The Mixed Waste Management Facility

Monthly Report
September 1995

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The Mixed Waste Management Facility

Monthly Report
September 1995

Ronald D. Streit

October 1995

Lawrence Livermore National Laboratory
University of California • Livermore, California • 94550

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Project Summary

Overview

A continuing concern over the last few months was resolved with the approval of the *Environmental Assessment* (EA) and signing of the *Finding of No Significant Impact* (FONSI). This was completed in time to allow approval of the DWTF Phase 1 KD-3 and subsequent award of the construction contract for this phase (site preparation).

The Project continues to make progress toward the Project Preliminary Design Review (PDR), scheduled for November 15–16, 1995. We completed the conventional feed preparation and solid feed preparation demonstration technologies (telerobotic sorting) and conducted a prereview of the Analytical Services element. Molten Salt is scheduled for October 3–4, with Water Treatment and Analytical Services completing the reviews by October 12. While a number of design issues have been raised and are being tracked, the general level of engineering progress is consistent with completing the PDR on schedule. No show-stoppers have been identified, and all items requiring resolution before PDR will be completed.

We completed the initial iteration of the cost roll-ups for the preliminary design and have developed a plan consistent with the guidance issued for the Project (level funding at ~\$10M/yr, reduced scope, integrated with DWTF). This was accomplished by staging the completion of various elements (e.g., MSO in FY98, Telerobotics in FY99), and reducing to the extent possible project support functions. Two significant modifications will be noted in the *Project Baseline Revision 2.0—Preliminary Design* (PB2.0) relative to previous estimates: (1) the cost of the MSO system has increased due to a better understanding of the system needs (relative to CDR assessment), and (2) the Project management has increased owing to a restructuring of how LLNL distributes facility charge costs. However, both these increases have been offset by reduction in other elements and by a general lowering of project contingency. This information will be further detailed in the PB2.0 to be completed after the PDR.

Engineering development continues to progress toward resolving the issues needed for final design. The MSO Engineering Demonstration Unit (EDU) has now been operational since June 1995, and we are continuing to obtain data on key elements such as baffle design, injector performance, controls, salt height assessment, and other engineering elements.

Two vendor contracts were completed for preliminary design input of the salt separation element to the MSO salt recycle system. The vendors were selected based on their ability to design and deploy a complete turnkey salt separation system for integration into MSO. This acquisition strategy has allowed the Project to involve industrial partners at an early stage of the design and to get an assessment of vendor capability. The salt recycle preliminary design will be based on their inputs and the LLNL design. Concurrently, a contract is being pursued to purchase a "turnkey" salt separation system. The contract will include final design through installation in the MWMF and will be based on a detailed procurement specification completed as part of preliminary design.

The telerobotic feed preparation engineering development has also made significant progress. Linkage between Control Shell and SMART (for interfacing between the robotic arm, hand controller, and linking to the facility model) has been tested, and a decision on the final configuration is nearing completion. The telerobotic arm, the Schilling Titan III, was received in September as planned. It will be used for the final stages of engineering development and will ultimately be used in the facility.

Cost Status. Final costs for FY95 were \$7,231K out of \$8,585 total funds available, leaving \$1,354K. Of the funds remaining to be carried into FY96, \$475K is obligated in liens. The \$879K of "Approved Work Scope" is distributed as \$340K related to manpower costs delayed because of slow ramp-up, and \$539K is related to the salt separation system procurements being processed.

To ensure that the Project continues to meet schedule and has sufficient outyear funding, it is essential that the total \$1,354K be carried forward from FY95 to FY96.

Schedule Status. The project PDR will be held November 15-16, 1995, per the Rev 1.2 Rebaseline schedule. As stated previously, the approximately flat spending profile over the next three fiscal years, per DOE guidance, will result in stretch-out of the Project into FY99.

Significant Issues and Planned Corrective Actions

Funding uncertainty continues to be the major concern in meeting the baseline plan. FY96 funding is still uncertain, as is the availability of DOE/OAK funds in outyears. This will impact overall Project scope, schedule and/or cost. The PB2.0 reflects the budget profile guidance from DOE for the remainder of the Project established mid to late FY95. We have focused on keeping the spending profile relatively flat, and at approximately \$10M/yr. (with a total cost to complete of approximately \$36M). However, recently (mid-September) we were also given additional guidance reflecting a significantly lower DOE/OAK budget consistent with the "House mark-up" of the appropriations bill with a total cost to complete of approximately \$12-14M. We are developing a very high level plan to address this potential budget, but detailed planning will not commence until more formal notification is received. The differences between the two guidances are significant and will result in very different project scopes and schedules. Uncertainty in the budget profile and budget "stability" will lead to additional costs and Project schedule slips. It will continue to have a negative impact on meeting Project goals and milestones as well as in retaining the best personnel.

As part of the system-level PDRs, we have identified a number of design and integration concerns relative to the deployment of the process and process support systems, as are typical of this type of review. The concerns raised as part of the system design reviews have been grouped into two categories: "action items" that require formal tracking and "issues" to be addressed in the normal progress of final design. The action items have been assigned a control number and responsible individual, and will be followed to closure. None of the action items or issues identified appear to be technical "show stoppers," and the Project preliminary design will be completed as scheduled.

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:

- Environmental Documentation: No substantive comments were received by DOE on the MWMF draft EA. DOE/OAK subsequently issued a FONSI.
- Facility Integration: Comments from the lead engineers on the interim review of the Title I package of drawings, specifications, and studies were transmitted to Parsons.
- Receiving and Shipping: The System 90% PDR was completed. No action items/issues were raised that impact the preliminary design.
- Solids Feed Preparation: The System 90% PDR for conventional Solids Feed Preparation and Local I&C was completed. There were no outstanding action items/issues that would impact preliminary design. The Feed Prep Demonstration System PDR was held on September 21, completing the last of the Feed Transport, Preparation, and Storage (FPTS) PDRs. Factory acceptance testing was completed for the Titan III manipulator arm; the system was delivered and installed. Control Shell for telerobot low-level control has been selected and acquired as baseline for beginning Title II design.
- MSO: In the materials development and evaluation area, candidate vessel materials have been partitioned into two categories: design-related (materials presently under serious consideration for use in construction of the vessel) and future possibilities. FY96 efforts will focus on additional testing of the first group and advancing their suitability for the vessel. The EDU test series for the evaluation of the side injector was completed, and a preliminary analysis of the data has been conducted. Preliminary layouts of the Primary Unit showing spatial relationships of major components have been completed.
- Process Transport and Storage: The 90% PDR was held September 11.

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 September. For reference, the monthly profiles are shown for both the original (11/94 Plan) and the revised (4/95 Plan) FY95 spending plan. There are no significant financial items to report beyond those discussed in the Cost Status paragraph of the Overview section above.

