FEB 18 1998

STA#4

4

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT

619131

2. To: (Receiving Organization) Distribution		3. From: (Originating Organization) Characterization Engineering		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: Characterization Project		6. Design Authority/ Design Agent/Cog. Engr.: AJ Kostelnik		7. Purchase Order No.: N/A	
8. Originator Remarks: The attached report is submitted for approval and release				9. Equip./Component No.: N/A	
				10. System/Bldg./Facility: 200 General	
11. Receiver Remarks: 11A. Design Baseline Document? ☐ Yes ☒ No				12. Major Assm. Dwg. No.: N/A	
				13. Permit/Permit Application No.: N/A	
				14. Required Response Date: 2/12/98	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	HNF-2060		0	CHARACTERIZATION ENGINEERING STATUS REPORT OCTOBER 1997 - DECEMBER 1997	N/A	2	1	

16. KEY					
Approval Designator (F)		Reason for Transmittal (G)		Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)		1. Approval	4. Review	1. Approved	4. Reviewed no/comment
		2. Release	5. Post-Review	2. Approved w/comment	5. Reviewed w/comment
		3. Information	6. Dist. (Receipt Acknow. Required)	3. Disapproved w/comment	6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
		Design Authority	N/A			1	/	CE Mgr. RM B...		2/17/98	
		Design Agent	N/A			1	/	SESC Project Mgr. CE Hanson		2/12/98	
1	/	Cog. Eng. RN Dale									
1	/	Cog. Mgr. JS Schofield									
		QA	N/A								
		Safety	N/A								
		Env.	N/A								

18. AJ Kostelnik Signature of EDT Date 2-11-98		19. RM B... Authorized Representative Date for Receiving Organization 2/11/98		20. JS Schofield Design Authority/ Cognizant Manager Date 2/12/98		21. DOE APPROVAL (if required) Ctrl. No. N/A ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
---	--	--	--	--	--	---	--

CHARACTERIZATION ENGINEERING STATUS REPORT OCTOBER 1997- DECEMBER 1997

Alois J. Kostelnik

SGN Eurisys Services Corporation, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: 619131

UC: 2070

Org Code: 08E00

Charge Code: N4H2A

B&R Code: EW3120074

Total Pages: 42

Key Words: core sampling, grab sampling, vapor sampling, HTI, LDUA, RMCS
KMA 2/18/98

Abstract: The attached report identifies the activities of the Characterization Engineering organization for the time period of October, through December 1997.

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact:
WHC/BCS Document Control Services, P.O. Box 1970, Mailstop H6-08, Richland WA 99352, Phone
(509) 372-2420; Fax (509) 376-4989.

[Signature]
Release Approval

2/18/98
Date

Release Stamp

Approved for Public Release

CHARACTERIZATION ENGINEERING STATUS REPORT

OCTOBER 1997 - DECEMBER 1997

HNF-2060

Revision 0

Prepared By:

A. J. Kostelnik

SGN Eurisys Services Corporation

January 1998

CONTENTS

EXECUTIVE SUMMARY	4
1.0 INTRODUCTION	5
2.0 HIGHLIGHTS FOR REPORTING PERIOD	5
2.1 CORE SAMPLING	5
2.1.1 Tanks Sampled	5
2.1.2 Sample Data	5
2.1.3 Sample Recovery	6
2.1.4 Core Sampling Equipment Availability	8
2.1.5 Core Sample Truck Modifications	8
2.2 GRAB SAMPLING	9
2.3 STANDARD HYDROGEN MONITORING SYSTEM SAMPLING	9
2.4 VAPOR SAMPLING	9
2.5 OTHER EQUIPMENT MODIFICATION AND DEPLOYMENT	10
2.5.1 Electrical Support Equipment	10
2.5.2 Exhauster	10
2.5.3 Support Equipment	10
2.5.4 Transport Casks	11
2.5.5 Samplers	11
2.6 CONFIGURATION CONTROL	11
2.8 RISER PREPARATION ACTIVITIES	14
2.9 CHARACTERIZATION OF TANK AZ-102	14
2.10 LIGHT DUTY UTILITY ARM (LDUA)	15
2.11 AUTHORIZATION BASIS AND PERMIT ISSUES	15
3.0 PLANNED ACTIVITIES	15
3.1 CORE SAMPLING	15
3.2 GRAB AND VAPOR SAMPLING	16
3.3 RISER PREPARATION	16
3.4 EQUIPMENT	16
3.5 PLUTONIUM FINISHING PLANT (PFP)	16
4.0 BUDGET SUMMARY	16
5.0 ENGINEERING	17
6.0 REFERENCES	18
APPENDIX	20

TABLES

Table 1. Tanks Sampled	5
Table 2. Core Sampling Configuration Status	12
Table 3. ECNs with Work Pending or in Process	13
Table 4. Work Package Reviews	13

FIGURES

Figure 1: SX-106 PMCS Core Profile	21
Figure 2: U-112 PMCS Core Profile	22
Figure 3: B-107 PMCS Core Profile	23
Figure 4: Truck #1 Sample Recovery	24
Figure 5: Truck #1 Sample Recovery	25
Figure 6: Truck #1 Segment Recovery	26
Figure 7: Truck #2, #3, & #4 Sample Recovery	27
Figure 8: Truck #2, #3, & #4 Sample Recovery	28
Figure 9: Truck #2, #3, & #4 Segment Recovery	29
Figure 10: Truck #1 Sampling System Availability	30
Figure 11: Truck #2 Sampling System Availability	31
Figure 12: Truck #3 Sampling System Availability	32
Figure 13: Truck #4 Sampling System Availability	33
Figure 14: Master Schedule for Characterization Project Engineering	34

**CHARACTERIZATION ENGINEERING STATUS REPORT
OCTOBER 1997 - DECEMBER 1997**

EXECUTIVE SUMMARY

Characterization Engineering (CE) continues to make progress in support of the project goal of characterizing the Hanford high-level waste tanks. Three core sampling systems were operational during this reporting period--rotary mode core sample systems #2 and #4 and push mode core sample system #1.

