The Mixed Waste Management Facility

Monthly Report
December 1995

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The Mixed Waste Management Facility

Monthly Report
December 1995

Ronald D. Streit

January 1996

Lawrence Livermore National Laboratory
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Project Summary

Overview

Subsequent to the MWMF Preliminary Design Review (Nov. 15-16, 1995, reported previously), the Project focus was to resolve issues identified by S. Cowan in October so as to facilitate approval of the KD-2 and initiation of Final Design. In particular, we addressed three primary elements: reaffirmed mission need for facility with the industrial sector, initiated coordination of activities with the Mixed Waste Focus Area, and assured continued support within LLNL for the Project. We have received many letters from industrial partners, companies wishing to demonstrate in the MWMF, and others strongly supporting the need for the MWMF as a means of reducing risk and improving competitiveness in the deployment of new technologies. In addition, the MWMF Project and DWTF have further coordinated their activities to reduce the risk for the initiation of design and construction of the DWTF Phase 2 elements (conventional facility to house MWMF systems). This information was presented to DOE/HQ on December 14, 1995. A number of additional items were identified and are currently being addressed for a follow-up meeting in February, 1996.

In addition, the Project continues to make good progress in resolving issues identified as part of the Preliminary Design reviews (PDRs). We have completed the System Design Requirements Document, and within the MSO system, have finalized the acquisition plan and vendor selection for the salt recycle system. We continue to work with Hazardous Waste Management to coordinate functions on operations of the facility, use of the process diagnostics requirements, and Supervisory I&C elements of the Project.

Cost Status. The FY95 carryover funding was deobligated, but FY96 funding was increased to proper levels for the year. At this time the B/A for Operating is \$1.4M and Capital is \$10.6M. The obligation amounts are: Operating \$1.4M and Capital \$5.4M. Costs to date are as follows: Operating \$107K, Variance of \$22K; Capital \$1,210K, Variance of \$1,649K. The project is currently behind scheduled costs due to DOE only allowing a 10% spending rate until the approval of the KD-2 and a \$1M contract, which has not been let due to DOE's "hold" on the KD-2 decision.

Schedule Status. 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

As stated in previous months, the uncertainty in the budget for FY96 and out years continues to be the major concern. Entering the fourth 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. As this situation continues, it will become increasingly difficult to meet key Project milestones or to make up lost time. Overall, this will result in higher project costs and delayed implementation of MWMF systems. During December we had a teleconference including LLNL (Ron Streit, Bill Huddleston), DOE/OAK (Samuel Brinker and Ray Corey), and DOE HQ (Steve Cowan, John Neaves, Ram Makunda) to address the Project continuation and funding uncertainty. At this

meeting a number of issues were defined that required further information. A plan is in place for resolving these issues, and a follow-up meeting will be scheduled for early February, 1996, to make a final decision on the MWMF. In the interim, the MWMF has been given approval to continue to spend at the current running rate to resolve the outstanding issues identified at this teleconference meeting and to follow up on details from the preliminary design. *Project Baseline 2.0* (PB2.0) is scheduled to be completed in January, but will not be issued until the decision on the MWMF's status is made.

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:** We completed and distributed an update of the System Design Requirements (SDRs) based upon the information obtained from the Project PDR.
- **Solids Feed Preparation:** It was determined that the crane can be deployed initially with a cable hoist and later upgraded to a telescoping Z-mast. This will eliminate duplication of equipment within the Process Room and reduce Telerobotics Sorting (TRS) costs.
- **Molten Salt Oxidation:** Materials development continues with the launch of a 500 hour corrosion test to determine the relative aggressiveness of various sodium salts, including silicates. Inconel 600 is the test material. Current EDU tests are investigating the effects of increasing chloride content. The Safety Note revision for installation of the top injector assembly is in initial review. Fabrication of a solids feed injector and visualization model have been started. The MSO equipment arrangement has been reviewed and revised. The required utilities and their location have been forwarded to the facility AE. Two proposals for the Salt Separation System were evaluated during December, resulting in the selection of one vendor to proceed with the process design portion of the salt separation project.
- **Final Forms:** Ceramic final forms work continues with emphasis on leaching behavior differences as measured by the California WET and Federal TCLP methods.
- **Supervisory Instrumentation and Control:** We successfully demonstrated the use of the HDS Share product to operate multiple X-terminals as a single workspace. Adoption of the HDS Share configuration will lead to significant cost savings to the Project.

