The Mixed Waste Management Facility

Monthly Report and Revised FY95 Plan
May 1995

June 1995

Lawrence Livermore National Laboratory
Environmental Programs

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The Mixed Waste Management Facility

Monthly Report and Revised FY95 Plan
May 1995

Ronald D. Streit

June 1995

Lawrence Livermore National Laboratory
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Project Summary

Preface

This document, the *May Monthly Report and Revised FY95 Plan*, serves two purposes. In addition to the regular monthly reporting, each level-three WBS element description also describes the scope, schedule, and cost changes resulting from the \$2M reduction from FY95 funding as directed by DOE. The revised spending plan was instituted in April as shown in the *April Monthly Report*. However, due to printing time constraints, descriptions of the impacts were not available. By combining the *May Monthly Report* with the *Revised FY95 Plan*, the Project was able to reduce printing costs as well as the time required to assemble a stand-alone *Revised FY95 Plan*.

The changes described in this revised plan reflect the key changes to the FY95 Baseline Plan in response to the April, 1995, reduction in FY95 funding (see *April Monthly Report*). In many cases, milestones have been delayed from FY95 into FY96 (or beyond). Due to the potential budget reduction for FY96 (\$15.3M to \$10M), the changes do not yet reflect impacts, so any dates deferred out of FY95 are only preliminary at this time.

Overview

Technical progress continues to accelerate as design reviews, engineering development results, and procurements/contracts successfully occur. A key development is the installation of the MSO Engineering Development Unit (EDU), which is on schedule for initial operation in July.

Management activities during May included planning for the public participation meeting, dealing with budget cuts, permitting, training, and issuing the *Project Management Plan* (PMP). Key management actions included the following:

- The first MWMF National Review Panel (NRP) meeting is scheduled for June 20, with a broad range of members from state, regulatory, environmental, and DOE organizations. Preparations are essentially complete.
- The document containing Revision 1.2 of the Project Baseline was formally issued for DOE approval in May. This baseline contains information developed for the FY97 Validation in March and April, although it has already been superceded by more recent funding changes, as discussed last month. Rev. 1.2 approval is needed to document project solution and as a basis in future changes. All work was completed earlier; delays in editing and release deferred the formal document until May. The timing of the next baseline revision is under discussion with DOE/OAK.
- We completed scope and schedule planning to accommodate the reduced FY95 budget. The cost plan was developed and presented earlier in the *April Monthly Report*. The full plan, with scope and schedule impacts for FY95, is shown in this monthly report (as a cost saving measure) and thus submitted to DOE for approval. The plan for FY96 and beyond is in progress, and will be developed in discussion with DOE/OAK.
- The revised permitting strategy was reviewed in meetings with California DTSC and DOE, and was favorably received. The remaining action is to document the agreement and obtain concurrence from DOE/OAK. Progress on the review of the

EA for the MWMF continued within DOE/OAK, with LLNL providing revisions as requested. No major issues have been identified.

- All key technical and management project staff completed SARA/OSHA 1910.120 training for the handling of RCRA hazardous wastes. This provides necessary technical and operational background for the design of MWMF systems.
- The PMP was issued to DOE/OAK for review and approval. The PMP provides the documented basis for managing the project and is essentially already being implemented. Approval will occur after DOE issues its *Project Plan* and the PMP is deemed consistent.

Cost Status. We issued the rebaseline financial plan for FY95, in response to the \$2M budget cut for FY95, in the *April Monthly Report*, and the BCWS in PTS was similarly rebaselined to reflect the revised plan. This was done in conjunction with DOE/OAK.

During May, corrective cost transfers occurred, resulting in a cost variance of -\$88K. Project liens increased to \$710K. Some of these liens (~\$100K) are remnants from prior contracts that will not cost; the project is attempting to have them removed from project accounts. However, this may not happen during FY95 due to LLNL accounting procedures. With the expected obligated carryover, we currently project only minimal unencumbered carryover into FY96.

During May, new BA for CENRTC funding has brought available funds to near that required for the *Revised FY95 Plan*. The additional CENRTC funds, along with the budget cuts, have now essentially brought the OPEX/CENRTC funding into balance.

Schedule Status. The project priority continues to be MSO, with the installation of the EDU on schedule and good progress in the materials area. Salt recycle is behind the original schedule, due to a delayed start as a result of DOE spending guidance. The Preliminary Design Review (PDR) for MSO has been delayed from August to October to meet FY95 funding plans. Accordingly, the project PDR has been delayed from September to November. A two-day peer review was completed for MSO in May that involved 7 outside reviewers; no significant issues with the present design or plans were identified.

Significant Issues and Planned Corrective Actions

Uncertainty in funding is causing significant effort to rework plans. DOE/HQ is again reviewing a decision to fund or cancel the MWMF; project effort and resources are required to help resolve this action. The FY95 budget reduction has been addressed and the revised FY95 Baseline Plan, contained herein, is submitted to DOE/OAK for approval. Planning for cuts to the FY96 and outyear budgets is in progress. We seek a potential win-win plan that may allow early limited demonstration of MSO. This will support the MWFA Implementation Team requirement for demonstration by 1997, and can also accommodate DOE funding profile guidance with related changes in project scope and schedule.

NEPA for MWMF poses a continued, but lessened, schedule risk for the MWMF and DWTF. The key concern remains a NEPA determination by September to allow Phase I construction (and expenditure of FY95 funds) to occur, as well as Title II of Phase II to begin in November; the former is on critical path. The MWMF EA, revised to reflect the

DWTF/MWMF collocation, was submitted to DOE/OAK in February. Revisions at DOE's request are continuing, with a current target date of August to issue a NEPA determination. Delayed start of the DWTF and funding delays of the MWMF have somewhat reduced schedule risk.

While agreement exists on the revised permitting strategy, it remains to be formally accepted by DOE. All relevant parties appear to agree on the new strategy. An earlier letter requested DOE approval, but a revised letter containing additional information has been requested by DOE; this in progress. The first public review will be at the June meeting of the MWMF National Review Panel.

The OPEX/CENRTC funding balance for the year has been essentially resolved.

Summary of Accomplishments

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

- Preliminary design continued, including peer reviews for the B695 floorplan and utility requirements, telerobotics, safety control system, and MSO.
- Systems Integration: We began a series of meetings between Lead Engineers and Hazards Control to begin a detailed review prior to PDRs. Work began on a mass flow/balance model for the facility.
- We held briefings for the Environmental Programs Scientific Advisory Committee and prepared for the LLNL Engineering Scientific and Technology Review. We provided input to DOE/OAK for the MWFA decision strategy for the MWMF and for the DOE/OAK mid-year review.
- We made good progress on the integrated cost/scheduling estimating system for project control.
- Feed Prep: We held the telerobotic peer review May 23. We issued a procurement request for a manipulator arm that can be used both for engineering development and later in the facility. We also continued work toward PD review.
- MEO: We are finishing up work to close out MEO and delete it from the project scope. We successfully demonstrated yields of up to 99% in silver recovery using the 1/15-scale system. We began final runs on the B161 system to clarify several steady-state issues. We completed final markup of the P&ID drawings to 80% and, we began writing the System Design Description to document the status of MEO at close-out.
- MSO: We held a two-day peer review, with several independent reviewers in attendance. The full system was reviewed, including injectors, salt recycle, process off-gas, and controls. While we identified several action items, the Title I design seemed on track. We obtained encouraging results on vessel coatings from tests conducted at ETEC. EDU is on schedule for initial operations to begin in July. Results from bench-scale salt recycle crystallization tests were encouraging and were supported by recent theoretical process calculations, which are also being used to predict and design the MWMF system performance. We sent a CRADA request for the primary vessel to DOE. We are evaluating responses from a CBD announcement for partners or vendors for the MWMF salt recycle system.

- Water Treatment: HWM continued Title I work for the MWMF system, focusing on process requirements and equipment sizing. A peer review is planned for June.
- Final Forms: Measurements continued to quantify phase and partitioning effects of expected types of residue metals on the ceramic immobilization form. No serious issues have yet been found. Leaching tests of the ceramic final form continued, with most RCRA metals well below allowable limits; additional work is required in one case. We also continued work on encapsulation of salt and volatile inorganic solids.
- Supervisory I&C: On schedule for PD review in June. We met with LLNL groups to review system architecture and security and completed the safety system peer review.

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 May. The figures and the table have been modified to reflect the revised financial plan for FY95 that was required in response to the DOE directive during April to reduce the FY95 budget (see April Monthly Report). For reference, the monthly profiles are shown for both the original (11/94 Plan) and the revised (4/95 Plan) FY95 spending plan. The cumulative profiles are shown for only the revised FY95 spending plan. In addition, monthly variances for OPEX, CENRTC, and TOTAL have been added to the table, along with the current pre-liens. The pre-liens are important, since they represent purchase orders or contracts requested by the program that have not yet been formally signed or had funds obligated; they are likely to become liens.