The availability average for all core sampling systems remained at the fiscal year (FY) 97 average of 43 percent. Three tanks were core sampled during the reporting period and 34 samples were retrieved.. Average sampler recovery for system #1 was 77 percent, below the performance goal of 80 percent. The systems #2, #3, and #4 goal of 60 percent was satisfied by overall recovery of 76 percent.

This reporting period included revision of the emissions permits for rotary mode core sampling (RMCS) with significant input from CE personnel. The changes included upgrading the portable exhausters to "Major Stack" and the preparation of a separate Notice of Construction for sampling in SX tank farm using the existing facility exhauster. Because the portable exhausters are still being upgraded, the use of the SX exhauster allowed Truck #4 to be deployed during the period.

During this reporting period there was significant progress made in other areas as well. Grab Sampling retrieved samples of waste from five tanks. Vapor Sampling was completed on ten tanks and was utilized in determining the passive tank ventilation rates for three tanks.

1.0 INTRODUCTION

The purpose of this report is to status the activities and plans for Characterization Engineering (CE) activities. The reports are meant to be the status report for deliverables to the Characterization Project.

2.0 HIGHLIGHTS FOR REPORTING PERIOD

This report statuses the activities and plans accomplished by CE for the period from October 1, 1997 through December 31, 1997.

2.1 CORE SAMPLING

2.1.1 Tanks Sampled

During this reporting period, one rotary truck and one push mode truck system were used to obtain core samples from waste in the Hanford tanks. All core samples, with the exception of one tank (241-SX-101), were taken in the push mode. Three tanks were sampled and 34 samples obtained, 22 from Truck #1 and 12 from Truck #4. The samples obtained from 241-SX-101 with Truck #4 were obtained in both rotary and push modes of operation.

Table 1. Tanks Sampled

Truck	Tank	Riser
1	241-SX-106	6 and 3
1	241-U-112	3 and 6 ⁽¹⁾
1	241-B-107	2 and 6 ⁽¹⁾
4	241-SX-101	19 ⁽²⁾

(1) Core samples obtained at the close of last quarter, but not processed.

(2) Riser sampled but not included in recovery analysis. Riser 4 scheduled to be sampled next quarter with Truck #3.

2.1.2 Sample Data

Color profiles of the extruded samples continue to be collected and are on file in CE, as well as in the 222-S laboratory. The graphic files of the tank profiles are located on server \\AP012\ACTLOG\ in directory COREPROF.

2.1.3 Sample Recovery

Core profiles for each tank in Table 1 are shown in Figures 1 through 3. The cores from 241-U-112 and 241-B-107 were obtained during the closing of the last quarter, but were not processed in time to be included in the last report.

All core sampling during this period, with the exception of samples from 241-SX-101 were obtained in push mode. Samples from riser 19 of tank 241-SX-101 were obtained using both push and rotary modes of operation. However, the data from SX-101 was not obtained in time to be included in this report.

2.1.3.1 Push Mode Core Sample Truck #1

Figure 4 shows the current performance of truck #1 for the last 100 samples. The chart shows the individual sample recovery, the last 100 sample average, and the recovery goal. The last 100 sample average as of December 31, 1997, is 77 percent. The recovery for truck #1 has decreased below the FY98 goal of 80 percent, based on the average of the last 100 samples.

Two cores, made up of 11 samples each, were obtained from risers 6 and 3 of SX-106 between October 13, 1997, and December 12, 1997, as shown in Figure 1. An excellent recovery, above 80 percent, was obtained for the softer materials in the top half of the tank. A lower recovery rate, below 80 percent, was obtained for the last five samples in each riser where the materials were dryer.

The low waste depth in 241-U-112 allowed only one sample each to be taken from risers 3 and 6. The recovery, shown in Figure 2, for both samples was below 80 percent (67 percent and 78 percent, respectively for risers 3 and 6). The material in both samples was principally moist saltcake, with some liquid present in the upper part of the sample from riser 6.

Three (3) samples and four samples were taken, respectively, from risers 6 and 2 of B-107 as shown in Figure 3. The average recovery for riser 6 was 94 percent. The recoveries for riser 2 were all below 27 percent, with one sample being empty. The data collected does not support any specific reason for the poor recovery.

2.1.3.2 Push Mode Core (Sample Truck #1) Recovery Analysis

Figure 5 shows the same recovery data, but with additional data added to the samples (number of segments per core, retained gas samples marked, first and last segments marked). Analysis of Figure 5 shows the following trends:

- Overall, 66 percent of the samples have recoveries greater than 80 percent and 34 percent less than 80 percent.
- For samples with less than 80 percent recovery, 18 percent are first segment samples, compared with 6 percent for samples above the 80 percent goal.

- For samples with less than 80 percent recovery, 15 percent are last segment samples, compared with 8 percent for samples above the 80 percent goal.
- The number of segments per core is decreasing.

The trends indicate that the first and last segment samples have lower recovery levels than the segments between them. Since the number of segments per core decreased, there is a larger impact from first and last segment recoveries on the total recovery performance.

Figure 6 shows the average recovery for the last 100 samples grouped according to the major material category that was identified during segment extrusion in the 222-S Laboratory. The number of segments for each material category is also shown. The segment materials are not identified in the 222-S Laboratory for the retained gas samples (RGS). Analysis of Figure 6 shows the following trends:

- RGS, wet sludge, and dry saltcake samples have recoveries below 80 percent. All other material show average recoveries around the 80 percent goal and above.