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 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
December 1995**

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										1,400		
FY96 Plan 10/95		52	37	39	36	50	36	58	64	75	64	64	64	639	NA, for	639
														0		
Actual		41	35	30	0	0	0	0	0	0	0	0	0	107	information only	
Variance		(11)	(1)	(9)										(22)		
Actual Liens**		140	112	112										NA		
Mgmt Reserve		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										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												
Variance		(11)	(13)	(22)												

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	3,958										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
														0		
Actual		440	448	322										1,210	information only	
Variance		(121)	(1,230)	(299)										(1,649)		
Actual Liens**		434	379	469										NA		
Mgmt Reserve		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										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												
Variance		(121)	(1,350)	(1,649)												

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	0	5,356										6,856		
FY96 Plan 10/95		613	1,714	660	625	795	611	644	770	655	629	711	785	9,211	NA, for	9,211
		0	0	0	0	0	0	0	0	0	0	0	0	0		
Actual		481	483	352										1,316	information only	
Variance		(132)	(1,231)	(308)										(1,671)		
Actual Liens**		574	491	581										NA		
Actual Prelims**			1,141	1,025										NA		
Mgmt Reserve		0	0	0										0	0	989
95/96 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										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												
Variance		(132)	(1,363)	(1,671)												

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									
Labor (\$K@)		364	291	243									

* 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 issued a revision of the Project WBS and the Level 3 WBS Dictionary.
- We issued a Project Abbreviations, Acronyms, and Definitions Dictionary.
- 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									
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									
Current lien	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
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									
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									
Current lien	64.1	64.1	64.1									

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	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									
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									
Current lien	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
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									
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									
Current lien	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
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 budget concerns, activities in this element were restricted to Project Manager and 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.
- We continue to develop a test plan proposal for the certification of technologies in the MWMF. This will form the basis for the technology-specific test plans and run plans to be completed on each primary process submitted for demonstration.

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									
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									
Current lien	45.4	45.4	45.4									

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
D115-1	DOE issues <i>Project Plan</i>	Jan 95	
L115-10	Submit <i>FY96 Plan</i>	Oct 95	Complete
L115-11	FY98 Project Validation	Apr 96	
L115-12	Submit <i>FY97 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.

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									
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									
Current lien	28.2	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
L116-3	NRP Meeting	Jan 96	
L116-3.1	MWMF Letter	Feb 96	
L116-4	NRP Meeting	Jun 96	
L116-4.1	MWMF Letter	Jul 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									
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									
Current lien	2.0	2.0	2.0									

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
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									
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									
Current lien	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
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									
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									
Current lien	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
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. Subsequent to the PDR (November, 1996), the MWMF has been given approval to continue to spend at the current running rate to resolve the outstanding programmatic issues (see below) and to follow up on details from the Preliminary Design so as to facilitate approval of the KD-2 and initiation of Final Design. Completion of the PB2.0 is scheduled to be completed in January, but it will not be issued until the decision on the MWMF's status is made. In addition, the Project continues to make good progress in resolving issues identified as part of the PDRs. We have completed the SDR Document, and within the MSO system, have finalized the acquisition plan and vendor for the salt recycle system. We continue to work with Hazardous Waste Management to coordinate functions on operations of the facility, use of the process diagnostics requirements, and Supervisory I&C elements of the Project.
- During December a DOE/HQ, DOE/OAK, and LLNL teleconference was held to address the project continuation and funding issues. Three primary points were presented to S. Cowan: reaffirmed mission need for facility with the industrial sector, coordinated activities with the Mixed Waste Focus Area (MWFA), and assured continued support within LLNL for the Project. We have received many letters from industrial partners, companies wishing to demonstrate in the MWMF, and others strongly supporting the need for the MWMF as a means of reducing risk and improving competitiveness in the deployment of new technologies. In addition, the MWMF Project and DWTF have further coordinated their activities to reduce the risk for the initiation of design and construction of the DWTF Phase 2 elements (conventional facility to house MWMF systems). This information was presented to DOE/HQ on December 14, 1995. At this meeting, a number of additional issues (return-on-investment study, MWFA integration, and continued integration with industry) were defined, which required further information. A plan is in place for resolving these issues by the end of January, 1996, and to allow DOE to make a final decision on the MWMF in early February.
- Entering the fourth 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.

