The Mixed Waste Management Facility

Monthly Report
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Project Summary

Overview

During February the Project activities included completion of the cost-benefit analysis for the MWMF Project, completion of the 95% Title 2 design review for the DWTF Phase 2, further development of an MWMF business plan for working with industry, and finalization of outstanding issues from the Preliminary Design Review.

From the Project management perspective, the primary focus was in the resolution of issues identified by HQ for the continuation of the Project and the receipt of KD-2. A cost-benefit analysis was completed and reviewed with DOE/HQ, EM-50, and the Mixed Waste Focus Area (MWFA). Issues identified were incorporated in the report, and a final draft has been completed. Based on the best available data, the results of this study lead to three simple conclusions: (1) It would be cost effective for the DOE to complete pilot-scale demonstrations of alternatives to incineration prior to design and construction of full-scale facilities. (2) Given that demonstrations are to be conducted, it is more cost effective to consolidate these in the MWMF. Cost-benefit from a centralized demonstration facility will more than pay for the cost of the facility over the first eight demonstrations. (3) As the cost for independent site demonstrations or the cost for deploying full-scale treatment facilities is reduced, the net benefit of demonstrations is reduced. However, under these circumstances, the risk of deploying technologies increases and the ability to promote competition among small companies, unable to compete with independent pilot-scale demonstrations, will be significantly reduced.

The 95% design review of the MWMF building, DWTF Phase 2, was completed with a number of minor comments to be incorporated in the final design. Overall, the facility design is very well conceived and will provide a valuable resource as a national testbed or, should it be required, for alternative uses.

Technically, the first phase of testing for the MSO demonstrations in the engineering development unit (EDU) have been completed. A number of key engineering issues were identified and resolved including the parameters associated with the chloride content for salt recycle, baffle design, side injector, burst disk design, and material evaluations. The EDU unit will be refurbished in March for continued operations to finalize design details for the downcomer injector for solid and liquid feeds, alternate baffle design, and other engineering design issues.

Cost Status. Budget Authority (BA) for Operating is \$1,095M and Capital is \$10,553M. Current Budget Obligation (BO) funding for FY96 is \$1,095M OP and \$5,456M CE for a total funding of \$6,551M. Costs to date are: Operating \$170.9K, variance of -\$9.4K and a remaining lien of \$111.5K; Capital \$1,913.2K, Variance of \$372.1K and a remaining lien of \$695.3K. The variance for the capital funding is due to invoices from several vendors for work performed that have not yet been posted to the account.

The Project is currently behind schedule and will continue to fall behind until DOE issues a KD-2. As soon as we receive a KD-2, a revised spending plan will be submitted.

Schedule Status. As reported last month, KD-2 (Milestone D131-2), which was due to be issued in December 1995, has been delayed pending a Project review by DOE. All major procurements have also been held up pending this ongoing Project review. A

revised Project schedule reflecting all changes will be issued when the DOE review is completed.

Significant Issues and Planned Corrective Actions

The Project continues to proceed slowly as a result of uncertainty in the Project status and budget. Entering the sixth month of FY96 the Project does not have an approved budget or accepted scope of work. Although the Preliminary Design was completed in November with a proposed revised baseline incorporating DOE guidance, the Project will need KD-2 to allow for detailed design and long-lead procurements. As a result, the Project has lost a number of key personnel. As this situation continues, it will become increasingly difficult to meet key Project milestones or to make up lost time. Overall, this delay will result in higher Project costs, reduced scope, and delayed implementation of MWMF systems, impacting the near-term value of the MWMF in resolving treatment needs for the current inventory. The MWMF has been given approval to continue to spend at a rate equivalent to FY95, focusing on three main items: resolving the outstanding issues so as to allow approval of KD-2, continuing to resolve facility (DWTF Phase 2) Title 2 design issues, and following up on details from the preliminary design review. *Project Baseline 2.0* (PB2.0) was scheduled to be completed in January; however, while a final draft has been completed, it will not be issued until the Project status is finalized and an approved work scope is defined.

All issues that have been identified for the continuation of the MWMF Project have been completed. This includes demonstrating industry interest in the MWMF, reaffirming LLNL interest in the Project, coordinating—to the extent possible—with the MWFA and EM-50, and developing a Cost-Benefit Analysis for the Project. The last item has resulted in a detailed report on the Cost Benefit of the MWMF. This report was reviewed with DOE/HQ (EM30 and 50), and the MWFA. To the extent possible, technical issues that were identified by the reviewers (e.g., assumptions as to the costs of demonstrations, number of technologies) were incorporated into the report as part of the main assessment or included as part of the sensitivity analysis. Telephone conference meetings were held in February and will be held in early March to discuss and finalize outstanding issues with the MWFA and EM-50, ultimately leading to a final decision on the MWMF Project. A final report on the Cost Benefit is in process.

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:

- **Technical Systems Integration:** Initiated review of the facility Phase 2 95% design submittal.
- **Solids Feed Preparation-Telerobotics Sorting:** Provided additional detail to the facility AE on crane requirements to avoid duplication of control system functionality between the cell integration subsystem, the crane controller, and the CCTV system. The changes should result in a savings of approximately \$150K to \$200K in overall system costs. Completed the ControlShell components for the force

compliance feature needed to control the amount of force the manipulator exerts on objects and workcell components.

- **Molten Salt Oxidation:** Metallographic evaluation of the Inconel 600 test samples from the 500-hour corrosion test in LLNL's ten-tube test furnace indicates that the material will last 2.5 times longer at 900°C than at 950°C. In the EDU, full reduction of the data from charges 2 and 3 is under way to evaluate the effect of charge depth, chloride concentration, and froth height expansion. Analysis of the froth height expansion data indicates that the average volume expansion is dependent upon the charge depth, temperature, and superficial velocity. We designed and began implementation of the Automated ReHeat function for EDU. Following discussions with several potential vendors for the salt freezer, the performance specification was written and the Project is ready to begin procurement action. Discussions began with vendors of screw conveyors and pneumatic conveyors concerning a conveyor to lift the salt solids from the end of the salt freezer into a storage hopper.
- **Supervisory Instrumentation and Control:** The Memorandum of Understanding for MWMF Container Tracking and Material Accounting Requirements was signed off, completing Marker L165-2.3. We completed the design alternatives study for the bar coding system. The interface between the bar coding system and the container tracking and material accounting applications has been defined. Preparations are under way to procure demonstration hardware from Intermec, Inc.

Project Financial Summary

Figures 1 and 2 present graphical plots of planned-vs.-actual spending for OPEX and CENRTC. Table 1 presents a more detailed financial summary of the MWMF Project for December. There are no significant financial items to report beyond those discussed in the Cost Status paragraph of the Overview section above.