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TABLE 1

MWMF Project - Monthly Financial Summary for FY95
September 1995

OPEX (\$K, monthly expenditures)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Subtotal*	Undisb#	4/95 Budget*	11/94 Plan*
DOE Funds*	279	235	235	0	0	301	-120	0	0	0	0	0	0	930	NA, for information only		
FY95 Plan 11/94		59	58	56	58	53	63	66	66	66	66	71	66	746			746
FY95 Plan 4/95*		103	103	224	-87	78	-49	51	50	50	46	54	53	675		675	
Actual		103	103	224	-87	78	-49	91	-13	67	19	42	53	630			
Variance		0	0	0	0	0	0	40	-33	17	-25	-12		-46			
Actual Liens**		246	242	285	305	275	247	215	152	140	140	140	133	NA			
1. Mgmt Reserve		0	0	0	0	0	0	0	0	0	0	0	0	0	60	60	84
2. 95/96 Liens holdback***														124	-44	80	100
FY95 OPEX budget =																815	930

OPEX (\$K, cumulative to date)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
DOE Funds*	279	514	749	749	749	1050	930	930	930	930	930	930	930
FY95 Plan 4/95*		103	206	430	343	421	372	423	473	522	568	622	675
Actual		103	206	430	343	421	372	463	450	516	535	576	630
Variance		0	0	0	0	0	0	40	-23	-6	-34	-46	-46

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

CENRTC (\$K, monthly expenditures)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Subtotal*	Undisb#	4/95 Budget*	11/94 Plan*
DOE Funds*	2649	0	0	0	2000	0	2856	-850	1000	0	0	0	0	7655	NA, for information only		
FY95 Plan 11/94		657	725	715	748	692	724	700	749	671	606	737	632	8358			8358
FY95 Plan 4/95*		730	188	371	602	640	662	695	629	589	733	613	741	7190		7190	
Actual		730	188	371	602	640	662	596	541	579	435	468	791	6602			
Variance		0	0	0	0	0	1	-95	-88	-10	-298	-144		-638			
Actual Liens**		86	81	85	125	961	547	470	557	457	618	585	342	NA			
1. Mgmt Reserve		0	0	0	0	0	0	0	0	15	20	227	0	262	66	328	605
2. 95/96 Liens holdback***														10	240	250	400
LDRD-CAP#		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	291
FY95 CENRTC budget =																7768	9654

CENRTC (\$K, cumulative to date)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
DOE Funds*	2649	2649	2649	2649	4649	4649	7505	6655	7655	7655	7655	7655	7655
FY95 Plan 4/95*		730	917	1289	1890	2530	3192	3886	4515	5104	5837	6450	7190
Actual		730	918	1289	1891	2530	3193	3789	4330	4909	5343	5811	6602
Variance		0	0	0	0	0	1	-98	-185	-195	-494	-638	-588

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

PROJECT TOTAL (\$K, monthly expenditures)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Subtotal*	Undisb#	4/95 Budget*	11/94 Plan*
DOE Funds*	2928	235	235	0	2000	301	2736	-850	1000	0	0	0	0	8585	NA, for information only		
FY95 Plan 11/94		717	783	772	806	744	787	767	815	737	672	807	696	9104			9104
FY95 Plan 4/95*		833	291	595	515	718	613	746	678	638	780	666	794	7865		7865	
Actual		833	291	595	515	718	613	687	528	645	453	510	844	7231			
Variance		0	0	0	0	0	1	-59	-150	7	-326	-156	0	-684			
Actual Liens**		331	323	370	430	1236	794	685	709	597	758	725	475	NA			
3. Actual Preliens**								373	192	201	107	181	1196	NA			
1. Mgmt Reserve		0	0	0	0	0	0	0	0	15	20	227	0	262	126	388	689
2. 95/96 Liens holdback***														134	196	330	500
LDRD-CAP#		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	291
FY95 TOTAL budget*** =																8583	10584

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

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
DOE Funds*	2928	3163	3398	3398	5398	5699	8435	7585	8585	8585	8585	8585	8585
FY95 Plan 4/95*		833	1124	1719	2234	2951	3564	4310	4988	5626	6405	7071	7865
Actual		833	1124	1719	2234	2952	3565	4252	4780	5425	5878	6388	7232
Variance		0	0	0	0	0	1	-58	-208	-201	-527	-684	-634

DOE FY95 new-BA, TOTAL		
budget	guidance**	delta
5655	7656	-2001

MANPOWER SUMMARY (total project, by month)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Labor (FTE)		49.1	46.9	49.1	47.2	46.0	49.3	48.6	48.4	46.9	41.3	40.4	42.1
Labor (\$K)@		409	349	322	390	415	450	436	440	424	365	338	370

* DOE funds include FY94/95 carryover (source: LLNL Contract Modification)

** Relevant for current month only; sum not meaningful

*** Includes budgeted amounts for management reserve, liens holdback, LDRD

Undistributed remaining budget; CE/LDRD values assume 6% of new-BA budget

1. FFM, 6=15K; XOG, 7=20K; TFM, =120K; SFP, =107K

2. (7/13/95) OE: Aspen=32, Weston=64, PP/Kaiser=28; CE: S&W = 10

3. Sept preliens included a \$1M prelien exclusively for FY96.

@ Labor \$K value includes non-FTE labor costs (small cost amount); Dec has mischarge corrected.

^ 4/95 Budget* is current FY95 Plan; 11/94 Plan* is prior FY95 baseline plan

** As identified in the most recent program letter

*** Updated periodically (see note); only Subtotal Relevant

WBS Element 1.1.1 Quality Assurance**Task Description**

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

Summary of Monthly Activities

- We completed a Project Status Board, showing project milestone and cost and schedule status. This board will be updated monthly.
- We continued updating the action item tracking system/list and attended various preliminary design review meetings.
- We worked with project personnel on QA issues and the QA filing system.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	3	3	3	3	3	3	3	3	3	3	3	3
4/95 Plan	Used actual costs through March						3	3	3	3	3	3
Monthly actual	2	3	12	-4	3	5	0	0	3	-1	0	-7
11/94 Plan cumulative	3	6	8	11	13	17	19	22	25	28	31	34
4/95 Plan cumulative	Used actual costs						23	26	29	32	35	38
Actual cumulative	2	5	17	13	16	21	21	21	24	23	22	16
Current lien	0	0	0	0	0	0	0	0	0	0	0	-7

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.1.2 PSAR**Task Description**

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

Summary of Monthly Activities

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

FY95 Budget Spending profiles (OPEX)

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

Spending profiles (CENRTC)

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

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

WBS Element 1.1.3 Environmental Documentation

Task Description

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

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

Summary of Monthly Activities

- No substantive comments were received by DOE on the MWMF draft EA, which was available for public review until September 5. DOE/OAK subsequently issued a FONSI.
- There was minimal permitting activity during September. The Department of Toxic Substance Control (DTSC) continues to review and consider information supporting why molten salt oxidation should be categorized as treatment other than incineration.

FY95 Budget Spending profiles (OPEX): NEPA

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	5	5	5	5	1	5	5	0	0	0	0	0
4/95 Plan	Used actual costs through March						3	0	0	0	0	0
Monthly actual	14	12	26	-32	7	3	17	10	3	2	0	0
11/94 Plan cumulative	5	10	15	20	21	26	31	31	31	31	31	31
4/95 Plan cumulative	Used actual costs						33	33	33	33	33	33
Actual cumulative	14	26	52	20	27	30	47	56	60	62	62	61
Current lien	0	0	0	0	0	0	0	0	0	0	0	0

Spending profiles (CENRTC): CEQA, Permitting

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	40	40	40	40	10	8	8	8	8	6	5	5
4/95 Plan	Used actual costs through March						15	8	8	6	5	5
Monthly actual	0	0	11	109	34	15	7	-56	5	1	2	1
11/94 Plan cumulative	40	80	120	160	170	178	185	193	200	206	211	216
4/95 Plan cumulative	Used actual costs						185	192	200	206	211	216
Actual cumulative	0	0	11	121	155	170	177	120	125	126	128	129
Current lien	0	0	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, if appropriate.