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									
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									
Current lien	24.5	21.6	19.2									

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
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	
L131-6	Final Design Review complete	Oct 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:

- While awaiting the outcome of Continuing Resolution and a final budget, we continued to closely monitor costs during December to ensure that they were held as low as possible while still accomplishing milestones.
- We provided budget and schedule information, as needed, to support preparation of PB2.0.
- Other activities and accomplishments during December included the following:
 - Issued the DOE PTS monthly report.
 - Issued the *November 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									
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									
Current lien	0.0	0.0	119.2									

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
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	
L132-12.1	Complete support of Project Final Design Review	Sep 96	
L132-13.1	Engineering Change Control Procedure	Jan 96	
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 met with Parsons personnel and discussed design issues including power distribution, cableways, communications, lighting, layouts, etc.
- We completed and distributed an update of the SDRs based upon the information obtained from the Project PDR.
- 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									
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									
Current lien	0.9	0.0	0.9									

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
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 (80%)	Feb 96	
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:

- We completed the PB2.0 update.
- 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)	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									
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									
Current lien	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
L141-1.3	RAS LI&C System Functional Requirements document complete	Sep 95	Late
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:

- We completed the PB2.0 update.
- We continued design activities in preparation for the LI&C System Functional Requirements Document; a draft has been started.

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									
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									
Current lien	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
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:

- Items impacting the facility design were given top priority in December, primarily utility interfaces and equipment mounts. Of primary importance was increased definition of the crane and crane interface. We determined that the crane can be deployed initially with a cable hoist and later upgraded to a telescoping Z-mast, which will eliminate duplication of equipment within the Process Room and reduce TRS costs.
- We met with ORNL and agreed on mechanisms to facilitate collaborative developments. We agreed to set up accounts to allow shared access to each other's machines and to use common module interfaces and engineering units.
- We developed additional design detail for key components in preparation for freezing the general arrangement plan for Final Design.
- We completed milestone 1422-2.1—*Linear rail facility interface design complete*.

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									
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									
Current lien	0.0	0.0	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 "Milestone/Marker Log" for original dates and reconciliation.

ID No.	Milestone/Marker	Scheduled	Status
		Date*	
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:

In December, we performed the following activities:

- Updated the SDR.
- Finished and signed off on the Title I drawing package.
- Completed the Pilot Characterization Study.
- Completed the Rebaseline from Rev. 1.2 to Rev. 2.
- Completed a description of the current LFP design; includes potential cost saving ideas and a plan as to how LFP should continue in the near future.

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									
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									
Current lien	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
L143-1.6	LFP LI&C System Functional Requirements Document complete	Oct 95	Late
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									
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									
Current lien	0.9	0.9	0.9									

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	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**

- Current materials of interest*

- Corrosion test samples of (1) high-Al, Ni-base alloys and (2) iron aluminide weld overlays on Inconel 600 have been obtained for the next round of corrosion testing. Likewise, custom oxide coatings on Inconel 600 are being applied for us by outside coaters using flame spray or CVD.
 - We continued corrosion testing in LLNL's ten-tube furnace.
 - A 500-hour corrosion test was launched to determine the relative aggressiveness of various sodium salts, including silicates. Inconel 600 is the test material.

- **Engineering Demonstration Unit (EDU)**

- Current tests are investigating the effects of increasing chloride content. Tests to date have been run at concentrations of 5 and 15 mol% NaCl. During the build-up of chloride in the melt, which was accomplished by running carbon tetrachloride into the reactor at 1 ft./s, the system was extremely well behaved, with little to no CO production observed. At those chloride levels, mineral oil/toluene and acetone were run at 1 and 1.5 ft./s at temperatures as low as 800°C. These runs have produced increased levels of CO (as high as 3300 ppm for the tests to date). These results are not consistent with results obtained in the six-inch reactor; it is believed that this is largely due to the different injector configuration (downcomer vs. side). This will be confirmed when the downcomer injector is evaluated in the next test series.
 - Tests have also begun to look at NO_x production as a function of increased chloride levels (using pyridine). The first test, at 15 mol% NaCl, has not shown any increase in NO_x levels.
 - During January, tests as described above at 30, 45, and 55 mol% NaCl will be conducted to complete this test series.
 - The Safety Note revision for installation of the top injector assembly on EDU is in initial review.
 - Fabrication of a solids feed injector and visualization model have been started. This injector will be similar to the solids feed injector used on the six-inch unit for injecting rubber.
 - We specified and ordered an HCl toxic gas sensor to monitor for Cl carryover when testing for the maximum NaCl build-up in the bed.

