



U.S. Department of Energy
Office of River Protection

0059427

P.O. Box 450
Richland, Washington 99352

MAY 13 2003

03-TPD-047

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
1315 W. Fourth Avenue
Kennewick, Washington 99336

RECEIVED
MAY 16 2003

EDMC

Dear Mr. Wilson:

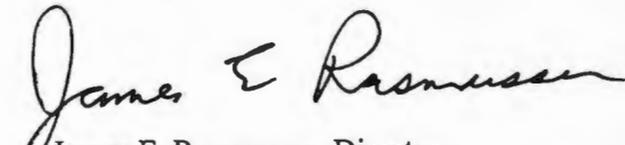
TRANSMITTAL OF MINUTES FROM THE MARCH 13, 2003, MEETING REGARDING
DELIVERABLE FOR MILESTONE M-45-03G

The purpose of this letter is to transmit and obtain Washington State Department of Ecology (Ecology) concurrence on the minutes of the March 13, 2003 meeting between Jeffery Lyon and Richard Heggen, Ecology, James Thompson, U.S. Department of Energy, Office of River Protection (ORP), Paul Branson, Steve O'Toole, and Sandra Fowler, CH2M HILL Hanford Group, Incorporated (CHG), and Peter Gibbons, Numatec Hanford Company (NHC).

The purpose of the meeting was to come to agreement with Ecology on the expectations and acceptance criteria of the deliverable for Milestone M-45-03G. The information discussed and the agreements reached at the meeting are documented in the attached meeting minutes. This letter formally transmits the meeting minutes for Ecology approval and signature. Please return the signed minutes to me with a copy to the Hanford Federal Facility Agreement and Consent Order, Tri-Party Agreement Administrative Record.

If you have any questions, please contact me, or your staff may contact Jim Thompson, Tank Farms Programs and Projects Division, (509) 373-9757.

Sincerely,


James E. Rasmussen, Director
Environmental Division

TPD:JFT

Attachment

cc: See page 2

Mr. Michael A. Wilson
03-TPD-047

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MAY 13 2003

cc w/attachs:

P. M. Branson, CHG
K. E. Carpenter, CHG
S. B. Fowler, CHG
M. N. Jarayssi, CHG
T. L. Hissong, CHG
J. J. Lyons, Ecology

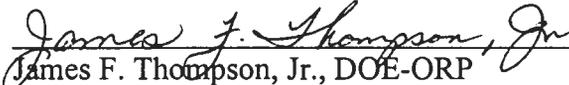
TPA Administrative Record

Meeting Minutes Transmittal

**Hanford Federal Facility Agreement and Consent Order (HFFACO)
Milestone M-45-03G, "COMPLETE C-104 SLUDGE / HARD HEEL, CONFINED
SLUICING AND ROBOTIC TECHNOLOGIES, WASTE RETRIEVAL COLD
DEMONSTRATION."**

**Ecology Offices
1314 West Fourth Avenue
Kennewick, Washington
March 13, 2003
8:00 a.m. to 10:00 a.m.**

The undersigned indicate by their signatures that these meeting minutes reflect the actual occurrences of the above dated HFFACO Milestone M-45-03G meeting.

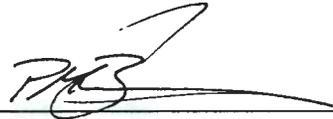

James F. Thompson, Jr., DOE-ORP

Date: 4/30/03

Jeffery Lyon, Washington State Department of Ecology

Date: _____

CHG Concurrence:


Paul M. Branson, CHG

Date: 5/1/03.

PURPOSE: Come to agreement with Washington State Department of Ecology (Ecology) on the content of the deliverable for HFFACO Milestone M-45-03G.

- Attachment 1: Meeting Minutes
- Attachment 2: Attendee List
- Attachment 3: Presentation Materials

Attachment 1

Hanford Federal Facility Agreement and Consent Order (HFFACO) Milestone M-45-03G, "COMPLETE C-104 SLUDGE / HARD HEEL, CONFINED SLUICING AND ROBOTIC TECHNOLOGIES, WASTE RETRIEVAL COLD DEMONSTRATION."