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

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

ES&H provides for on-going Environment, Safety, and Health (ES&H) representation to the MWMF Project by ES&H specialists to ensure that all activities are conducted in a safe and environmentally sound manner and to ensure that ES&H standards have been properly applied.

Summary of Monthly Activities

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

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	14	14	14	14	14	14	14	14	14	14	14	14
4/95 Plan	Used actual costs through March						14	14	14	14	14	14
Monthly actual	11	8	14	6	12	12	9	8	19	9	21	15
11/94 Plan cumulative	14	27	41	54	68	81	95	108	122	135	149	162
4/95 Plan cumulative	Used actual costs						76	89	103	116	130	143
Actual cumulative	11	19	32	38	51	62	72	80	99	108	128	143
Current lien	0	0	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, if appropriate.

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

WBS Element 1.1.5 Program Support**Task Description**

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

Summary of Monthly Activities

- In response to continued budget concerns, OPEX-funded program support activities have been reduced to the extent possible. Based on the initial roll-ups for the revised project baseline (PB 2.0 discussed in 1.3.1), we are developing the *FY96 Plan*. This plan will summarize the major activities to be accomplished and define the annual markers and milestones for tracking progress. However, due to the potential to significantly modify project budget and scope (as discussed in 1.3.1 and PTS), this plan will remain tentative until final budget guidance for FY96 and outyears is received.
- Relative to DTSC's activity in categorizing MSO, Terry Escarda has written to U.S. EPA, Region IX. Mr Escarda defined the DTSC position that MSO does not have the regulatory characteristics of incineration and forwarded on the key elements of the "white paper" on MSO prepared by the Project. DTSC would like U.S. EPA to make the ultimate determination.
- We continue developing 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.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	30	29	27	29	27	33	27	31	31	29	33	29
4/95 Plan	Used actual costs through March						27	25	25	25	25	25
Monthly actual	54	76	169	-48	44	-76	60	-36	18	0	15	34
11/94 Plan cumulative	30	59	86	114	141	174	201	233	264	293	326	354
4/95 Plan cumulative	Used actual costs						247	272	297	322	347	372
Actual cumulative	54	131	300	251	296	220	280	243	261	261	276	310
Current lien	140	136	179	198	169	143	111	48	46	46	46	45

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.1.6 Public Participation**Task Description**

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

Summary of Monthly Activities

- The first *MWMF Letter* and the public information *Fact Sheet* were distributed in September. The majority of costs incurred (shown below) were associated with TID for the Letter and NRP information (completed in previous months).
- Final comments on the EA were received and coordinated through DOE. No significant comments were received from the NRP.

FY95 Budget Spending profiles (OPEX)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	8	8	8	8	8	8	8	8	8	8	8	8
4/95 Plan	Used actual costs through March						5	8	8	5	5	5
Monthly actual	10	3	3	8	11	5	7	5	14	9	6	11
11/94 Plan cumulative	8	16	24	32	40	48	56	64	72	80	88	96
4/95 Plan cumulative	Used actual costs						44	51	59	64	69	74
Actual cumulative	10	12	15	23	34	38	46	51	65	74	80	91
Current lien	28	28	28	29	28	28	28	28	28	28	28	28

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.2.1 Conceptual Design**Task Description**

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

Summary of Monthly Activities

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

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

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

Charges were transfers from FY94.

Significant procurement actions this month

None

Milestones and Markers

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

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

WBS Element 1.2.2 Plant Start-Up Management**Task Description**

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

Summary of Monthly Activities

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

FY95 Budget Spending profiles (OPEX)

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

¹ Estimated date only

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

WBS Element 1.2.3 Activation**Task Description**

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

Summary of Monthly Activities

There are no activities under this WBS element during FY95.

FY95 Budget Spending profiles (OPEX)

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

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

WBS Element 1.3.1 Project Management**Task Description**

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

Summary of Monthly Activities

- Project management for all elements of the Title I design of CENRTC-funded activities continued. The Project continues to make progress toward the Project Preliminary Design Review (PDR), scheduled for November 15–16, 1995. We completed the conventional feed preparation and solid feed preparation demonstration technologies (telerobotic sorting) and conducted a prereview of the Analytical Services element. Molten Salt is scheduled for October 3–4, with Water Treatment and Analytical Services completing the reviews by October 12. While a number of design issues have been raised and are being tracked, the general level of engineering progress is consistent with completing the PDR on schedule. No show-stoppers have been identified, and all items requiring resolution before PDR will be completed. Additionally, the draft *System Design Description* (SDD) for MEO was completed and is being distributed.
- A continuing concern over the last few months was resolved with the approval of the EA and signing of the FONSI. This was completed in time to allow approval of the DWTF Phase 1 KD-3 and subsequent award of the construction contract for this phase (site preparation).
- We completed the initial iteration of the cost roll-ups for the preliminary design and have developed a plan consistent with the guidance issued for the Project (level funding at ~\$10M/yr, reduced scope, integrated with DWTF). This was accomplished by staging the completion of various elements (e.g., MSO in FY98, Telerobotics in FY99), and reducing to the extent possible project support functions. Two significant modifications will be noted in the PB2.0 relative to previous estimates: (1) the cost of the MSO system has increased due to a better understanding of the system needs (relative to CDR assessment), and (2) the Project management has increased owing to a restructuring of how LLNL distributes facility charge costs. However, both these increases have been offset by reduction in other elements and by a general lowering of project contingency. This information will be further detailed in the PB2.0 to be done after the PDR.
- The Preliminary Design Project Baseline reflects the budget profile guidance from DOE for the remainder of the Project established mid to late FY95. However, recently (mid-September) we were also given additional guidance reflecting a significantly lower DOE/OAK budget consistent with the "House mark-up" of the appropriations bill with a total cost to complete of approximately \$12–14M. We are developing a very high level plan to address this potential budget, but detailed planning will not commence until more formal notification is received. The differences between the two guidances are

significant and will result in very different project scopes and schedules. Uncertainty in the budget profile and budget "stability" will lead to additional costs and Project schedule slips. It will continue to have a negative impact on meeting Project goals and milestones as well as in retaining the best personnel.

FY95 Budget**Spending profiles (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	59	56	54	56	54	65	54	101	101	92	105	60
4/95 Plan	Used actual costs through March						55	65	55	55	80	80
Monthly actual	71	12	36	37	44	44	41	66	45	37	55	52
11/94 Plan cumulative	59	116	169	226	279	344	398	499	599	691	796	856
4/95 Plan cumulative	Used actual costs						299	364	419	474	554	634
Actual cumulative	71	83	119	156	200	244	285	351	396	433	488	540
Current lien	0	0	0	0	111	37	37	35	33	30	28	23

Significant Procurement Actions this Month
None

Milestones and Markers

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

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

WBS Element 1.3.2 Project Control**Task Description**

Project Control provides for the project integration, configuration management, cost and schedule control, quality assurance (see WBS 1.1.1), and administration of the CENRTC-funded systems. It develops and maintains the management systems used to monitor progress against the established baselines and to ensure configuration control (drawings, documents, etc.).