- **Primary Unit**

- The baseline configuration of the vessel has been finalized as a 12-ft vessel with an 18.5-inch-ID finned lower section and a 24.5-inch-ID upper section. The upper section has been increased from 22.5-inch-ID to allow for the reduced cross section due to the instrument tree and salt feed tubes.
- The MSO equipment arrangement has been reviewed and revised to accommodate our needs. The required utilities and their location have been forwarded to the facility AE.
- Vessel configuration and support drawings are proceeding. All of the various interfaces and their spatial relationships are being considered.

- **Salt Recycle**

- The two proposals for Salt Separation System were evaluated in December. We had a meeting at Livermore with one vendor to discuss technical problems with his proposal. After completing our evaluations, we terminated discussions with that vendor because we felt that the process proposed would not meet our performance objectives. (In particular, the process would have left about 50 wt% Na_2CO_3 in the salt residue. Our objective is 15 wt%.) The other proposal had no technical problems necessitating face to face meetings.
- We found that the fixed-price quotation from the remaining vendor was much too high. Discussions with the vendor led us to believe that the proposal cost included a tremendous amount of contingency to cover a large number of uncertainties in the process design. These uncertainties in the process design, which could drastically affect the final configuration and cost of equipment, will be resolved during the process design portion of the work. After process design is complete, a better fixed price (with much less contingency to cover uncertainties) can be determined for the rest of the work. We therefore solicited a fixed-price quotation from this vendor for only the process design portion of the salt separation project. Our plan is to fund only for the process design tasks at this time. After the process design work is complete, we plan to contract with the same vendor for the balance of the work. This plan completes marker L152-5.1—*Select Industrial Participation method for Salt Recycle.*

- **Salt Separation Process Modeling**

- Removal of chromate by dithionite in salt solutions was simulated in the modeling software EQ 3/6 with COM database. The results are as follows:

$\text{Na}_2\text{S}_2\text{O}_4$ Stoichiometry	Yield, %, Cr_2O_3	Chromate levels, ppm: before	Chromate levels, ppm: after
10	99.996	1800	0.08
6.4	99.996	1800	0.08
2.4	99.996	1800	0.08
1.6	99.996	1800	0.08
1.0	96.3	1800	66.6

Based on the modeling, dithionite should be very effective in reducing chromate to acceptable levels. Stoichiometry greater than 1.6 is required.

- **Salt Separation Experimental**

- Removal of heavy/toxic metal ions from Na_2CO_3 and NaCl brine solutions is the main focus in the lab experiments this month. The purpose is to demonstrate effective means of removing these toxic ions in the lab scale. One of heavy metals in spent salts is chromium, which is either from waste feed or dissolved from the MSO vessel. Reduction of Cr^{+6} to Cr^{+3} is needed in order to drop chromium concentrations to acceptable levels. Based on literature and results from process modeling with EQ 3/6, dithionite is an excellent reducing agent as shown in the following:

As shown in the reaction, chromate is reduced and precipitated out as Cr_2O_3 . Laboratory experiments were conducted to determine chromate levels with dithionite as reducing agent. The results are as follows:

Reducing agent	Stoichiometry	Chromate levels, ppm: before	Chromate levels, ppm: after
$\text{Na}_2\text{S}_2\text{O}_4$	10	1800	1.25

As shown in the table, chromate concentration dropped to 1.25 ppm, which meets the required level of less than 3.8 ppm.

- **Process Off-Gas**

- Calculations were done to verify the configuration of the salt trap (knock-out drum) for de-entrainment of salt particles. The present configuration (355.6 mm in diameter $\times$ 533.4 mm in height) slows the gas velocity to 0.7 m/s (2.3 ft/s) and separates salt particles as small as 100 μm .
- A mist eliminator was added to the condenser to prevent reentrainment of the separated moisture.
- We added pressurization to the small air gap in the double-wall heat exchanger to monitor leaks. The cooling jacket is also sloped downward approximately 1 to 2 degrees to prevent water from enter the vessel in the event a breach in the piping occurs.
- We reviewed Parsons' drawings to ensure that the proper sizes and locations of utilities were adequate for the process off-gas requirements.