2.1.3.3 Rotary Mode Core Sample Trucks #2, #3, and #4

The analysis of Truck #2, #3 and #4 sample recovery is based on the data completed in the quarter prior to October 1, 1997. Figure 7 shows the performance of the rotary mode core systems which were used in the push mode of operation. The average recovery was 76 percent, based on the average of the last 200 samples. The overall recovery shows a recent decrease, but the average recovery is still above the FY98 goal of 60 percent. This performance is nearly identical to that shown for Truck #1, which should be expected, as the cores were obtained in a push mode of operation and the cores had a low number of segments.

Core samples were obtained from riser 19 of tank SX-101 between December 10, 1997, and December 29, 1997. The laboratory data for 241-SX-101 was not received in time to generate a core recovery chart for this report. The data from riser 19 will be combined with data from riser 4 in the next quarterly report.

Figure 8 shows the same recovery data as Figure 7, but combined with the number of segments per core and with the first and last segments marked. Analysis of Figure 8 shows the following trends:

- Overall, 75 percent of the samples have recoveries greater than 60 percent (actually greater than 70 percent) and 25 percent are less than 60 percent.
- For samples with less than 60 percent recovery, 28 percent are first segment samples, compared with 11 percent for samples that are above the 60 percent goal.
- For samples with less than 60 percent recovery, 14 percent are last segment samples, compared with 20 percent for samples above the 60 percent goal.
- The number of segments per core is decreasing.

As with truck #1, the first and last segment samples have lower recovery levels than the segments between them. Since the number of segments per core also decreased, there is also a larger impact from first and last segment recoveries on the total recovery performance. This should be expected, since the samples for these trucks were also obtained using the push mode of operation.

Figure 9 shows the average recovery for the last 100 samples, grouped according to the major material category that was identified during segment extrusion in the 222-S Laboratory. The number of segments for each material category is also shown. Analysis of Figure 9 shows the following trends:

- Dry saltcake and moist saltcake materials have average recoveries that are below 60 percent.
- Dry saltcake recovery has the lowest recovery, similar to that for Truck #1 shown above.

2.1.4 Core Sampling Equipment Availability

As reported previously, the working definitions for availability and reliability of sampling equipment have been established (Janicek 1995). As defined, the availability of core sampling systems is tracked daily. Concurrence in equipment status is established between CE and Characterization Project Operations (CPO).

The average equipment availability, (based on a 52-week moving average) for the reporting period was 64 percent for System #1, 64 percent for system #2, 0 percent for system #3, and 17 percent for system #4. All four systems combined remained at 43 percent availability for the reporting period, equal to FY97. The data is shown graphically in Figures 10 through 13.

Deployment of truck # 2 was delayed for nine weeks during the period for dome loading analysis required prior to deployment. Dome loading analysis is still pending. (See Section 2.11)

Truck #4 was deployed in SX tank farm to rotary mode sample under flammable gas controls. To allow Truck #4 to go to the field, the grace period for required calibration and preventive maintenance was used to defer the outage to January 1998.

Truck #3 remained out of service during the period for upgrades to comply with the authorization basis.

2.1.5 Core Sample Truck Modifications

Truck #1 did not receive any modifications during the reporting period, and there are no modifications pending for authorization basis compliance.

Truck #2 did not receive any modifications during the reporting period, and there are no modifications pending for authorization basis compliance. Deployment is awaiting new baseline dome loading analysis per LMHC 1997c, the new procedure containing administrative controls for the tank farms.

Truck #3 was modified to comply with flammable gas requirements per Leach 1997, and acceptance testing was started during the period.

Truck #4 did not receive any modifications during the reporting period, and there are no modifications pending for authorization basis compliance.

2.2 GRAB SAMPLING

Grab Sampling successfully sampled five of ten tanks scheduled on the Baseline Sampling Schedule, Rev 5.2. The work packages for the delayed five tanks are either approved or waiting approval from the Work Authorization Review Team. Those tanks that have been approved are on hold waiting for unrelated tank work to be completed. For example, sampling of AY-102 has been on hold to wait for work to be completed on the airlift circulators.

Both of the grab sampling procedures have been updated to comply with the Authorization Basis.

Two (2) new tools have been developed for grab sampling. They include a finger trap sampler assembly and sludge weight sampler assembly that capture dried sludge from the surface of the waste.

2.3 STANDARD HYDROGEN MONITORING SYSTEM SAMPLING

The procedure has been developed to obtain vapor grab samples from the Standard Hydrogen Monitoring System (SHMS) cabinets. The schedule for the activities has not been established. The (Tank Waste Remediation System) Characterization sets the schedule for monthly sampling of selected SHMS cabinets. All SHMS cabinets selected have been sampled on schedule. This program is currently limited to FY98.

2.4 VAPOR SAMPLING

The total number of tanks in-situ vapor sampled to date is ten, meeting all first quarter, FY98 commitments. Three (3) tanks have been injected with tracer gases and sampled periodically to determine the natural breathing rate and whether the cascade pipelines are opened or plugged. Equipment was designed and installed on two of these tanks to perform a tracer gas injection/sample through the breather filter. This new method allows other activities to take place in a riser that would otherwise have tracer gas equipment installed on it.

Engineering Change Notices (ECN) are being prepared to install the equipment needed to perform the five upcoming tracer gas samples. An ECN to install an automated data collection system on a Double-Containment Receiver Tank is also being written. This continuous monitoring system is being installed on an uncontaminated isolated underground storage tank to determine a baseline for single-shell tank breathing rates.

The vapor sampling procedure and upcoming work packages have been updated to comply with the Authorization Basis.