Summary of Monthly Activities

- We completed the first roll-up of the cost estimate that will be used to generate the *FY96 Plan* and Revision 2.0 of the Project Baseline. Following analysis of the results, additional direction was given to the estimators and good progress was made towards a second roll-up to be completed in early October. The transfer of data from the Excel estimating sheets into the Primavera database went very smoothly.
- Work continued on developing plans to respond to various DOE FY96 and outyear funding scenarios.
- Other activities and accomplishments during September included the following:
 - Issued the DOE PTS monthly report.
 - Issued the *August Monthly Report*.
 - Continued investigating several liens for possible removal from Project accounts.

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

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	42	40	37	39	37	45	37	43	43	39	45	39
4/95 Plan	Used actual costs through March						37	43	43	39	45	77
Monthly actual	44	9	22	45	66	38	41	42	46	27	29	37
11/94 Plan cumulative	42	82	119	158	195	240	277	320	363	402	447	486
4/95 Plan cumulative	Used actual costs						262	305	348	387	432	509
Actual cumulative	44	53	76	121	187	225	266	308	354	382	411	448
Current lien	0	0	0	42	42	38	26	26	11	11	11	0

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.3.3 Technical Systems Integration**Task Description**

Technical Systems Integration provides the oversight and performance studies intended to verify or document system integration performance, system analysis, special process diagnostics, and planning and analysis of the process aspects of integrated tests. It covers technical issues that affect all primary and support processes. It also includes the responsibility for assuring that the integrated design addresses systems interfaces, including interfaces with LLNL Hazardous Waste Management and facility engineering. The element coordinates the System Design Requirements (SDRs), the MWMF floor plan, and the Integrated Operating Plan.

Summary of Monthly Activities

- We transmitted comments from the lead engineers on the interim review of the Title I package of drawings, specifications, and studies provided by Parsons.
- We completed the trade-off study for the evaporator in the MSO salt recycle system comparing the use of hot liquid (~600° F) to conventional steam heating. The main advantage of the hot liquid is that the higher temperature can be attained without an increase in operating pressure. This hot liquid system is now the baseline for the facility.
- We completed an evaluation of equipment arrangements for the MWMF floor plan including MSO, Final Forms, and the Water Treatment areas. This arrangement provides a more useful placement of these areas of common material transport, freeing up area in the MWMF previously required for forklift access.
- We distributed a memo providing direction and decisions as a result of the series of meetings with Hazards Control. This memo completes the marker providing personnel egress guidance.
- We have continued to answer questions and give clarification to Parsons to assist in their design effort.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	28	26	26	26	26	30	26	29	29	26	30	26
4/95 Plan	Used actual costs through March						27	27	27	27	27	27
Monthly actual	51	-1	10	18	30	18	19	20	17	22	18	15

	28	54	80	106	132	162	188	217	246	272	302	328
11/94 Plan	Used actual costs						154	181	208	235	262	289
4/95 Plan	51	50	60	78	108	127	146	166	183	205	222	238
Current lien	2	0	2	0	1	3	2	1	1	1	4	1

Significant Procurement Actions this month

None

Milestones and Markers

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

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

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

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

Summary of Monthly Activities

- We completed the System 90% PDR. No action items/issues were raised that impact the preliminary design.
- We continued design activities in preparation for the upcoming Project PDR.

FY95 Budget**Spending profile (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	18	17	16	17	16	19	14	15	15	9	10	9
4/95 Plan	Used actual costs through March						11	7	7	7	5	5
Monthly actual	21	2	4	12	4	11	5	9	4	4	2	3
11/94 Plan cumulative	18	35	51	68	84	103	117	132	147	156	166	175
4/95 Plan cumulative	Used actual costs						65	72	79	86	91	96
Actual cumulative	21	23	27	40	44	54	59	68	72	77	79	82
Current lien	0	0	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, if appropriate.

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

WBS Element 1.4.2 Solids Feed Preparation

Task Description

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

Summary of Monthly Activities

- We completed the System 90% PDR for conventional Solids Feed Preparation and Local I&C on September 11 with no outstanding action items/issues that would impact preliminary design.
- The Feed Prep Demonstration System PDR was held on September 21, completing the last of the FPTs PDRs.
- We continued design activities in preparation for the upcoming Project PDR.
- We completed the revised Title I bottom-up cost estimate.
- Factory acceptance testing has been completed for the Titan III manipulator arm and the system has been delivered and installed.
- The prototype teleoperational system being developed to evaluate Control Shell for telerobot low-level control is up and operational. The PUMA interface has been completed and a new driver for the RSI hand control has been implemented for initial system testing. The RSI hand control interface is much closer to the final interface that will be in place for the Cybernet hand control. It addresses two control system evaluation issues: it minimizes mixing of SMART and Control Shell code and it reduces communication time delays. The completed system is stable and responsive, although some filtering is needed to reduce jitter. Control Shell performance has been promising and it has been selected and acquired as baseline for beginning Title II design.
- Discussions on possible collaboration with ORNL are continuing. ORNL has provided its control block diagram for our use and is talking with its tech transfer office to determine the best approach toward handling intellectual property rights.
- We have continued activities to complete the *Functional Requirements Document for the SFP System*.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	95	91	86	91	87	104	87	100	100	36	41	36
4/95 Plan	Used actual costs through March						52	57	105	232	42	167
Monthly actual	83	31	31	76	92	85	44	38	125	32	28	312
11/94 Plan cumulative	95	186	272	363	450	554	641	741	841	877	918	954
4/95 Plan cumulative	Used actual costs						449	506	611	843	885	1,159
Actual cumulative	83	114	144	220	312	397	441	479	604	636	663	976
Current lien	21	0	0	0	639	275	275	307	228	408	395	154

Significant Procurement Actions this Month

The Real-Time Innovations Control Shell development environment has been acquired and the VxWorks operating system license has been renewed. The Schilling Titan III manipulator has been received.

Milestones and Markers

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

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

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

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

Summary of Monthly Activities

- We completed the System 90% PDR for Liquids Feed Preparation and Local I&C on September 11th with no outstanding action items/issues that would impact preliminary design.
- We continued design activities in preparation for the upcoming Project PDR.
- We completed the revised Title I bottom-up cost estimate.
- We have continued activities to complete the *Functional Requirements Document for the LFP System*.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	38	36	34	36	34	41	34	40	40	18	21	18
4/95 Plan	Used actual costs through March						22	20	20	14	14	14
Monthly actual	37	6	14	22	28	22	22	20	20	14	14	22
11/94 Plan cumulative	38	74	108	144	178	219	253	293	333	351	372	390
4/95 Plan cumulative	Used actual costs						152	172	192	206	220	234
Actual cumulative	37	43	57	79	108	130	152	172	192	206	220	243
Current lien	0	0	0	0	0	0	0	0	0	0	0	0

Significant Procurement Actions this Month

None

Milestones and Markers

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

WBS Element 1.5.1 Mediated Electrochemical Oxidation**Task Description**

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

Summary of Monthly Activities

The activities are focused on completing the remaining tests and documenting the results prior to close-out of this task at the end of September.