**Ecology Offices
1314 West Fourth Avenue
Kennewick, Washington
March 13, 2003
8:00 a.m. to 10:00 a.m.**

Meeting Minutes

Meeting Title: Deliverable for HFFACO Milestone M-45-03G.

The purpose of this meeting was to discuss and come to agreement with Washington State Department of Ecology (Ecology) on the content of the deliverable for HFFACO Milestone M-45-03G. The deliverable for the milestone is due on June 30, 2004.

The full text of HFFACO Milestone M-45-05I-T01 reads:

"COMPLETE C-104 SLUDGE / HARD HEEL, CONFINED SLUICING AND ROBOTIC TECHNOLOGIES, WASTE RETRIEVAL COLD DEMONSTRATION."

"THIS FULL SCALE DEMONSTRATION WILL BE SUFFICIENT TO SUPPORT FINAL DESIGN OF ALL EQUIPMENT, INCLUDING THE LDMM APPROACH USED IN THE ACTUAL SYSTEM. THE DEMONSTRATION MUST ESTABLISH THE PERFORMANCE OF THE EQUIPMENT SPECIFIED IN THE FUNCTIONS AND REQUIREMENTS DOCUMENT. A LETTER REPORT WILL BE SUBMITTED TO ECOLOGY TO DOCUMENT THE RESULTS OF THE COLD DEMONSTRATION."

The Mobile Retrieval System (MRS) is a robotic waste retrieval system that will be used to retrieve the waste from Tank 241-C-104. The MRS is composed of an In-Tank Vehicle (ITV), or robotic crawler, and a remote controlled articulating mast with a vacuum conveyance system. The system has successfully completed factory acceptance, functional, and operability testing.

To ensure that the milestone deliverable would meet Ecology's expectations, CH2MHill Hanford Group, Incorporate (CHG), Numatic Hanford Company (NHC), and Office of River Protection (ORP) provided Ecology with a status of the testing completed on the MRS. Additionally, the proposed content of the letter report / milestone deliverable was presented. The presentation is shown as Attachment 4.

The proposed letter report / deliverable would include the test methods, functions tested, test results, and operating experience. Accompanying the letter report would be a video recording

documenting the operation of the MRS. Also, the report will include the LDMM approach for Tank 241-C-104.

Ecology, Jeff Lyon, accepted the proposed content of the milestone deliverable with the addition of the following information and clarifications:

- Summary of all test results including factory acceptance, functional, and operability tests are to be included in the report.
- Document the actions taken to correct the identified system, subsystem, and component failures.
- Included a compact disk (CD) containing all reference materials.

Ecology and ORP are in agreement on the addition of this information.

Attachment 2

**Hanford Federal Facility Agreement and Consent Order (HFFACO)
Milestone M-45-03G, "COMPLETE C-104 SLUDGE / HARD HEEL, CONFINED
SLUICING AND ROBOTIC TECHNOLOGIES, WASTE RETRIEVAL COLD
DEMONSTRATION."**

**Ecology Offices
1314 West Fourth Avenue
Kennewick, Washington
March 13, 2003
8:00 a.m. to 10:00 a.m.**

Attendance List

Meeting Title: Deliverable for HFFACO Milestone M-45-03G.

Date: March 13, 2003

Name	Company	Phone Number
Jeff Lyon	Ecology	736-3098
Richard Heggen	Ecology	736-5716
Jim Thompson	Office of River Protection	373-9757
Paul Branson	CH2M Hill	372-0086
Steve O'Toole	CH2M Hill	376-4284
Sandra Fowler	CH2M Hill	372-8930
Peter Gibbons	Numatic Hanford Company	373-9187

Distribution:

ADMINISTRATIVE RECORD (two copies): A1-14
Debbie Isom (two copies): H6-08

Attachment 3

**Hanford Federal Facility Agreement and Consent Order (HFFACO)
Milestone M-45-03G, "COMPLETE C-104 SLUDGE / HARD HEEL, CONFINED
SLUICING AND ROBOTIC TECHNOLOGIES, WASTE RETRIEVAL COLD
DEMONSTRATION."**

**Ecology Offices
1314 West Fourth Avenue
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Presentation Materials

Meeting Title: Deliverable for HFFACO Milestone M-45-03G.