2.5 OTHER EQUIPMENT MODIFICATION AND DEPLOYMENT

2.5.1 Electrical Support Equipment

Correction of National Electrical Code (NEC) discrepancies is in progress. All the ECNs have been written to modify the core sampling equipment; work packages are being prepared. The electrical work remaining consists of NEC corrections on the two air compressors and three generators. Upgrade of the Truck #1 air compressor is the only compatibility and improvement work remaining. Upgrades to the services trailers and distribution trailers for systems #3 and #4 have been completed. Construction of an electrical distribution trailer and modification of the service trailer for system #2 is no longer required. The modification ECNs will be canceled.

A new spare portable generator was procured as a spare for core sampling equipment. The Acceptance for Beneficial Use (ABU) has been issued to use this generator. One of the portable generators has been sent back to the vendor for repairs. The engine and the load bank on the unit had overheating problems.

2.5.2 Exhauster

The RMCS Exhauster C was modified during the period. The modifications include replacement of the HEPA filter housing and upgrade of the emissions monitoring equipment to comply with "Major Stack" requirements. New monitoring equipment includes a continuous air monitor for detecting beta and gamma particulates and a new isokinetic sampling probe for the Record Sampler. The modifications to Exhauster C will be completed during the next reporting period. Modifications to Exhauster B are scheduled for the third quarter of FY98.

2.5.3 Support Equipment

Several new pieces of equipment for operational improvements were designed during the period. A pressure switch was provided to monitor the pressures in the vapor spaces of the tanks in SX tank farm. The switch was necessary to ensure that rotary mode operations were suspended, should the tank pressure exceed the Authorization Basis limits. The design of the grab sampler and the pintel rod overpack were documented to establish configuration control. A drill string hydrostatic head fluid displacement pump was designed to remove fluid from the drill string when the bit is plugged. A new supernate and sludge sampler was designed to allow sampling in a 2¼ inch riser. The installation design to upgrade the spray wash pump system was completed.

An ECN was prepared to close a safety concern on the large sample transport trucks. The ladders at the rear of the trucks were permanently fixed in position, and warnings for lifting were stenciled on the overpacks.

2.5.4 Transport Casks

Three (3) partially completed Neutralized Current Acid Waste (NCAW) casks and their work packages were located. The work was stopped in 1995 just short of completing the casks. The shop estimate to finish the casks is \$22K. These casks, which have more shielding than the current on-site transfer casks, could be used for temporary storage if a sample is too hot to transfer, or the casks could be used for future high dose level sample transports. The Safety Analysis Report for Packaging (SARP) for these casks would have to be updated.

2.5.5 Samplers

The procurement contract was placed for casting the sampler quadrilatch fingers. The request for proposal was competitively bid between two companies. The contract was awarded to the higher bidder, justified by the past poor performance of the low bid company. The previous contract for fingers, which was let to the low bid company, has not yet been satisfied with an acceptable product.

2.6 CONFIGURATION CONTROL

Selected drawings for Trucks #3 and 4 and the exhausters are being as-built to improve configuration control. Funding is not authorized for upgrade of the other drawings. At the start of FY98, there were 897 drawing sheets for all core sampling systems. During the period 23 new sheets have been released, for a total of 920. At the start of the period there were 624 sheets with outstanding ECNs. During the quarter, approximately 176 drawing sheets have been revised with ECNs incorporated. An additional 16 drawings are currently being reviewed for release. To support RMCS deployment 23 new drawing sheets have been created for Exhauster C, and 48 additional sheets are being prepared. For Exhauster B, 50 new drawing sheets have been started.

As of September 1, 1997, there were 67 drawings sheets for sampling systems that had more than five ECNs outstanding against each of them. The breakdown of drawings was as follows: 20 sheets for Truck #1, four sheets for Truck #2, 29 sheets for Trucks #3 & #4, 14 sheets for ancillary equipment including five sheets for the exhauster. Table 2 below represents the current status of all core sampling drawings.

Currently, all sheets of Truck #3 & #4 drawings that are affected by more than five ECNs are being updated. The drawings will be released when the ECNs for Truck #3 flammable gas modifications are signed work complete. Truck #3 modifications are complete, and the packages are in post review. As part of the basis for Interim Operation (BIO) implementation, eight of the 20 sheets of Truck #1 drawings should be updated, but funding is not available.

An Engineering Task Plan is being prepared, that will result in classifying the remaining core sampling system drawings as essential, support, or general. Currently, two of the support equipment electrical panelboard drawings are classified as essential.

Table 2. Core Sampling Configuration Status

Equipment	Sheets with > 10 ECNs	Sheets with >5 ECNs	Sheets with < 5 ECNs	Total Sheets with ECNs	Sheets with 0 ECNs	Total Drawing Sheets
Trucks 3 & 4	1	7	52	60	219	279
Truck 2	1	10	110	121	86	207
Truck 1	1	10	45	56	23	79
Truck 1 & 2	3	5	24	32	14	46
Support/Ancillary	0	19	79	98	55	153
Exhausters	1	8	13	22	7	29
Exhauster C only	0	0	12	12	11	23
*Exhauster Interlock Cart and Sampler Spool Piece	0	1	24	25	24	49
*Support/Ancillary	0	7	3	10	32	42
*Truck 1	0	5	7	12	1	13
TOTALS	7	72	369	448	472	920

*Obsolete drawings that should be voided.

During the ECN incorporation process a total of 147 ECNs were found to be work complete; however the ECNs were not signed work complete. Several were identified as work complete in packages that were not closed due to post modification activities, such as calibration, still in process. Other ECNs were either completed per J3's, were created by other organizations, or were actually ECNs that provided fabrication details and should not have been classified as modification work ECNs. CE is now tracking closure of ECNs.

All ECNs that are work complete have been signed as work complete. Table 3 below represents the status of drawings and ECNs with modification work pending or in process.