TABLE 1

MWMF Project - Monthly Financial Summary for FY96
February 1996

OPEX (\$K, monthly expenditures)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Subtotal*	Undistrib	10/95 Plan
DOE Funds*	0	0	0	1,400	(305)	0	0							1,095		
FY96 Plan 10/95*		52	37	39	36	50	36	58	64	75	64	64	64	639	NA, for	639
Actual		41	35	30	21	43	0	0	0	0	0	0	0	171	information only	
Variance		(11)	(1)	(9)	(15)	(7)								(44)		
Actual Liens**		140	112	112	112	112								NA		
Mgmt Reserve		0	0	0	0									0	0	116
96/97 Liens holdback***														0	100	100
															FY96 OPEX budget =	
															855	

OPEX (\$K, cumulative to date)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	DOE FY96 new-BA, OPEX		
DOE Funds*	0	0	0	1,400	1,095	1,095								budget	guidance*	delta
FY96 Plan 10/95*		52	89	128	165	215	251	309	372	447	511	575	639	639		639
Actual		41	77	107	128	171										
Variance		(11)	(13)	(22)	(37)	(44)										

CENRTC (\$K, monthly expenditures)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Subtotal*	Undistrib	10/95 Plan
DOE Funds*	0	1,500	0	3,956	0	0								5,456		
FY96 Plan 10/95*		561	1,677	621	589	745	574	586	706	580	565	648	721	8,572	NA, for	8,572
Actual		440	448	322	367	337								1,913	information only	
Variance		(121)	(1,230)	(299)	(222)	(408)								(2,279)		
Actual Liens**		434	379	479	477	695								NA		
Mgmt Reserve		0	0	0	0	0								0	0	873
96/97 Liens holdback***														0	400	400
															FY96 CENRTC budget =	
															9,845	

CENRTC (\$K, cumulative to date)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	DOE FY96 new-BA, CENRTC		
DOE Funds*	0	1,500	1,500	5,456	5,456	5,456								budget	guidance*	delta
FY96 Plan 10/95*		561	2,238	2,859	3,448	4,192	4,767	5,353	6,059	6,639	7,204	7,851	8,572	8,572		8,572
Actual		440	888	1,210	1,576	1,913										
Variance		(121)	(1,350)	(1,649)	(1,872)	(2,279)										

PROJECT TOTAL (\$K, monthly expenditures)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Subtotal*	Undistrib	10/95 Plan
DOE Funds*	0	1,500	1,500	6,856	6,551	6,551								6,551		
FY96 Plan 10/95*		613	1,714	660	625	795	611	644	770	655	629	711	785	9,211	NA, for	9,211
Actual		481	483	352	388	380								2,084	information only	
Variance		(132)	(1,231)	(308)	(238)	(414)								(2,323)		
Actual Liens**		574	491	591	589	807								NA		
Actual Prelims**			1,141	1,025	272	6								NA		
Mgmt Reserve		0	0	0	0	0								0	0	989
96/97 Liens holdback***														0	500	500
															FY96 TOTAL budget =	
															10,700	

TOTAL PROJECT EXPENDITURES (\$K, cumulative to date)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	DOE FY96 new-BA, TOTAL		
DOE Funds*	0	1,500	1,500	6,856	6,551	6,551								budget	guidance*	delta
FY96 Plan 10/95*		613	2,327	2,987	3,612	4,407	5,018	5,661	6,431	7,086	7,715	8,426	9,211	9,211	0	9,211
Actual		481	964	1,316	1,704	2,084										
Variance		(132)	(1,363)	(1,671)	(1,908)	(2,323)										

MANPOWER SUMMARY (total project, by month)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Labor (FTE)		41.1	31.9	27.5	30.4	32.8							
Labor (\$K) @		364	291	243	220	251							

- * FY95 carryover funds were deobligated (source: LLNL Contract Modification)
 ** Relevant for current month only; sum not meaningful
 *** Includes budgeted amounts for management reserve, liens holdback
 # Undistributed remaining budget
 ^ No guidance has been provided
 ^^ Updated periodically (see note); only Subtotal Relevant

WBS Element: 1.1.1. Quality Assurance

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

Summary of Monthly Activities:

- We worked with Project personnel in tracking and closing out design review action items.
- We began preparing a nonconformance reporting procedure.
- We worked with Project personnel on QA issues and the QA filing system.

FY96 Budget: Spending profile (\$K, OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.5
Monthly actual	1.6	1.6	0.8	0.2	1.4							
FY96 Plan cumulative	2.3	4.6	6.9	9.2	11.5	13.8	16.1	18.4	20.7	23.0	25.3	27.8
Actual cumulative	1.6	3.1	3.9	4.1	5.5							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

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

No activities are planned for FY96.

FY96 Budget: Spending profile (\$K, CENTRC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly actual	0.0	0.0	0.0	0.0	0.0							
FY96 Plan cumulative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Actual cumulative	0.0	0.0	0.0	0.0	0.0							
Current lien	64.1	64.1	64.1	64.1	64.1							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

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

WBS Element: 1.1.3. NEPA/CEQA

Task Description: The 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 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, and 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 permits approvals.

Summary of Monthly Activities:

We continued providing support to DOE regarding comments received on the EA.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	4.2	5.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
Monthly actual	0.5	1.0	1.6	(0.3)	1.3							
FY96 Plan cumulative	4.2	9.3	13.5	17.7	21.9	26.1	30.3	34.5	38.7	42.9	47.1	51.3
Actual cumulative	0.5	1.5	3.0	2.7	4.0							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L113-2	Submit air permit to BAAQMD	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 ongoing 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 ongoing ES&H support to the MWMF Project as described above.

FY96 Budget: Spending profile (\$K, OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.2	13.2	13.2	13.2	13.2
Monthly actual	18.3	16.6	11.4	13.1	20.4							
FY96 Plan cumulative	13.1	26.2	39.3	52.4	65.5	78.6	91.7	104.9	118.1	131.3	144.5	157.7
Actual cumulative	18.3	34.9	46.3	59.4	79.8							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

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

Due to continuing DOE budget concerns and MWMF status, activities in this element were restricted to Project Manager, scientific oversight support, and clerical support as required. We continue to monitor permitting and environmental assessment comments as well as working with DTSC on the classification of MSO. Additional effort was directed at developing an MWMF business plan consistent with DOE strategy for privatization/commercialization of the waste treatment activities within the DOE complex.

FY96 Budget: Spending profile (\$K, OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	31.0	15.3	15.3	15.0	26.0	15.0	20.0	15.0	26.0	15.0	15.3	15.3
Monthly actual	17.5	15.0	15.6	3.5	14.7							
FY96 Plan cumulative	31.0	46.3	61.5	76.5	102.5	117.5	137.5	152.5	178.5	193.5	208.8	224.0
Actual cumulative	17.5	32.5	48.1	51.7	66.4							
Current lien	45.4	45.4	45.4	45.4	45.4							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
D115-1	DOE issues <i>Project Plan</i>	Jan 95	Complete
L115-10	Submit FY96 <i>Plan</i>	Oct 95	
L115-11	FY98 Project Validation	Apr 96	
L115-12	Submit FY97 <i>Plan</i>	Oct 96	

WBS Element: 1.1.6. Public Participation

Task Description: Public Participation provides for public input to the planning and execution phases of the MWMF Project. Included are a National Review Panel (NRP), a community newsletter, and preparation and coordination of press releases and community tours.

Summary of Monthly Activities:

- We coordinated and prepared the MWMF presentation and display for the Southwest Defense Cleanup Conference and Exhibition in Salt Lake City.
- We responded to media regarding public inquiries on the Project and drafted a response and informational material.
- Due to the delay in issuing a KD-2 by DOE, Milestones and Markers have been rescheduled. The first NRP meeting is now planned for April 96.