- The steady-state run analysis is complete and the results documented.

FY95 Budget**Spending profiles (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	79	98	94	113	102	91	81	73	73	73	73	73
4/95 Plan	Used actual costs through March						81	73	73	53	25	25
Monthly actual	103	32	68	76	82	91	75	71	48	30	18	26
11/94 Plan cumulative	79	177	271	384	486	577	658	731	804	877	950	1023
4/95 Plan cumulative	Used actual costs						534	607	680	733	758	783
Actual cumulative	103	136	203	279	361	453	527	598	647	677	695	721
Current lien	22	21	14	9	6	7	13	3	3	3	2	2

Significant procurement actions this month

None

Milestones and Markers

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

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

WBS Element 1.5.2 Molten Salt Oxidation**Task Description**

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

Summary of Monthly Activities

- **Materials Development:**

- *Material categories*

Candidate vessel materials have been partitioned into two categories: design-related and future possibilities. The first group includes (1) Inconel 600 as the bare metal of choice and the substrate for coatings, (2) aluminized Inconel 600 as the Baseline Design Material, and (3) iron aluminide weld overlays on Inconel 600 as the back-up design material. We plan to focus our FY96 efforts on additional testing of this group and advancing their suitability for the vessel. The second group contains two (bare) metals and three oxide coating groups as Future Possibilities, should they be required.

- *Iron aluminide weld overlays on Inconel 600 nickel alloy*

Sheets of iron aluminide proved corrosion resistant upon salt testing at 900°C/1050 hr. While such sheets are too brittle for vessel fab, a weld overlay of this material is likely to block corrosion. This possibility led to an informal collaboration with ORNL to evaluate iron aluminide weld overlays to protect Inconel 600 from corrosive attack. To begin, ORNL will coat samples for our (LLNL) corrosion screen testing.

- *Corrosion testing at LLNL*

Corrosion testing in our brand-new system experienced typical start-up problems. These were primarily gas train leaks that, for the most part, were repaired on-line without seriously interfering with the test operation (the gas train consists of the air/CO₂/moisturizing system).

- **Engineering Demonstration Unit (EDU)**

- The test series for the evaluation of the side injector was completed, and a preliminary analysis of the data has been conducted. As mentioned last month, the optimum air feed ratio for this injector was established at 10% through the feed tube, with the remaining 90% through the surrounding annulus. Off-gas quality was consistent at superficial velocities of 1, 2 and 3.75 ft/s, when all other variables were held constant. Optimum off-gas quality was obtained using 30% excess air at 950°C for a variety of materials.
 - Production of NO_x was not seen to be a problem during the oxidation of non-nitrogen bearing materials. Injection of pyridine resulted in approximately 44% of its nitrogen converting to NO_x. This is consistent with results seen at ETEC, in which approximately half of the feed nitrogen forms NO_x.

Additional experiments with other nitrogen-bearing materials will be done to confirm these results as a part of the test plan. The catalytic converter planned at the end of the process off-gas will easily reduce these emissions to acceptable levels.

- The current disc-and-donut baffle configuration mitigated approximately two-thirds of the carryover. Quite a bit of salt collected on the baffles, indicating that the cool temperature of the upper region combined with the 4° baffle incline was not adequate for self-refluxing action. Optimization of the baffle configuration will be on-going through the next three test series.
- Salt containing Na_2SO_4 and Na_3PO_4 at 4 and 1 mol%, respectively, was generated for salt recycle experiments at the conclusion of the first test series.
- All data logged during August and September has now been retrieved and converted to Excel files for analysis. A program has been written to convert the raw data file to a spreadsheet file. This current solution will now reliably log and save data.
- Inspection of the EDU salt transfer system piping revealed excessive build-up of salt on the inside of the tube. The excessive build-up was a result of allowing the vacuum isolation valve to remain open after the salt was evacuated from the vessel. The flow of cooler air solidified the salt in the tube, thereby making it questionable for future use. The salt transfer tube assembly was removed from service and refurbished. Refurbishment included replacement of the inner tube, new tubular heaters, thermocouples, and insulation. A total of four 55-kg charges of salt were removed with this salt transfer system.
- Injector Development
 - The EDU side liquid injector has been rebuilt due to an end-cap circumferential weld failure. The weld was very thin since the injector was field fitted to the vessel. The end cap and outer tube have been chamfered to allow for a full weld. In addition, the tip design was modified to allow for a stronger weld at this location.
 - ETEC now expects to deliver the top liquid injector for EDU during the second week of October.
- Primary Unit Design
 - Preliminary layouts showing the spatial relationships of major components have been completed. The layouts have served well for the PDR and help define the areas that need attention.
 - Preliminary calculations have shown that the vessel cooling air can be mixed with the enclosure-ventilation air and exhausted to the Facility off-gas system. This greatly simplifies the system by eliminating the need for a closed-loop air system and a heat exchanger.
 - The primary unit's P&IDs and PFDs are approximately 75% complete. They are being revised to show the current single-vessel configuration.
- Salt Recycle
 - Three qualified vendors were asked to do a preliminary design. The goal was for each vendor to provide (1) a preliminary PFD and process description, (2) a project plan to tackle the complete system (including identification of

additional design information needed and a preliminary plan for getting it), (3) an equipment arrangement sketch, and (4) a cost estimate.

One vendor completed a draft report and came to LLNL to present their findings. This vendor proposed four possible processes for further evaluation: (1) a bicarbonate process where all the sodium carbonate is converted to sodium bicarbonate for fractional crystallization; (2) a cyclic fractional crystallization of sodium carbonate decahydrate and sodium chloride; (3) a process with two stages of low-temperature fractional crystallization to recover sodium carbonate decahydrate; and (4) a hybrid process consisting of a single-stage sodium carbonate decahydrate crystallizer followed by a bicarbonate stage. The recovered sodium carbonate decahydrate is converted to the monohydrate in a vacuum-cooled evaporative crystallizer followed by drying to produce the anhydrous sodium carbonate for recycle to MSO. Recovered sodium bicarbonate is calcined to sodium carbonate for recycle to MSO.

A second vendor declined to do an in-depth effort and did only a cursory effort at their own expense.

The third vendor visited LLNL, but did not complete a draft report in September.

- With regard to the vendor's draft report that was received in September, we suggested some changes for incorporation into the final report to be completed in October. We reviewed the four processes and the project plan suggested in the draft report. The bicarbonate process and the hybrid process seem to have the most promise. The vendor's suggested project plan includes appropriate tasks to further evaluate the process.
- The specification for design and procurement of the salt separation system was issued with the Request for Proposal (RFP) in September. This procurement will be handled under a new LLNL procedure, "Commercial Best Value Source Selection," which is designed to streamline the RFP, proposal evaluation, and negotiation activities. The RFP letter was written and reviewed by procurement in September before being issued.
- Salt recycle laboratory work in September tested the performance of a small-scale salt melting furnace, which was assembled in late August. Model salt A mixture was prepared and melted. The preliminary results indicated that the furnace worked very well. The post melting salt was then further separated by dissolution and crystallization laboratory processes.

We have developed a unique approach to predict partitions/separations of salt species in salt mixtures by using *precipitation potential* and *separation factor*. These prediction tools give a first approximation, since they are based on single-component solubilities. We have applied the approach to model salt A.