Table 3. ECNs with Work Pending or in Process

Equipment	Sheets	ECNs
Trucks 3 & 4	51	31
Truck 2	64	40
Truck 1	29	25
Truck 1 & 2	26	16
Support/Ancillary	71	65
Exhausters	22	32
Exhauster C only	11	2
*Exhauster Interlock Cart and Sampler Spool Piece	23	14
TOTALS	297	225

*Obsolete drawings that should be voided.

2.7 WORK PACKAGE REVIEW

Work package preparation and post review is a significant activity for the cognizant engineers within CE. Table 4 below represents the work package quantities that required cognizant engineer attention. Many packages are cycled through the CE cognizant engineers several times due to preparation reviews, work scope changes, and post review.

Table 4. Work Package Reviews

Month	Work Packages Incoming	Work Packages Outgoing	Remaining at Month End
October	16	18	48
November	82	65	65
December	39	69	35
Total for Period	137	152	35

2.8 RISER PREPARATION ACTIVITIES

Evaluation of risers that can be used to support sampling activities continued through the period. The files that document the riser preparation activity are maintained on the Hanford Local Area Network (HLAN) and can be accessed by anyone on HLAN. The files are maintained on file server AP012 in shared area ACTLOG. To access the information, make a network connection to \\AP012\\ACTLOG. The files are located in the RISERS directory.

The BIO (LMHC1997a) and the Technical Safety Requirements (TSR) (LMHC 1997b) went into effect on September 29, 1997. Several task-generic USQ evaluations were revised to incorporate the requirements of the BIO/TSR. The Unreviewed Safety Question (USQ) evaluations involved the use of adapters, the relocation of level instruments, the relocation of breather filters, and the other activities that are associated with riser preparation.

Because of a shortage of available risers on 241-SX-106, ECNs were prepared to temporarily remove the ENRAF and pressure transmitter and to permanently remove the PVC riser liner from riser 3 on 241-SX-106. The ECNs to accomplish the changes on 241-SX-106 were implemented during the reporting period to support core sampling. Similar modifications were made to 241-SX-101 to support rotary mode core sampling. In addition, the same changes to the ENRAF on 241-SX-102 will be required to support the core sampling of this tank.

Preparation for the core sampling of 241-AZ-102 continued. Risers 15I and 22A were identified as the sampling risers on this tank. Sampling of riser 15I will require temporary removal of the shield plug from this riser. Sampling of riser 22A will require the temporary removal of the level instrument from this riser. Currently, there is an FIC level gauge installed in riser 22A, which will be replaced with an ENRAF level gauge. Efforts are underway to coordinate the gauge replacement with the core sampling activities to minimize the equipment moves on 241-AZ-102.

2.9 CHARACTERIZATION OF TANK AZ-102.

The Data Quality Objectives (DQO) for characterization of tank AZ-102 have not been determined. The DQOs are scheduled to be issued during the next reporting period. All preparations and design activities are based upon assumptions made by the Characterization Program based upon data required to characterize the tank. Additional DQOs related to retrieval or treatment have not been identified.

A meeting was held to kick off the project with all parties represented. A review was performed by engineering, operations, and the 222-S labs to identify all existing tooling and new tooling required to do the job. The need for an off-set, rotating, 16-inch riser adaptor was identified, and the ECN to build the adaptor was prepared. The shop estimate to fabricate this adaptor is approximately \$13K. A practice session to test equipment, procedures, and radiation work permits (RWP) for the whole process of sampling, retrieving, packaging, transportation, and placement into the hot cell is planned to see if these tools are adequate. Specific radiation calculations, tank dome loading calculations, and RWPs are being prepared to cover the job. The sampling procedure has already been updated. The required changes to the SARP have been identified and are scheduled to be incorporated in January. The existing OTC will be used to transfer the samplers taken from tank 241-AZ-102 to 222-S laboratories. The OTC drawings have 14 outstanding ECNs and will be revised as part of this activity.

2.10 LIGHT DUTY UTILITY ARM (LDUA)

The LDUA deployment continues to be delayed until the hold that McClusky 1997 placed on the LDUA field activities is resolved. The hold was placed on field activities because of DOE reservations as to the Authorization Basis for the LDUA deployment.

A demonstration of the LDUA was performed for Hanford Site senior management. The demonstration provided the opportunity to see and understand the unique capabilities of the LDUA so that key program decisions can be made regarding tank waste.

2.11 AUTHORIZATION BASIS AND PERMIT ISSUES

The Notice of Construction (NOC) for the activity of rotary mode core sampling in SX tank farm (DOE-RL 1997a) was approved by the Washington State Department of Health (WDOH) letter (Conklin 1997a). The approval of the NOC allowed RMCS to be performed in SX tank farm and the first RMCS samples to be taken under flammable gas controls and the new Authorization Basis. The NOC (DOE-RL 1997b) for the portable exhausters with upgrades to Major Stack has been approved (Conklin 1997b); however, several actions remain to allow operation. Conklin 1997b included modifying the exhausters to operate as "Major Stacks" as well as supplying the WDOH with supplemental information. A response to the requirements has been prepared and is being transmitted through Fluor Daniel Hanford, Inc. and DOE-RL to the WDOH.

The BIO was implemented as the Authorization Basis for Tank Farm operations. The transitions required to implement the BIO introduced a significant challenge. The implementing procedure (LMHC 1997c) for the dome loading administrative control AC-5.16 imposes further restrictions than those required by AC-5.16. Generation of baseline dome loading analysis requires significant manpower which is not available within TWRS. To facilitate deployment of sampling equipment, CE personnel have been preparing many of the dome baseline load analyses for TWRS. Baseline analysis will continue to be performed by CE as required to support sampling.

3.0 PLANNED ACTIVITIES

3.1 CORE SAMPLING

Several activities are planned for the next period. The acceptance testing of Truck #3 flammable gas modifications will be completed. The exhauster modifications and acceptance testing will be completed. Testing will be performed to expand the operating envelope for core sampling by adjusting the drilling parameters of down force, RPM, and purge gas flow.

