews			Oct-93	complete	
	L121-1.2	Complete Point Design Reviews			Nov-93	complete	
	L121-2	90% CDR Review			Mar-94	complete	
	L121-3	CD Report issued	X		Apr-94	complete	
	L122-1	Issue MWMF Start-Up and Activation Plan		Sep-95	Feb-96		Delayed due to 4/95 budget cut.
	L131-1	Preliminary Design Review (Overall Project) completed	X	Sep-94	Nov-95		Delayed due to reduced DOE funding.
	L131-2	Input to FY95 Plan (see 115-7)	X	Sep-94	Dec-94	complete	delayed due to LLNL accounting changes and higher DOE priorities
	L131-3	Submit MWMF Rebaseline (KD-1)	X		Sep-94	complete	
	L131-4	Submit MWMF Rebaseline (MWMF/DWTF Merge)	X	Mar-95	May-95	complete	Delayed due to FY97 field submittals and other higher priority work.
	L131-5	Submit Post-PDR Project Baseline	X	Sep-95	Jan-96		Delayed due to reduced DOE funding.
	L132-1	Implement Cost planning/tracking systems (document)		Sep-94	Dec-94	complete	activity stretched-out due to reduced funding guidance
	L132-10.1	Input to FY96 Plan (see L115-10)			Oct-95		
	L132-2	Implement Technical baseline control system		May-94	Nov-94		see 132-7
	L132-3	Implement Schedule control/tracking system			Aug-94		see 132-7
	L132-4	Input to FY95 Plan (see L115-7)		Nov-94	Dec-94	complete	delayed due to LLNL accounting changes and higher DOE priorities
	L132-5	Issue Configuration Control System Document		Jan-95	Mar-95	complete	Delayed to allow discussion and review and due to higher priorities.
	L132-6.1	Input to MWMF Project Management Plan (see L115-1)		Feb-95	Apr-95	complete	Delayed due to higher priority work.
	L132-7	Performance Management System documented		Apr-95	Aug-95		Delayed due to requests for unplanned work from DOE.
	L132-8.1	Complete support of Project PDR (see L131-1)		Jun-95	Nov-95		Delayed due to reduced DOE funding.
	L132-9	Complete QA Self Assessment			Aug-95		
	L132-9.1	Records Control Procedure issued			Apr-95	complete	
X	L132-9.2	Assessment/Surveillance Procedure issued			Jul-95	complete	
	L133-1.1	Draft System Engineering Management Plan			Sep-94	deleted	information in other documents
	L133-1.2	Issue MWMF development plan			Jul-94	complete	
	L133-1.3	Complete MWMF floor plan			Jul-94	complete	
	L133-1.4	Input to FY95 Plan (see 115-7)			Nov-94	complete	
	L133-2	Issue Integrated Operations Plan			Jan-95	complete	
	L133-3	Issue Title I System Design Requirements		Feb-95	Aug-95	In Progress	Delayed due to reduced DOE funding.
	L133-4	Issue Metrication Plan			Feb-95	complete	

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Number	Item	PTS	Orig. Date	Date	Status	Comments
L133-5	Input to FY96 Plan (see 115-10)			Oct-95		
L133-10.1	Identify emissions for air permit			Jun-95	complete	New marker
X L133-10.2	Review floorplan layout and personnel egress			Jul-95	complete	New marker
L133-10.3	Review facility Process Flow Diagrams			Aug-95		New marker
L133-10.4	Facility preliminary design (20%)			Aug-95		New marker
L133-10.5	Title I Design Review (80%)			Sep-95		New marker
L133-10.6	LLNL Review Title I Design			Oct-95		New marker
L141-1	RAS System Preliminary Design Review		Sep-94	Sep-95		Delayed due to reduced DOE funding.