FY96 Budget: Spending profile (\$K, OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	6.0	6.0	8.5	6.0	8.5	6.0	6.0	6.0	6.5	6.0	6.0	6.0
Monthly actual	3.8	2.2	2.3	4.2	5.7							
FY96 Plan cumulative	6.0	12.0	20.5	26.5	34.0	41.0	47.0	53.0	59.5	65.5	71.5	77.5
Actual cumulative	3.8	6.0	8.3	12.5	18.2							
Current lien	28.2	0.0	0.0	0.0	0.0							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L116-3	NRP Meeting	Apr. 96	
L116-3.1	MWMF Letter	May 96	
L116-4	NRP Meeting	Sep 96	
L116-4.1	MWMF Letter	Oct 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.

FY96 Budget: Spending profile (\$K, OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly actual	0.0	0.0	0.0	0.0	0.0							
FY96 Plan cumulative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Actual cumulative	0.0	0.0	0.0	0.0	0.0							
Current lien	2.0	2.0	2.0	2.0	2.0							

Significant Procurement Actions This Month:
None

Milestones and Markers:

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

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:

There are no significant activities under this WBS element until April 1996.

FY96 Budget: Spending profile (\$K, OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	0.0	0.0	0.0	0.0	0.0	0.0	16.2	27.2	27.2	27.2	27.2	27.2
Monthly actual	0.0	0.0	0.0	0.0	0.9							
FY96 Plan cumulative	0.0	0.0	0.0	0.0	0.0	0.0	16.2	43.4	70.6	97.8	125.0	152.2
Actual cumulative	0.0	0.0	0.0	0.0	0.9							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

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

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 finalization of design documentation for equipment and process modifications; (4) maintenance support to perform equipment or process modifications during start-up, testing, and activation; (5) all operational spares and the initial stores inventory; and (6) all manpower and materials required to deliver support services (e.g., utilities, power, etc.) during construction, testing, and activation of the MWMF.

Summary of Monthly Activities:

There are no activities under this WBS element during FY96.

FY96 Budget: Spending profile (\$K, OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly actual	0.0	0.0	0.0	0.0	0.0							
FY96 Plan cumulative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

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 Project Office, Project assurance (including quality assurance, safeguards, environmental protection, and safety oversight), management overview of information management and technical activities, and interface with DOE.

Summary of Monthly Activities:

- Project management continued for all elements of the CENRTC-funded activities. PB2.0 is essentially complete; however, it will have to be modified before it is issued to adjust the schedule and budget resulting from the significant delay in obtaining KD-2 for the Project. We will address these changes once we have approval to proceed into final design.
- The Project continues to resolve issues identified as part of the Preliminary Design reviews and to address outstanding engineering development items. As described in more detail in the MSO section, the EDU has completed a series of tests and will be undergoing refurbishment during March. Issues on chloride content relative to salt recycle input stream have been largely resolved based on these studies.
- Effort continued on the Cost-Benefit Study for the MWMF as directed by DOE/HQ. During February, the draft report was reviewed by EM-50, the MWFA, and others. We have significantly revised the study to include more sensitivity analysis relative to the cost of treatment demonstrations, plant deployment costs, waste processing cost, and growth of capacity. The resolution of the need for a centralized testbed facility and closure on cost-benefit analysis still remain as the key issues to be resolved before approval of KD-2.
- Entering the sixth month of FY96, the Project does not have an approved budget or accepted scope of work. As a result, the Project has lost a number of key personnel, and we are not bringing on new team members until such issues are resolved. Key Project milestones will have to be reassessed once the funding and plan for the remainder of the Project is approved by DOE. The Project PDR established the basis for PB2.0. We will continue to proceed along this plan—albeit at a reduced funding rate—until further formal guidance is received from DOE.
- As described in the *January Monthly Report*, significant charges in January were the result of a redistribution of costs previously charged to the wrong account. The very low cost for February is further correction on the same mischarges. On balance, the "true" charges for February are consistent with the earlier months' expenditures and somewhat below the FY96 Plan.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	64.0	88.0	72.0	61.3	64.0	61.3	61.3	61.3	64.0	61.0	61.0	88.0
Monthly actual	42.5	51.6	44.8	161.5	3.6							
FY96 Plan cumulative	64.0	152.0	224.0	285.3	349.3	410.5	471.8	533.0	597.0	658.0	719.0	807.0
Actual cumulative	42.5	94.1	138.9	300.4	304.0							
Current lien	24.5	21.6	19.2	12.3	48.8							

Significant Procurement Actions This Month:

No new procurement; however, additional costs are expected on the existing SAIC contract to cover the additional scope of work for the independent cost-benefit study.

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L131-1	Preliminary Design Review complete	Nov 95	Complete
D131-2	DOE issues KD-2	Nov 95	Late
L131-5	Issue Project Baseline Rev. 2.0	Jan 96	On hold†
L131-6	Final Design Review complete	Oct 96	

†See Summary above.

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:

- While awaiting the outcome of the Continuing Resolution and a final budget, we continued to closely monitor costs during February.
- The publication of Baseline Revision 2.0 (Marker L132-11.1) remains on hold awaiting a decision by DOE on the future status of the Project.
- Other activities and accomplishments during February included the following:
 - Issued the DOE PTS monthly report.
 - Issued the *January Monthly Report*.
 - Continued investigating several liens for possible removal from Project accounts.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	38.0
Monthly actual	13.7	9.1	18.4	8.1	9.6							
FY96 Plan cumulative	40.0	80.0	120.0	160.0	200.0	240.0	280.0	320.0	360.0	400.0	440.0	478.0
Actual cumulative	13.7	22.9	41.3	49.4	59.1							
Current lien	0.0	0.0	119.2	136.5	136.5							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L132-8.1	Complete support of Project PDR	Nov 95	Complete
L132-10.1	Complete FY96 Budget Plan	Oct 95	Complete
L132-11.1	Complete Cost/Schedule Baseline Rev. 2.0	Jan 96	On hold
L132-12.1	Complete support of Project Final Design Review	Sep 96	
L132-13.1	Engineering Change Control Procedure	Jan 96	Complete
L132-13.2	Nonconformance Reporting Procedure	Apr 96	
L132-13.3	Complete QA Surveillance/Verification	Aug 96	

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 systems interfaces are addressed in the integrated design, including interfaces with LLNL Hazardous Waste Management and facility engineering. The element coordinates the System Design Requirements, the MWMF floor plan, and the Integrated Operating Plan.

Summary of Monthly Activities:

- We initiated the review of the Phase 2 Title 2 95% design submittal.
- We provided information on cost/benefit analysis of the MWMF in response to a DOE request. Formal documentation was completed.
- We placed the floor plan drawing (AAA96-100241-00) and the Revision 2 Utilities Requirements list under documentation control. We also initiated the Interface Control Drawings which will also be under documentation control.
- We have continued to answer questions and give clarification to Parsons to assist in their design effort.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	35.0	28.0	28.0	32.0	26.4	29.0	30.0	23.4	23.4	27.4	23.4	23.4
Monthly actual	20.9	14.1	10.3	4.3	55.8							
FY96 Plan cumulative	35.0	63.0	91.0	123.0	149.4	178.4	208.4	231.8	255.2	282.6	306.0	329.4
Actual cumulative	20.9	35.0	45.3	49.6	105.5							
Current lien	0.9	0.0	0.9	0.9	3.7							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L133-10.5	Facility Title I Design Review (80%)	Oct 95	Complete
L133-10.6	LLNL review of Facility Title I Design	Nov 95	Complete
L133-6	Revised SDR completed for Title II Design	Nov 95	Complete
L133-7.1	Facility Title II Design Review (95%)	Feb 96	Late
L133-7	LLNL review of Facility Title II Design complete	Mar 96	

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 RAS equipment, Title III inspection, and acceptance test procedures (ATP). RAS includes both receiving and shipping equipment and systems integration.