During May, the project ran somewhat under plan. An unexpected -\$20K cost transfer for incorrect prior G&A charges contributed to this in part. The expense for some liens are included in the 4/95 base plan, so that we expect to have some - but only minimal - unencumbered carryover from FY95 into FY96. A key factor is our ability to remove several liens, which total about \$150K for completed contracts, from project accounts. In May, for example, we received a charge from a contract completed in Q1 FY95. In another case, it appears that a lien was not removed when a contract was modified. Accelerated closure of these actions during FY95, to meet the reduced budget, will take effort and cannot be assured.

During May, we received additional CENRTC funds (Table 1) into the DOE/Laboratory Contract Modification. This, combined with the reduced budget for FY95, brings the balance of CENRTC and OPEX funding into reasonable agreement with the project budget. The new funding levels need to be reflected in the DOE/OAK/EM Program Letter to assure closure between DOE and the Project.

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MWMF Project - Monthly Financial Summary for FY95

MAY, 1995

OPEX (\$K, monthly expenditures)

	CO*	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Subtotal*	Undistb#	4/95 Budget*	11/94 Plan*
DOE Funds*	279	235	235	0	0	301	-120	0	0					930			
FY95 Plan 11/94		59	58	56	58	53	63	66	66	66	66	71	66	746	NA, for information only		
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					450			
Variance		0	0	0	0	0	0	40	-63					NA			
Actual Liens**		246	242	285	305	275	247	215	152					NA			
Mgmt Reserve		0	0	0	0	0	0	0	0					0	60	60	84
95/96 Liens holdback		0	0	0	0	0	0	0	0					0	80	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				
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				
Variance		0	0	0	0	0	0	40	-23				

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*	Undistb#	4/95 Budget*	11/94 Plan*
DOE Funds*	2649	0	0	0	2000	0	2856	-850	1000					7655			
FY95 Plan 11/94		657	725	715	748	692	724	700	749	671	606	737	632	8358	NA, for information only		
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					4330			
Variance		0	0	0	0	0	1	-98	-88					NA			
Actual Liens**		86	81	85	125	961	547	470	557					NA			
Mgmt Reserve		0	0	0	0	0	0	0	0					0	328	328	605
95/96 Liens holdback		0	0	0	0	0	0	0	0					0	250	250	400
LDRD-CAP#		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				
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				
Variance		0	0	0	0	0	1	-98	-185				

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*	Undistb#	4/95 Budget*	11/94 Plan*
DOE Funds*	2928	235	235	0	2000	301	2736	-850	1000					8585			
FY95 Plan 11/94		717	783	772	806	744	787	767	815	737	672	807	698	9104	NA, for information only		
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					4779			
Variance		0	0	0	0	0	1	-59	-150					NA			
Actual Liens**		331	323	370	430	1236	794	685	709					NA			
Actual Prelims**							373	192						NA			
Mgmt Reserve		0	0	0	0	0	0	0	0					0	388	388	689
95/96 Liens holdback		0	0	0	0	0	0	0	0					0	330	330	500
LDRD-CAP#		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				
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				
Variance		0	0	0	0	0	1	-58	-208				

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				
Labor (\$K)@		409	349	322	390	415	450	436	440				

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

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

** Relevant for current month only; sum not meaningful

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

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

^^ As identified in the most recent program letter

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

TABLE 1

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.

Changes Due to 4/95 Revised FY95 Plan

SCOPE: None

SCHEDULE: None

COST: None

Summary of Monthly Activities

- We completed Revision 1 of QA procedure, *Design Review*. This document was approved by Project Management and distributed.
- We worked with Project personnel on QA issues and the QA filing system.
- We supported the project peer reviews.
- We updated the action item tracking system.
- We attended the training classes *Land Disposal Restrictions Overview* and *SARA/OSHA 40-hour Health and Safety Training for Hazardous Waste Workers*.

FY95 Budget**Spending profiles (OPEX)**

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

¹ Original FY95 Plan shown to illustrate changes² Current FY95 Plan (April '95) uses actual costs through March**Significant Procurement Actions this Month**

None

Milestones and Markers

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

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.

Changes Due to 4/95 Revised FY95 Plan

SCOPE: No change in scope as activity completed in December 1994.

SCHEDULE: No change in schedule as activity was completed in December 1994

COST: Effort is now directed towards closing out the \$73K lien as the PSAR was completed and the Roy F. Weston Inc. contract expired in December 1994.

Summary of Monthly Activities

There were no significant activities during May 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				
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				
Current lien	74	73	73	73	73	73	73	73				

Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

We received an unanticipated invoice for \$13.6K in May for work completed by the contractor (Roy F. Weston, Inc.) in August, 1994.

Milestones and Markers

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

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

WBS Element 1.1.3 Environmental Documentation**Task Description**

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

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains level of effort work during FY95 to support preparation and processing of NEPA documentation and permits.

SCHEDULE: Milestone L-113-3 was put on hold as the overall permitting strategy for the MWMF is under evaluation. Once confirmation has been received from DOE that an RD&D permit is no longer appropriate, this milestone will be deleted.

COST: No change in cost estimate.

Summary of Monthly Activities

- We submitted the revised EA to DOE in May to address comments received in February from DOE/OAK on an earlier version of the document.
- Submittal of the RD&D permit application remained on hold in May. MWMF Project members and DOE staff met with the DTSC to discuss proposed changes to the permit strategy. DTSC staff confirmed that the change in strategy makes sense and indicated continuing interest in acting as technical/regulatory advisor to the Project, particularly if funding is provided through a DOE grant to support this effort. There was additional discussion about MWMF commitments under the Proposed Site Treatment Plan for LLNL and about the need for the State to complete an analysis of environmental impacts related to this plan to comply with CEQA. The DTSC requested project information to support its effort.
- MWMF staff received training to better understand hazardous waste land disposal restrictions as well as SARA/OSHA training for hazardous waste operations.

FY95 Budget Spending profiles (OPEX): NEPA

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	5	5	5	5	1	5	5	0	0	0	0	0
4/95 Plan ²	Used actual costs through March						3	0	0	0	0	0
Monthly actual	14	12	26	-32	7	3	17	10				

11/94 Plan cumulative ¹	5	10	15	20	21	26	31	31	31	31	31	31
4/95 Plan cumulative ¹	Used actual costs						33	33	33	33	33	33
Actual cumulative	14	26	52	20	27	30	47	56				
Current lien	0	0	0	0	0	0	0	0				

Spending profiles (CENRTC): CEQA, Permitting

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	40	40	40	40	10	8	8	8	8	6	5	5
4/95 Plan ²	Used actual costs through March						15	8	8	6	5	5
Monthly actual	0	0	11	109	34	15	7	-56				

11/94 Plan cumulative ¹	40	80	120	160	170	178	185	193	200	206	211	216
4/95 Plan cumulative ²	Used actual costs						185	192	200	206	211	216
Actual cumulative	0	0	11	121	155	170	177	120				
Current lien	0	0	0	0	0	0	0	0				

¹ Original FY95 Plan shown to illustrate changes² Current FY95 Plan (April '95) uses actual costs through March**Significant Procurement Actions this Month**

None

Milestones and Markers

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

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

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

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains level of effort work during FY95 to provide ES&H support to the project.

SCHEDULE: No change in schedule as this is on-going level-of-effort support.

COST: No change in cost for FY95.

Summary of Monthly Activities

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

FY95 Budget Spending profiles (OPEX)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.1.5 Program Support**Task Description**

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: No major change in scope. Costs will be minimized consistent with meeting Project requirements. OPEX effort to meet DOE requests for special studies will be very restricted.

SCHEDULE: Certain milestones have already been delayed to accommodate unplanned work requested by DOE for impact studies and implementation of directed funding and scope changes. No significant schedule impacts are anticipated due to this milestone accommodation.

COST: The revised plan reflects a slight increase due to early FY95 expenses. To the extent possible, costs will be minimized in the second half of FY95.

Summary of Monthly Activities

We completed milestone L115-1—submit the *Project Management Plan* (PMP) to DOE—during May. We sent a request for DOE approval with the document. However, the document will be considered Draft until such time that the DOE *Project Plan* is written and the two documents checked for consistency. Most of the procedures described in the document have already been implemented, and this will be the baseline for project management until we receive further comments from DOE.

We held a meeting between the MWMF, DOE, and California DTSC to discuss the revised permitting strategy. The revised strategy met with general support. An RCRA RD&D permit would not be required for the early operations of MWMF due to the use of only surrogates and limited treatability studies to accomplish the technology demonstrations. The DTSC will be involved in the design and planning for MWMF through participation in the MWMF National Review Panel and via a DOE grant. To formalize the revised permitting strategy, DOE/OAK has requested that MWMF prepare a brief memo of the RCRA and air permitting strategy for their concurrence.

