Sta 4.(2)

JAN 06 2000 **ENGINEERING DATA TRANSMITTAL**

1 EDT 624171

2 To (Receiving Organization) LMHC Characterization Engineering	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 GP Janicek/DD Wanner	7 Purchase Order No. N/A
8. Originator Remarks: ESR-98-03 1) The Design Criteria is addressed in WHC-SD-WM SDD-068, "System Design Description for the In-Situ Vapor Sampling System" 3) The Safety Classification for the Carts is General Services (GS)		9 Equip./Component No. N/A 10 System/Bldg./Facility 200G
11 Receiver Remarks	11A. Design Baseline Document? [] Yes [X] No	12 Major Assm. Dwg. No. N/A 13 Permit/Permit Application No N/A 14 Required Response Date N/A

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	RPP-5468	N/A	0	Engineering Task Plan for Preparing the Type IV In-Situ Vapor Samplers (ISVS) for Use	Q	1	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 2 Release 5 Post-Review 3 Information 6 Dist. (Receipt Acknow Required)	1 Approved 4. Reviewed no/comment 2 Approved w/comment 5 Reviewed w/comment 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
1	1	Design Authority GP Janicek [signature] 12/20/99	S7 12	1	1	Proj Mgr JL Smalley [signature] 12/6/99	S7 12
		Design Agent N/A	S7 12	1	1	CPO Eng. Mgr ~~RM Boger~~ [signature] 1/4/00	S7 12
1	1	Cog. Eng. DD Wanner [signature] 12-20-99	S7 12	1	1	CPO Mgr JF Sickels [signature]	S7-03
1	1	Cog. Mgr JS Schofield [signature] 12/28/99	S7 12				
1	1	QA JL Logston [signature] 12 7 99	S7 34				
		Safety N/A					
		Env N/A					
1	1	Review FR Reich [signature] 12/6/99	S7 12				

18	19	20	21 DOE APPROVAL (if required)
RW Lysher [signature] 12/2/99 Signature of EDT Originator Date	JS Schofield [signature] 12/28/99 Authorized Representative For Receiving Organization Date	JS Schofield [signature] 12/28/99 Design Authority/ Cognizant Manager Date	Ctrl No [] Approved [] Approved w/comments [] Disapproved w/comments

S

Engineering Task Plan for Preparing the Type IV In-Situ Vapor Samplers (ISVS) for Use

RM BOGER
Lockheed Martin Hanford Corporation, Richland, WA 99352
U S Department of Energy Contract DE-AC06-96RL13200

EDT/ECN 624171	UC 2000
Org Code 74900	Charge Code 102254/E100
B&R Code EW3130000	Total Pages ~~32~~ 33

Key Words Type IV Gas Sampler Characterization Equipment, ETP, Task Plan

Abstract The DOE has identified a need to sample vapor space and exhaust ducts of several waste tanks The In-Situ Vapor Sampling (ISVS) Type IV vapor sampling cart has been identified as the appropriate monitoring tool The ISVS carts have been out of service for a number of years This ETP outlines the work to be performed to ready the type IV gas sampler for operation Characterization Engineering will evaluate the Type IV gas sampler carts to determine their state of readiness and will proceed to update procedures and equipment documentation to make the sampler operationally acceptable

Release Approval Date 1/6/00 Release Stamp

DATE
STA 4
HANFORD
RELEASE
ID 2
JAN 06 2000

Approved for Public Release

RPP-5468
REV 0

ENGINEERING TASK PLAN FOR PREPARING THE TYPE IV IN-SITU VAPOR SAMPLERS FOR USE

Prepared For
River Protection Project
Lockheed Martin Hanford Corporation
Characterization Engineering
Richland, WA

By F R. Reich
COGEMA Engineering Corporation

DECEMBER 1999

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APPENDICES

1 0 INTRODUCTION

This engineering task plan (ETP) outlines the activities required to ready the two existing In-Situ Vapor Sampling (ISVS) Type IV (herein referred to as Type 4) vapor sampling carts for operation in Fiscal Year (FY) 2000 The two carts have not been used for approximately two years and are currently in storage An ISVS cart is a portable monitoring tool that was designed to sample single-shell tanks, double-shell tanks, inactive miscellaneous underground storage tanks (IMUSTs), double-contained receiver tanks (DCRT), and aging waste tanks

The U S Department of Energy (DOE) has identified a need to sample vapor space and exhaust ducts of waste tanks (LMHC-1999a) During FY 2000, vapor assessments are scheduled for two waste tanks to provide information for the closeout of flammable gas issues In addition, vapor data is needed on four exhaust ducts that are scheduled for upgrades The ISVS Type 4 vapor sampling cart has been identified as the appropriate monitoring tool

The ISVS cart (refer to Appendix B for a photo of an ISVS Type 4 vapor sampling cart) consists primarily of an instrumentation cabinet and air pump mounted on a hand truck with a manifold and various valves, rotameters, and a tube bundle A vapor flow diagram (from H-2-825313, Vapor Sampling Cart Installation) is shown in Appendix D A sample head assembly that contains sorbent traps and filters is attached to a tube bundle (Figure 4VS-1) and is inserted in the vapor space to be monitored (lowered into the tank dome headspace) Gases are drawn through the sorbent traps, tube bundle, and manifold assembly The instrument cabinet has flow sensors that accurately measure the volume of gas drawn through the tubes and filters After sampling the vapor space, the sorbant tubes are sent to a laboratory for analysis The system also contains the means to gather a SUMMA™ canister gas sample

2 0 SCOPE

2 1 OBJECTIVES

As indicated above, a FY 2000 need to sample vapor space and exhaust ducts of several waste tanks has been identified The current ISVS carts can functionally complete this vapor sampling However, they currently do not have all documentation in place that is required to support their deployment

The objective of this ETP is to complete an assessment, upgrade, document, and review activities that will provide two, operationally ready ISVS Type 4 vapor sampling carts This includes all the tasks necessary to ensure the operational readiness of the two ISVS Type 4 vapor sampling system carts

2 2 DELIVERABLES

The primary deliverable is two operational ISVS Type 4 vapor sampling carts and all associated documentation (drawings, procedures, etc) The following tasks, as necessary, will be performed to accomplish this

- Assess and document current equipment configuration (design verification)
- Modify equipment/drawings via Engineering Change Notice (ECN) process
- Verify equipment in compliance with the Authorization Basis
- Update drawings (incorporate outstanding ECNs)
- Review existing maintenance work package
- Prepare/update recommended spare parts list
- Prepare/update vendor information file
- Update operations procedure (TO-080-627)
- Prepare/update Design Compliance Matrix (DCM)
- Prepare/update Safety Equipment List (SEL)
- Prepare ECN to update Characterization Engineering Essential Drawing List HNF-3240, latest revision (LMHC 1999b)
- Complete operational testing and operator training
- Complete instrument calibration
- Prepare/update Acceptance for Beneficial Use (ABU) process HNF-IP-0842, Section 3 12 (LMHC 1999c)

3 0 DESCRIPTION

3 1 PHYSICAL DESCRIPTION

The sample carts will be reviewed/inspected to verify the configuration and update the drawings Any outstanding work complete ECNS will be incorporated into the drawings Any spare parts necessary for operations will be identified