Summary of Monthly Activities:

Design work in this area has been deferred due to higher priorities.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	1.5	1.5	1.5	1.5	2.4	4.9	2.4	4.9	2.4	2.2	2.2	2.2
Monthly actual	3.6	1.9	1.8	1.7	2.1							
FY96 Plan cumulative	1.5	3.0	4.5	6.0	8.4	13.3	15.7	20.6	22.9	25.1	27.3	29.5
Actual cumulative	3.6	5.5	7.3	9.1	11.2							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L141-1.3	RAS LI&C System Functional Requirements document complete	Sep 95	Complete
L141-2.1	RAS LI&C System Design Description drafted	Jun 96	
L141-2.2	RAS System Design Description drafted	Sep 96	
L141-2	RAS 90% Final Design Review complete	Oct 96	

WBS Element: 1.4.2. Solids Feed Preparation—Conventional

Task Description: The principal objective of the Conventional Feed Preparation (CFP) system is to provide for the receipt, preparation for processing, and the decontamination of homogeneous and heterogeneous solids received from storage and other processes in the facility. This includes processing the incoming combustible solids waste/surrogate stream into a form required by the treatment processes. The decontamination system provides necessary equipment to ensure materials/containers can be safely transferred out of the facility. CFP provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of CFP equipment, Title III inspection, and acceptance test procedures (ATP). CFP includes both solids feed preparation equipment and systems integration.

Summary of Monthly Activities:

- Design work in this area has been deferred due to higher priorities.
- We continued design activities in preparation for the LI&C System Functional Requirements Document; a draft has been reviewed.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	17.3	20.3	31.3	30.3	33.8	31.8	32.8	31.8	31.8	30.5	30.5	31.5
Monthly actual	3.9	1.1	2.9	0.8	16.2							
FY96 Plan cumulative	17.3	37.6	68.9	99.2	133.0	164.8	197.6	229.4	261.2	291.7	322.2	353.7
Actual cumulative	3.9	5.0	7.9	8.7	24.9							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L142-1.8	CFP LI&C System Functional Requirements Document complete	Oct 95	Late
L142-3.1	CFP System Design Description drafted	Sep 96	
L142-3.2	CFP LI&C System Design Description drafted	Oct 96	
L142-3	CFP 90% Final Design Review complete	Oct 96	

WBS Element: 1.4.2. Solids Feed Preparation—Telerobotics Sorting

Task Description: The principal objective of the Telerobotics Sorting (TRS) system within Solids Feed Prep is to provide remote container and waste handling equipment necessary to demonstrate remote preparation of feed for treatment processes in the MWMF and to evaluate the technology for use at sites across the DOE complex. TRS interfaces with SFP container receiving and conventional size reduction and segregation equipment and replaces manual (hands-on) sorting and container handling operations in the potentially contaminated process room. TRS primary functions include drum movement; waste characterization; segregation of the incoming waste stream into bulk streams containing predominantly organic solids, heterogeneous solids, homogeneous inorganic solids and metals, and liquids not previously identified; and repackaging of reject materials. TRS provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of Solids Feed Preparation TRS equipment, Title III inspection, and acceptance test procedures (ATP). TRS includes both solids feed preparation equipment and systems integration.

Summary of Monthly Activities:

- Reviewed the facility 90% Title II design. Provided additional detail on crane requirements to avoid duplication of control system functionality between the cell integration subsystem, the crane controller, and the CCTV system. The changes should result in a savings of approximately \$150K to \$200K in overall system costs.
- A procurement delay that had a significant impact on controller engineering development was rectified by canceling the order and placing it through another vendor. The equipment has arrived and is currently being installed.
- Completed the ControlShell components for the force compliance feature needed to control the amount of force the manipulator exerts on objects and workcell components.
- All critical prototype console components are on order and some have been received.
- Lack of mechanical designer support continues to delay important design work. However, there is enough time to recover and meet Title II completion in FY96.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	59.0	63.0	102.0	75.0	62.0	51.0	48.0	57.0	42.0	40.0	38.0	62.0
Monthly actual	33.0	108.6	46.3	48.5	36.2							
FY96 Plan cumulative	59.0	122.0	224.0	299.0	361.0	412.0	460.0	517.0	559.0	599.0	637.0	699.0
Actual cumulative*	33.0	141.6	187.9	236.4	272.6							
Current lien	0.0	0.0	0.0	126.6	0.0							

*Note: Accumulated costs for work performed under the SAIC Contract will be redistributed to the proper user accounts.

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L1422-2.1	Linear rail facility interface design complete	Dec 95	Complete
L1422-2.2	Prototype sorting application operational	Mar 96	
L1422-2.3	Operator console prototype complete	Apr 96	
L1422-2.4	Telerobot control interface design and performance specification complete	Aug 96	
L1425-2	Crane final design (specification) complete	Aug 96	
L1422-2	Telerobotics Sorting 90% Final Design Review complete	Sep 96	

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, 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:

Design work in this area has been deferred due to higher priorities.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	17.5	17.5	17.6	17.6	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8
Monthly actual	10.6	15.5	16.4	3.8	0.7							
FY96 Plan cumulative	17.5	35.0	52.6	70.2	91.0	111.8	132.6	153.4	174.2	195.0	215.8	236.6
Actual cumulative	10.6	26.1	42.5	46.2	47.0							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L143-1.6	LFP LI&C System Functional Requirements Document complete	Oct 95	Complete
L143-2.1	LFP System Design Description drafted	Sep 96	
L143-2.2	LFP LI&C System Design Description drafted	Sep 96	
L143-2	LFP 90% Final Design Review complete	Oct 96	

WBS Element: 1.5.1. Mediated Electrochemical Oxidation

Task Description: The principal objective of Mediated Electrochemical Oxidation (MEO) System 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:

This task has been closed out per DOE guidance. No FY96 activities.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly actual	3.4	-0.1	0.0	0.0	1.4							
FY96 Plan cumulative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Actual cumulative	3.4	3.3	3.3	3.3	4.6							
Current lien	0.9	0.9	0.9	0.9	0.9							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

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

WBS Element: 1.5.2. Molten Salt Oxidation

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

Summary of Monthly Activities:• **Materials Development**

Inconel 600 lasts 2.5 times longer at 900°C than at 950°C

Metallographic evaluation showed that the corrosion rate of Inconel 600 tested at ETEC for 500 h in 80 mol% Na₂CO₃—20 mol% NaCl fell from 263 MPY to 105 MPY.

Some coatings have arrived

Flame-spray coatings on rod samples having topcoats of alumina or MCrAlY have arrived from BIRL and EST. Others are due from BIRL and Ultramet.

Status of Materials CRADA with Thermal Technology Inc.

Thermal Technology has no current materials or material concepts to assess. However, they may be able to run corrosion tests on LLNL samples.