L141-1.1	Complete pilot characterization studies		Jun-94	Dec-94	complete	activity stretched-out due to reduced funding guidance
L141-1.2	Identify equipment and define floor plan		Sep-94	Mar-95	complete	activity stretched-out due to reduced funding guidance
L141-1.3	RAS LI&C System Functional Requirements Document complete		Jun-95	Sep-95		Delayed due to reduced DOE funding.
L141-1.4	RAS LI&C Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.
L142-1	SFP System Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.
L142-1.1	SFP surrogate feeds defined			May-94	complete	
L142-1.2	Identify initial suite of characterization equipment		Jun-94	Jan-95	complete	Delayed due to later than scheduled completion of pilot characterization studies and reduced manpower and funding guidance received after original schedule was established.
L142-1.3	Complete validation of characterization, isolation, and segregation methods		Sep-94	Apr-95	complete	Delayed by late completion of pilot characterization studies, reduced manpower/funding guidance, rebaselining activities, and project delay of procurements of engineering development equipment.
L142-1.4	Complete preliminary operator control station design		Mar-95	Apr-95	complete	Delayed due to project rebaseline activities.
L142-1.5	Process Vision/Robline bilateral communication link demonstrated			Feb-95	complete	
L142-1.6	Process Vision/Robline bilateral message handling demonstrated			Mar-95	complete	
L142-1.7	SFP workcell control architecture designed			May-95	complete	
L142-1.8	LI&C Functional Requirements Document complete		Jun-95	Sep-95		Delayed due to reduced DOE funding.
L142-1.9	LI&C Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.
L142-1.10	Locate user interface stations and required functionality			Aug-95		New marker
L142-1.11	Draft FP control console layout			Aug-95		New marker
L142-2	Telerobotics Preliminary Design Review			Sep-95		New milestone.
L143-1	LFP System Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.
L143-1.1	Define surrogate feeds		May-94	Nov-94	complete	date changed to agree with extended project schedule
L143-1.2	LFP general arrangement plan finalized		Jul-94	Dec-94	deleted	
L143-1.3	Complete validation of characterization and segregation methods		Sep-94	Apr-95	complete	Delayed by technical difficulties which have since been resolved.
L143-1.4	LI&C Functional Requirements Document complete		Jun-95	Sep-95		
L143-1.5	LI&C Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.
L151-1.1	Complete tests on turbo-aerator for nitrous acid conversion (document issued)		Mar-94	Jan-95	complete	Release of report delayed due to slower than expected review cycle.
L151-1.10	P&ID drawings (document)			Sep-95	complete	Incorporated into L151-3.
L151-1.11	Layout drawings of major equipment items (document)			Sep-95	complete	Incorporated into L151-3.
L151-1.12	LI&C Functional Requirements Document complete			Aug-95		

MWMF Milestone/Marker Log

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Number	Item	PTS	Orig. Date	Date	Status	Comments
L151-1.13	LI&C Preliminary Design Review			Sep-95	deleted	Replaced by L151-3.
L151-1.2	Initiate steady-state flow and chemistry balance tests			Apr-94	complete	
L151-1.3	Initiate instrumentation and control system tests for MEO			Aug-94	complete	
L151-1.4	Summarize silver recovery chemistry results to date (document)		Sep-94	Apr-95	complete	Release of report delayed because PI was involved with higher priority tasks. Task has been assigned to another engineer.
L151-1.5	Fabricate and set-up cellulose Feeder		Sep-94	Dec-94	complete	activity stretched-out due to reduced funding guidance
L151-1.6	Report on NaOH-AgCl recovery (document)		Feb-95	Apr-95	complete	Delayed to allow patent disclosure to be filed. Document is in review cycle with release expected in Apr-95.
L151-1.7	Computer simulation of the combined MEO and Acid Recovery control systems (document)		Feb-95	Mar-95	complete	Delayed due to higher priority tasks.
L151-1.8	Final Report on steady-state flow and chemistry balance tests (document issued)		Apr-95	Aug-95		Delayed due to budget uncertainty.