FY95 Budget Spending profiles (OPEX)

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

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.1.6 Public Participation**Task Description**

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains funding profile for the remainder of FY95 consistent with meeting goals for NRP meeting and public interactions. Funding to support outside participation on review panels will be limited due to the cost reduction.

SCHEDULE: None

COST: Savings of \$22K realized from reduced Public Participation activities.

Summary of Monthly Activities

The first NRP meeting is now scheduled for June 20. We sent letters to all participants and developed an agenda for the meeting. Interactions with the Mixed Waste Focus Area (MWFA) Implementation group have resulted in the addition of a representative of the MWFA on the NRP.

A one-page MWMF "Fact Sheet" was drafted and reviewed. This sheet will be used at a number of public forums and will be the basis of the first MWMF newsletter.

FY95 Budget Spending profiles (OPEX)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

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.

Changes Due to 4/95 Revised FY95 Plan

Not applicable. Conceptual design activity is complete.

Summary of Monthly Activities

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

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

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

¹ Original FY95 Plan shown to illustrate changes

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

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.

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Defers essentially all work from FY95 into FY96. May impact design and integration activities. Work completed to issue job description and to seek an applicant has been deferred.

SCHEDULE: The milestone for FY95 has been deferred into FY96.

COST: A savings of about \$50K is projected.

Summary of Monthly Activities

No activities this month. All work has been deferred due to FY95 funding reduction.

FY95 Budget Spending profiles (OPEX)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

ID no.	Milestone/Marker	Scheduled Date*	Status
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 finalization of design documentation for equipment and process modifications; (4) maintenance support to perform equipment or process modifications during start-up, testing, and activation; (5) all operational spares and the initial stores inventory; and (6) all manpower and materials required to deliver support services (utilities, power, etc.) during construction, testing, and activation of the MWMF.

Changes Due to 4/95 Revised FY95 Plan

There are no changes to FY95 activities.

Summary of Monthly Activities

There are no activities under this WBS element during FY95.

FY95 Budget Spending profiles (OPEX)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.3.1 Project Management**Task Description**

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: No significant change in scope. However, costs and activities will be reduced to the extent possible consistent with meeting Project goals and DOE direction.

SCHEDULE: The project PDR has been delayed primarily due to delays in MSO resulting from DOE direction to minimize staffing. MSO was also delayed due to DOE guidance for reduced spending. A revised project baseline may be issued prior to the Project PDR, but details have not finalized with DOE on this.

COST: The revised cost estimate reflects the actual under-run through March and a reduction and deferral of activities. Deferred activities include support for TID and outside reviewers for the Project PDR, which has been delayed until November due to the reduced funding for FY95.

Summary of Monthly Activities

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

Technical progress continued in general accordance with the *Revised MWMF FY95 Plan*. Engineering development and design continued in support of preliminary design (PD) of MWMF major subsystems. Peer reviews continued in preparation for system PD reviews.

We continued to implement rampdown activities necessary for the FY95 funding reduction and to assess the technical impact of the funding reductions for FY96 and beyond. The May 16 Program Letter contained formal DOE direction to implement the \$2M funding rescission for FY95 and to delete MEO from the scope of the project.

We completed milestone L131-4—issue the *Project Baseline Revision 1.2* that reflects the March FY96 Validation—during May. Most work was completed during April, but other priorities delayed formally issuing the document. We issued the document to DOE/OAK for review and approval. Note that the baseline discussed in this document (\$15.3M in FY96) has already been superseded by other DOE guidance for reduced FY95 and FY96 funding (see WBS 1.3.2).

During May, key management and engineering staff (about 15 staff) completed the SARA/OSHA 1910.120 40-hour training for handling of RCRA hazardous wastes. This was part of the on-going Project staff training to provide engineering, procedural, and regulatory information to be used in designing MWMF systems.

We held meetings with an outside organization to discuss possible collaborative work with the MWMF and the UC to deploy advanced treatment processes.

We prepared or presented briefings for the Environmental Programs Scientific Advisory Committee and the LLNL Engineering Scientific and Technology Review.

We provided input to DOE for the Mixed Waste Focus Area decision strategy for the MWMF and for the DOE/OAK mid-year review.

Preparation continued for the first meeting of the MWMF NRP and the first public participation meeting. We prepared fact sheets and summary information.

FY95 Budget Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains level of effort work during FY95 to support project controls. Changes do not reflect proposed FY96 budget reduction.

SCHEDULE: Certain milestones have already been delayed to accommodate unplanned work requested by DOE for impact studies and implementation of directed funding and scope changes. New forecast dates are indicated where they can be meaningfully estimated, given uncertain plans for FY96 at this time. Changes do not reflect proposed FY96 budget reduction.

COST: The revised plan reflects the current under-run (\$15K).

Summary of Monthly Activities

- We completed milestone L131-4—issue the *Project Baseline Revision 1.2* that reflects the March FY96 Validation—during May. This change was for a 15.3/13.0/12.6 M\$ funding profile for FY96/97/98, respectively, and assumed \$7.6M new BA in FY95. We formally issued the document to DOE/OAK for review and approval. Most work was completed during April, but other priorities delayed formal issuing. The baseline discussed in this document has already been superseded by other DOE guidance for reduced FY95 and FY96 funding (\$5.6M in FY95 and \$10M in FY96; see *April Monthly Report*). However, from a baseline control standpoint, *Project Baseline Revision 1.2* will be the current baseline from which a future baseline will be reconciled.
- In the May 16 Program Letter, DOE/OAK gave formal directive to implement the \$2M funding rescission for FY95 and to delete MEO from the scope of the Project. Verbal guidance had been given in April and, as contained in the *April Monthly Report*, it was necessary to immediately modify the FY95 spending plan. The formal response to this Program Letter guidance is the *4/95 Revised FY95 Plan*, which has been combined with this *May Monthly Report*. The two documents have been merged as a cost-saving measure, since the formats are similar. We will send a cover letter to DOE/OAK with this document to request formal approval of the revised plan.
- During April, the project also received verbal guidance for reduced funding in FY96 (from \$15.3M to \$10M), with further reduced and flat funding in the outyears. The Project has not yet received formal guidance for this change, since further changes are possible. Currently, the next revision of the full project baseline is planned to be completed in parallel with the project PDR. This milestone has now been delayed until November, due to the FY95 funding reductions. An interim baseline revision at some level will likely be required prior to that time (for example, as part of

developing the *FY96 Plan*), but details will depend upon when a firmer funding profile is available. DOE/OAK and the Project are discussing this matter.

The Project began to develop a method to deal with the out-year funding guidance. Typically a project requires a year or two of "higher-spending" following the design phase, to purchase equipment that is subsequently installed and activated. To meet DOE flat-profile guidance, equipment spending needs to be spread (both accelerated and delayed) over the remainder of the Project and then downscoped, if necessary, to meet TPC objectives. While this has associated risk from a number of factors, the acceleration of certain high-priority activities—which could result in early delivery of key hardware and demonstrations—could have positive overall benefits to the Project and DOE. Delay of necessary, but lower-priority, activities could then help to minimize any peak equipment spending. Several options are being studied in this regard.

- We held meetings and discussions within the Project and with Laboratory Procurement and Accounting departments to resolve several outstanding liens on Project accounts. Due to the limited FY95 funds, the removal of any unnecessary liens needs to be accelerated; usually this would take an extended period (6–12 months) to resolve. The reduced funding also requires that budgeted funds, contained within the LLNL accounting system, be shifted often to accommodate real-time expenditures. This is time-consuming, and we are investigating the possibility of combining accounts, or the way that they are managed, to operate more efficiently.
- We made good progress on the integrated cost/schedule estimating process. This is required for the next bottom-up estimate of the Project to provide necessary planning and baseline control information. Excel estimating sheets were successfully uploaded into Primavera and vice-versa, using export conversion applications on both ends. Small details and procedures remain to be finalized before the system can be fully implemented.
- In the facility area, activities included training and record updates for the LLNL property management system; coordination of the LLNL May "Shaker 95" safety exercise; and the search for new housing for the MWMMF offices (the current lease is being withdrawn at the end of 1995).
- In the QA area, the QA manager participated in peer reviews and maintained the action item log and the design review schedule. Peer reviews were held for B695 floorplan and utility requirements, the telerobotic system, and MSO (a two-day review).
- Other significant activities and accomplishments include the following:
 - Issued the DOE PTS monthly report.
 - Issued the *April Monthly Report*.
 - QA manager and project control manager completed the SARA/OSHA 1910.120 40-hour training for handling of RCRA hazardous wastes.
 - Prepared procurement documentation for continued support of Project scheduling and integration activities from an outside contract source.
- Key issues:
 - Developing plan to respond to DOE FY96 and outyear funding guidance.

- Monitoring FY95 time and spending closely to maintain distribution of available funds in proper accounts.