• **Engineering Demonstration Unit (EDU)**

- Tests at 45, 55, and 70 mol% NaCl were completed in February; tests at 85 mol% are almost complete. The remaining tests will be completed by March 6, and EDU will then be refurbished to accommodate the next baffle design and the ETEC downcomer injector.
- Full reduction of the data from charges 2 and 3 is under way to evaluate the effect of charge depth, chloride concentration, and froth height expansion.
- Analysis of the froth height expansion data indicates that the average volume expansion is dependent upon the charge depth, temperature, and superficial velocity. In general, the percent expansion *decreases* as the temperature rises and *increases* as the superficial velocity and/or the charge depth increases. Focusing on results from the L/D = 4 experiments, the average expansion ranges between 20–30% for superficial velocities of 1 and 1.5 ft/s. The transition zone for the MWMF reactor is currently 23% of the volume of the lower section, which is the right size given the froth height data observed in EDU. These results will be documented formally, closing out an action item from the MSO EDU Design Review.
- We designed and began implementation of the Automated ReHeat function for EDU.

- **Primary Unit**

- A design meeting was held to review two concepts for the attachment of the salt drain pipe to the bottom of the vessel. The result was a third concept that eliminates a weld and provides a flat surface for heater viewing.
- An ECR is being prepared to shift the vessel six feet to the west to reduce congestion with the utility piping and the exhaust air ducts. In anticipation of the ECR, work on the new arrangement was started.

- **Salt Recycle**

- Hazen Research, Inc., is proceeding with the first portion of the process design for Salt Separation. The currently funded portion of the work will be complete on March 11, 1996. If LLNL signs a Purchase Order for the balance of the process design contract, the process design work will be complete in the June time frame.
- We had discussions with several potential vendors for the salt freezer. The concept here is to introduce the melt onto a vibrating surface, freeze the salt, and cool the solid. We identified five manufacturers of vibratory, water-cooled conveyors that have built equipment for freezing hot liquids and/or cooling hot solids in our temperature range (or hotter).
- We wrote a performance specification for the salt freezer and are ready to begin the procurement action for it.
- We began discussions with vendors of screw conveyors and pneumatic conveyors concerning a conveyor to lift the salt solids (which will still be quite hot) from the end of the salt freezer into a storage hopper. As expected, the elevated temperature is a problem, but there are high-temperature models on the market that are acceptable.

- **Salt Separation Experimental**

- Removal of heavy metals from salt solutions by sulfiding were the main focus in the lab experiments in February. Sodium hydrogen sulfide, NaSH, was selected as sulfiding agent due to the fact that it works well in alkaline solutions and is easy to use. Nonetheless, low stoichiometric amounts of NaSH should be used to avoid excessive emission of hydrogen sulfide (H_2S) to the air. Stoichiometry of 1.3 was used in a laboratory experiment and was found very efficient to reduce heavy metal concentrations in salt solutions to acceptable levels. Table 1 shows the experimental results for zinc reduction.

Table 1. Spent salt composition: 20% NaCl, 2% Zn, 78% Na_2CO_3 .

Run No.	NaSH stoichiometry	Zn ²⁺ con. in salt solutions vs. time		
		0 min	10 min	70 min
1	0	4270 ppm*	595	249
2	1.3	4340	385	1.0

*Acceptable level is 20 ppm.

Table 1 shows that NaSH is very efficient to reduce Zn concentration to the acceptable level.

- **Salt Separation Process Modeling**

- EQ 3/6 was used to model zinc removal from salt solution with different stoichiometries of sulfiding agent, NaSH. The purpose is to determine an optimal stoichiometry to reduce metals in solution without emitting excessive H₂S gas to the air. This also would provide important information and basis for further laboratory experiments. The results are as follows:

Table 2. Spent salt composition: 20% NaCl, 2% Zn, 78% Na₂CO₃.

NaSH stoichiometry	H ₂ S (aq)	Solids
0	0	ZnO
1.01	0	ZnO 19%, ZnS 81%
1.1	0	ZnO 12%, ZnS 88%
1.3	6.5×10^{-8} m	ZnS
2.5	3.6×10^{-7} m	ZnS
3.5	5.2×10^{-6} m	ZnS
5.0	1.1×10^{-5} m	ZnS

Based on the modeling results, NaSH stoichiometry 1.3 or less should be used to avoid emission of H₂S gas to the air. Efforts are under way to model more species of heavy metals in high chloride conditions.

- **Process Off-Gas**

- Chuck McClure of the Bay Area Air Quality Management District stated we can use one port at each sampling point if the stack (pipe) is less than 8 inches in diameter. We don't have to follow the prescribed protocol in the Manual of Procedures for two ports 90 degrees apart on a plane perpendicular to the longitudinal axis of the duct.
- The vendor for the catalytic converter is reworking the quotation for an electric heater instead of a gas-fired heater.
- We reviewed Parsons' drawings and calculations of the line sizes for the utility drops.
- We received assembly drawings for a Gas Solid Separation filter similar in design and size for the one Pall quoted for us. The unit has been in operation for approximately 2 months.

- **Local I&C**

- The general arrangement for the MSO LI&C equipment has been defined. This included a preliminary layout of the PLC I/O distribution and utilization of Flex I/O modules for the vessel heater power controller rack and the off-gas analyzer system rack.
- We discussed details of the Vessel Heaters and Heater Power Controller designs with Thermal Technology.
- We wrote the electrical sections for the Salt Freezer Specification.

- We are investigating options for connecting the Horiba Gas Analyzer system to the process off-gas system. There is an issue due to the off-gas system pressure being out of the normal operating range of the analyzer system.
- The MSO Operations Task Analysis (to aid in LI&C design) is in progress.
- Additional milestones were added to improve project tracking.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	215.0	1315.0	215	215	215	215	215	330	227	215	215	215
Monthly actual	201.6	160.4	112.3	80.5	118.9							
FY96 Plan cumulative	215.0	1530.0	1745.0	1960.0	2175.0	2390.0	2605.0	2935.0	3162.0	3377.0	3592.0	3807.0
Actual cumulative	201.6	362.0	474.3	554.7	673.6							
Current lien	198.6	156	151.3	179.4	182.9							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L152-3.5	LI&C Functional Requirements Document complete	Oct 95	Complete
L152-3.6	LI&C System Preliminary Design complete	Oct 95	Complete
L152-3	MSO System MWMF PDR	Oct 95	Complete
L152-5.1	Select Industrial Participation method for Salt Recycle	Nov 95	Complete
L152-5.2	MSO Peer Review	Jul 96	
L152-5.3	Salt and operating temperature selection complete	Mar 96	
L152-5.4	System Design Description draft complete	May 96	
L152-5.5	ETEC Valve Design Review	Jun 96	
L152-5.6	Review Hazen Salt Separation Process Phase II	Jun 96	
L152-5.7	Order vessel	Aug 96	
L152-5	MSO 90% Final Design Review complete	Sep 96	

WBS Element: 1.5.3. Wet Oxidation

Task Description: The principal objective of Wet Oxidation (WOX) is to demonstrate treatment of organic mixed wastes using a wet oxidation process to convert the organic portions to CO₂, water, and inorganic ions, leaving ash, salts, metals, and radionuclides in a residual solution/slurry. The WOX Project element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement and installation of the WOX equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities.