3.2 GRAB AND VAPOR SAMPLING

The qualification of acceptable conductive spray or paints to be applied to non-conductive surfaces that would not wash off over a period of time is being sought. The Flammable Gas Equipment Advisory Board (FGEAB) is reviewing the presented information for the materials. The use of the new coatings would allow considerable savings in fabrication of components from PVC and plastics instead of steel.

Continued effort will be focused toward modifying the basic grab sampler assembly design to reduce dose exposure limits by 20 percent.

3.3 RISER PREPARATION

Continued support will be provided throughout the next reporting period for riser identification and preparation for sampling activities.

3.4 EQUIPMENT

The required upgrades for RMCS Exhauster C, including acceptance and operational testing, will be completed during the next period. Modification of Exhauster B will follow as soon as possible. Since Exhauster B has been used to support sampling, it is radiologically controlled, and the schedule to perform the work is expected to be considerably longer.

Closure of all NEC compliance activities is expected during the next reporting period.

3.5 PLUTONIUM FINISHING PLANT (PFP)

Planning efforts have been supported for sampling the 20,000-gallon Miscellaneous Underground Storage Tank (MUST) for Babcock & Wilcox Hanford (BWH) PFP facility. This tank, 361-Z, contains 30-50 kilograms of plutonium and presents some unique requirements for equipment, sampling, and permitting. During the next reporting period CE will begin addressing these issues if necessary funding is approved.

4.0 BUDGET SUMMARY

Budget results for the first quarter show CE slightly under projections. This is due to the majority of the first quarter expenditures being directed to preparing Truck #4 and associated support equipment for deployment in Flammable Gas Watch List Tanks. Some of the costs also have not been realized because of Enterprise Companies' (ENCO) delays in initiating the invoice processes for payments.

Funding Change Request TWR98-024, presently awaiting Fluor Daniel Hanford, Inc. approval, defers the 500-milliliter sampler system project to provide additional funding for

modifications to upgrade Exhausters B and C to operate as "Major Stacks." These modifications will provide qualified equipment that meets current requirements of the Authorization Basis and operating permits.

5.0 ENGINEERING

The overall schedule of CE activities at the end of the reporting period is included as Figure 14.

6.0 REFERENCES

- Conklin, A. W., 1997a, "*Radioactive Air Emissions Notice of Construction for Rotary Mode Core Sampling Systems in SX Tank Farm*," (external letter AIR 97-1101 to J. E. Rasmussen, November 13), Washington State Department of Health, Olympia Washington. (Approval of DOE/RL-97-70 Rev.0.)
- Conklin, A. W., 1997b, "*Notice of Construction for Rotary Mode Core Sampling Systems Three and Four*," (internal letter, AIR 97-901 to J. E. Rasmussen, September 3) Washington State Department of Health, Olympia, Washington (Approval of DOE/RL-94-118 Rev. 1.)
- DOE-RL, 1997a, "*Radioactive Air Emissions Notice of Construction for Rotary Mode Core Sampling Systems in SX Tank Farm*", DOE/RL-97-70 Rev. 0, U. S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-RL, 1997b, "*Radioactive Air Emissions Program Notice of Construction for the Rotary Mode Core Sampling Systems Three And Four*," DOE/RL-94-118, Rev.1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- Janicek G. P., 1995, "*Sampling Equipment Availability/Reliability Improvement, Engineering Task Plan*," WHC-SD-WM-ETP-171, Rev. 0, Westinghouse Hanford Company, Richland, Washington.
- Leach, C. E., 1997, "*A Safety Assessment of Rotary Mode Core Sampling in Flammable Gas Single Shell Tanks: Hanford Site, Richland Washington*," HNF-SD-WM-SAD-035, Rev.0b, Lockheed Martin Hanford Corporation, Richland, Washington.
- LMHC, 1997a, "*Tank Waste Remediation System Basis for Interim Operation*," HNF-SD-WM-BIO-001, Rev.0, Lockheed Martin Hanford Corporation, Richland, Washington.
- LMHC, 1997b, "*Tank Waste Remediation System Technical Safety Requirements*," HNF-SD-WM-TSR-006, Rev.0, Lockheed Martin Hanford Corporation, Richland, Washington.
- LMHC, 1997c, "*Tank Farms Operations Administrative Controls*", HNF-IP-1266 Rev.1, Lockheed Martin Hanford Corporation, Richland, Washington.
- McClusky, J. K., 1997, *Contract Number DE-AC06-96RL13200; Directed Hold on Tank Intrusive Activities with the Light Duty Utility Arm (LDUA)*, (external letter 97-WSD-069 to H. J. Hatch, February 27), U.S. Department of Energy, Richland Operations Office, Richland, Washington.

APPENDIX

Figure 1: SX-106 PMCS Core Profile

Figure 2: U-112 PMCS Core Profile

Figure 3: B-107 PMCS Core Profile

Figure 4: Truck #1 Sample Recovery

Figure 5: Truck #1 Sample Recovery (Additional Data Added)

Figure 6: Truck #1 Segment Recovery (Grouped by Waste Type)

Figure 7: Truck #2, #3, & #4 Sample Recovery

Figure 8: Truck #2, #3, & #4 Sample Recovery (Additional Data Added)

Figure 9: Truck #2, #3, & #4 Segment Recovery (Grouped by Waste Type)

Figure 10: Truck #1 Sampling System Availability

Figure 11: Truck #2 Sampling System Availability

Figure 12: Truck #3 Sampling System Availability

Figure 13: Truck #4 Sampling System Availability

Figure 14: Master Schedule for Characterization Project Engineering as of 01/01/98

Figure 1: SX-106 PMCS Core Profile

SX-106 PMCS CORE PROFILE

 FILE: SX106.CRD
 DATE: 11/13/97

Profile reflects primary parameters for each sample. Data may be adjusted given information such as previous water additions.