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

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

¹ Original FY95 Plan shown to illustrate changes

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

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

ID no.	Milestone/Marker	Scheduled Date*	Status
L132-4	Input to <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	
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	
L132-9	Complete QA Self Assessment	Aug 95	
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 systems interfaces are addressed in the integrated design, including interfaces with LLNL Hazardous Waste Management and facility engineering. The element coordinates the System Design Requirements (SDRs), the MWMF floor plan, and the Integrated Operating Plan.

Changes due to 4/95 Revised FY95 Plan

SCOPE: Maintains level-of-effort work during FY95 to support project integration.

Changes do not reflect proposed FY96 budget reduction.

SCHEDULE: Milestone L133-3 has been delayed by two months to assess the effects of the revised plan. Other milestones are unchanged. Changes do not reflect proposed FY96 budget reduction.

COST: The revised plan reflects the current underrun (\$15K).

Summary of Monthly Activities

- Lead engineers updated HVAC and electrical utility requirements.
- We updated the MWMF floor plans to show equipment.
- Coordination is being provided between HWM, Team 2, and Team 4 to come to conclusion as to the PPE (personnel protective equipment) requirements. We have scheduled a series of one-on-one (HC and process) meetings to provide a forum to close this issue.
- We held an MWMF/HWM peer review on 5/11/95 to bring the MWMF personnel up to date as to the status of the Facility design.

FY95 Budget Spending profiles (CENRTC)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
11/94 Plan ¹	28	26	26	26	26	30	26	29	29	26	30	26
4/95 Plan ²	Used actual costs through March						27	27	27	27	27	27
Monthly actual	51	-1	10	18	30	18	19	20				
11/94 Plan cumulative ¹	28	54	80	106	132	162	188	217	246	272	302	328
4/95 Plan cumulative ²	Used actual costs						154	181	208	235	262	289
Actual cumulative	51	50	60	78	108	127	146	166				
Current lien	2	0	2	0	1	3	2	1				

Significant Procurement Actions this month

None

Milestones and Markers

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

ID no.	Milestone/Marker	Scheduled Date*	Status
L133-1.4	Input to <i>FY95 Plan</i> (see 115-7)	Nov 94	Complete
L133-2	Issue Integrated Operations Plan	Jan 95	Complete
L133-4	Issue Metrication Plan	Feb 95	Complete
L133-3	Issue Title I System Design Requirements	Aug 95	In Progress
L133-5	Input to <i>FY96 Plan</i> (see 115-10)	Oct 95	

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains level of effort work during FY95 to support RAS Title I design. Due to consolidation into DWTF facilities, RAS no longer requires the extent of in-process storage originally scoped. Title II design projected to begin in August '95 has been delayed to FY96.

SCHEDULE: RAS 90% Preliminary Design Review has been rescheduled to September.

COST: The revised plan reflects cost savings resulting from decreased scope and use of existing characterization data for the pilot characterization studies. End-of-year activities have been reduced to meet new RAS scope.

Summary of Monthly Activities

Activities this month continued with the coordination of the design efforts for the RAS areas of the MWMF and DWTF. We are drafting a letter describing the proposed recommendations. We have been developing layouts showing the revised RAS areas and how they would fit into the facility.

FY95 Budget Spending profile (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

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

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains level of effort work during FY95 to support SFP Title I design. Title II design projected to begin in August '95 has been delayed to FY96.

SCHEDULE: SFP 90% Preliminary Design Review has been rescheduled to September.

COST: Overall cost for this element has been increased approximately \$100K resulting from two major factors: (1) The revised plan reflects cost savings already incurred through design simplification. (2) It reflects a 25% reduction in telerobotics manpower that has been shifted off the Project and an additional 20% reduction in SFP manpower that has been shifted to other MWMF activities. These budget reductions are offset by approximately \$100K in projected carryover to account for an uncosted lien for a support contract that runs through March, 1996 and an increase in engineering development hardware costs of approximately \$200K.

Summary of Monthly Activities

- Activities this month focused on rebaselining of the feed preparation area to meet revised guidelines and preparation of the SFP Hardware PDR. Another revised floor plan has been generated at the request of the Project Manager. This new layout shows how a completely manual operation of the area would be accomplished. This change addresses concerns from HWM in how manual operations would be accomplished if the telerobotic or teleoperational modes were not used.
- We provided additional details for the drum venting and opening operation. Efforts are directed towards providing the most cost-effective method using commercially available equipment where possible. Detailing of the equipment and vendor inquiries to firm up cost estimates are in progress.
- We addressed drum handling concepts and made an initial cut at the required tooling/fixtures required for the overhead crane.
- We completed training for both Land Disposal Restrictions and the 40-hour OSHA Hazardous Waste Training.
- We held the telerobotics peer review May 22, 1995. Some action items and concerns were brought up, which will be addressed as the design proceeds. We issued the engineering development arm RFP. We wrote the specification to describe an arm that could also be used in the facility, avoiding future costs and reducing the overall

cost of the telerobotic system. Having the actual arm requirements and interfaces will also reduce the design effort related to the interface and control system.

- We are sending samples of feed material containing metallic impurities to potential separation vendors for proof of principle testing.
- We completed Marker L142-1.7—*SFP workcell control architecture designed*. Formal documentation will be done and reviewed by appropriate line management in June.

FY95 Budget**Spending profiles (CENRTC)**

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

We released the RFP for the engineering development arm in April and received responses in May.

Milestones and Markers

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

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

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

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains level of effort work during FY95 to support LFP Title I design. Title II design projected to begin in August '95 has been delayed to FY96.

SCHEDULE: LFP 90% Preliminary Design Review has been rescheduled to September.

COST: The revised plan reflects cost savings already incurred through design simplification and use of pre-existing design information. In addition, it reflects a 25 percent reduction in manpower that has been shifted to other MWMF activities.

Summary of Monthly Activities

- We continued LFP equipment layouts based upon the revised floor plan generated during April '95. Changed process flow diagrams and P&ID's as necessary. Responded to action items that arose during the LFP Peer Review.
- We acquired further information for final trade-off matrix (prior to PDR).
- We attended a 40-hour SARA/OSHA class designed for those working with or on hazardous waste.
- We are currently writing System Design Description, System Operation Description and Hazards Analysis Matrix for LFP.

FY95 Budget Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

	Item	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	Complete
L143-1.5	LFP LI&C System Preliminary Design Review	Sep 95	
L143-1	90% Preliminary Design Review	Sep 95	

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

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Per the Program Letter of 5/16/95, MEO was deleted from the Project baseline. Current status of system design, which is consistent with *Project Rebaseline 1.2*, will be documented to allow reactivation of MEO as the first process technology added to the MWMF. Remaining tests on existing hardware will also be completed to effect an orderly shutdown.

SCHEDULE: Certain milestones have been delayed, modified, or added to accommodate implementation of directed funding and scope changes.

COST: The revised 4/95 plan is consistent with Project rampdown, as the Program Budget Letter of 5/16/95 instructed the Project to drop MEO from the project baseline. Zero budget is assumed for FY96.

Summary of Monthly Activities

- The pH probe for the Automated Diluter has been tested. The Cervo computer-controlled syringe pump and smart valve have been installed in a test fixture and checked out using the DOS test software that was supplied with them. The system is ready for testing.
- We performed additional Ag recovery tests using the 1/15-scale silver recovery system in B161, slowing the H₂O₂ feed rate and using delumped AgCl. The yields were over 99%, slightly better than the 98 to 99% yields obtained in the lab-scale tests. The results are being documented and will be included in the System Design Description currently being written.
- We completed preparation for steady-state simulation runs of the FM-21 in B161. These runs will be used to verify the MEO secondary system design capacities. First runs are scheduled to start this coming week.
- Design effort included the following:
 - Began writing a complete System Design Description documenting the MEO design and development to this point. This description is to be sufficiently complete so that MEO can be reactivated in two years without loss of design information.
 - Continued review, mark-up, and modification of preliminary P&IDs. This effort is approximately 80% complete. The results will be included in the System Design Description currently being written.

FY95 Budget

Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

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.

Changes Due to 4/95 Revised FY95 Plan

SCOPE: The overall scope of MSO is unchanged. However, the FY95 scope has been reduced to meet the revised FY95 milestones and budget.

SCHEDULE: The PDR milestone has been delayed from June '95 to October '95 due to the budget reduction and earlier DOE funding and manpower guidance. This slippage will also permit more engineering data from the EDU to be available prior to the final design.

COST: The revised plan reflects the budget reduction of \$350K.

Summary of Monthly Activities

- **Materials Development and Evaluation:**

- Aluminized coatings of nickel alloy (*in collaboration with ETEC*)**

- Metallography revealed that aluminizing was successful in protecting Inconel alloys 600 and 601 against corrosion when tested at 900°C/500 h. This triggered two actions. The first was to begin a confirmation test at the higher temperature of 950°C. The second was to intensify our evaluation of aluminides by expanding our source base from one (Alon) to three commercial coaters: Alon, Hi Tempco, and Sermatech, the latter two being high-technology shops heavily involved in aerospace coatings. Coated samples of Inconel 600 rods for corrosion testing have been ordered from Hi Tempco.