The current configuration of the carts will be assessed and changes, necessary to continue operation, will be made via the ECN process In light of the recent use of the carts (~ two years ago) it is anticipated that few, if any, physical modifications will be necessary

The bulk of the work in this ETP will be the creation and update of documentation listed above in Section 2 2 Required modifications will be performed via the ECN process as outlined in LMHC 1999d and will follow NEC® 1999 as applicable Any new supporting documents will be reviewed and approved according to LMHC 1999e

3 2 ENGINEERING TASKS

The following activities will be completed, as required, to meet the ETP objectives

- Assess/review equipment to determine current configuration and document
- Assess configuration and, if necessary, modify equipment/drawings via ECN
- Verify that the equipment is in compliance with the Authorization Basis
- Update drawings with outstanding ECNs
- Review existing maintenance work package
- Prepare/update recommended spare parts list
- Prepare/update vendor information file
- Update operation procedure (TO-080-627)
- Prepare/update DCM
- Prepare/update SEL
- Prepare ECN to update Characterization Engineering Essential Drawing List HNF-3240, latest revision, (LMHC 1999b)
- Write operational test plan/document and provide support for operator training
- Provide engineering support for testing and instrument calibration
- Provide engineering support in the completion of the ABU process

3 3 VERIFICATION, TECHNICAL REVIEWS, AND MODIFICATION MANAGEMENT

Any possible modifications will be verified per HNF-IP-0842, Section 4 6, "Functional Tests" (LMHC 1999c) and performed via the ECN process as defined in LMHC 1999d It is the policy of the River Protection Project (RPP) that all modifications shall have a National Environmental Policy Act (NEPA) screening Therefore, any ECNs created, as a result of this effort, will be screened for compliance with NEPA

All documents produced as a result of this effort will, at a minimum, be reviewed to the standards set forth by LMH-PRO-233, "Review and Approval of Documents"(LMHC 1999e) All changes to documents will be subject to the same level of review as the original documentation

Characterization Project Operations (CPO) performed an Operational Readiness Review screening to determine if one was required and concluded, through the process worksheet, that it was not (See Appendix F)

3 4 SOFTWARE DEVELOPMENT

There are no software development tasks associated with this modification

3 5 PROCUREMENT/FABRICATION

Spare parts will be procured to facilitate operations

A spare parts list will be generated identifying the parts that are to be maintained as spares to facilitate timely sampling Engineering judgment and operations past experience with the equipment will be used to determine an appropriate type and number of spare parts to maintain

Any vendor information relating to procured items will be placed in a Vendor Information (VI) file that currently does not exist

3 6 INSTALLATION

The flow sensors of the ISVS cart require calibration This is accomplished by removing the appropriate modules and shipping them to the calibration services source There will be some minor work to remove/reinstall the instruments to complete calibration (see Section 3 9 below - calibration services are currently available locally at Energy Northwest, Richland, Washington) Removal/installation tasks will be handled by Characterization Projects Operations/Interim Stabilization (CPO/IS) maintenance personnel and performed per maintenance work package (see deliverables section)

3 7 PRE-OPERATIONAL AND OPERATIONAL TESTS (TEST AND EVALUATION)

An operational test will be performed to test the effectiveness of the revised operating procedure This will serve to evaluate the Type 4 sampler to ensure it is ready for operations before the sampler is turned over for use All testing will be performed per HNF-IP-0842, Section 4 28, 'Testing Practices Requirements" (LHMC 1999c)

3 8 ACCEPTANCE FOR BENEFICIAL USE

The ABU will be completed to provide turnover (or return) of the Type 4 vapor sampler to CPO The ABU checklist in Appendix A is for reference only Any completed ABU forms and documentation will be released as required by HNF-IP-0842, Section 3 12, "Acceptance of Structures, Systems, and Components for Beneficial Use" (LMHC 1999c) The first ABU will be a partial one due to the time involved in updating the essential and support drawings with the information on the ECNs After the ECNs are incorporated into the drawings and any other outstanding items are completed, a final ABU will be accomplished by revising the turnover-supporting document via the ECN process

3 9 RISK ASSESSMENT

3 9 1 Budget Risks

There will be minimal variances in the budget for both parts and labor The parts variation will come from deciding how many spares need to be ordered to facilitate operations The labor variance could be substantial if there is significant effort required for the documentation review/approval cycle

3 9 2 Schedule Risks

There is some schedule risk associated with this project because of the short time frame (approximately 2 ½ months) If parts that need to be procured have long lead times, or if a design modification must be performed, the project could be finished significantly behind its target date (January 2000) A potential issue with the calibration of the existing flow meters exists Long lead times for calibrations of the flow meters have been experienced in the past If the new calibration lab (Energy Northwest) cannot provide timely calibration of the flow meters, a design modification may become necessary One possible alternative to a design modification would be to purchase the necessary Maintenance and Test Equipment (M&TE) to perform the calibrations "in-house " If the project became too far behind in its schedule, operations may be rushed to get the Type 4 vapor sampling work completed within FY 2000

4 0 ORGANIZATION

<u>COGNIZANT ORGANIZATION</u>

Characterization Engineering	Manager- RM Boger Project Manager - JL Smalley Design Authority - GP Janicek Responsible Engineer FR Reich Responsible Engineer RW Lysher
Characterization Field Engineering	Cognizant Manager - JS Schofield Cognizant Engineer (Type 4 vapor sampler) - DD Wanner

The Cognizant Organization(s) will provide project management, design authority, and cognizant engineering support for the design verification, upgrades, documentation, review activities, and testing of the ISVS carts

<u>SUPPORTING ORGANIZATIONS</u>

Characterization Project Operations/Interim Stabilization Maintenance
Supervisor - BJ Shoemake

The CPO/IS organization will provide qualified personnel to assist in field assessments or reviews of draft drawings

Characterization Project Ops — Manager - JF Sickels

The CPO organization will provide qualified personnel to assist in field assessment/reviews of draft drawings

Quality Assurance — Manager – JB Hebdon
Engineer – JL Logston
Technician – RA Arndt

This organization will provide input for the design review of the proposed modification and support any required verification/witnessing of acceptance testing

5 0 SCHEDULE/COST ESTIMATE

5 1 SCHEDULE ESTIMATE

A schedule for this work is shown in Appendix C

5 2 COST ESTIMATE

Cost Description	Cost Estimate
Engineering Support ETP, DCM, SEL, Design Review, OTP, ABU	$73,000
Design Drafting Support	$25,000
Design Authority Support	$10,000
Cog Engr Support	$31,000
Quality Engr Support	$7,000
Safety Engr Support	$6,000
Environmental Engr Support	$3,000
Support Calibrations	$17 000
Training	$11,000
Maintenance	$8 000
Parts/Materials	$37,000
Total	$228,000

6 0 CONFIGURATION MANAGEMENT

The proposed activities will produce new and updated design media in the form of supporting documents and drawings The ECNs that are currently out against the Type 4 vapor sampler will be incorporated into the system drawings to facilitate the design verification of the sampler If any ECNs are generated against the Type 4 vapor sampler in support of this task plan, they will be incorporated before final turnover to CPO Refer to LMHC 1998a and LMHC 1999b for details on drawing evaluation and classification