L151-1.9	Demonstrate prototype cellulose feeder (document)			Jun-95	deleted	Deleted per Rebaseline 1.2 as cost savings measure.
L151-2	MEO System Preliminary Design Review			Sep-95	deleted	Replaced by L151-3.
L151-2.1	Preliminary Process Flow Diagram for MEO			Jun-94	complete	
L151-2.2	Preliminary equipment layout for MEO			Sep-94	complete	
X L151-3	MEO System Design Description (document)			Jul-95	complete	New milestone. Replaces L151-1.13 and L151-2.
L152-1	Complete MSO bench scale rubber destruction tests			Dec-93	complete	
L152-2	Select Industrial Participation method for Primary Unit			Jun-95	complete	
L152-2.1	MSO advertise in the CBD		Apr-94	Jun-94	complete	delayed due to funding limitations per DOE guidance
L152-2.2	Complete Design Specification		May-94	Jan-95	complete	delayed for incorporation of reviewer's comments
L152-2.3	Conduct Industrial Partner meeting		Jul-94	Jan-95	complete	Delayed due to funding limitations per DOE guidance and unavailability of participants due to holidays. Scheduled for January 5th.
L152-3	MSO System MWMF PDR		Jun-95	Oct-95		Delayed due to reduced DOE funding.
L152-3.1	Preliminary Process Flow Diagram complete for MSO		Jun-94	Sep-94	complete	
L152-3.2	Initiate MSO Preliminary Design			Jul-94	complete	
L152-3.3	Initiate vessel material study			Oct-94	Complete	
L152-3.4	Install development unit			Jun-95	Complete	
L152-3.5	LI&C Functional Requirements Document complete		May-95	Oct-95		Delayed due to reduced DOE funding.
L152-3.6	LI&C Preliminary Design Review		Jun-95	Oct-95		Delayed due to reduced DOE funding.
L152-4	Start Development Activities			Aug-94	complete	
L152-5	Start Title II design		Jul-95	Nov-95		Delayed due to reduced DOE funding.
L152-6	Select Industrial Participation method for Salt Recycle			Nov-95		New Milestone
L153-1	Award WOX contract			Sep-94	deleted	WBS element deleted per DOE guidance
L153-1.1	Complete and document work to date			Jul-94	complete	
L153-1.2	Issue RFQ for WOX treatment unit w/ completed specification			Jun-94	deleted	WBS element deleted per DOE guidance
L153-2	30% Preliminary Design Review for WOX			Sep-94	deleted	WBS element deleted per DOE guidance
L153-2.1	WOX dispersion system test and design recommendation complete			May-94	deleted	WBS element deleted per DOE guidance
L153-2.2	Preliminary WOX treatability tests complete			Jun-94	deleted	WBS element deleted per DOE guidance
L153-2.3	Preliminary WOX Process Flow Diagram complete			Jun-94	deleted	WBS element deleted per DOE guidance

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	Number	Item	PTS	Orig. Date	Date	Status	Comments
	L153-2.4	Preliminary P&ID for WOX Support System complete			Jul-94	deleted	WBS element deleted per DOE guidance
	L154-1	Complete and document UVP work to date			Jul-94	complete	
	L154-2	UVP System Preliminary Design Review			Sep-94	deleted	WBS element deleted per DOE guidance
	L154-2.1	UVP Process Flow Diagram			Jul-94	deleted	WBS element deleted per DOE guidance
	L154-2.2	P&ID for UVP Support System			Jul-94	deleted	WBS element deleted per DOE guidance
	L154-2.2	EOG preliminary Equipment Layout			Sep-94	deleted	WBS element deleted per DOE guidance
	L154-2.3	UVP Equipment Layout			Aug-94	deleted	WBS element deleted per DOE guidance
X	L155-1	Summarize Gas Liquid Contactor Tests (document)		Jun-95	Aug-95	In progress	Delayed due to testing difficulties. Corrections have been made.