- Aluminized coating of iron (*in collaboration with ETEC and ORNL*)**

- Last month we reported that Inconel 600, which had first run electroplated with iron and then aluminized, failed extensively during a corrosion test at 900°C for 500 h. To see if thermal shock was responsible for the failure, the test is being repeated by loading the sample and salt granules simultaneously at room temperature versus the initial method of lowering it into molten salt at 900°C.

- Physical vapor deposition (PVD)**

- Oxides about 1 µm thick of Cr, Ta, and Y were applied at LLNL by unbalanced magnetron sputtering to Inconel 600 rods. The coatings appear sound and will be corrosion tested.

- Corrosion test furnace**

- The furnace has been moved to a larger area to permit the addition of an air/CO₂/moisture-injection system for more prototypic testing. All major components required for its assembly have been received.

- **Engineering Demonstration Unit (EDU):**

Major tasks associated with activation of the MSO EDU are complete. Preliminary system checkout is scheduled to begin mid-June.

A great deal of progress has been completed during the past month. This includes installation of the vessel and heaters, and installation of the off-gas. All components of the Horiba gas analyzer system have now been received and installed. The problem with the THC analyzer was simply a loose fitting on the burner. All wiring for the analyzers is complete. All items have now been received from Omega (TCs, TC wire and connectors, heater wire, etc.). Field wiring of sensors and actuators is being completed as the components are installed (TCs, heaters, valves, etc.). Two valves were added for control of the salt sucker operation and are being incorporated into the control system design.

The supervisory controls are 80% complete. The PLC programming is 90% complete; remaining tasks are control of the blower, documentation and initial checkout of the interface with the operator interface computer (supervisory controls).

Tasks to be completed include: complete preliminary system checkout, begin system operation, complete salt sucker system engineering calculations and evaluate safety issues, re-evaluate cooling/heating calculations, verify assumptions with operation of EDU, and work with ETEC on the integration of their top injector for EDU, and complete the review/approval process for the OSP.

- **Injector Development:**

Construction of the EDU liquid injector is 85% complete. Fabrication of the injector pneumatic panel is nearly complete. A CO₂ cover gas purge system has been added. Remaining tasks include plumbing of the backup air system and running lines over to the injector.

The injector portion of the P&ID has been updated to reflect the latest design.

- **Primary Unit Design:**

This activity continued with work on the arrangement drawing and Process Flow Diagram. We completed design of an Excel spreadsheet that calculates mass and energy balances on the MSO reactor. The input variables include mass flow rates of the feed materials (up to 6 streams may be fed simultaneously in any proportion), reactor ID, percent excess air (plus the ability to add an additional input air stream), temperature of the melt, percent of feed nitrogen to be converted to NO, percent of feed carbon to be converted to CO, and salt recycle parameters (including salt removal rate, salt addition rate, amounts of Na₂CO₃ and NaCl to be contained in the salt stream returning to the reactor from salt recycle, and time before salt recycle is initiated). Information returned includes the superficial velocity, composition and mass flow rate of the product off-gas, composition of the melt (with or without salt recycle), and the heat required (or evolved).

- **Process Off-Gas:**

We performed a tradeoff study on the location of the Gas Solid Separation (GSS) filter. We concluded that the location behind reactor vessel #2 was best because the

gas temperature in each pipe would be essentially the same at the GSS filter inlet. Otherwise the gas temperature among the three streams could vary by as much as 215°C, which in turn adds complexity to the design requirements for the process off-gas components.

We have completed preliminary sizing of the heat exchanger, condenser, circulation heater(s), and HEPA filter and obtained cost estimates. This was essential to the development of a layout showing the space required for the system and how the components fit together.

The sizing of the components was based on the worst-case condition (3 vessels running at 1 ft/s superficial velocity with combustible feed). Presently, the design of each component is being reevaluated to ensure that it will efficiently handle the low-end condition (1 vessel running at 0.6 ft/s superficial velocity with halogenated feed) as well. For example, if the heat exchanger is not designed properly, condensation will begin inside the heat exchanger when the low-end condition is experienced. The trapped condensate could damage the heat exchanger as well as the overall system by increasing the back pressure. As a result, a design is underway for combining the heat exchanger and condenser into one unit. A tradeoff study will be done to see which design is more feasible.

- **Salt Recycle:**

Laboratory work continued in May to characterize the processes proposed for use in Salt Recycle. A model salt mixture containing 20 wt% NaCl was mixed from known amounts of NaCl and Na₂CO₃, and laboratory separations were demonstrated for a two-stage crystallization process. Laboratory analytical techniques are in development and were used to characterize the performance of the laboratory work during May. After crystallization, the separated product contained 5% NaCl impurity and the separated NaCl product contained 26% Na₂CO₃ impurity.

We began Process Flow Diagrams (PFDs). The PFDs show key process streams and all process equipment required for the salt recycle system. Included in the PFDs are tag numbers and preliminary information of the process equipment. The PFDs will provide a basis for cost analysis as well as the development of piping and instrumentation diagrams (P&IDs).

Analysis of three component phase equilibrium data [confusing: 3 data or 3 components?] from the literature confirmed clearly the feasibility of using fractional crystallization to separate mixtures of NaCl and Na₂CO₃. Process design calculations for batch crystallization of Na₂CO₃ from mixtures of Na₂CO₃ and NaCl were completed. One theoretical stage is sufficient to separate any mixture between 4 wt% NaCl and 80 wt% NaCl into a pure Na₂CO₃ product and a NaCl product containing 12% Na₂CO₃. Table 2 shows separations that can be expected from batch crystallization when practical batch process inefficiencies are included in the calculations. We are evaluating options for reducing the Na₂CO₃ impurity in the NaCl product to meet the 10% goal.

Table 2. Separations expected from batch crystallization.

	Goal	Batch design analysis		
wt% NaCl in input salt	6-40%	6%	19%	40%
kg/h input rate (dry)	as given— >	230 kg/h	140 kg/h	70 kg/h
wt% NaCl impurity in Na ₂ CO ₃ product	<4%	3%	3%	3%
wt% Na ₂ CO ₃ impurity in NaCl product	<10%	17%	17%	18%
Stages of Na ₂ CO ₃ crystallization required	few as possible	3	2	1

Spent salt from molten salt treatment of waste will contain many more contaminants than NaCl, such as F, Br, sulfate, and phosphate salts of Al, Zn, Mg, Ca, Fe, K, toxic metals, and radionuclides. Models for calculating aqueous-phase equilibrium will be used to analyze and design separations for these multicomponent systems. We are evaluating candidate models, two having accurately calculated the first test problem. The large number of possible combinations of process conditions and contaminant interactions make a calculational approach less costly than full experimental exploration.

The Salt Recycle peer review was held during May as part of the overall MSO peer review. There were no action items for Salt Recycle. Issues that will be addressed during the balance of the design task include preliminary design of salt extraction valve and freezer, identification of contaminants in the spent salt, understanding the behavior of salt contaminants, and optimum process design of the salt separation process.

- **Industrial Participation:**

The CRADA documentation for the Primary system (Joint Work Statement) has been transmitted to DOE.

- **Reviews:**

A two-day peer review was held for the entire MSO system. Although there were several action items listed, the consensus was that the Title 1 design was on track and no show stoppers were identified.

A Safety Control System Issues peer review for MSO was also held.

FY95 Budget Spending profiles (CENRTC)

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

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

ID no.	Milestone/Marker	Scheduled Date*	Status
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	Oct 95	
L152-3.4	Install development unit	Oct 95	
L152-3	MSO System MWMF PDR	Oct 95	
L152-5	Start Title II design	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.

Changes Due to 4/95 Revised FY95 Plan

Not applicable. This activity has been closed out.

Summary of Monthly Activities

This activity has been closed out. No FY95 activities.

FY95 Budget Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.5.4 UV Photolysis**Task Description**

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

Changes Due to 4/95 Revised FY95 Plan

Not applicable. This activity has been closed out.

Summary of Monthly Activities

This activity has been closed out. No FY95 activities.

FY95 Budget Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

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

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

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Catalytic DeNO_x and Advanced Metal Filters were delayed pending budget availability in out-years. The Acidic Urea DeNO_x engineering development will end in July

SCHEDULE: Certain milestones have been delayed and/or deleted to accommodate close-out of current activities on Urea DeNO_x. Future funding availability will dictate the extent to which XOG is deployed.

COST: The revised plan reflects the delay/deletion of XOG activities.

Summary of Monthly Activities

The gas-liquid contactor for destruction of NO_x with acidic urea is assembled complete with I&C systems and undergoes final tests.