The policies, practices, and procedures that will be used to govern configuration management during this task are listed in Section 11 0 References

7 0 QUALITY ASSURANCE

The Approval Designator for this modification will include Q (Quality Assurance) and S (Safety) The Design Control and Documentation for this task shall meet the requirements reflected in LMHC 1998b HNF-IP-0842, Section 3 5, "Engineering Documentation" (LMHC 1999c), shall be used in determining the appropriate organizational reviews and signatures required for the documentation produced by this activity Any ECNs that may be generated under this task will include an E (Environmental Review), and a NEPA screening will be performed, as required by LMHC 1999e

8 0 SAFETY, AUTHORIZATION BASIS AND ENVIRONMENTAL PROTECTION

The safety classification of the Type 4 vapor sampler is general service There are some components that have defense-in-depth characteristics for mitigation of flammable gas accident These components will be recognized in the SEL that is being generated as specified by this ETP

The current Authorization Basis, LMHC 1999f, covers the Type 4 Vapor Sampling System under Appendix KC *Exceptions to Ignition Source Controls*, item numbers 22 and 24 As indicated in Appendix E, Item 22, Static Spark Potential (pages KC-30 to KC-33), is an exemption for static spark potential from the sampling tubes in the sampling head of the Type 4 ISVS sampling cart Item 24, Electrical Spark Potential (pages KC-37 to KC-39), is an exemption for potential electrical spark ignition events from the Type 4 ISVS sampling cart

Any changes to systems via the ECN process will have a NEPA screening to assess if further consideration must be given to environmental concerns

9 0 SYSTEMS ENGINEERING

This activity is part of 100 116 – "Provide Sampling Equipment Engineering " The WBS for this activity is 1 01 01 01 01 03 01 13, with the scope description that is to " restore the capability of obtaining Type 4 vapor samples utilizing the vapor sampling carts "

The life cycle of the Type 4 vapor sampling cart is fairly short, and hence special consideration will be given to ordering minimal numbers of spare parts Additionally, the effort to bring the sampler documentation up to date will be kept minimal wherever possible to lower the costs for this activity

10 0 CLOSEOUT COSTS

The closeout costs associated with the project are only the parts and materials that could potentially be ordered before the project were terminated Materials costs were estimated to be approximately $37,000 The rest of the budget is labor costs, and work could be stopped at any time with no financial penalty

11 0 REFERENCES

FDH 1998, HNF-SP-1230, Rev 1, *Tank Waste Remedıatıon System Fıscal Year 1999 Multı-Year Work Plan WBS 1 1*, Fluor Danıel Hanford, Inc , Rıchland, Washıngton, November 1998

LMHC 1998a, HNF-2305 Rev 0, *DRAWING EVALUATION REPORT FOR SAMPLING EQUIPMENT*, Lockheed Martın Hanford Corporatıon, Rıchland, Washıngton, September 1998

LMHC 1998b, HNF-SD-WM-QAPP-025, *Tank Waste Remedıatıon System Characterızatıon Project Qualıty Polıcıes* Lockheed Martın Hanford Corporatıon, Rıchland, Washıngton, September 1998

LMHC 1999a, HNF-SD-WM-DQO-021, Rev 1, *Data Qualıty Objectıves for Regulatory Requırements for Hazardous and Radıoactıve Aır Emıssıons Samplıng and Analysıs* Lockheed Martın Hanford Corporatıon, Rıchland, Washıngton, July 1999

LMHC 1999b, HNF-3240, Rev 3, *Characterızatıon Equıpment Essentıal/Support Drawıng Plan*, Lockheed Martın Hanford Corporatıon, Rıchland, Washıngton, June 1999

LMHC 1999c, HNF-IP-0842, Vol IV, *TWRS Admınıstratıve Procedures, Engıneerıng*, Lockheed Martın Hanford Corporatıon, Rıchland, Washıngton, September 1998

LMHC 1999d, LMH-PRO-440, Rev 0, *Engıneerıng Document Change Control Requırements*, Lockheed Martın Hanford Corporatıon, Rıchland, Washıngton, October 1999

LMHC 1999e, LMH-PRO-233 Rev 0 *Revıew and Approval of Documents*, Lockheed Martın Hanford Corporatıon, Rıchland, Washıngton, October 1999

LMHC 1999f, HNF-SD-WM-SAR-067, Rev 1, *Tank Waste Remedıatıon System Fınal Safety Analysıs Report* Lockheed Martın Hanford Corporatıon, Rıchland, Washıngton, October 1999

LMHC 1999g, LMH-PRO-1819, Rev 0, *PHMC Engıneerıng Requırements*, Lockheed Martın Hanford Corporatıon, October 1999

H-2-825314, Vapor Samplıng Cart Electrıcal Installatıon, Rev 0, 1995

H-2-825313, Vapor Samplıng Cart Assemblıes, Rev 0, 1995

H-2-825301, In Sıtu Sample Head Assembly & Detaıls, Rev 0, 1995

NEC® 1999, NFPA 70 1999 Edition, *National Electrical Code®*, National Fire Protection Association, Quincy, Maryland, July 1995

SUMMA™ SUMMA is a registered trademark of Molectrics, Inc, Cleveland, Ohio It is used herein as reference to sample collection canisters prepared using the SUMMA passivation process

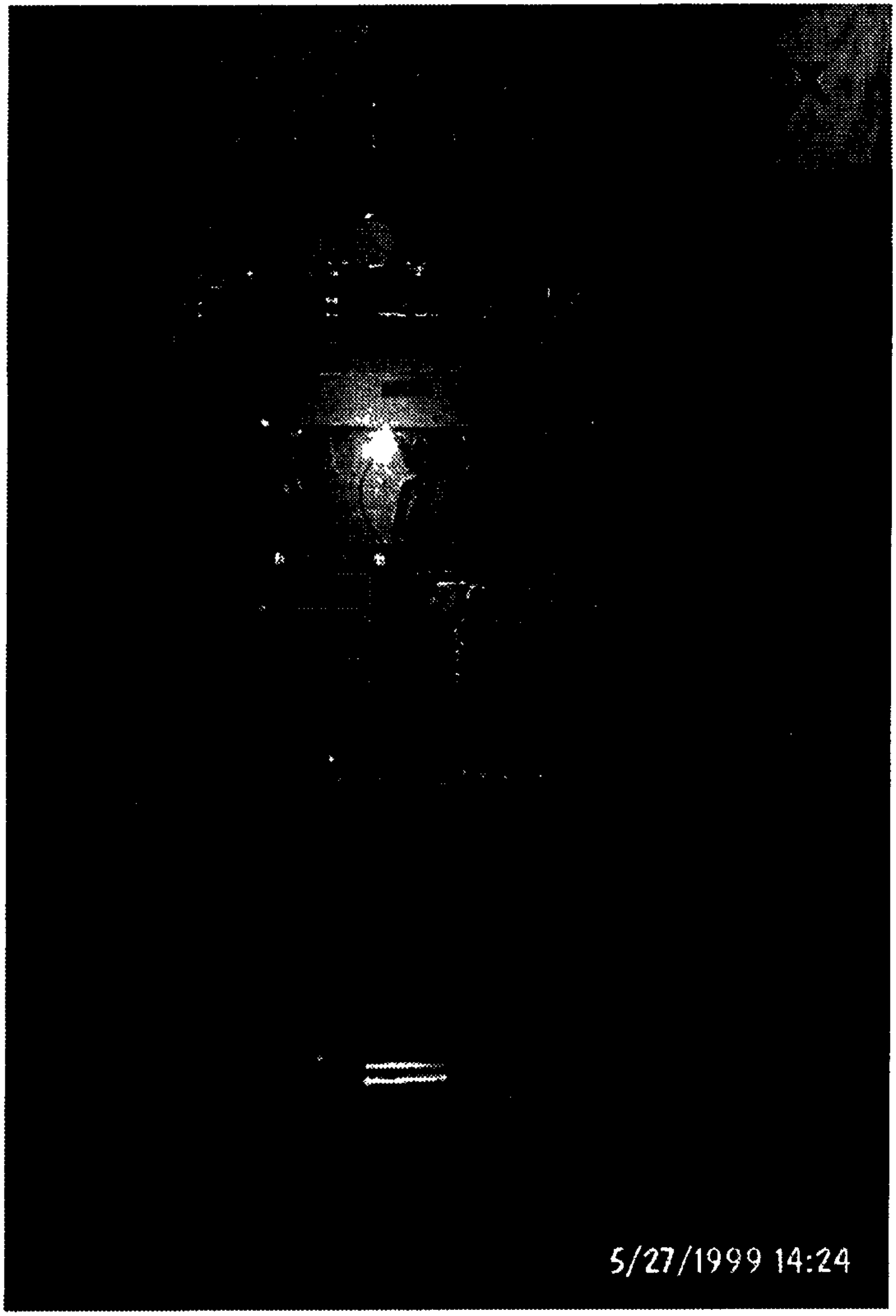
TO-080-627, *Tank Farm Operating Procedure - Perform Vapor Sampling of Waste Tanks using In-Situ Vapor Sampling (ISVS) System*, Rev A-2, 1997