RGS - Segments 223-6A, 223-9, 224-2, 224-4, 224-7, and 224-10.

Segment 223-11 abandoned: no sample material was visible in the x-ray.

Segment 223-6A was a re-push of 223-6; grapple problem.

Figure 2: U-112 PMCS Core Profile

Profile reflects primary parameters for each sample. Data may be adjusted given information such as previous water additions.

FILE: U112.CRD
DATE: 11/29/97

U-112 PMCS CORE PROFILE

B-107 PMCS CORE PROFILE

FILE: B107.CRD
DATE: 11/25/97

Profile reflects primary parameters for each sample. Data may be adjusted given information such as previous water additions.

Figure 3: B-107 PMCS Core Profile

HNF-2060
Rev. 0

Rev. 0
Figure 4: Truck #1 Sample Recovery

Figure 5: Truck #1 Sample Recovery

Figure 6: Truck #1 Segment Recovery (Grouped by Waste Type)

Figure 7: Truck #2, #3, & #4 Sample Recovery

Figure 8: Truck #2, #3, & #4 Sample Recovery (Additional Data Added)

Figure 8: Truck # 2,3,4 Sample Recovery

Figure 9: Truck #2, 3, 4 Sample Recovery Summary

Figure 10: Truck #1 Sampling System Availability

Truck 1 Sampling System Availability (52 Week Period)

Figure 11: Truck #2 Sampling System Availability

Figure 12: Truck #3 Sampling System Availability

Figure 13: Truck #4 Sampling System Availability

HNF-2060
Rev. 0

**Figure 14. Master Schedule for Characterization
Project Engineering
as of 01/01/98**

Consisting of 9 Pages

Including Cover page

34

Project Start	01SEP97	Early Bar
Project Finish	09OCT98	Target Bar
Data Date	18JAN98	Progress Bar
Run Date	16JAN98	Critical Activity

CEEP

LMH

Sheet 1 of 8

CHARACTERIZATION EQPT ENGRG PROJECTS

Master Schedule

HNF-2060
 Rev. 0
 Sheet 1

HNF-2
Rev.
Sheet

© Primavera Systems, Inc.

HNF-2060
 Rev. 0
 Sheet 4

Activity ID	Early Start	Early Finish	Total float	Resp Eng	Due date	1997												1998												1999	
						NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR									
NO FLOW PUSH BIT & KNIFE INSERT TESTING**						**NOT FUNDED IN FY 98																									
SCHEDULE SUMMARY H3B0500 16JAN98 30SEP98 0						NO FLOW PUSH BIT & KNIFE INSERT TEST																									
SAFETY IMPROVEMENTS																															
ENGRG ANAL OF SAF OF TRK JACKS (KOSTELNIK)																															
DOCUMENTATION (LOI'S & ETP'S)																															
H3C0100A	08NOV97A	16JAN98	-40	KOSTELNIK		REVIEW & APPROVE ETP NO. 213																									
H3C0100B		19JAN98	-40	KOSTELNIK	17NOV97	◇ISSUE ETP NO. 213																									
NEC CORRECTIONS & MODS DEFERRED FROM FY97																															
CONVERT SERVICE TRAILER #2 (B JOHNS)																															
H3C0310	15SEP97A	16JAN98	151	SHOEMAKE		◇CLOSE OUT FIELD WORK PER WP NO. ES-96-81																									
H3C0312	05JAN98A	03FEB98	151	B JOHNS		◇DFT, REV & APPV CHNG ECN # 640460 TO CLOUT FLD W																									
H3C0313	04FEB98	10FEB98	151	B SHOEMAKE		◇MOVE EQUIPMENT PROCURED TO SPARE PARTS																									
H3C0314	11FEB98	26FEB98	151	B JOHNS		◇POST REVIEW																									
CONSTRUCT NEW DISTRIBUTION TRAILER (B JOHNS)																															
H3C0320	05JAN98A	02FEB98	152	B JOHNS		◇APPV & ISSUE CHNG ECN # 642962 TO CLOUT FLD WORK																									
H3C0321	03FEB98	09FEB98	152	B SHOEMAKE		◇MOVE EQUIPMENT PROCURED TO SPARE PARTS																									
H3C0322	10FEB98	25FEB98	152	B JOHNS		◇POST REVIEW																									
REPLACE AIR COMPRESSOR TRUCK 1 (B JOHNS)																															
H3C0330	06JAN97A	19JUN98	66	D MOORE		◇INSTL ECN 632411 FOR TRUCK 1 AIR COMPRESSOR MODS																									
H3C0331	06JAN97A	23JAN98	67	D MOORE		◇REV & APPROVE AIR COMP TRUCK 1 WP NO. ES-96-182																									
H3C0331A	06JAN97A	23JAN98	67	D MOORE		◇BDM FILLED																									
H3C0331B	22APR97A	16JAN98	72	B JOHNS		◇PREPARE & ISSUE CHANGE ECN NO. 640432																									
H3C0331C		23JAN98	67	D MOORE		◇WP NO. ES-96-182 RTW																									
H3C0331D	26JAN98	01JUN98	67	SHOEMAKE		◇REPLACE AIR COMPRESSOR TRUCK 1																									
H3C0332	26JAN98	01JUN98	67	B JOHNS		◇ENGINEERING SUPPORT																									
H3C0332A	02JUN98	03JUN98	67	B JOHNS		◇TESTING																									
H3C0332B	05JUN98	19JUN98	66	B JOHNS		◇POST REVIEW																									
H3C0332C	22JUN98	26JUN98	66	B JOHNS		◇FINAL ACCEPTANCE BY ABU																									
MILESTONES																															
H3C0340		26JUN98	66	SHOEMAKE	30SEP98	◇COMPLETE & INSTALL ALL ECNS																									
AIR COMPRESSORS BAC-C & D (B JOHNS)																															
H3C0370A	03OCT97A	22JAN98	149	SHOEMAKE		◇INSTL OF MODS TO CONT PNL PER WP NO. ES-96-837																									
H3C0371	03OCT97A	22JAN98	149	B JOHNS		◇ENGINEERING SUPPORT FOR MODS TO GONT PNL																									
H3C0371A	23JAN98	26JAN98	149	B JOHNS		◇TESTING OF MODS TO CONT PNL FOR BAC-C & D																									
H3C0371B	27JAN98	23FEB98	149	B JOHNS		◇POST REVIEW OF MODS TO CONT PNL FOR BAC-C & D																									
H3C0371C	24FEB98	02MAR98	149	B JOHNS		◇FINAL ACCEPTANCE BY JS FOR MODS TO CONT PNL																									
GENERATOR G-A, B, C & D (B JOHNS)																															
H3C0380C	30SEP97A	16JAN98	146	D MOORE		◇BDM FILLED FOR GEN-A																									