Summary of Monthly Activities:

This task has been closed out per DOE guidance. No FY96 activities.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly actual	0.4	0.0	0.0	(0.1)	0.0							
FY96 Plan cumulative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Actual cumulative	0.4	0.4	0.4	0.4	0.4							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

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

Summary of Monthly Activities:

This task has been closed out per DOE guidance. No FY96 activities.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly actual	0.0	0.0	0.0	0.0	0.0							
FY96 Plan cumulative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

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

WBS Element: 1.5.5. Experimental Off-Gas

Task Description: The principal objective of the Experimental Off-Gas Treatment (XOGT) is to demonstrate advanced, more effective off-gas treatment technologies that minimize secondary waste. These are improved Selective Catalytic Reduction (SCR) of NO_x to nitrogen in gaseous phase, 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 the source of the gas where the treatment can be tailored to that specific source. The XOGT Project element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement and installation of XOGT equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities. The XOGT will be backed by the facility off-gas system.

Summary of Monthly Activities:

No activity to report.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Monthly actual	0.0	0.0	0.0	0.0	0.0							
FY96 Plan cumulative	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

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

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 and 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:

- Reviewed facility 90% Title II design.
- Deferred additional design definition due to higher-priority work on other WBS elements.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	0.5	0.5	5.5	9.5	11.1	14.1	12.1	9.1	3.1	2.1	2.1	2.1
Monthly actual	1.4	1.2	1.4	1.6	3.2							
FY96 Plan cumulative	0.5	1.0	6.5	16.0	27.1	41.2	53.3	62.4	65.5	67.6	69.7	71.8
Actual cumulative	1.4	2.6	4.0	5.6	8.8							
Current lien	0.0	0.0	0.0	0.0	0.0							

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
L161-2.1	Final design of transport interface complete	Mar 96	
L161-2.2	Final design of batch makeup station complete	May 96	
L1615-2.3	LI&C prototype user interface approved	May 96	
L1615-2.4	LI&C System Design description complete	Jul 96	
L161-2	PTS 90% Final Design Review complete	Sep 96	

WBS Element: 1.6.2. Process Diagnostic Services

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

Summary of Monthly Activities:

- Prioritization of measurement needs for on- and at-line analysis in support of MSO has occurred. Top priority will be given to the development of methods for use on the salt itself. Methods will be developed to provide accurate determination of metals and ash at mid-ppm levels and higher in a variety of salt compositions. On- or at-line methods for determination of chloride and carbonate species (CO_3^{2-} , HCO_3^- , and CO_2) will be developed after methods for salt analysis.
- Personnel have been identified to perform MSO methods development work. Howard Hall, Jay Dixon, and Inés Heinz have met with representatives of MSO to define measurement needs and begin work. Because personnel were not available prior to February, the scheduled completion date for development of on- and at-line methods for MSO analysis needs (marker L162-8.1) has been delayed until May 1996 (previous milestone date: March 1996).
- DWTF Title 2 drawings were reviewed and comments were made regarding PDS casework and ventilation.
- Ruth Hawley-Fedder met with Marilyn Pickens, the CES database development team leader, to discuss MWMF database development manpower, timing, and status issues. The database development is currently on track for CES, with completion due in April-May 1996. Two CES team members will begin working with MWMF in April to review and update database requirements, and to familiarize themselves with MWMF SI&C and computer design/requirements.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	9.0	15.0	24.0	25.0	29.0	29.0	30.1	37.0	35.0	40.0	125.0	145.0
Monthly actual	6.2	4.1	2.9	2.3	10.2							
FY96 Plan cumulative	9.0	24.0	48.0	73.0	102.0	131.0	161.1	198.1	233.1	273.1	398.1	543.1
Actual cumulative	6.2	10.3	13.2	15.2	25.6							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled	Status
		Date*	
L162-7	90% Preliminary Design Review	Oct 95	Complete
L162-8.1	Define MSO on- and at-line measurement methods	May 96	
L162-8.2	Define off-gas analysis requirements	May 96	
L162-8.3	Select vendor for off-gas system procurement	July 96	
L162-8.4	Select vendors for tritium and gas proportional counter procurements	Aug 96	
L162-8.5	Complete custom test and sample tracking database design	Sep 96	
L162-8	LAB 90% Final Design Review complete	Sep 96	

WBS Element: 1.6.3. Water Treatment

Task Description: Water Treatment (WTR) is an integral part of treatment train demonstrations, continuing treatment of aqueous by-products as part of demonstration tests to produce solid residuals suitable for Final Forms and fully treated water that meets treatment standards and sewer limits. The WTR element provides the management, system analysis and support, design and engineering (Title I, II, III), procurement and installation of the WTR 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:

- Continued reviewing the Water Treatment P&ID drawing.
- Reviewed the Parsons' 95% Title II drawing package with regard to Water Treatment floorplan and generated comments to be transmitted to Parsons.
- Reviewed utility interfaces on the Parsons' 95% Title II drawing package.
- Resolved the location of the local I&C equipment that is shared with Final Forms.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	9.7	9.6	8.3	8.3	8.3	8.3	15.3	15.3	15.3	10.7	11.1	13.2
Monthly actual	12.7	9.8	6.5	2.4	3.2							
FY96 Plan cumulative	9.7	19.3	27.6	35.9	44.2	52.5	67.8	83.0	98.3	109.0	120.1	133.3
Actual cumulative	12.7	22.5	29.0	31.4	34.6							
Current lien	0.0	0.0	0.0	0.0	0.0							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L163-3.1	LI&C Functional Requirements Document complete	Oct 95	Complete
L163-3.2	LI&C System Preliminary Design Review	Oct 95	Complete
L163-3	WTR System Preliminary Design Review	Oct 95	Complete
L163-4	Begin Final Design	Nov 95	On hold
L163-5.1	WTR Unit Operation Subsystems Final Design complete	Aug 96	
L163-5	WTR 90% Final Design Review complete	Sep 96	

WBS Element: 1.6.4. Final Forms

Task Description: The Final Forms (FFM) task is to immobilize the solid residues from the treatment of the mixed waste input streams by the primary processes, and wastes resulting from secondary support processes that are integral to the primary treatment processes. The waste form types under investigation in FY96 are (1) ceramics for mineral residues, (2) polymer microencapsulation for salt, and (3) sulfur-polymer microencapsulation for volatile inorganic solids.

Summary of Monthly Activities:

- General FFM design activities included work on interfacing with DWTF design, floor plan changes, P&IDs, interface control diagrams, and documentation. Final Forms functional and process flows are being diagrammed into a unified, multilevel document. This will include the ceramic recipe-writer block logic diagram, which is now essentially complete.
- Ceramic final forms work continues to focus on matters mentioned in the January report. The study of sintering temperature revealed a disturbing level (~10 vol%) of interconnected porosity in typical compositions, even at 1150°C. The extent to which this affects long-term leach resistance—the short-term effects are probably small—is uncertain, but as a generality, interconnected porosity is undesirable. We will try to minimize (preferably eliminate) it by modified processing. Additional work includes a series of specimens formulated to explore glass formation in compositions near to our basic ceramic.
- Eight mineral residues were prepared under simulated MSO reactor products and are being characterized. Four more will be prepared in March, and ceramics will be fabricated from all of them.
- The ceramic interim status report (Marker L164-4.2) is still being written, completion now being expected in March. The report providing the design of the polymer microencapsulation system (Milestone L164-3) has been rescheduled to June 1996. This was done to allow time for an experimental study to be done under subcontract at Rocky Flats, which in turn was postponed when the polymer microencapsulation of salt residues was deleted from the scope of Final Forms.
- February costs were lower than the Plan, primarily because procurement of the rotary calciner is being postponed pending KD-2. January's costs included an error that was corrected in February. Costs of actual activities continue to run at a fairly steady rate of approximately \$28K, though this will increase over the next few months.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	54.0	35.0	36.0	35.0	198.0	34.0	35.0	34.0	34.0	34.0	34.0	35.0
Monthly actual	50.7	38.0	26.2	17.4	37.1							
FY96 Plan cumulative	54.0	89.0	125.0	160.0	358.0	392.0	427.0	461.0	495.0	529.0	563.0	598.0
Actual cumulative	50.7	88.7	114.9	132.3	169.4							
Current lien	0.2	0.2	0.2	0.2	0.2							