Appendix A – Acceptance for Beneficial Use Checklist

DOCUMENTATION REQUIRED from
Project Type IV Sampler Documentation Update
Prior to ACCEPTANCE FOR BENEFICIAL USE

DESCRIPTION	RESPONSIBILITY	DESCRIPTION	RESPONSIBILITY
ENGINEERING		**ADP**	
☒ Engineering Task Plan (ETP)	Reich, FR	☐ Software Configuration Management Plan	N/A
☒ Activity Schedule	Reich, FR	☐ System Requirements Specification	N/A
☐ Final Safety Analysis Report (FSAR)	N/A	☐ Software Design Description	N/A
☐ Technical Safety Requirements (TSR)	N/A	☐ Software Validation/Verification	N/A
☐ Safety Assessment (SA)	N/A	☐ ____________	
☒ Safety Equipment List (SEL)	Criddle JD	**TRAINING**	
☐ Design Criteria	N/A	☐ Training Plan	N/A
☐ System Design Description (SDD)	N/A	☐ Training Manuals	N/A
☐ Test Plan/Specification	N/A	☒ Training to Operating Crews	Jennings, P
☐ Acceptance Test Procedures (ATPs) and Final Test Reports	N/A	☒ Training to Maintenance Crews	Jennings, P
☒ Operational Test Procedures (OTPs) and Final Test Reports	Reich, FR N/A	☐ Training Mock-Up	N/A
☐ Environmental Impact Statement	N/A	☐ ____________	
☐ Environmental Report	N/A	**OPERATIONS/MAINTENANCE**	
☐ Environmental Permit	N/A	☐ Operating and Maintenance Manuals	N/A
☐ Hazardous Waste Disposal Plan/Procedure	N/A	☒ Operating Procedures	Wanner DD
☐ Solid Waste Disposal Plan/Procedure	N/A	☐ Surveillance Procedures	N/A
☐ Stress/Seismic Analysis	N/A	☒ Calibration Procedures	Wanner DD
☐ Stress/Design Report	N/A	☐ Preventative Maintenance Procedures	Wanner DD
☐ Design Specification Report	N/A	☐ Repair/Maintenance Procedures	Wanner DD
☐ Equipment Specifications	N/A	☐ Functional Check Procedures	N/A
☐ Procurement Specifications	N/A	☐ Preventative Maintenance Data Sheets	Wanner DD
☐ Construction Specifications	N/A	☐ ____________	
☐ Essential Material Specifications	N/A	**QUALITY ASSURANCE**	
☐ Final Design Drawings	N/A	☐ Inspection Plan	N/A
☐ Installation Drawings	N/A	☐ QA Program Plan	N/A
☐ Installation Work Plan	N/A	☐ QA Project Plan	N/A
☒ As-Built Drawings	Wilson GW	☐ ____________	
☐ Interface control Drawings	N/A	**PROCUREMENT**	
☐ IEFD Drawings	N/A	☒ Vendor Information Files	Wilson, GW
☐ System Drawings	N/A	☐ Comprehensive Equipment List	N/A
☐ Drawing Tree	N/A	☒ Spare Parts List	Wilson, GW
☒ Incorporated Outstanding Project Generated ECNs	Reich, FR	☒ Spare Parts in Stock	Wilson, GW
☒ FGEAB Report	Criddle JD		
☒ Design Compliance Matrix	Reich, FR		
☐ ____________			

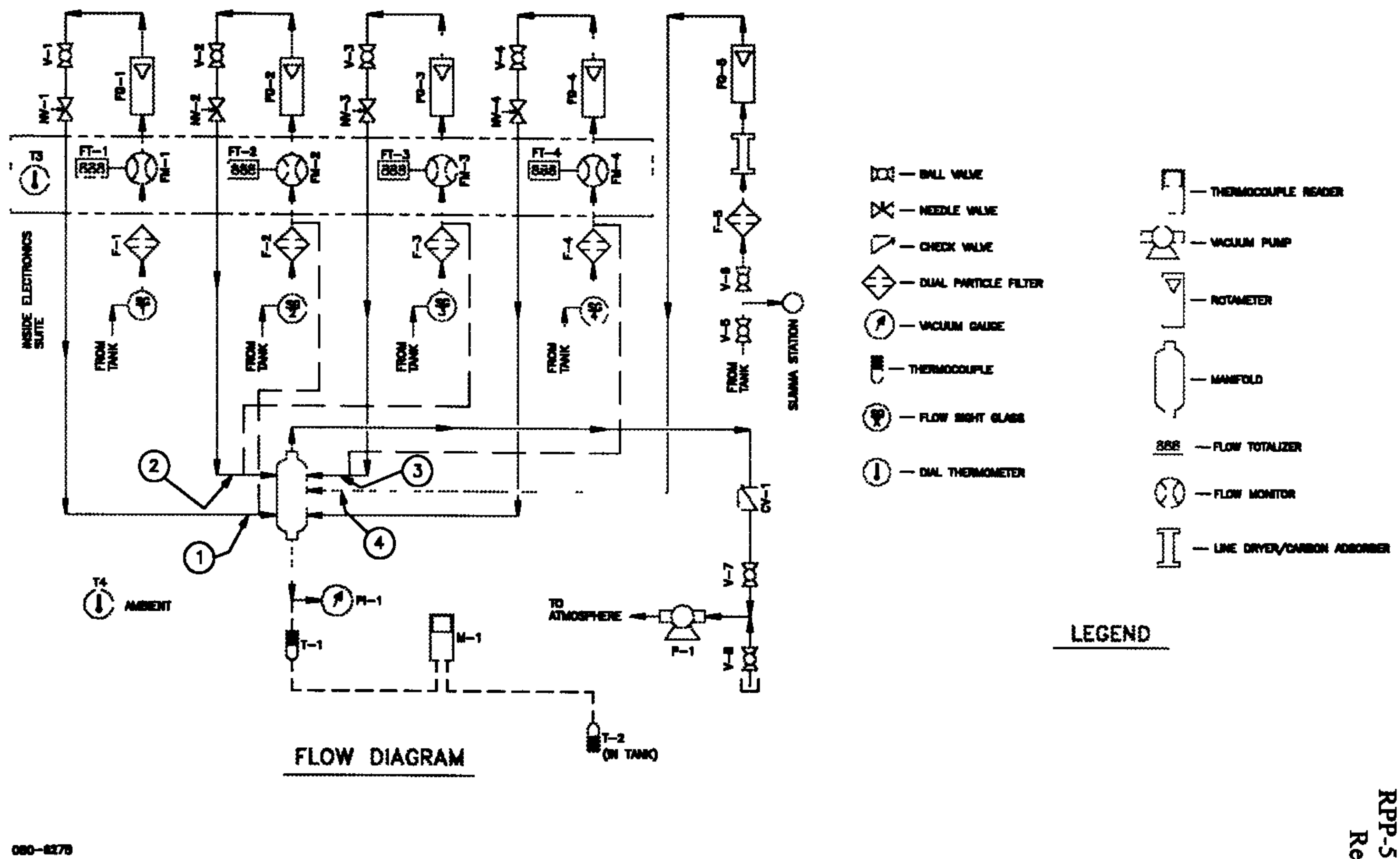
Appendix B – ISVS Type 4 Vapor Sampling Cart Photo