Date: March 13, 2003



U.S. Department of Energy



Tank 241-C-104 Mobile Retrieval System Cold Demonstration

Presented By

Paul Branson, CH2M HILL Hanford Group, Inc.

March 13, 2003



CH2MHILL
Hanford Group, Inc.

Objective

- Provide status of work supporting TPA M-45-03G.
- Overview testing results to date
 - MRS & LDMM
- Define content for TPA M-45-03G deliverable.

Milestone M-45-03G

COMPLETE C-104 SLUDGE/HARD HEEL, CONFINED SLUICING AND ROBOTIC TECHNOLOGIES, WASTE RETRIEVAL COLD DEMONSTRATION

“This full scale demonstration will be sufficient to support final design and testing of all equipment, including the LDMM approach used in the actual system. The demonstration must establish the performance of the equipment specified in the functions and requirements document. A letter report will be submitted to Ecology to document the results of the cold demonstration.”

Summary of Approved C-104 MRS Functions & Requirements (RPP-7807)

Specific MRS features to be verified in full-scale tests:

- 4.5 – Waste Removal
- 4.6 – Process Control & Monitoring
- 4.8 – Waste Generation & Minimization
- 4.12 – Material Compatibility & System Maintainability
- 4.15 – Prohibited Materials
- 4.16 - Secondary Containment & Leak Detection
- 4.17 - Deactivation and Decontamination

MRS Test Documentation & Procedures

Test Planning:

- RPP SST Projects Testing & Evaluation Plan (RPP-8418) – test program to accomplish mission.
- C-104 WRS Testing & Evaluation Plan (RPP-10452) – qualification testing process for components & integrated system.

Factory Testing:

- MRS Factory Acceptance Testing (RPP-10889) – operability testing of integrated systems.

Existing MRS Test Documentation – cont.

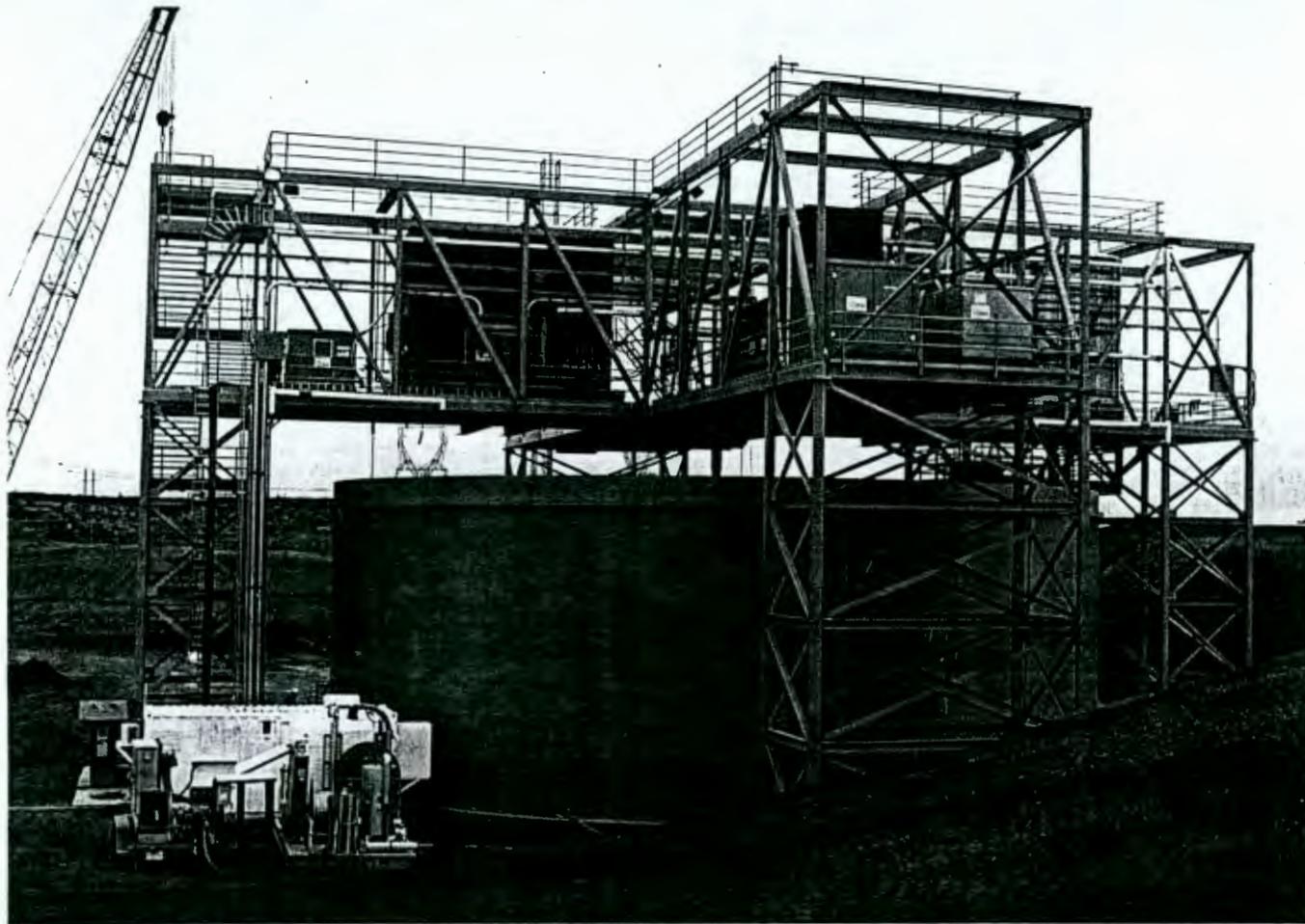
Functional Testing:

- SST C-104 Integrated MRS Cold Test Plan & Procedures (RPP-12382) – full-scale functional cold testing of integrated systems.

Performance Testing:

- C-104 MRS Performance Test Plan & Procedures (RPP-14137) – verification of quantitative performance objectives and features.

MRS Installation at Cold Test Facility



C-104 Mobile Retrieval System

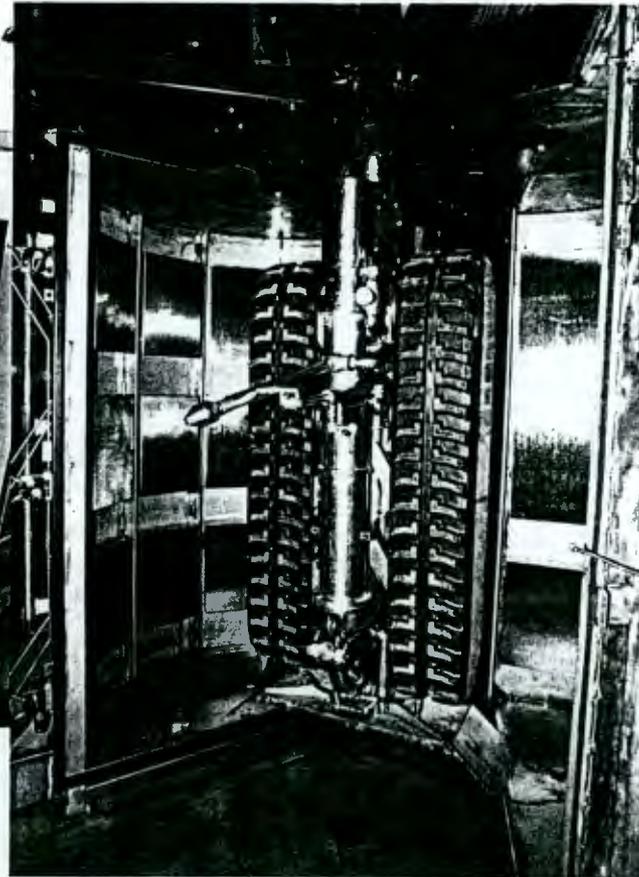
March 13, 2003

MRS Testing at Cold Test Facility

*ITV in Ultrasonic
Decontamination Chamber*



MRS Control Console



MRS In-Tank Equipment – Sludge Tests

ITV Deployed in Sludge Simulant

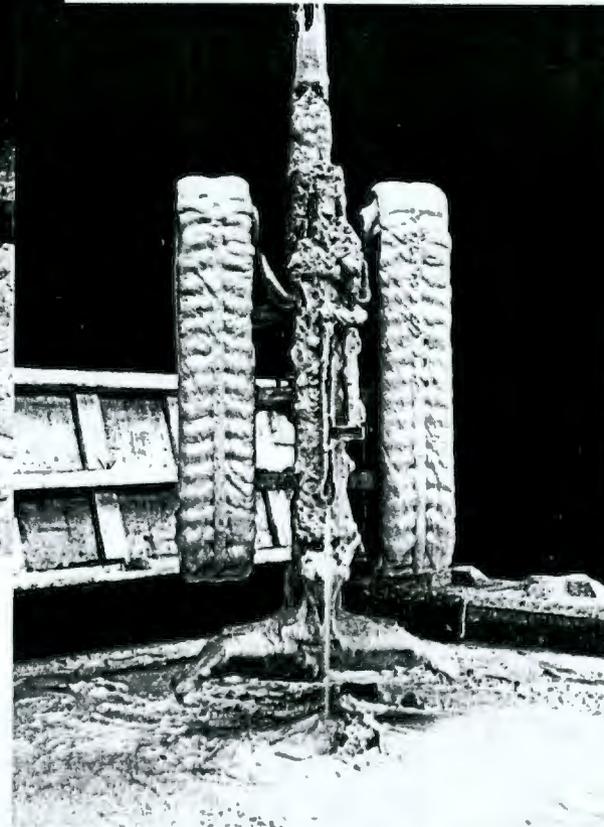


AMS Deployed in Sludge Simulant

MRS In-Tank Equipment – Sludge Tests



ITV Removal from Sludge Simulant

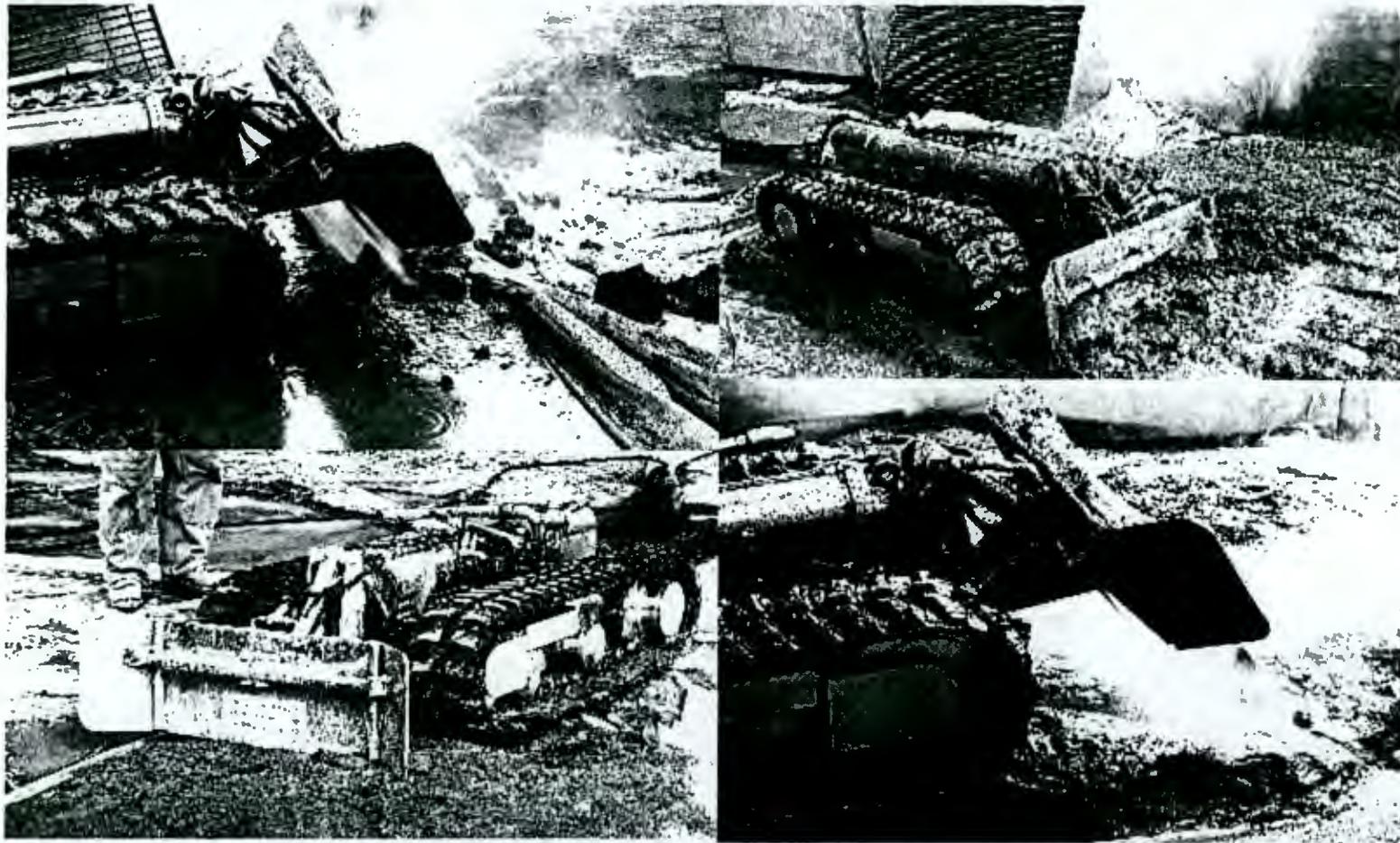


C-104 Mobile Retrieval System

March 13, 2003

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MRS In-Tank Equipment – Hard Heel Tests



C-104 Mobile Retrieval System

March 13, 2003

Status of MRS Cold Tests

- ALL tests at FULL SCALE
- Factory Acceptance Test Report (RPP-13543) released.
- Functional testing is complete
 - Draft Functional Test Report is complete
 - Final Functional Test Report will be issued by end of March.
- Performance testing will complete by end of March