- **Local I&C**

- We completed the *Functional Requirements Document* (Doc. No. L-21050-01), which completes marker # L152-3.5—MSO LI&C Sys. *Functional Requirements Doc.*

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	150	100.2									
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	351	451.4									
Current lien	198.6	156	151.3									

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
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	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									
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									
Current lien	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
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									
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									
Current lien	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
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									
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									
Current lien	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
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, 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 design information and provided information on facility interface requirements.
- 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									
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									
Current lien	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. Process Diagnostic Services provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, installation of Process Diagnostic Services equipment, Title III inspection, and acceptance test procedures (ATP). Process Diagnostic Services includes Process Diagnostic Services Equipment, Local Process I&C, and Process Off-Gas.

Summary of Monthly Activities:

- The name of this WBS element was changed from Analytical Services to Process Diagnostic Services. The new name more accurately reflects the emphasis of PDS as a service to assist the primary and support elements of the MWMF in defining and selecting the instrument systems and chemical measurements needed for process diagnostics and control.
- Input was provided to the SDR document and PB2.0 to update the PDS design requirements and scope.
- Final results from the waste analysis effort initiated in June, 1995, were received and a memorandum describing the metals analysis results was distributed jointly with Liquids Feed Preparation (W.B.S 1.4.3).
- The status of the CES database was assessed. This database will serve as the basis for the MWMF sample management database. The sample log-in portion of the database was put into use in December and is functioning as required. Additional database modules will be developed for CES. Development of database modules specific to the MWMF is expected to begin in April/May 1996.

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									
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	13.1									
Current lien	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	Status
		Date*	
L162-7	90% Preliminary Design Review	Oct 95	Complete
L162-8.1	Define MSO on- and at-line measurement methods	Mar 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:

Application of organic treatment was reviewed, including discussions with principals on UV-peroxide and Fenton's Reagent. We distributed treatability studies documentation and articles. We finalized a Trimsol separation report; this will have an impact on WTR since the aqueous phase remaining after Trimsol separation must be treated by WTR. The floor plan arrangement and utility interfaces were examined. The *Functional Requirements Document* for the WTR Local I&C System was written and partially reviewed in December.

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									
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									
Current lien	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
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	Late
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 P&IDs, interface control diagrams, the ceramic recipe-writer block logic, miscellaneous interfacing with DWTF design, and documentation.
- Ceramic final forms work continues, with emphasis on leaching behavior differences (as measured by the California WET and Federal TCLP methods) and characterization and reduction of residual glass in the ceramic. There are no new results to report.

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									
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									
Current lien	0.2	0.2	0.2									

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
L164-3	Report: Design of polymer microencapsulation system	Oct 95	Late
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	
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, 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 completed the *Project Baseline Revision 2.0*.
- We completed the *MWMF — Abbreviations, Acronyms, & Definitions* (December 1995, Doc. No. L21001-1) document.
- We revised the draft *Memorandum of Understanding for MWMF Container Tracking and Material Accounting Requirements*. This document provides the baseline requirements for marker L165-2.3. Two issues are waiting resolution. Signatures will be obtained in January.
- We met with Parsons engineers for discussion regarding B695 design issues, including power distribution, cableways, communications, lighting.
- We resolved communications difficulties encountered during the relocation of the Controls Development Lab to T1883. The Network bridge has been replaced. We have now resumed Engineering Development Phase 5 testing activities. Marker L165-1.13—*Engineering Development tasks complete and documented*—will not be completed until February.
- We successfully demonstrated the use of the HDS Share product to operate multiple X-terminals as a single workspace. The product was subsequently ordered so we can continue prototype configuration testing. Adoption of the HDS Share configuration will lead to significant cost savings to the Project.
- We continued human interface design standards activities. The standards address color, fonts, symbols, windows, data entry, alarms, and sound.

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									
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									
Current lien	21.2	21.2	21.2									

Significant Procurement Actions This Month:

None

Key Milestones and Markers:

*See "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	Late
L165-2.4	Facility Monitoring and Safety Control System task analysis complete/documented	Feb 96	
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 Dec 95 Monthly Report - Sorted by Number