Appendix C – Schedule

ID	Task Name	Start	Finish	Gantt label (Oct 24 – Jan 30)
1	Determine requirements	Mon 10/25/99	Mon 10/25/99	Lysher/Akers
2	Prepare Draft ETP	Wed 10/27/99	Mon 11/8/99	Akers/Reich
3	Review and Approve ETP	Tue 11/9/99	Wed 12/1/99	Reich
4	Issue ETP	Mon 12/6/99	Thu 12/9/99	Reich
5	Prepare Draft DCM	Mon 11/8/99	Wed 12/8/99	Reich/Wanner
6	Review and Approve DCM	Thu 12/9/99	Mon 12/27/99	Reich/Wanner
7	Issue DCM	Tue 12/28/99	Wed 12/29/99	Reich
8	Prepare Draft SEL	Mon 11/22/99	Fri 12/3/99	Lysher/Criddle
9	Review and Approve SEL	Thu 12/9/99	Thu 12/23/99	Criddle/Wanner
10	Issue SEL	Mon 12/27/99	Tue 12/28/99	Criddle
11	Release Partial ABU	Thu 12/9/99	Mon 12/13/99	Criddle
12	Determine Calibration Reqs	Mon 11/22/99	Tue 11/23/99	Wanner
13	As-Built Drawings	Thu 12/2/99	Fri 12/31/99	Reich/Wilson/Wanner
14	Update Operating Procedur	Mon 11/29/99	Thu 1/6/00	Wanner
15	Operator Training	Mon 1/10/00	Fri 1/14/00	Jennings
16	Draft Maintenance Procedu	Mon 12/13/99	Thu 12/16/99	Wanner/Wilson
17	Draft Calibration Procedure	Mon 12/20/99	Wed 12/29/99	Wilson/Wanner
18	Calibration of Instruments	Mon 11/8/99	Wed 12/8/99	Wanner
19	Equipment modifications	Mon 12/20/99	Tue 1/18/00	Wanner/Reic
20	Revise Operational Test Pl	Wed 12/15/99	Tue 12/21/99	Wanner/Criddle/Wilson
21	Review and Approve OTP	Mon 12/27/99	Fri 12/31/99	Reich/Wanner
22	Release OTP	Mon 1/3/00	Tue 1/4/00	Reich
23	Perform OTP	Wed 1/5/00	Wed 1/5/00	Wanner/Reich
24	Release Test Report	Thu 1/6/00	Mon 1/10/00	Reich/Wanner
25	Informal Design Verificatio	Tue 1/11/00	Tue 1/18/00	Wanner/Crid
26	Release Final ABU	Wed 1/19/00	Thu 1/20/00	Criddle

Appendix D – ISVS Flow Diagram (from H-2-825313, sheet 4)



Appendix E – Exceptions to Ignition Source Controls

The following text is taken from HNF-SD-WM-SAR-067 REV 1, Appendix KC, pages KC30 to KC33

ITEM CLASSIFICATION NON DE MINIMUS

ITEM NUMBER 22

EQUIPMENT Use of Type 4 vapor sampling head

CATEGORY Static Spark Potential

USE Used for obtaining Type 4 dome space vapor samples

APPLICABLE CONTROL NOT MET ICS 2 #3

WHEN CONTROL NOT MET FG 1 ex-tank FG 1,2 dome intrusive

DISCUSSION OF FLAMMABLE GAS JCO APPLICABILITY

Type4 vapor sampling is currently used for tank vapor sampling It is a marked improvement over Type 3 sampling in both cost, schedule, and sampling time The sampling is done in-situ, making the data more reliable than data from the Type 3 vapor sampling Type 3 vapor sampling requires the removal of vapors from a tank through heated sampling tubes Type 3 vapor sampling requires the insertion of a sampling head equipped with sampling media Figure 4VS-1 is a sketch of the equipment inserted into the tank vapor space Some of the items on the sampling head are made of different polymers Encased within the acrylic tubing are approximately 1 foot of the plastic flexible tube bundle, the bulkhead top collar (ultra-high molecular weight plastic), and Teflon filter The tube bundle, within the acrylic tubing, terminates with the stainless steel sample head (non-sparking) containing the exposed (to tank vapors) Teflon alignment guide The remainder of the tube bundle above the acrylic tubing is wrapped in plastic sleeving The scope of this requested exception is limited to the Type 4 vapor sampling head items

RISK ACCEPTANCE

See risk acceptance write-up starting on next page

IMPACT OF NOT ACCEPTING RISK OF CONTINUED USE

Facility Group 1 Tanks-Would halt Type 4 vapor sampling until alternate items were available

Facility Group 2 Tanks-Would halt Type 4 vapor sampling until alternate items were available

Facility Group 3 or other Tanks-No Impact

REQUESTED APPROVAL FROM DOE

Continued use when performing flammable gas monitoring control [B] for above polymeric items during
Type 4 vapor sampling in
1) FG 1 ex-tank regions
2) FG 1, 2 tanks during dome intrusive activities