Significant Procurement Actions This Month:

None

Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L164-3	Report: design of polymer microencapsulation system	Jun 96	
L164-4.1	Report: volatile residue components and the design of ceramic waste form system	Oct 95	Complete
L164-4.2	Report: interim status of ceramic waste form compositions and process parameters	Jan 96	Late
L164-5.1	Rotary calciner design procurement complete	Jun 96	
L164-5	Rotary calciner operational	Sep 96	
L164-6.1	Final Design of sulfur-polymer cement system complete	Aug 96	
L164-6.2	Final Design of ceramic recipe-writer complete	Sep 96	
L164-6.3	Final Design of local process off-gas system complete	Jun 96	
L164-6	FFM 90% Final Design Review complete	Jan 97	

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 and 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 (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

- The *Memorandum of Understanding for MWMF Container Tracking and Material Accounting Requirements* is signed, thereby completing Marker L165-2.3—*Container Tracking and Material Accounting Requirements document approved*.
- The operating system and open database connectivity (ODBC) software on the database interface computer was upgraded to Windows NT in January. Upgrades for compatible software from MinnovEX and ORACLE were received and installed in February. However, we are experiencing technical difficulties getting the ODBC software to operate correctly. As a result, Engineering Development Phase 5 testing activities are again stalled. Marker L165-1.13—*Engineering Development tasks complete and documented* has not been completed.
- The HDS Share hardware/software was tested. We identified a faulty communications board and subsequently replaced it.
- CTI has indicated that it will offer a Windows NT version of ProcessView and ExpertView in the May/June 1996 time frame to solve our new X-terminal connectivity requirement. This development provides an opportunity for us to better solve our multiple monitor requirement. In view of this information, we have procured and successfully demonstrated a Colorgraphic video card that supports up to four monitors. Our baseline design will be modified to reflect these technological advances. A document detailing our findings related to operating multiple monitors and X-terminals as a single workspace, and the cost savings by doing so, is in preparation.
- We completed the design alternatives study for the bar coding system. The interface between the bar coding system and the container tracking and material accounting applications has been defined. We are preparing to procure demonstration hardware from Intermec, Inc.
- Marker L165-2.4 — *Facility Monitoring and Safety Control System task analysis complete/documented* was not completed due to conflicting priorities.
- We established the standard field device wiring interface method (see LEA95-2601).

- We completed a spreadsheet that documents the interconnectivity of all standard field device termination panels (LEA95-2601). This data will be transferred to the I&EDB, from which on-line Signal Path documentation will be generated.
- We continued human interface design standards activities.

FY96 Budget: Spending profile (\$K, CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
FY96 Plan (10/95)	33.8	38.8	35.8	34.1	29.8	31.1	39.0	37.2	37.2	37.2	40.2	40.2
Monthly actual	34.8	31.5	30.2	34.0	37.6							
FY96 Plan cumulative	33.8	72.6	108.4	142.5	172.2	203.3	242.3	279.5	316.7	353.9	394.1	434.3
Actual cumulative	34.8	66.2	96.4	130.5	168.0							
Current lien	21.2	21.2	21.2	20.1	20.1							

Significant Procurement Actions This Month:

None

Key Milestones and Markers:

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

ID No.	Milestone/Marker	Scheduled Date*	Status
L165-1.12	SI&C Functional Requirements Document complete	Oct 95	Complete
L165-1.13	Engineering Development tasks complete and documented	Oct 95	Late
L165-2.3	Container Tracking and Material Accounting Requirements document approved	Nov 95	Complete
L165-2.4	Facility Monitoring and Safety Control System task analysis complete/documented	Feb 96	Late
L165-2.5	Instrumentation and Equipment Database complete	Mar 96	
L165-2.6	Final Design Process I&C Standards complete	Apr 96	
L165-2.7	Control Room and Equipment Room design complete	May 96	
L165-2.8	Supervisory Control System SDD drafted	Jun 96	
L165-2	SI&C 90% Final Design Review complete	Oct 96	

Appendix A

Milestone/Marker Log

MWMF Milestone/Marker Log

For Feb 96 Monthly Report - Sorted by Number

Number	Item	PTS	Orig. Date	Date	Status	Comments
	Rev. Date: 3/20/96; Doc. Resp. Person: M. Hussey					
X	= changes in this revision					
C113-1	RD&D permit issued by DTSC	X		Apr-96		date required by DWTF schedule. Better est. after DTSC review applic.
C113-2	Authorization to construct issued by BAAQMD	X	Oct-94	Jul-96		Schedule change as a result of permitting strategy change.
D112-1	PSAR Approved by DOE	X	Jun-94	Nov-94	deleted	facility categorized Low Hazard; DOE approval not req'd
D113-1	EA determination by DOE	X	Aug-94	Sep-95	complete	EA draft submitted for comments. Final determination and issue of FONSI by DOE Compliance Office now expected in September.
D115-1	DOE issues Project Plan	X		Jan-95		
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	complete	recieved KD-1 only
D131-2	DOE issues KD-2	X	Jun-94	Nov-95	late	Delayed due to reduced DOE funding. Decision expected in Dec-95.
L111-1	Develop and issue Quality Assurance Plan			Oct-93	complete	
L111-2	Develop and issue Document Control Plan			Jan-94	complete	
L111-3	Issue Design Review Procedure			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 MWMF & DWTF
L112-1.1	Issue PSAR Contract			Oct-93	complete	
L112-1.2	Preliminary PSAR Review			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		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 MWMF/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	complete	
L114-1.2	ES&H review of 90% CDR			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	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	complete	
L115-2	Select Project Engineers and Project Control Manager			Dec-93	complete	
L115-3	Submit FY94 Plan	X		Jan-94	complete	
L115-4	Initiate PTS and Monthly reporting			Jan-94	complete	
L115-5	Technology Selection and Implementation Plan	X		Feb-94	complete	
L115-6	Develop Design Basis Operations Plan			Mar-94	complete	
L115-7	Submit FY95 Plan	X	Sep-94	Dec-94	complete	delayed due to LLNL accounting changes and higher DOE priorities
L115-8	Technology Selection and Implementation Plan, Part II		Mar-95	Apr-95	complete	Document in TID for publication. Release expected in Apr-95.
L115-9	FY97 Project Validation			Apr-95	complete	
L115-10	Submit FY96 Plan	X		Oct-95	complete	
L115-11	FY98 Project Validation			Apr-96		
L115-12	Submit FY97 Plan	X		Oct-96		
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.