- Process modeling
 - We successfully blended two databases in the EQ3/6 salt modeling system into a new "Pitzer Plus" database that spans the range of temperatures and ion species of interest to MWMF Salt Recycle. The model predicts actual equilibrium conditions of sodium carbonate and sodium chloride mixtures to

within 10%. The next step in the verification process is to compare the code's predictions with experimental results of more complicated systems.

- Process Off-Gas
 - The preliminary P&ID for the process off-gas system has been completed.
 - A cost estimate for the catalytic converter has been obtained. The catalyst-assisted thermal oxidizer removes both NO_x and CO from the process off-gas. The unit has its own gas-fired heater that heats the off-gas to 525°F (274°C).
 - The total cost estimate for the Process Off-Gas System has been completed.

FY95 Budget**Spending profiles (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	140	147	194	210	209	196	235	221	153	202	279	242
4/95 Plan	Used actual costs through March						285	221	153	202	279	242
Monthly actual	139	27	83	101	124	222	221	245	190	200	214	225
11/94 Plan cumulative	140	287	481	691	900	1,096	1,331	1,552	1,705	1,907	2,186	2,428
4/95 Plan cumulative	Used actual costs						981	1,202	1,355	1,557	1,836	2,198
Actual cumulative	139	166	249	350	474	696	917	1,163	1,352	1,552	1,766	1,991
Current lien	3	36	47	52	154	154	110	181	181	165	131	149

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.5.3 Wet Oxidation**Task Description**

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

Summary of Monthly Activities

This activity has been closed out. No FY95 activities.

FY95 Budget Spending profiles (CENRTC)

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

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

WBS Element 1.5.4 UV Photolysis**Task Description**

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

Summary of Monthly Activities

This activity has been closed out. No FY95 activities.

FY95 Budget Spending profiles (CENRTC)

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

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

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

The principal objective of Experimental Off-Gas Treatment (XOGT) is to demonstrate advanced, more effective off-gas treatment technologies that minimize secondary waste. These are improved selective catalytic reduction (SCR) of NO_x to nitrogen in gaseous phase, acidic urea DeNO_x scrubbing, and advanced metal filters. The second objective is to demonstrate feasibility and effectiveness of off-gas treatment at or near to the source of the gas where the treatment can be tailored to that specific source. The XOGT element provides the management, system analysis and support, design (Title I, II, III) engineering, procurement, and installation of XOGT equipment, Title III inspection, and acceptance test procedures (ATP) covering both equipment and system integration activities. XOGT will be backed by the facility off-gas system.

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

Summary of Monthly Activities

- The acidic urea DeNO_x chemistry was experimentally tested in the gas-liquid contactor over the range of parameters consistent with that in the literature. It has been concluded that in the mildly acidic solutions (0.1–0.3M recommended by the literature), nitrous acid (to be destroyed by urea) does not form from NO_x . Apart from the literature, our theoretical study suggests that nitrous acid should form in the gaseous rather than in the liquid phase, which would require sole use of nitric acid (instead of any acid) and at much higher concentration.
- The new approach with 5M nitric acid and 1M urea was experimentally verified, and better than 90% destruction of NO in a small 1.5-L glass flask has been achieved. The parametric study of NO_x -urea chemistry has been extended into October 1995 and is in progress.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	13	13	12	13	12	15	12	14	14	13	14	13
4/95 Plan	Used actual costs through March						6	6	6	6	0	20
Monthly actual	18	12	19	9	6	2	21	6	3	3	7	10
11/94 Plan cumulative	13	26	38	51	63	78	90	104	118	131	145	158
4/95 Plan cumulative	Used actual costs						72	78	84	90	90	110
Actual cumulative	18	29	49	58	63	66	86	93	95	98	105	115
Current lien	0	1	0	4	0	17	2	0	0	0	0	0

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

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

- The PTS 90% PDR was held on September 11, completing Milestone L161-1.
- The Title I bottom-up cost estimates have been completed. Scope and costs have been reduced to meet budget guidance.

FY95 Budget Spending profiles (CENRTC)

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.6.2 Analytical Services**Task Description**

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

Summary of Monthly Activities

- Prepared for 90% PDR, to be held October 12, 1995.
- Completed input into Rev. 2 budget.
- Prepared and distributed a memorandum (L-20476-01) describing the principle beneficiaries (specific process, MWMF, DWTF, or whole facility) of the major analysis equipment to be purchased in support of Analytical Services. The purpose of the memo is to determine the appropriate cost center for budgeting and procurement of instrumentation.
- With Liquid Feed Prep, completed and distributed the report describing the results of chemical characterization analysis on five barrels of mixed waste.

FY95 Budget**Spending profiles (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	10	9	9	9	9	11	9	10	10	9	27	18
4/95 Plan	Used actual costs through March						9	10	10	9	10	10
Monthly actual	19	-2	8	8	9	9	9	10	5	8	9	7
11/94 Plan cumulative	10	19	28	37	46	57	66	76	86	95	122	140
4/95 Plan cumulative	Used actual costs						60	70	80	89	99	109
Actual cumulative	19	16	24	32	41	51	60	71	76	83	92	99
Current lien	0	0	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, if appropriate.

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

WBS Element 1.6.3 Water Treatment**Task Description**

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

Summary of Monthly Activities

The HWM design team continued Title I design work on the MWMF WTR process and equipment specification. Cost and schedule estimating effort continued in support of the PB2.0. Preparations were made to hold the WTR PDR in early October.

FY95 Budget**Spending profiles (CENRTC)**

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	0	14	13	14	13	16	13	15	5	5	10	8
4/95 Plan	Used actual costs through March						13	15	5	5	5	5
Monthly actual	0	0	2	3	3	2	3	2	3	1	4	2
11/94 Plan cumulative	0	14	27	41	54	70	83	98	103	108	117	126
4/95 Plan cumulative	Used actual costs						22	37	42	47	52	56
Actual cumulative	0	0	2	5	7	9	12	14	16	17	21	23
Current lien	0	0	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, if appropriate.