RISK ACCEPTANCE FOR TYPE 4 VAPOR SAMPLING HEAD

The Teflon and various plastic components in the Type 4 vapor sampling head were all specifically selected for use based upon their physical characteristics and because they were shown to cause minimal bias to the sampling operation from out-gassing of organics Alternate materials cannot be used for the Type 4 vapor sampling head without going through extensive testing The sampling method is sufficiently sensitive that during early sampling with the Type 4 vapor sampler, it was found that the results were being biased by out-gassing from the plasticizer used in the tape that attached the plastic sleeve to the sample head This required revising the taping method normally used for sleeving objects inserted into tank risers to the one shown in Figure 4VS-1 which maintains a barrier between the tape and the vapor sampling head inlet The ends of the sampling tubes are tightly pressed into the Teflon end piece There is no flow of tank vapors into the acrylic housing as there is no driving force to cause vapors to pass by the seal

Static buildup is a function of the RH (Ed note relative humidity) and physical factors that influence a charge such as mechanical friction The Type 4 vapor sampling head is only in a tank vapor space for a few hours The unit is stationary at that time while the tank vapors flow through the tubes There is no work done to induce a static charge

The RH has been measured at >50% in 95% of the non-exhausted tanks sampled (as of 7/96) This is to be expected since the concentration of water in air in a sealed chamber will eventually reach saturation, and be in equilibrium with the liquid phase The remaining 5% of the non-exhausted tanks all measured approximately between 40% to 50% RH The SX Farm exhausted tanks measured approximately between 20% to 40% RH, except one tank, which was 65% RH Tank 241-C-105 measured 40% to 60% RH, and tank 241-C-106 measured 50% to 100% RH

Therefore, for non-exhausted tanks, plastics in dome intrusive regions are expected to be in compliance with the Flammable Gas JCO about 95% of the time For exhausted tanks tanks 241-C-105 and 241-C-106 are approximately 50% RH Most double-shell tanks would be expected to be the same due to the liquid or moist solid surfaces

Concern is when a spark occurs coincident with a flammable gas mixture >100% lower flammability limit (LFL) Per Appendix A of this JCO, vapor space sample results for single-shell tanks indicate that 70% to 90% of the tanks show negligible or non-detectable flammable gas levels during non-waste intrusive work The remaining 10% to 30% of the tanks average 1 2% to 1 5% of the LFL The highest CGM measurement (7%) recorded to date using the organic vapor monitor (OVM) samples equated to approximately 3 5% of the LFL The highest vapor sample results obtained via Type B/Type 4 vapor sampling correlates to 2 51% of the LFL One inactive miscellaneous underground storage tank (IMUST) sampled showed no flammable gas present The highest recorded organic concentration, 3 8% of the LFL, was found in tank 241-C-103 Tank 241-C-103 is the only waste tank known to have a significant floating organic layer Since July 1996, one tank has shown a 10% of the LFL combustible gas meter (CGM) reading (5% of the LFL), and one showed a 13% LFL CGM reading (6 5% LFL) prior to intrusive activities Actively ventilated tanks would be expected to have low flammable gas levels because of the constant dilution air passing through the tanks No actively ventilated single-shell tanks have shown flammable gas levels above minimum detectable levels in either the Type 3 or 4 vapor samples or in the special OVM samples taken in these tanks

Trapping of gases is not a concern with the Type 4 vapor sampling head as the top end of the external sleeving is open The following list summarizes the points to be considered when evaluating the risk associated with using the Type 4 vapor sampling head

1) The air flow in the sampler tubing is insufficient to induce a static charge
2) There is a low potential for static buildup and subsequent discharge with the unit There are no moving parts and the head is in the tank vapor space for only a few hours
3) The RH in passively ventilated tanks or waste-intruding equipment is expected to be high enough so that the majority of the time nonconductive plastic use in these areas is in compliance with the Flammable Gas JCO
4) There is no liquid or wind exposure to the head to cause a static buildup
5) Flammable gas levels have not been seen in excess of the LFL in the tank dome space for any tank except in pre-mitigated tank 241-SY-101 during one or more gas release event (GREs) In about 80% of the single-shell tanks that have been sampled, the LFL is below detectable In the remaining 20% of the single-shell tanks, the LFL is less than 2%,

except for two to three specific readings, which have ranged up to 6 5% The presence of flammable gases in actively ventilated single-shell and double-shell tanks would be expected to be low most of the time because of the constant dilution air Therefore, although the presence of flammable gas concentrations in dome intrusive areas above the LFL cannot be positively ruled out, they can be expected to be a rare occurrence

Based upon the following, continued use of the Type 4 vapor sampling head in the tank farms poses a low risk of causing a flammable gas ignition event

- consideration of the small amount of time the Type 4 vapor sampling head is exposed to the tank vapor space
- the low percentage of the time the Type 4 vapor sampling head will be used in a dome intrusive regions when the RH will be low enough that the head use would not meet the Flammable Gas JCO
- the lack of any significant static generating mechanisms, and
- the small percent of the time that flammable gas levels might be above the LFL

The risk with continuing use of the Type 4 vapor sampling head is further reduced by performing flammable gas monitoring of the work area prior to and during use This will include monitoring per method [A] See definition of monitoring methods at the end of this section

When flammable gas levels reach 25% of the LFL, work ceases as required per the Flammable Gas JCO The National Fire Protection Association (NFPA 30, 1988) recommends that processes be controlled so that flammable gas concentrations are <25 percent of the LFL, when relying upon vapor space flammability levels to preclude the possibility of an ignition DOE Order 5480 4 requires Hanford waste tanks to be operated within NFPA guidelines Thus, a control of <25% of the LFL has been established for performing activities in and around tank farm facilities Because of the unpredictable nature of GREs, it is currently not possible to ensure that 25% of the LFL is never exceeded Procedures and controls are thus in place to minimize the potential for a tank to exceed 25% of the LFL, and to cease work in areas common with the tank vapor space when the flammable gas concentration exceeds this value This 25% limit is far below the actual limit at which flammability can occur, and is conservatively chosen to allow for potential measurement errors