	L155-1.1	Fab prototype gas-liquid contactor for acidic urea NOx destruction		Jun-94	Jun-95	complete	Delayed due to DOE stretchout & peer review action item(s). Design/fabrication package currently out for bid.
	L155-1.2	Complete XOG tests on urea and SCR DeNOx			Jul-94	deleted	break up into other markers
	L155-2	Urea DeNOx: peer review			Aug-94	complete	
	L155-2.1	Initiate instrumentation and control system test		Aug-94	Feb-95	deleted	Deleted from scope due to budget reductions. (1/95)
	L155-3	XOG System Preliminary Design Review		Sep-94	Jun-95	deleted	Deleted from scope due to budget reductions. (1/95)
X	L155-3.1	Summarize NOx-urea chemistry to date (document)		Sep-95	Sep-95		Delayed awaiting completion of Milestone L155-1. Date was Aug-95.
	L155-3.2	Initiate systematic catalysts testing			Jan-95	deleted	Deleted from scope due to budget reductions. (1/95)
	L155-3.3	LI&C Functional Requirements Document complete			May-95	deleted	Deleted from scope due to budget reductions. (1/95)
	L155-3.4	LI&C Preliminary Design Review			Jun-95	deleted	Deleted from scope due to budget reductions. (1/95) Title correction.
	L161-1	Process Transport & Storage System Preliminary Design Review		Sep-94	Sep-95		Delayed due to reduced DOE funding.
	L161-1.1	Select standard transport container designs		Jun-94	Jul-95		Delayed due to reduced DOE funding.
	L161-1.2	Floor plan layout complete		Jul-94	Aug-95		Delayed due to reduced DOE funding.
	L161-1.3	LI&C Functional Requirements Document complete		Jun-95	Sep-95		Delayed due to reduced DOE funding.
	L161-1.4	PTS LI&C System Preliminary Design review		Jul-95	Sep-95		Delayed due to reduced DOE funding.
	L162-1	Complete preliminary floor plan layout			Jun-94	complete	
	L162-1.1	Select ATS standard transport container designs			Jun-94	deleted	WBS content revised to "Analytical Lab"
	L162-1.2	Finalize ATS transport handling capacity			Jun-94	deleted	WBS content revised to "Analytical Lab"
	L162-1.3	Finalize ATS transport equipment selection			Aug-94	deleted	WBS content revised to "Analytical Lab"
	L162-2	Define analysis tests based on process acceptance criteria		Sep-94	Aug-95	partial	Delayed due to reduced DOE funding.
	L162-3	Define facility off-gas monitoring requirements		Sep-94	Feb-95	complete	Completed for preliminary design.
	L162-4	Define MEO on-line analysis requirements		Dec-94	Feb-95	complete	Completed for preliminary design.
	L162-5	Define MSO on-line analysis requirements		Jan-95	Mar-95	complete	Waiting for salt analysis to be defined. Completion expected in Mar-95.
	L162-6	Define DWTF analysis requirements			Feb-95	complete	Completed for preliminary design.
X	L162-7	Analytical Lab System Preliminary Design review		Aug-95	Sep-95		Delayed due to reduced DOE funding.
X	L162-7.1	LI&C Functional Requirements Document complete		Jul-95	Aug-95		Delayed while document is in review cycle.
	L162-7.2	LI&C Preliminary Design Review			Aug-95		
	L163-1	Water Treatment trade-off study		Jun-94	Sep-94	complete	
	L163-1.1	Water Treatment trade-off study revision		Dec-94	Feb-95	complete	Delayed due to previously unplanned decision to have TID edit document. Presently out for signatures. Release expected in Feb 95.
	L163-2	Memorandum of Understanding with HWM			Jan-95	complete	

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Number	Item	PTS	Orig. Date	Date	Status	Comments
L163-3	WTR System Preliminary Design Review		Jul-95	Oct-95		Delayed due to reduced DOE funding.