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

WBS Element 1.6.4 Final Forms**Task Description**

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

Summary of Monthly Activities

- Again, considerable effort was expended on PB2.0.
- We are processing the various action items identified at the FFM PDR.
- The LI&C Functional Requirements document was completed and reviewed. This completes Marker 164-2.2.
- Ceramic final forms work continues, including specimens fabricated in connection with the TTLC issue discussed in the *August Monthly Report*. Our first attempt to demonstrate that a ceramic waste form heavily loaded with a wide array of RCRA metals could pass the California WET test was unsuccessful. We are working this problem in parallel with our more general ceramic waste form development/design.
- Actually, the dilemma posed to FFM by the California TTLC regulations seems to have been mooted by the Hazardous Waste Management Reform Act of 1995, which has passed both the California Assembly and Senate and which is expected to be signed into law by Governor Wilson by October 15, 1995. We will scrutinize the provisions and provide further information next month.
- Design of FFM's process off-gas subsystem is continuing and should be completed soon.
- A *tentative* decision, the complete extent of which is not entirely settled, has been made to delete polymer microencapsulation from FFM's scope. Instead, MWMF will attempt to purify the MSO residual salt to the extent that the salt can be land-disposed without further immobilization, at a low-level rad or at a low-level mixed waste repository. Additional elements will consequently appear in the mineral residues and volatile inorganic residues received by FFM, which may be expected to impact our processing. Purification and disposal of the salt would be the responsibility of MSO Salt Recycle and/or Water Treatment; FFM would not be involved. Polymer microencapsulation could later be reinstated, should this prove desirable, without much disruption and with tolerable schedule and budgetary impacts. It is emphasized that *this decision is not final* at this writing.
- Markers 164-4.1 and -4.2 have been delayed due to higher-priority activities. These markers are expected to be completed in November.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	34	33	33	33	33	34	33	33	33	33	33	34
4/95 Plan	Used actual costs through March						33	33	33	33	33	34
Monthly actual	59	13	23	26	38	35	32	33	30	27	37	41
11/94 Plan cumulative	34	67	100	133	166	200	233	266	299	332	365	399
4/95 Plan cumulative	Used actual costs						226	259	292	325	358	407
Actual cumulative	59	72	95	120	158	193	224	257	286	314	351	392
Current lien	1	1	2	1	1	1	1	1	1	1	0	0

There is now a prelien of \$19K against Acct. No. 7950-25 (polymer encapsulation), bringing the total charges for FY95 to \$407K.

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

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

- Continued activities to complete the *MWMF Project Baseline—Preliminary Design, Revision 2.0*. Established complementary milestones and markers.
- Reviewed and commented on the DWTF Phase 1 Title I 30% documentation. Updated all I&C electrical power requirements.
- Continued activities to complete marker L165-1.12—*SI&C Functional Requirements Document complete*. This marker is late due to manpower dilution caused by competing, more immediate, LI&C needs.
- Continued DBMS testing (Engr. Dev. Phase 5) activities at a slow pace due to competing, more immediate, LI&C needs.
- Completed the first draft of the *MWMF Instrumentation and Control Equipment Quality Assurance Plan*.
- Launched a full-scale investigation into implementing multiheaded work cell control stations. CTI is currently testing a two-monitor concept and plans to release an X-terminal solution in April/May 1996. Attended the UNIX Exposition and identified Human Design Systems (HDS), which claims to link multiple X-terminals through special software and currently can operate two monitors that function as a single workspace. HDS will demonstrate its products in late October or late November.
- Completed control cable selection guidelines. See document #L-20477-1.
- Completed marker L165-2.2—*Process I&C Standards established*. See document #L-20478-1.
- Completed and issued the *MWMF/DWTF Functional Requirements Document for Closed Circuit TV Systems*. See document #L-20498-1.
- Completed and issued the E revision to MEL-709—*Electrical and Electronic Equipment Fabrication General Requirements*.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan	50	94	60	43	40	38	48	38	38	40	37	45
4/95 Plan	Used actual costs through March						40	38	38	40	37	44
Monthly actual	70	41	35	43	75	68	50	30	32	25	23	30
11/94 Plan cumulative	50	144	204	247	287	325	373	411	449	489	526	571
4/95 Plan cumulative	Used actual costs						372	410	448	488	525	569
Actual cumulative	70	112	146	189	264	332	381	411	443	468	491	522
Current lien	37	23	19	18	8	11	5	3	0	0	0	0

Significant procurement actions this month

None.

Milestones and Markers

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

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

Appendix A

Milestone/Marker Log

MWMT Milestone/Marker Log

For Sep 95 Monthly Report - Sorted by Number

Number	Item	PTS	Orig. Date	Date	Status	Comments
	Rev. Date: 10/19/95; 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		EA draft submitted for comments. Final determination and issue of FONSI by DOE Compliance Office now expected in September.
D115-1	DOE issue Project Plan	X	Jan-95	Jan-95	Open	No revised date available from DOE. LLNL preparing PMP w/o PP.
D121-1	Preliminary approval and funding for Preliminary Design	X	Apr-94	Jun-94	complete	delayed decision by DOE
D121-2	KD 1/2 Approval by DOE	X	Jun-94	Jun-94	complete	received KD-1 only
D131-2	DOE issues KD-2	X	Jun-94	Nov-95		Delayed due to reduced DOE funding.
L111-1	Develop and issue Quality Assurance Plan		Oct-93	Oct-93	complete	
L111-2	Develop and issue Document Control Plan		Jan-94	Jan-94	complete	
L111-3	Issue Design Review Procedure		Sep-94	Sep-94	complete	
L112-1	PSAR to DOE for Review	X	Mar-94	Dec-94	complete	delayed to include CDR information and due to DOE decision to merge MWMT & DWTF
L112-1.1	Issue PSAR Contract		Oct-93	Oct-93	complete	
L112-1.2	Preliminary PSAR Review		Feb-94	Feb-94	complete	
L113-1	Environmental Assessment (EA) submitted to DOE	X	Mar-94	Jun-94	complete	delayed to include CDR information, draft submitted
L113-2	Submit air permit to BAAQMD	X	May-94	Apr-96		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 MWMT/DWTF merge)	X	Dec-94	Feb-95	complete	Delayed to allow coordination with permitting efforts (L113-3).
L114-1.1	ES&H review of 30% CDR		Dec-93	Dec-93	complete	
L114-1.2	ES&H review of 90% CDR		Mar-94	Mar-94	complete	
L114-1.3	ES&H review of 90% PDR		Sep-94	Jan-95	deleted	changed to reflect level of effort work
L114-2	Complete review of PSAR		Aug-94	Aug-94	complete	
L115-1	Submit Project Management Plan (Final)	X	Jan-95	May-95	complete	Delayed due to unavailability of DOE Project Plan.
L115-1.1	Project Management Plan (Draft)		Oct-93	Oct-93	complete	
L115-10	Submit FY96 Plan	X	Oct-95	Oct-95		
L115-2	Select Project Engineers and Project Control Manager		Dec-93	Dec-93	complete	
L115-3	Submit FY94 Plan	X	Jan-94	Jan-94	complete	
L115-4	Initiate PTS and Monthly reporting		Jan-94	Jan-94	complete	
L115-5	Technology Selection and Implementation Plan	X	Feb-94	Feb-94	complete	
L115-6	Develop Design Basis Operations Plan		Mar-94	Mar-94	complete	
L115-7	Submit FY95 Plan	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	Apr-95	complete	
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.