FY95 Budget Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

ID no.	Milestone/Marker	Scheduled Date*	Status
L155-1.1	Fabricate prototype gas-liquid contactor for acidic urea DeNO _x scrubbing	Jun 95	In Process
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)	Jul 95	
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)	Aug 95	

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

The principal objective of the Process Transport and Storage system is to collect, transfer, deposit, store, and handle containers, discrete items, dry and wet bulk materials, slurries, and liquids. Process Transport and Storage provides management, system analysis and support, design (Title I, II, and III) engineering, procurement, installation of process support systems equipment, Title III inspection, and acceptance test procedures (ATP). Process Transport and Storage includes both process transport and storage equipment and systems integration.

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Scope has been reduced to match a reduced number of systems planned for initial MWMF operation.

SCHEDULE: 90% PDR has been rescheduled for September.

COST: The revised plan reflects maintaining the current level of effort through FY95 rather than increasing activity required to meet the original Title I schedule for June.

Summary of Monthly Activities

- Activities this month focused on trade-offs in the area of blending and sampling of feed batches. Small changes in the order of final batch preparation may have significant impacts on analytical needs and storage requirements. Various scenarios are being evaluated to minimize the number of more expensive delivery systems and to reduce the analytical load, which is expected to be a major schedule and operational cost driver during facility operation.
- We have completed draft process flow diagrams and P&IDs.

FY95 Budget Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.6.2 Analytical Services**Task Description**

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

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains level of effort work during FY95 to support Title 1 Design. Planned procurement toward end of FY95 is delayed.

SCHEDULE: Certain milestones have been delayed due to implementation of directed funding and scope changes. No other changes to the FY95 forecast dates have occurred as a result of the budget rebaseline.

COST: The revised plan reflects the delay of procurements planned for end of year.

Summary of Monthly Activities

- Work this month has primarily focused on data gathering and preparation of the LI&C *Functional Requirements* Document. We met with Trish Baisden, Patrick Epperson, and Howard Hall of Chemistry and Material Sciences Environmental Services to discuss partnering and cost sharing for the development of a laboratory sample management system and database.
- We began preparations for the peer review to be held in July, 1995.

FY95 Budget**Spending profiles (CENRTC)**

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

WBS Element 1.6.3 Water Treatment**Task Description**

Water Treatment (WT) 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. WT 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.

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains FY95 funding to support Title I design. Allocated budget was spent during the first half of FY95 due to delayed start of Title I. This shortfall has been applied to reduce the FY95 Project budget.

SCHEDULE: Certain milestones have been delayed to accommodate the new spending profile. New forecast dates are indicated where they can be meaningfully estimated, given uncertain plans for FY96 at this time. Changes do not reflect proposed FY96 budget reduction. WT Title II design should not begin until the WBS elements that originate water for treatment by WT have completed their Title I Design.

COST: The revised plan reflects the current underrun.

Summary of Monthly Activities

The HWM water treatment design team continued Title I design work on the MWMF WT process equipment selection and specification. Trade-off studies on unit operations were completed and preferred unit operations were further defined and sized. Utility and space requirements for WT equipment were provided during May. Preparations began for the WT Peer Review, which is scheduled in June.

FY95 Budget Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

ID no.	Milestone/Marker	Scheduled	Status
		Date*	
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	Oct 95	

WBS Element 1.6.4 Final Forms**Task Description**

The Final Forms 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 final form types are (1) ceramics for mineral residues, (2) polymer microencapsulation for salt, and (3) sulfur-polymer microencapsulation for volatile inorganic solids.

Changes Due to 4/95 Revised FY95 Plan

SCOPE: Maintains the effort during FY95 to meet "initial" FY95 plan. A planned subcontract to evaluate thermosetting resin systems for polymer microencapsulation has been postponed.

SCHEDULE: The completion milestone L164-1 has been postponed. There are no other significant changes in the FY95 schedule.

COST: The revised plan includes a cost reduction of \$7K for FY95.

Summary of Monthly Activities

- As previously discussed, most of our current ceramic activities are directed at determining the interrelated effects of various loadings on phase formation, partitioning, and component volatilization. Specimens were prepared of a formulation containing substantial levels of U, Ag, Be, Tl, and Zn, and low levels of a wide variety of other elements. It was found that U partitions into the zirconolite phase, as expected. The concentration of U in the zirconolite seems uneven, however, suggesting that considerably higher levels are feasible. Most of the Tl vaporized, as expected, as did minor amounts of Ag, Cd, Mo, Zn, and Pb. The Ag occurs, apparently in elemental form, as a droplet (not a continuous) grain boundary phase. Pb partitioned mainly into the perovskite. The fate of the Be is unknown at this time, awaiting ion microprobe analysis.
- There was one serious failure in leach resistance for the ceramic form. The Cd concentration in our simulated TCLP test was 2.06 ppm, the regulatory level being 1.0 ppm and the UTS limit 0.19. Cd, having the same valence and nearly the same size as Ca, was expected to be immobilized in the perovskite or zirconolite phases. Various possible explanations and cures suggest themselves, and the failure is under investigation.
- Leachate concentrations of all other RCRA metals passed even the stringent UTS levels.
- Planned work on the polyethylene microencapsulation of salt, to be performed at EG&G Rocky Flats under an MWMF ICO, has been delayed in order to specify the scope and costs. This work is very cost effective, since it is being coordinated with Rocky Flats work that is of interest to the MWMF but funded by other sources.
- Sulfur-polymer microencapsulation of volatile inorganic solids had been deleted, for cost reasons, from Final Forms' scope. On the basis of recent results at ORNL, we now believe that this waste form can be retained at negligible cost. The waste form will not be optimized, but the quantities of volatile inorganic solid residuals is so small (a few liters per year) that it hardly matters.

- Final Forms safety issues were included in the I&C peer review for safety control system issues held on May 23.
- We estimated RCRA metal concentration levels for the salt residuals, such that the polymer-microencapsulation waste form will pass appropriate regulatory leach tests. See *Final Forms' recommended assumptions for WT designs* (L-19602-1).
- The two peer reviews held in March and April completed Marker 164-2.1.
- We prepared a rather detailed memorandum, *Status of Final Forms' Immobilization Evaluations* (L-19631-1), in fulfillment of Marker 164-1.3.
- Milestone L164-1 has been postponed due to uncertainties about the most cost-effective (for the overall Project) technology to use for the polymer microencapsulation of salt. The new date depends on decisions to be made in June.

FY95 Budget Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None

Milestones and Markers

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

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

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

Supervisory Instrumentation and Control (I&C) systems will be provided and integrated to demonstrate, test, and evaluate mixed-waste destruction technologies in a safe, environmentally acceptable, reliable, and cost-effective manner. I&C systems provide the management, system analysis and support, design (Title I, II, III) engineering, procurement, equipment installation, Title III inspection, and acceptance test procedures (ATP) covering equipment and system integration activities for: Facility database management, safety control, process I&C standards, supervisory control, and ancillary systems and equipment including the instrumentation and equipment database, intercom communication, process and surveillance CCTV, cable and power distribution and grounding, and control room facilities.

Changes Due to 4/95 Revised FY95 Plan

None.

Summary of Monthly Activities

- We continued activities to answer action items identified during the ICS Peer Review of March 9th.
- We prepared for the *SI&C System 90% Preliminary Design Review*. The PDR is scheduled for June 15, 1995.
- Several members of the I&C Engineering Group attended the 40-hour OSHA/SARA training class on May 15–19, 1995.
- We completed evaluation testing of the ProcessVision-to-DBMS software (Engr. Dev. Phase 2B).
- We continued ICS testing activities. ProcessVision *procedure* and *rule* configuration features were demonstrated.
- We conducted a *Safety Control System Issues* peer review on May 23, 1995 to identify all controls-related safety issues for the MWMP and for the local processes. Seven action items were generated.
- We initiated activities to establish standard methods for implementing operator interface screens. The I&C design team will be attending a workshop on Human Factors Engineering (HFE) on June 1–2.
- We resumed activities directed toward marker *L165.1-12 — SI&C Functional Requirements Document complete*. The document will not be completed until late June or early July due to priority conflicts.
- We held discussions with LLNL's Network and Computer Engineering Group for assistance in the evaluation and costing of network architecture design alternatives.
- We held discussions with LLNL's Computer Security group for assistance in determining control system vulnerability to unauthorized users.

FY95 Budget Spending profiles (CENRTC)

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

¹ Original FY95 Plan shown to illustrate changes

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

Significant Procurement Actions this Month

None.