Project Start 01SEP97
 Project Finish 09OCT98
 Data Date 16JAN98
 Run Date 16JAN98

38

Legend:
 Early Bar
 Target Bar
 Progress Bar
 Critical Activity

CEEP

LMH

CHARACTERIZATION EQPT ENGRG PROJECTS

Master Schedule

Sheet 5 of 8

HNF-2060
 Rev. 0
 Sheet 5

Activity ID	Early Start	Early Finish	Total float	Resp Eng	Due date	1997					1998												1999										
						NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	M											
H3E0211B	09MAR98	27MAR98	115	WITWER																													
H3E0212	30MAR98	17APR98	115	KOSTELNIK																													
X-RAY IMPROVEMENTS																																	
X-RAY CART LOADING FIX**																																	
SCHEDULE SUMMARY																																	
H3F0100	16JAN98	30SEP98	0																														
EQUIP CHANGES TO SAMPLE AZ-102 TANK																																	
SMPLG EQUIP SYS DSGN TO SMPL AZ-102 TK (D HICKS)																																	
H3G0210	02SEP97A	06MAR98	-14	D HICKS																													
H3G0210A	26NOV97A	16JAN98	20	J BURTON																													
H3G0211	15AUG97A	16JAN98	12	J POPPITI																													
H3G0211A	19JAN98	21JAN98	12	B ROGERS																													
H3G0211B	22JAN98	28JAN98	12	POP/ROGERS																													
H3G0212	12DEC97A	07JAN98A		LINSCHOOTE																													
H3G0213	19JAN98	13FEB98	0	FAB SHOP																													
H3G0214	01OCT97A	16JAN98	15	J POPPITI																													
H3G0215	16JAN98	16JAN98	10	J R BIGGS																													
H3G0216	16JAN98	16JAN98	10	J R BIGGS																													
H3G0217	19JAN98	23JAN98	10	LINSCHOOTE																													
H3G0218	19JAN98	23JAN98	10	LINSCHOOTE																													
H3G0219	19JAN98	23JAN98	10	LINSCHOOTE																													
H3G0219A	26JAN98	30JAN98	10	LINSCHOOTE																													
H3G0221	16JAN98	11MAR98	-17	D MOORE																													
H3G0222	16JAN98	20JAN98	18	COVERDELL																													
H3G0222A	15OCT97A	20JAN98	18	J MCCOY	16JAN98																												
H3G0223	19JAN98	21JAN98	12	LINSCHOOTE																													
H3G0224	22JAN98	28JAN98	12	FAB SHOP																													
H3G0225	16JAN98	22JAN98	13	LINSCHOOTE																													
H3G0225A	01OCT97A	27JAN98	13	FAB SHOP																													
H3G0226	01OCT97A	16JAN98	-14	KIRKBRIDE																													
H3G0226A	19JAN98	27FEB98	-14	KIRKBRIDE																													
H3G0227	11MAR98		-17		15FEB98																												
H3G0228	16MAR98	16APR98	87		13APR98																												
H3G0229	16MAR98	16APR98	87	222-S LAB																													
H3G0230	17APR98	28MAY98	87	222-S LAB																													

Project Start 01SEP97
 Project Finish 09OCT98
 Data Date 16JAN98
 Run Date 16JAN98

CEEP

LMH
 CHARACTERIZATION EQPT ENGRG PROJECTS
 Master Schedule

Sheet 7 of 8

HNF-2066
 Rev. 0
 Sheet 7

DISTRIBUTION SHEET

To	From	Page 1 of 1			
Distribution	Characterization Engineering	Date 02/17/98			
Project Title/Work Order		EDT No. 619131			
CHARACTERIZATION ENGINEERING STATUS REPORT		ECN No. N/A			
Name	MSIN	Text With All Attach.	Text Only	Attach./Appendix Only	EDT/ECN Only

LMHC

Biggs, J. R.	S7-03
Burton, J. G.	S7-21
Janicek, G. P.	S7-12
Kristofzski, J. R.	R2-12
Payne, M. A.	R2-58
Popielarczyk, R. S.	S7-01
Raymond, R. E.	R2-38
Ross, W. E.	S7-84
Schofield, J. S.	S7-12

NHC

Boger, R. M.	S7-12
Mattichak, R. W.	S7-12
Rainey, T. E.	S7-12

RL

Thompson, Jr., J. F.	S7-54
----------------------	-------

SESC

Criddle, Jr., J. D.	S7-12
Hanson, C. E.	S7-12
Kostelnik, A. J.	S7-12
Scott, K. V.	S7-12
Central Files	A3-88

X
↓