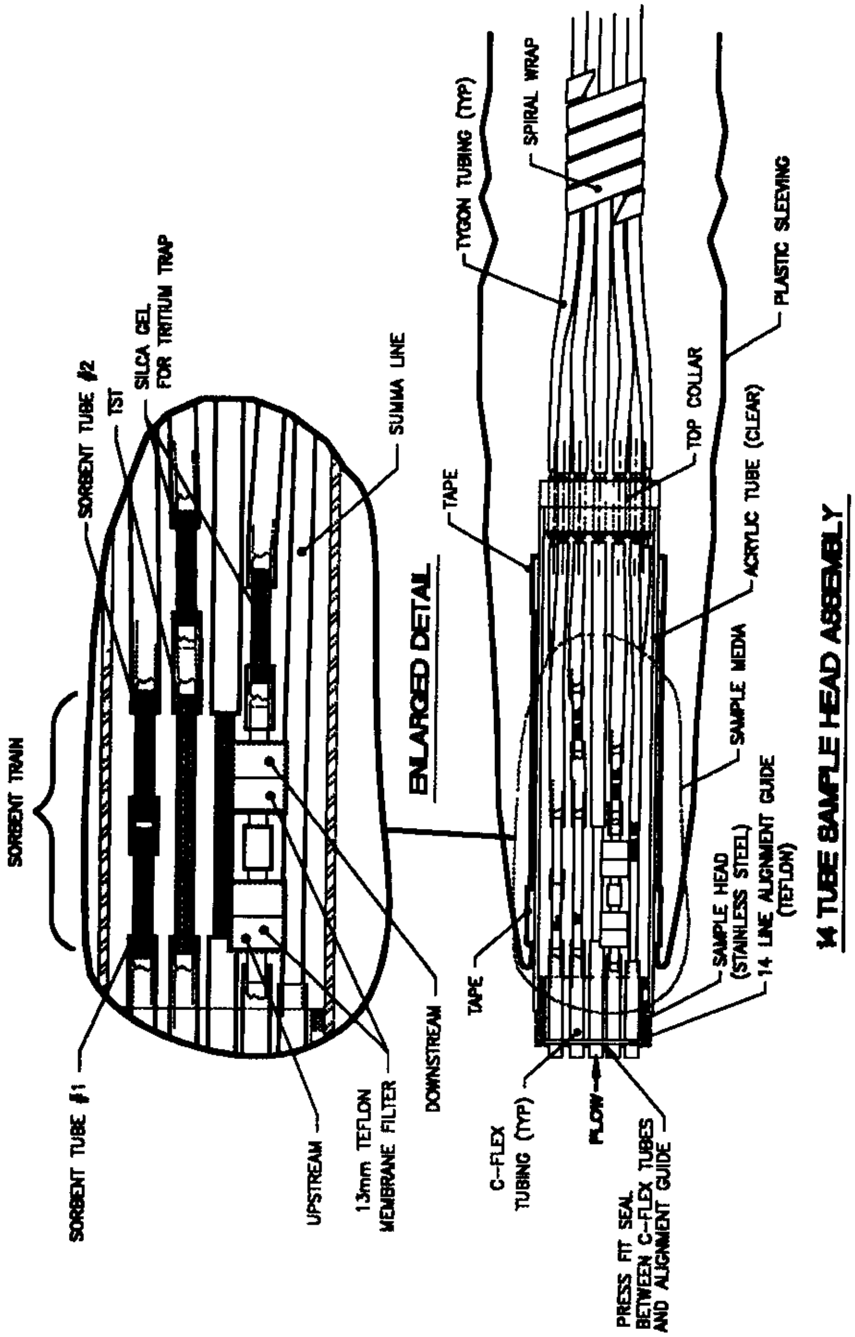
Monitoring is normally performed with a portable CGM The CGM is calibrated with pentane and reads high by 100% when monitoring for hydrogen in air For conservatism, no correction factor is applied in the field to the CGM reading when used for monitoring for personnel protection Thus a 25% of the LFL reading on a CGM is actually 12 5% of the LFL for hydrogen in air, but is treated as if it were 25% Depending upon the concentration of the flammable gas constituent and oxidants (ammonia, methane, carbon monoxide, nitrous oxide), a 25% LFL CGM reading will be indicative of 12 5% to approximately 20% of the LFL The response time of a CGM to an increase in flammable gas concentration is not instantaneous The CGM starts responding to an increase in flammable gas concentrations almost immediately upon the gas reaching the CGM internals The internal response time for a CGM to reach 10% of the LFL indication (5% LFL actual for hydrogen in air) when exposed to 23% of the LFL pentane mixture (equivalent to a 11 5% of the LFL hydrogen in air mixture) ranged from 7 to 12 seconds in a number of informal tests Time to reach the full 23% test gas indication took 20 to 40 seconds

If the CGM is drawing a sample out of a tank dome space, the time for the tank vapors to reach the CGM is approximately 26 seconds, based upon the 500 cm 3/min CGM flow and the tubing currently used for flammable gas monitoring Thus, an instantaneous change from zero to 12 5% of the LFL for hydrogen in air in a tank vapor space (an indicated 25% of the LFL) would not indicate any change at all on a CGM for about 26 seconds At 26 seconds, the indicated LFL would begin to rise and 33 to 36 seconds after the step change the CGM would indicate about 10% of the LFL The CGM would indicate 25% of the LFL approximately 45 to 65 seconds after the step change

A CGM is an acceptable instrument to use for flammable gas monitoring in dome intrusive regions as long as work is halted upon significant increase in the indicated flammable gas levels An instantaneous step increase in an entire tank dome vapor space concentration from zero to 100% of the LFL is not realistic due to the large volume of gas that would be required to be released, although localized spots near the waste surface could show a quick step change to >100% of the LFL from relatively small releases of gases from below the waste surface The risk is low that a gas stream would be released from the waste surface of a 75-foot diameter tank and enter the 2½-inch diameter sampling head directly above without the gas being partially diffused by tank vapors The sampling head is not routinely used near the waste surface where there could be quick localized step changes in the flammable gas concentration Were high gas concentrations present for a few seconds until noted by the CGM, there is still low risk of a static discharge as there are no moving parts to the Type 4 vapor sampling head and no major static discharge inducing activity (Ed note "High high gas concentrations, that may be present for a few seconds, are still a low risk as there are are no moving parts in the Type 4 vapor sampling head that can cause a spark and there are no static discharge inducing activities ")

The current polymeric materials used for vapor sampling were selected after a study that evaluated the effects of out-gassing with a variety of compounds Using other materials, even if they were available, would result in unnecessary expense and delays to the vapor sampling program The impact on resolution of tank safety issues by halting Type 4 vapor sampling is a more significant concern than the low risk of a flammable gas ignition event due to a spark from these items

FIGURE 4VS-1 TYPE 4 VAPOR SAMPLING HEAD



The following text is taken from HNF-SD-WM-SAR-067 REV 1, Appendix KC, Pages KC37 to KC39

ITEM CLASSIFICATION NON DE MINIMUS

ITEM NUMBER 24

EQUIPMENT Type 4 Vapor Sampling Cart

CATEGORY Electrical Spark Potential

USE Used for monitoring flows and providing suction for gas drawn through sampling tubes inserted in the tank

APPLICABLE CONTROL NOT MET ICS 2 #5

WHEN CONTROL NOT MET FG 1,2 dome intrusive

DISCUSSION OF FLAMMABLE GAS JCO APPLICABILITY

The electronic equipment on the Type 4 sampling cart consists of four mass flowmeters, four electronic totalizers, and a vacuum pump The Type 4 vapor sampling cart establishes the vacuum and monitors the flow of tank vapors from the Type 4 vapor sampling head The information is not yet available to show whether the items on the cart meet the controls for dome intrusive electrical equipment for facility group (FG) 1 and 2 tanks Although the definitions in the Flammable Gas JCO would imply the equipment is not required to meet dome intrusive criteria, a conservative assumption is that it should meet the requirements as filtered tank gases pass through the equipment and any flammable mixtures would be exposed to the electrical equipment internals Type 4 vapor sampling is currently only performed on FG 2 and FG 3 tanks, plans are to sample at least one FG 1 tank in the future

RISK ACCEPTANCE

See risk acceptance writeup starting on next page

IMPACT OF NOT ACCEPTING RISK OF CONTINUED USE

FG 1 tanks-No impact unless sample (Ed note "sampling") FG 1 tanks If FG 1 tanks are sampled, the impact would be the same as for FG 2 tanks FG 2 tanks-If the risk of continuing to use the current equipment is not accepted, all in-situ vapor sampling (Type 4) vapor sampling activities will be shut down until different equipment is available or the existing equipment can be shown to meet the Flammable Gas JCO criteria FG 3 or other tanks-No impact