Milestones and Markers

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

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

Appendix A

Milestone/Marker Log

MWMF Milestone / Marker Log		Sorted by number			For May 95 Report	
Number	Item	PTS	Orig. Date	Date	Status	Comments
Doc. Resp. Person: M. Hussey, A. Throop (alt.); Rev. date: 7/5/95						
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	Aug-95		EA draft submitted. Rev. due to MWMF/DWTF merge. Rev. EA 2/95. Aug-95 is earliest date for EA review and FONSI issue per DOE Compliance Office.
D115-1	DOE Issue Project Plan	X		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	complete	received KD-1 only
X 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	complete	
L111-2	Develop and Issue Document Control Plan			Jan-94	complete	
L111-3	Issue Design Review Procedure			Sep-94	complete	
L112-1	PSAR to DOE for Review	X	Mar-94	Dec-94	complete	delayed to include CDR information and due to DOE decision to merge MWMF & DWTF
L112-1.1	Issue PSAR Contract			Oct-93	complete	
L112-1.2	Preliminary PSAR Review			Feb-94	complete	
L113-1	Environmental Assessment (EA) submitted to DOE	X	Mar-94	Jun-94	complete	delayed to include CDR information, draft submitted
L113-2	Submit air permit to BAAQMD	X	May-94	Apr-96		Schedule change as a result of permitting strategy change.
L113-3	Submit RD&D permit application to DTSC	X	Jul-94	Feb-95	on hold	Draft application complete. Permit application may not be submitted if revised strategy is approved.
L113-4	Submit revised EA to DOE (for MWMF/DWTF merge)	X	Dec-94	Feb-95	complete	Delayed to allow coordination with permitting efforts (L113-3).
L114-1.1	ES&H review of 30% CDR			Dec-93	complete	
L114-1.2	ES&H review of 90% CDR			Mar-94	complete	
L114-1.3	ES&H review of 90% PDR		Sep-94	Jan-95	deleted	changed to reflect level of effort work
L114-2	Complete review of PSAR			Aug-94	complete	
X L115-1	Submit Project Management Plan (Final)	X	Jan-95	May-95	complete	Delayed due to unavailability of DOE Project Plan..
L115-1.1	Project Management Plan (Draft)			Oct-93	complete	
L115-10	Submit FY96 Plan	X		Oct-95		
L115-2	Select Project Engineers and Project Control Manager			Dec-93	complete	
L115-3	Submit FY94 Plan	X		Jan-94	complete	
L115-4	Initiate PTS and Monthly reporting			Jan-94	complete	
L115-5	Technology Selection and Implementation Plan	X		Feb-94	complete	
L115-6	Develop Design Basis Operations Plan			Mar-94	complete	
L115-7	Submit FY95 Plan	X	Sep-94	Dec-94	complete	delayed due to LLNL accounting changes and higher DOE priorities
L115-8	Technology Selection and Implementation Plan, Part II		Mar-95	Apr-95		Document in TID for publication. Release expected in Apr-95.
L115-9	FY97 Project Validation			Apr-95		
L116-1	First meeting of NRP	X	Feb-95	Jun-95		Delayed while key regulatory issues were resolved and the detail strategy for NEPA and CEQA finalized. Now scheduled for 6/20/95.
L116-1.1	National Review Panel (NRP) formed		Dec-94	Apr-95	Complete	Activity delayed while key regulatory issues relative to MSO are resolved and the detail strategy for NEPA and CEQA finalized.
L116-2	Second meeting of NRP		Aug-95	Nov-95		Activity delayed while key regulatory issues relative to MSO are resolved and the detail strategy for NEPA and CEQA finalized.
L116-2.1	Issue first public newsletter		Mar-95	Jun-95		Activity delayed while key regulatory issues relative to MSO are resolved and the detail strategy for NEPA and CEQA finalized.

MWMF Milestone / Marker Log		Sorted by number			For May 95 Report	
Number	Item	PTS	Orig. Date	Date	Status	Comments
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	Dec-95		Activity delayed while key regulatory issues relative to MSO are resolved and the detail strategy for NEPA and CEQA finalized.
L121-1	30% CDR Review			Dec-93	complete	
L121-1.1	Initiate Point Design Reviews			Oct-93	complete	
L121-1.2	Complete Point Design Reviews			Nov-93	complete	
L121-2	90% CDR Review			Mar-94	complete	
L121-3	CD Report Issued	X		Apr-94	complete	
L122-1	Issue MWMF Start-Up and Activation Plan		Sep-95	Feb-96		Delayed due to 4/95 budget cut.
X L131-1	Preliminary Design Review (Overall Project) completed	X	Sep-94	Nov-95		Delayed due to reduced DOE funding.
L131-2	Input to FY95 Plan (see 115-7)	X	Sep-94	Dec-94	complete	delayed due to LLNL accounting changes and higher DOE priorities
L131-3	Submit MWMF Rebaseline (KD-1)	X		Sep-94	complete	
X L131-4	Submit MWMF Rebaseline (MWMF/DWTF Merge)	X	Mar-95	May-95	complete	Delayed due to FY97 field submittals and other higher priority work.
X L131-5	Submit Post-PDR Project Baseline	X	Sep-95	Jan-96		Delayed due to reduced DOE funding.
L132-1	Implement Cost planning/tracking systems (document)		Sep-94	Dec-94	complete	activity stretched-out due to reduced funding guidance
L132-10.1	Input to FY96 Plan (see L115-10)			Oct-95		
L132-2	Implement Technical baseline control system		May-94	Nov-94		see 132-7
L132-3	Implement Schedule control/tracking system			Aug-94		see 132-7
L132-4	Input to FY95 Plan (see L115-7)		Nov-94	Dec-94	complete	delayed due to LLNL accounting changes and higher DOE priorities
L132-5	Issue Configuration Control System Document		Jan-95	Mar-95	complete	Delayed to allow discussion and review and due to higher priorities.
L132-6.1	Input to MWMF Project Management Plan (see L115-1)		Feb-95	Apr-95	complete	Delayed due to higher priority work.
X L132-7	Performance Management System documented		Apr-95	Aug-95		Delayed due to requests for unplanned work from DOE.
X L132-8.1	Complete support of Project PDR (see L131-1)		Jun-95	Nov-95		Delayed due to reduced DOE funding.
L132-9	Complete QA Self Assessment			Aug-95		
L132-9.1	Records Control Procedure Issued			Apr-95	complete	
L132-9.2	Assessment/Surveillance Procedure Issued			Jul-95		
L133-1.1	Draft System Engineering Management Plan			Sep-94	deleted	Information in other documents
L133-1.2	Issue MWMF development plan			Jul-94	complete	
L133-1.3	Complete MWMF floor plan			Jul-94	complete	
L133-1.4	Input to FY95 Plan (see 115-7)			Nov-94	complete	
L133-2	Issue Integrated Operations Plan			Jan-95	complete	
X L133-3	Issue Title I System Design Requirements		Feb-95	Aug-95	In Progress	Delayed due to reduced DOE funding.
L133-4	Issue Metrication Plan			Feb-95	Complete	
L133-5	Input to FY96 Plan (see 115-10)			Oct-95		
X 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		Delayed due to reduced DOE funding.
X L141-1.4	RAS LI&C Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.
X L142-1	SFP System Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.
L142-1.1	SFP surrogate feeds defined			May-94	complete	
L142-1.2	Identify initial suite of characterization equipment		Jun-94	Jan-95	complete	Delayed due to later than scheduled completion of pilot characterization studies and reduced manpower and funding guidance received after original schedule was established.

MWMF Milestone / Marker Log			Sorted by number			For May 95 Report	
Number	Item	PTS	Orig. Date	Date	Status	Comments	
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		
X 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		Delayed due to reduced DOE funding.	
X L142-1.9	LI&C Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.	
X L142-2	Telerobotics Preliminary Design Review			Sep-95		New milestone.	
X L143-1	LFP System Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.	
L143-1.1	Define surrogate feeds		May-94	Nov-94	complete	date changed to agree with extended project schedule	
L143-1.2	LFP general arrangement plan finalized		Jul-94	Dec-94	deleted		
L143-1.3	Complete validation of characterization and segregation methods		Sep-94	Apr-95	complete	Delayed by technical difficulties which have since been resolved.	
X L143-1.4	LI&C Functional Requirements Document complete		Jun-95	Sep-95			
X L143-1.5	LI&C Preliminary Design Review		Jul-95	Sep-95		Delayed due to reduced DOE funding.	
L151-1.1	Complete tests on turbo-aerator for nitrous acid conversion (document issued)		Mar-94	Jan-95	complete	Release of report delayed due to slower than expected review cycle.	
X L151-1.10	P&ID drawings (document)			Sep-95	In Progress	Replaced by L151-3.	
X L151-1.11	Layout drawings of major equipment items (document)			Sep-95	In Progress	Replaced by L151-3.	
L151-1.12	LI&C Functional Requirements Document complete			Aug-95			
X L151-1.13	LI&C Preliminary Design Review			Sep-95	deleted	Replaced by L151-3.	
L151-1.2	Initiate steady-state flow and chemistry balance tests			Apr-94	complete		
L151-1.3	Initiate instrumentation and control system tests for MEO			Aug-94	complete		
L151-1.4	Summarize silver recovery chemistry results to date (document)		Sep-94	Apr-95	complete	Release of report delayed because PI was involved with higher priority tasks. Task has been assigned to another engineer.	
L151-1.5	Fabricate and set-up cellulose Feeder		Sep-94	Dec-94	complete	activity stretched-out due to reduced funding guidance	
L151-1.6	Report on NaOH-AgCl recovery (document)		Feb-95	Apr-95	complete	Delayed to allow patent disclosure to be filed. Document is in review cycle with release expected in Apr-95.	
L151-1.7	Computer simulation of the combined MEO and Acid Recovery control systems (document)		Feb-95	Mar-95	complete	Delayed due to higher priority tasks.	
L151-1.8	Final Report on steady-state flow and chemistry balance tests (document issued)		Apr-95	Aug-95		Delayed due to budget uncertainty.	
L151-1.9	Demonstrate prototype cellulose feeder (document)			Jun-95	deleted	Deleted per Rebaseline 1.2 as cost savings measure.	
X L151-2	MEO System Preliminary Design Review			Sep-95	deleted	Replaced by L151-3.	
L151-2.1	Preliminary Process Flow Diagram for MEO			Jun-94	complete		
L151-2.2	Preliminary equipment layout for MEO			Sep-94	complete		
X L151-3	MEO System Design Description (document)			Jul-95		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			Jun-95			
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.	
X 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		