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Number	Item	PTS	Orig. Date	Date	Status	Comments
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		Date affected by review of EA by DOE and State(Ca.).
L116-2.2	Receive comments from NRP			Apr-95	Deleted	Comments and action items will be received as part of NRP meeting minutes.
L116-3.1	Issue second newsletter		Sep-95	Jan-96		Date changed to allow time to prepare and publish newsletter following NRP meeting.
L121-1	30% CDR Review		Dec-93	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 MWMT Start-Up and Activation Plan		Sep-95	Feb-96		Delayed due to 4/95 budget cut.
L131-1	Preliminary Design Review (Overall Project) completed	X	Sep-94	Nov-95		Delayed due to reduced DOE funding.
L131-2	Input to FY95 Plan (see 115-7)	X	Sep-94	Dec-94	complete	delayed due to LLNL accounting changes and higher DOE priorities
L131-3	Submit MWMT Rebaseline (KD-1)	X		Sep-94	complete	
L131-4	Submit MWMT Rebaseline (MWMT/DWTF Merge)	X	Mar-95	May-95	complete	Delayed due to FY97 field submittals and other higher priority work.
L131-5	Submit Post-PDR Project Baseline	X	Sep-95	Jan-96		Delayed due to reduced DOE funding.
L132-1	Implement Cost planning/tracking systems (document)		Sep-94	Dec-94	complete	activity stretched-out due to reduced funding guidance
L132-10.1	Input to FY96 Plan (see L115-10)			Oct-95		
L132-2	Implement Technical baseline control system		May-94	Nov-94		see 132-7
L132-3	Implement Schedule control/tracking system			Aug-94		see 132-7
L132-4	Input to FY95 Plan (see L115-7)		Nov-94	Dec-94	complete	delayed due to LLNL accounting changes and higher DOE priorities
L132-5	Issue Configuration Control System Document		Jan-95	Mar-95	complete	Delayed to allow discussion and review and due to higher priorities.
L132-6.1	Input to MWMT 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 (see L131-1)		Jun-95	Nov-95		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	
L133-1.1	Draft System Engineering Management Plan		Sep-94	Sep-94	deleted	Information in other documents
L133-1.2	Issue MWMT development plan			Jul-94	complete	
L133-1.3	Complete MWMT 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		
L133-10.1	Identify emissions for air permit			Jun-95	complete	New marker

MWMF Milestone/Marker Log

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	Number	Item	PTS	Orig. Date	Date	Status	Comments
	L133-10.2	Review floorplan layout and personnel egress			Jul-95	complete	New marker
X	L133-10.3	Review facility Process Flow Diagrams		Aug-95	Sep-95	complete	Delayed due to higher priority activities.
X	L133-10.4	Facility preliminary design (20%)		Aug-95	Sep-95	complete	Delayed due to higher priority activities.
X	L133-10.5	Title I Design Review (80%)		Sep-95	Sep-95	late	Review of drawings in progress. Completion expected in October.
	L133-10.6	LLNL Review Title I Design			Oct-95		New marker
	L141-1	RAS System Preliminary Design Review		Sep-94	Sep-95		Delayed due to reduced DOE funding.
	L141-1.1	Complete pilot characterization studies		Jun-94	Dec-94	complete	activity stretched-out due to reduced funding guidance
	L141-1.2	Identify equipment and define floor plan		Sep-94	Mar-95	complete	activity stretched-out due to reduced funding guidance
X	L141-1.3	RAS LI&C System Functional Requirements Document complete		Jun-95	Sep-95	late	Delayed due to higher priority activities.
X	L141-1.4	RAS LI&C Preliminary Design Review		Jul-95	Sep-95	complete	Delayed due to reduced DOE funding.
X	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	
X	L142-1.8	LI&C Functional Requirements Document complete		Jun-95	Sep-95	late	Delayed due to higher priority activities.
X	L142-1.9	LI&C Preliminary Design Review		Jul-95	Sep-95	complete	Delayed due to reduced DOE funding.
X	L142-1.10	Locate user interface stations and required functionality		Aug-95	Sep-95	complete	Delayed due to higher priority activities.
X	L142-1.11	Draft FP control console layout		Aug-95	Sep-95	complete	Delayed due to higher priority activities.
X	L142-2	Telerobotics Preliminary Design Review			Sep-95	complete	New milestone.
X	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.
X	L143-1.4	LI&C Functional Requirements Document complete		Jun-95	Sep-95	late	Delayed due to higher priority activities.
X	L143-1.5	LI&C Preliminary Design Review		Jul-95	Sep-95	complete	Delayed due to reduced DOE funding.
	L151-1.1	Complete tests on turbo-aerator for nitrous acid conversion (document issued)		Mar-94	Jan-95	complete	Release of report delayed due to slower than expected review cycle.
	L151-1.10	P&ID drawings (document)			Sep-95	complete	Incorporated into L151-3.
	L151-1.11	Layout drawings of major equipment items (document)			Sep-95	complete	Incorporated into L151-3.
X	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.
	L151-1.2	Initiate steady-state flow and chemistry balance tests			Apr-94	complete	

MWMF Milestone/Marker Log

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	Number	Item	PTS	Orig. Date	Date	Status	Comments
	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.
X	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.
	L151-2	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		Jun-95	Oct-95		Delayed due to reduced DOE funding.
	L152-3.1	Preliminary Process Flow Diagram complete for MSO		Jun-94	Sep-94	complete	
	L152-3.2	Initiate MSO Preliminary Design			Jul-94	complete	
	L152-3.3	Initiate vessel material study			Oct-94	Complete	
	L152-3.4	Install development unit			Jun-95	Complete	
	L152-3.5	LI&C Functional Requirements Document complete		May-95	Oct-95		Delayed due to reduced DOE funding.
	L152-3.6	LI&C Preliminary Design Review		Jun-95	Oct-95		Delayed due to reduced DOE funding.
	L152-4	Start Development Activities			Aug-94	complete	
	L152-5	Start Title II design		Jul-95	Nov-95		Delayed due to reduced DOE funding.
	L152-6	Select Industrial Participation method for Salt Recycle			Nov-95		New Milestone
	L153-1	Award WOX contract			Sep-94	deleted	WBS element deleted per DOE guidance
	L153-1.1	Complete and document work to date			Jul-94	complete	
	L153-1.2	Issue RFQ for WOX treatment unit w/ completed specification			Jun-94	deleted	WBS element deleted per DOE guidance
	L153-2	30% Preliminary Design Review for WOX			Sep-94	deleted	WBS element deleted per DOE guidance
	L153-2.1	WOX dispersion system test and design recommendation complete			May-94	deleted	WBS element deleted per DOE guidance
	L153-2.2	Preliminary WOX treatability tests complete			Jun-94	deleted	WBS element deleted per DOE guidance
	L153-2.3	Preliminary WOX Process Flow Diagram complete			Jun-94	deleted	WBS element deleted per DOE guidance
	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	

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Number	Item	PTS	Orig. Date	Date	Status	Comments
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	late	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.
X 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.
X L161-1.3	LI&C Functional Requirements Document complete		Jun-95	Sep-95	late	Delayed due to higher priority activities.
X L161-1.4	PTS LI&C System Preliminary Design review		Jul-95	Sep-95	complete	Delayed due to reduced DOE funding.
L162-1	Complete preliminary floor plan layout			Jun-94	complete	
L162-1.1	Select ATS standard transport container designs			Jun-94	deleted	WBS content revised to "Analytical Lab"
L162-1.2	Finalize ATS transport handling capacity			Jun-94	deleted	WBS content revised to "Analytical Lab"
L162-1.3	Finalize ATS transport equipment selection			Aug-94	deleted	WBS content revised to "Analytical Lab"
L162-2	Define analysis tests based on process acceptance criteria		Sep-94	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.
X L162-7	Analytical Lab System Preliminary Design review		Aug-95	Sep-95	late	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.
X L162-7.2	LI&C Preliminary Design Review		Aug-95	Sep-95	late	Rescheduled to Oct. 12, 1995, due to programmatic conflicts.
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		Delayed due to reduced DOE funding.
L163-3.1	LI&C Functional Requirements Document complete		Jun-95	Oct-95		Delayed due to reduced DOE funding.

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