Number	Item	PTS	Orig. Date	Date	Status	Comments
	Rev. Date: 1/31/96; 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	received 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		
L116-3.1	MWMF Letter			Feb-96		
L116-4	NRP Meeting			Jun-96		
L116-4.1	MWMF Letter			Jul-96		
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 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		Delayed due to reduced DOE funding.
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		
L132-12.1	Complete support of Project Final Design Review			Sep-96		
L132-13.1	Engineering Change Control Procedure			Jan-96		
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	
X 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.
L133-7.1	Facility Title II Design Review (80%)		Jan-96	Feb-96		To meet bldg. occupancy date Facility Title II Design must be shortened.
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		
L142-2	Telerobotics Sorting 90% Final Design Review complete	X		Sep-96		
X 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	late	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	
X 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		
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
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
L155-1	Summarize Gas Liquid Contactor Tests (document)		Jun-95	Aug-95	complete	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	complete	Delayed awaiting completion of Milestone L155-1. Work in progress.
	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	complete	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	complete	Delayed due to reduced DOE funding.
	L161-1.3	LI&C Functional Requirements Document complete		Jun-95	Sep-95	late	Delayed due to higher priority activities.
	L161-1.4	PTS LI&C System Preliminary Design review		Jul-95	Sep-95	complete	Delayed due to reduced DOE funding.
	L161-2	PTS 90% Final Design Review complete	X		Sep-96		
X	L161-2.1	Final Design of transport interface complete		Feb-96	Mar-96		Forecast delay due to design effort being diverted to higher priorities.
	L161-2.2	Final Design of batch make-up 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		
	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	Oct-95	partial	Delayed due to reduced DOE funding. First issue expected in October.
	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.
	L162-7	Analytical Lab System Preliminary Design review		Aug-95	Sep-95	complete	Rescheduled to Oct. 12, 1995, due to programmatic conflicts.
	L162-7.1	LI&C Functional Requirements Document complete		Jul-95	Aug-95	complete	Delayed while document is in review cycle.
	L162-7.2	LI&C Preliminary Design Review		Aug-95	Sep-95	complete	Rescheduled to Oct. 12, 1995, due to programmatic conflicts.
	L162-8	LAB 90% Final Design Review complete	X		Sep-96		
	L162-8.1	Define MSO on- and at-line measurement methods			Mar-96		
	L162-8.2	Define offgas analysis requirements			May-96		
	L162-8.3	Select vendor for offgas system procurement			Jul-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		
	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	
	L163-3	WTR System Preliminary Design Review		Jul-95	Oct-95	complete	Delayed due to reduced DOE funding.
	L163-3.1	LI&C Functional Requirements Document complete		Jun-95	Oct-95	complete	Delayed due to reduced DOE funding.
	L163-3.2	LI&C Preliminary Design Review		Jul-95	Oct-95	complete	Delayed due to reduced DOE funding.
	L163-4	Begin Final Design		Jul-95	Nov-95	late	Delayed due to reduced DOE funding. KD-2 delayed until Dec-95.
	L163-5	WTR 90% Final Design Review complete	X		Sep-96		
	L163-5.1	WTR Unit Operation Subsystems Final Design complete			Aug-96		
	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	complete	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	Sep-95	complete	Document in review cycle.
L164-2.3	LI&C Preliminary Design Review		Jun-95	Aug-95	complete	Delayed due to reduced DOE funding.
L164-3	Report: Design of polymer microencapsulation system		Jun-95	Oct-95	late	Delayed due to reduced DOE funding. To be rescheduled.
L164-4.1	Report: Volatile residue components and the design of ceramic waste form system		Jul-95	Oct-95	complete	Delayed due to higher priority activities.
L164-4.2	Report: Interim status of ceramic waste form compositions and process parameters		Aug-95	Jan-96		Delayed due to higher priority activities.
L164-5	Rotary calciner operational	X		Sep-96		
L164-5.1	Rotary calciner design procurement complete			Jun-96		
L164-6	FFM 90% Final Design Review complete			Jan-97		
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		
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	
L165-1.2	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.
L165-1.10	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	Oct-95	complete	Delayed due to higher priority work on Local I&C.
L165-1.13	Engineering Development tasks complete and documented		Jun-95	Oct-95	late	Delayed due to higher priority work on Local I&C.
L165-1.14	Preliminary Design activities complete, documented		Jun-95	Sep-95	complete	Delayed due to reduced DOE funding.
L165-2	SI&C 90% Final Design Review complete			Oct-96		
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	complete	
L165-2.3	Container Tracking and Material Accounting requirements document approved	X		Nov-95	late	Completion expected in Dec-95.
L165-2.4	Facility Monitoring and Safety Control System task analysis complete / documented			Feb-96		
L165-2.5	Instrumentation and Equipment Database complete			Mar-96		
L165-2.6	Final Design Process I&C Standards complete	X		Apr-96		
L165-2.7	Control Room and Equipment Room design complete			May-96		
L165-2.8	Supervisory Control System SDD drafted	X		Jun-96		
end

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