L163-3.1	LI&C Functional Requirements Document complete		Jun-95	Oct-95		Delayed due to reduced DOE funding.
L163-3.2	LI&C Preliminary Design Review		Jul-95	Oct-95		Delayed due to reduced DOE funding.
L163-4	Begin Final Design		Jul-95	Oct-95		Delayed due to reduced DOE funding.
L164-1	Evaluations of immobilization technologies complete		May-95	Jun-95	complete	Delayed pending decision on most cost effective technology for the project.
L164-1.1	Preliminary process flow diagram complete for FF			Jul-94	complete	
L164-1.2	Preliminary equipment layout complete for FF			Aug-94	complete	
L164-1.3	Report status of immobilization evaluations		Sep-94	May-95	complete	Delayed until after peer review of polymer microencapsulation. Peer Review activities finalized on 4/24/95. Report expected in May 95.
L164-2	Final Forms System Preliminary Design Review		Jun-95	Aug-95		Delayed due to reduced DOE funding.
L164-2.1	Final Forms subsystem design status peer review		Feb-95	May-95	complete	Peer Review activities finalized on 4/24/95. Report to be completed in May 95.
L164-2.2	LI&C Functional Requirements Document complete		May-95	Aug-95		Delayed due to higher priority work and reduced DOE funding.
L164-2.3	LI&C Preliminary Design Review		Jun-95	Aug-95		Delayed due to reduced DOE funding.
L164-3	Report: Design of polymer microencapsulation system		Jun-95	Oct-95		Delayed due to reduced DOE funding.
L164-4.1	Report issued: Volatile residue components and the design of ceramic waste form system		Jul-95	Sep-95		Delayed due to reduced DOE funding.
L164-4.2	Report issued: Interim status of ceramic waste form compositions and process parameters		Aug-95	Sep-95		Delayed due to reduced DOE funding.
L165-1	SI&C System Preliminary Design Review		May-95	Jun-95	complete	Delayed due to scheduling conflicts.
L165-1.1	I/C general arrangement plan complete			Mar-94	complete	
L165-1.10	Rapid prototype Engineering Development testing complete and report written		Jan-95	Feb-95	complete	Delayed because of late delivery of MinnovEX DBMS software driver. See Jan 95 WMMF Monthly Report.
L165-1.11	Integrated control system design peer review		Feb-95	Mar-95	complete	Completion expected in early Mar 95. Key participants are unavailable in February.
L165-1.12	SI&C Functional Requirements Document complete		Apr-95	Sep-95	In progress	Delayed due to reduced DOE funding.
L165-1.13	Engineering Development tasks complete, documented		Jun-95	Sep-95		Delayed due to reduced DOE funding.
L165-1.14	Preliminary Design activities complete, documented		Jun-95	Sep-95		Delayed due to reduced DOE funding.
L165-1.2	Process Control System FEP hardware/software selected			Apr-94	complete	
L165-1.3	Supervisory Control System hardware/software selected			Apr-94	complete	
L165-1.4	Handling Systems open architecture controller selected			Jul-94	deleted	to WBS 1.4.2
L165-1.5	Analytical laboratory LIMS selected			Jul-94	deleted	LIMS may not be used in system design
L165-1.6	Telerobotics platform selected			Aug-94	deleted	to WBS 1.4.2
L165-1.7	Teleoperator controller selected			Sep-94	deleted	to WBS 1.4.2
L165-1.8	Database Management System hardware/software selected			Jul-94	complete	
L165-1.9	Engineering Development System operational		Dec-94	Jan-95	complete	Delayed because of late delivery of MinnovEX DBMS software driver.
L165-2.1	Instrumentation and Equipment Database operational		Mar-95	Apr-95	complete	Delayed pending I&C design team review scheduled for 4/7/95.
L165-2.2	Process I&C Standards established			Sep-95		
end						