L116-2	Second meeting of NRP		Aug-95	Aug-95	complete	Date affected by review of EA by DOE and State(Ca.).
L116-2.1	Issue first public newsletter		Mar-95	Sep-95	complete	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	NRP Meeting		Jan-96	Apr-96		Rescheduled due to delay in receiving KD-2.
L116-3.1	MWMF Letter		Feb-96	May-96		Rescheduled due to delay in receiving KD-2.
L116-4	NRP Meeting		Jun-96	Sep-96		Rescheduled due to delay in receiving KD-2.
L116-4.1	MWMF Letter		Jul-96	Oct-96		Rescheduled due to delay in receiving KD-2.
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	Sep-96		Delayed due to 4/95 budget cut.
L131-1	Preliminary Design Review Completed	X	Sep-94	Nov-95	complete	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	Issue Project Baseline Rev. 2.0		Sep-95	Jan-96	on hold	On hold due to delay in receiving KD-2.
L131-6	Final Design Review Complete	X		Oct-96		
L132-1	Implement Cost planning/tracking systems (document)		Sep-94	Dec-94	complete	activity stretched-out due to reduced funding guidance
L132-2	Implement Technical baseline control system		May-94	Nov-94	complete	see 132-7
L132-3	Implement Schedule control/tracking system			Aug-94	complete	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	complete	Delayed due to requests for unplanned work from DOE.
L132-8.1	Complete support of Project PDR		Jun-95	Nov-95	complete	Delayed due to reduced DOE funding.
L132-9	Complete QA Self Assessment			Aug-95	complete	
L132-9.1	Records Control Procedure issued			Apr-95	complete	
L132-9.2	Assessment/Surveillance Procedure issued			Jul-95	complete	
L132-10.1	Complete FY96 Budget Plan			Oct-95	complete	
L132-11.1	Complete Cost/Schedule Baseline Rev. 2.0			Jan-96	on hold	On hold due to delay in receiving KD-2.
L132-12.1	Complete support of Project Final Design Review			Sep-96		
L132-13.1	Engineering Change Control Procedure			Jan-96	complete	
L132-13.2	Non-conformance Reporting Procedure			Apr-96		
L132-13.3	Complete QA Surveillance/Verification			Aug-96		
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	complete	Delayed due to reduced DOE funding.
L133-4	Issue Metrication Plan			Feb-95	complete	
L133-5	Input to FY96 Plan (see 115-10)			Oct-95	complete	
L133-6	Revised SDR completed for Title II Design	X		Nov-95	complete	Completion expected in Dec-95.
L133-7	LLNL Review of Facility Title II Design Complete	X	Apr-96	Mar-96		To meet bldg. occupancy date Facility Title II Design must be shortened.
X L133-7.1	Facility Title II Design Review (95%)		Jan-96	Feb-96	late	Design package received late. Completion expected in Mar-96.
L133-10.1	Identify emissions for air permit			Jun-95	complete	New marker
L133-10.2	Review floorplan layout and personnel egress			Jul-95	complete	New marker
L133-10.3	Review facility Process Flow Diagrams		Aug-95	Sep-95	complete	Delayed due to higher priority activities.

L133-10.4	Facility preliminary design (20%)		Aug-95	Sep-95	complete	Delayed due to higher priority activities.
L133-10.5	Facility Title I Design Review (80%)		Sep-95	Oct-95	complete	Review of drawings in progress. Completion expected in October.
L133-10.6	LLNL Review of Facility Title I Design			Nov-95	complete	
L141-1	RAS System Preliminary Design Review		Sep-94	Sep-95	complete	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	late	Delayed due to higher priority activities.
L141-1.4	RAS LI&C Preliminary Design Review		Jul-95	Sep-95	complete	Delayed due to reduced DOE funding.
L141-2	RAS 90% Final Design Review complete			Oct-96		
L141-2.1	RAS LI&C System Design Description drafted			Jun-96		
L141-2.2	RAS System Design Description drafted	X		Sep-96		
L142-1	SFP System Preliminary Design Review		Jul-95	Sep-95	complete	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	SFP LI&C System Functional Requirements Document complete		Jun-95	Oct-95	late	Delayed due to higher priority activities.
L142-1.9	LI&C Preliminary Design Review		Jul-95	Sep-95	complete	Delayed due to reduced DOE funding.
L142-1.10	Locate user interface stations and required functionality		Aug-95	Sep-95	complete	Delayed due to higher priority activities.
L142-1.11	Draft FP control console layout		Aug-95	Sep-95	complete	Delayed due to higher priority activities.
L142-2	Telerobotics Preliminary Design Review			Sep-95	complete	New milestone.
L142-3	SFP 90% Final Design Review complete			Oct-96		
L142-3.1	SFP System Design Description drafted	X		Sep-96		
L142-3.2	SFP LI&C System Design Description drafted			Oct-96		
L1422-2	Telerobotics Sorting 90% Final Design Review complete	X		Sep-96		
L1422-2.1	Linear rail facility interface design complete			Dec-95	complete	
L1422-2.2	Prototype sorting application operational			Mar-96		
L1422-2.3	Operator console prototype complete			Apr-96		
L1422-2.4	Telerobot control interface design and performance specification complete			Aug-96		
L1425-2	Crane final design (specification) complete			Aug-96		
L143-1	LFP System Preliminary Design Review		Jul-95	Sep-95	complete	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	deleted	Transferred to L143-1.6 (Were redundant)
L143-1.5	LI&C Preliminary Design Review		Jul-95	Sep-95	complete	Delayed due to reduced DOE funding.
L143-1.6	LFP LI&C System Functional Requirements Document complete			Oct-95	complete	Delayed due to higher priority activities.
L143-2	LFP 90% Final Design Review complete			Oct-96		
L143-2.1	LFP System Design Description drafted	X		Sep-96		
L143-2.2	LFP LI&C System Design Description drafted			Sep-96		
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.
L151-1.2	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	Sep-95	complete	Document delayed while waiting for chemical analysis results.
L151-1.9	Demonstrate prototype cellulose feeder (document)			Jun-95	deleted	Deleted per Rebaseline 1.2 as cost savings measure.
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	Sep-95	complete	Delayed due to higher priority activities.
L151-1.13	LI&C Preliminary Design Review			Sep-95	deleted	Replaced by L151-3.
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	
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	X	Jun-95	Oct-95	complete	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	complete	Delayed due to reduced DOE funding.
L152-3.6	LI&C Preliminary Design Review complete		Jun-95	Oct-95	complete	Delayed due to reduced DOE funding.
L152-4	Start Development Activities			Aug-94	complete	
L152-5	MSO 90% Final Design Review complete	X		Sep-96		
L152-5.1	Select Industrial Participation method for Salt Recycle			Nov-95	complete	
L152-5.2	MSO Peer Review			Jul-96		
X L152-5.3	Salt and operating temperature selection complete			Mar-96		New marker.
X L152-5.4	System Design Description draft complete			May-96		New marker.
X L152-5.5	ETEC Valve Design Review			Jun-96		New marker.
X L152-5.6	Review Hazen Salt Separation Process Phase II			Jun-96		New marker.
X L152-5.7	Order vessel			Aug-96		New marker.
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
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

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L165-2.7	Control Room and Equipment Room design complete			May-96		
L165-2.8	Supervisory Control System SDD drafted	X		Jun-96		
end						