MWMF Milestone / Marker Log			Sorted by number			For May 95 Report	
Number	Item	PTS	Orig. Date	Date	Status	Comments	
L152-3.3	Initiate vessel material study			Oct-94	Complete		
L152-3.4	Install development unit			Jun-95			
X L152-3.5	LI&C Functional Requirements Document complete		May-95	Oct-95		Delayed due to reduced DOE funding.	
X 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		
X L152-5	Start Title II design		Jul-95	Nov-95		Delayed due to reduced DOE funding.	
L153-1	Award WOX contract			Sep-94	deleted	WBS element deleted per DOE guidance	
L153-1.1	Complete and document work to date			Jul-94	complete		
L153-1.2	Issue RFQ for WOX treatment unit w/ completed specification			Jun-94	deleted	WBS element deleted per DOE guidance	
L153-2	30% Preliminary Design Review for WOX			Sep-94	deleted	WBS element deleted per DOE guidance	
L153-2.1	WOX dispersion system test and design recommendation complete			May-94	deleted	WBS element deleted per DOE guidance	
L153-2.2	Preliminary WOX treatability tests complete			Jun-94	deleted	WBS element deleted per DOE guidance	
L153-2.3	Preliminary WOX Process Flow Diagram complete			Jun-94	deleted	WBS element deleted per DOE guidance	
L153-2.4	Preliminary P&ID for WOX Support System complete			Jul-94	deleted	WBS element deleted per DOE guidance	
L154-1	Complete and document UVP work to date			Jul-94	complete		
L154-2	UVP System Preliminary Design Review			Sep-94	deleted	WBS element deleted per DOE guidance	
L154-2.1	UVP Process Flow Diagram			Jul-94	deleted	WBS element deleted per DOE guidance	
L154-2.2	P&ID for UVP Support System			Jul-94	deleted	WBS element deleted per DOE guidance	
L154-2.2	EOG preliminary Equipment Layout			Sep-94	deleted	WBS element deleted per DOE guidance	
L154-2.3	UVP Equipment Layout			Aug-94	deleted	WBS element deleted per DOE guidance	
L155-1	Summarize Gas Liquid Contactor Tests (document)		Jun-95	Jul-95	In progress	Delayed due to vacation schedule.	
L155-1.1	Fab prototype gas-liquid contactor for acidic urea NOx destruction		Jun-94	Jun-95	In progress	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)	
X L155-3	XOG System Preliminary Design Review		Sep-94	Jun-95	deleted	Deleted from scope due to budget reductions. (1/95)	
L155-3.1	Summarize NOx-urea chemistry to date (document)		Sep-95	Aug-95		Was to be included in L155-1. Delayed from 7/95 to 8/95 due to later than anticipated start in testing.	
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		Delayed due to reduced DOE funding.	
X L161-1.1	Select standard transport container designs		Jun-94	Jul-95		Delayed due to reduced DOE funding.	
X L161-1.2	Floor plan layout complete		Jul-94	Aug-95		Delayed due to reduced DOE funding.	
X L161-1.3	LI&C Functional Requirements Document complete		Jun-95	Sep-95		Delayed due to reduced DOE funding.	
X L161-1.4	PTS LI&C System Preliminary Design review		Jul-95	Sep-95		Delayed due to reduced DOE funding.	
L162-1	Complete preliminary floor plan layout			Jun-94	complete		
L162-1.1	Select ATS standard transport container designs			Jun-94	deleted	WBS content revised to "Analytical Lab"	
L162-1.2	Finalize ATS transport handling capacity			Jun-94	deleted	WBS content revised to "Analytical Lab"	
L162-1.3	Finalize ATS transport equipment selection			Aug-94	deleted	WBS content revised to "Analytical Lab"	
X L162-2	Define analysis tests based on process acceptance criteria		Sep-94	Aug-95	partial	Delayed due to reduced DOE funding.	
L162-3	Define facility off-gas monitoring requirements		Sep-94	Feb-95	complete	Completed for preliminary design.	
L162-4	Define MEO on-line analysis requirements		Dec-94	Feb-95	complete	Completed for preliminary design.	
L162-5	Define MSO on-line analysis requirements		Jan-95	Mar-95	complete	Waiting for salt analysis to be defined. Completion expected in Mar-95.	

MWMF Milestone / Marker Log		Sorted by number			For May 95 Report	
Number	Item	PTS	Orig. Date	Date	Status	Comments
L162-6	Define DWTF analysis requirements			Feb-95	complete	Completed for preliminary design.
L162-7	Analytical Lab System Preliminary Design review			Aug-95		
L162-7.1	LI&C Functional Requirements Document complete			Jul-95		
L162-7.2	LI&C Preliminary Design Review			Aug-95		
L163-1	Water Treatment trade-off study		Jun-94	Sep-94	complete	
L163-1.1	Water Treatment trade-off study revision		Dec-94	Feb-95	complete	Delayed due to previously unplanned decision to have TID edit document. Presently out for signatures. Release expected in Feb 95.
L163-2	Memorandum of Understanding with HWM			Jan-95	complete	
X L163-3	WTR System Preliminary Design Review		Jul-95	Oct-95		Delayed due to reduced DOE funding.
X L163-3.1	LI&C Functional Requirements Document complete		Jun-95	Oct-95		Delayed due to reduced DOE funding.
X L163-3.2	LI&C Preliminary Design Review		Jul-95	Oct-95		Delayed due to reduced DOE funding.
X L163-4	Begin Final Design		Jul-95	Oct-95		Delayed due to reduced DOE funding.
X L164-1	Evaluations of Immobilization technologies complete		May-95	Jun-95		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	
X 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.
X L164-2	Final Forms System Preliminary Design Review		Jun-95	Aug-95		Delayed due to reduced DOE funding.
X 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	Aug-95		Delayed due to higher priority work and reduced DOE funding.
X L164-2.3	LI&C Preliminary Design Review		Jun-95	Aug-95		Delayed due to reduced DOE funding.
X 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		Delayed due to reduced DOE funding.
X L164-4.2	Report issued: Interim status of ceramic waste form compositions and process parameters		Aug-95	Sep-95		Delayed due to reduced DOE funding.
L165-1	SI&C System Preliminary Design Review		May-95	Jun-95		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	In progress	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	In progress	Delayed due to reduced DOE funding.
X L165-1.13	Engineering Development tasks complete, documented		Jun-95	Sep-95		Delayed due to reduced DOE funding.
X L165-1.14	Preliminary Design activities complete, documented		Jun-95	Sep-95		Delayed due to reduced DOE funding.
L165-1.2	Process Control System FEP hardware/software selected			Apr-94	complete	
L165-1.3	Supervisory Control System hardware/software selected			Apr-94	complete	
L165-1.4	Handling Systems open architecture controller selected			Jul-94	deleted	to WBS 1.4.2
L165-1.5	Analytical laboratory LIMS selected			Jul-94	deleted	LIMS may not be used in system design
L165-1.6	Teleoperator platform selected			Aug-94	deleted	to WBS 1.4.2
L165-1.7	Teleoperator controller selected			Sep-94	deleted	to WBS 1.4.2
L165-1.8	Database Management System hardware/software selected			Jul-94	complete	
L165-1.9	Engineering Development System operational		Dec-94	Jan-95	complete	Delayed because of late delivery of MinnovEX DBMS software driver.
L165-2.1	Instrumentation and Equipment Database operational		Mar-95	Apr-95	complete	Delayed pending I&C design team review scheduled for 4/7/95.
L165-2.2	Process I&C Standards established			Sep-95		
end						