 - Final Performance Test Report will be issued in April.
- Operating procedures and training are being developed.

Full-Scale MRS Cold Test Simulants

- Variety of simulant materials used to confirm MRS capability on expected C-104 waste
 - Soft Sludges, Dense Sludges & Hard Heels
 - Various combinations of grout, kaolin clay, sand & plaster
 - Multiple shear strengths & viscosities.
- Simulant selection based on available tank waste characterization data
 - Mimic physical properties, not chemical properties.

Baseline LDMM

C-104 MRS Leak Detection Baseline:

- Use combined mass balance/drywell monitoring approach
 - Mass balance between Batch Vessel and receiver tank
 - Ex-tank drywell monitoring using gamma monitoring (RAS)
 - Ex-tank drywell monitoring using moisture (neutron) monitoring (NMLS)
 - Ex-tank drywell checks using manually deployed moisture monitoring equipment.

Ex-Tank Leak Detection Demonstration Cold Tests

- Follows FY2001 testing of 6 technologies.
- Electrical Resistivity Tomography (ERT) and High Resolution Resistivity (HRR) demonstration tests were completed at the 105-A Mock Tank Site in November '02.
- Draft ERT and HRR Test Report is complete.
- Final ERT and HRR Test Report will be issued by end of March.

Summary

- The results of MRS functional and performance cold testing will provide adequate information to support C-104 final design and meet the established performance criteria of the F&R.
- The results of drywell monitoring experience and recent performance evaluations (i.e., RPP-10413) provide adequate information to support the use of the Baseline LDMM approach in meeting the established performance criteria of the F&R.
- The results of Ex-Tank Leak Detection Demonstration tests are positive but will require a deployment in Tank Farms before performance can be validated and a change from the current baseline can be made.

Milestone M-45-03G Deliverables

- A letter report documenting the testing methods, functions tested, test results and operating experience will be submitted along with a video tape of the MRS in operation.
- In the same letter report, document that the Baseline LDMM approach using mass balance and existing truck mounted geophysical logging systems meets the cumulative leak loss and PD/PFA requirements during the C-104 retrieval campaign.

Backup Slide

Full-Scale MRS Cold Test Simulants

- Soft Sludges – mud & kaolin(5)
- Dense Sludges – kaolin+plaster+sand
- Hard Heels – grout
- Dry Solids – iron oxide+kaolin+plaster+
calcium nitrate+sodium carbonate