REQUESTED APPROVAL FROM DOE

Continued use when performing flammable gas monitoring control [A] for the current Type 4 vapor sampling cart
1) FG 1,2 dome intrusive regions

RISK ACCEPTANCE FOR TYPE 4 VAPOR SAMPLING CART

The scope of this discussion is limited to potential electrical spark ignition events from the Type 4 sampling cart

The Type 4 vapor sampling cart was developed to sample tank vapors to support resolution of tank safety issues It replaces Type 3 vapor sampling, which is more expensive and time consuming, and did not provide in-situ sampling

Concern is when a spark occurs coincident with a flammable gas mixture >100% of the LFL Per Appendix A of this Flammable Gas JCO, vapor space sample results for single-shell tanks indicate that approximately 70% to 90% of the tanks show negligible or nondetectable flammable gas levels during non-waste intrusive work The remaining 10% to 30% of the tanks average 1 2-1 5% of the LFL The highest CGM measurement (7%) recorded to date using the OVM samples equated to approximately 3 5% of the LFL The highest vapor sample results obtained via Type B/Type 4 vapor sampling correlates to 2 51% of the LFL One IMUST sampled showed no flammable gas present The highest recorded organic concentration, 3 8% of the LFL, was found in tank 241-C-103 Tank 241-C-103 is the only waste tank known to have a significant floating organic layer Since July 1996 one tank has shown a 10% of the LFL CGM reading (5% of the LFL) and one showed a 13% LFL CGM reading (6 5% LFL) prior to intrusive activities Actively ventilated tanks would be expected to have low flammable gas levels because of the constant dilution air passing through the tanks No actively ventilated single-shell tanks have shown flammable gas levels above minimum detectable levels in either the Type 3 or 4 vapor samples or in the special OVM samples taken in these tanks

The following can be summarized concerning the actual risk from using the Type 4 vapor sampling cart
1) Analytical data from Type 4 vapor sampling is used to support waste tank safety issue resolution
2) Flammable gas levels have not been seen in excess of the LFL in the tank dome space for any tank except in tank 241-SY-101 during one or

more GREs In about 80% of the single-shell tanks that have been sampled, the LFL is below detectable In the remaining 20% of the single-shell tanks, the LFL is less than 2%, except for two to three specific readings, which have ranged up to 6 5% The presence of flammable gases in actively ventilated single-shell and double-shell tanks would be expected to be low most of the time because of the constant dilution air Therefore, although the presence of flammable gas concentrations in dome intrusive areas above the LFL cannot be positively ruled out, they can be expected to be a rare occurrence

Based upon the need for Type 4 vapor sampling and the small percentage of the time that flammable gas levels might be above the LFL, continued use of the Type 4 vapor sampling cart poses a low risk of causing a flammable gas ignition event

The risk associated with continued use of the Type 4 vapor sampling cart is further reduced by performing flammable gas monitoring of the work area and dome space prior to and during use This will include monitoring per method [A] See definition of monitoring methods at the end of this section

When flammable gas levels reach 25% of the LFL, work ceases as required per the monitoring requirements (Ed note "of") this Flammable Gas JCO The National Fire Protection Association (NFPA 30, 1988) recommends that processes be controlled so that flammable gas concentrations are <25 percent of the LFL when relying upon vapor space flammability levels to preclude the possibility of an ignition DOE Order 5480 4 requires Hanford waste tanks to be operated within NFPA guidelines Thus, a control of <25% of the LFL has been established for performing activities in and around tank farm facilities Because of the unpredictable nature of GREs, it is currently not possible to ensure that 25% of the LFL is never exceeded Procedures and controls are thus in place to minimize the potential for a tank to exceed 25% of the LFL, and to cease work in areas common with the tank vapor space when the flammable gas concentration exceeds this value This 25% limit is far below the actual limit at which flammability can occur, and is conservatively chosen to allow for potential measurement errors

Monitoring is normally performed with a portable CGM The CGM is calibrated with pentane and reads high by 100% when monitoring for hydrogen in air For conservatism, no correction factor is applied in the field to the CGM reading when used for monitoring for personnel protection Thus, a 25% of the LFL reading on a CGM is actually 12 5% of the LFL for hydrogen in air but is treated as if it were 25% Depending upon the concentration of the flammable gas constituent and oxidants (ammonia, methane carbon monoxide, nitrous oxide), a 25% LFL CGM reading will be indicative of 12 5% to approximately 20% of the LFL The response time of a CGM to an increase in flammable gas concentration is not instantaneous The CGM starts responding to an increase in flammable gas concentrations almost immediately upon the gas reaching the CGM internals The internal response time for a CGM to reach 10% of the LFL indication (5% LFL actual for hydrogen in air) when exposed to 23% of the LFL pentane mixture (equivalent to a 11 5% of the LFL hydrogen in air mixture) ranged from 7 to 12 seconds in a number of informal tests Time to reach the full 23% test gas indication took 20 to 40 seconds

If the CGM is drawing a sample out of a tank dome space, the time for the tank vapors to reach the CGM is approximately 26 seconds, based upon the 500 cm/min CGM flow and the tubing currently used for flammable gas monitoring Thus an instantaneous change from zero to 12 5% of the LFL for hydrogen in air in a tank vapor space (an indicated 25% of the LFL) would not indicate any change at all on a CGM for about 26 seconds At 26 seconds, the indicated LFL would begin to rise, and 33 to 36 seconds after the step change, the CGM would indicate about 10% of the LFL The CGM would indicate 25% of the LFL approximately 45 to 65 seconds after the step change

A CGM is an acceptable instrument to use for flammable gas monitoring in dome intrusive regions as long as work is halted upon significant increase in the indicated flammable gas levels An instantaneous step increase in an entire tank dome vapor space concentration from zero to 100% of the LFL is not realistic due to the large volume of gas that would be required to be released although localized spots near the waste surface could show a quick step change to >100% of the LFL from relatively small releases of gases from below the waste surface The risk is very low that a gas stream would be released from the waste surface of a 75-foot diameter tank and enter the 2½-inch diameter sampling head directly above without the gas being partially diffused by tank vapors The sampling head is not routinely used near the waste surface where there could be quick localized step changes in the flammable gas concentration Were high gas concentrations present for a few seconds until noted by the CGM, the CGM would indicate high flammable gas levels present before flammable gases approached the Type 4 vapor sampling cart, leaving adequate time for shutdown

Continuous monitoring is performed during Type 4 vapor sampling using a CGM Sampling is conducted through a tube within the flexible tube bundle that is lowered into the tank Tank vapors flow faster through the tubing used for flammable gas monitoring than through the tubing used for sampling the tank gases This is because the vapors are drawn through the flammable gas monitoring tube with the CGM while the tank vapors to be sampled are drawn through sampling tubes by the vacuum pump on the cart The time for tank vapors to reach the CGM is approximately 26 seconds Tank vapors being sampled by the cart take approximately 65 seconds to reach the in-situ vapor sampling instrumentation on the cart Therefore, with the current flammable gas monitoring arrangement, a significant change in the tank flammable gas concentration would be noticed within 33 to 38 seconds or less, assuming there were no other indications of a GRE This still leaves approximately 30 seconds before the instrumentation on the cart would see the gas, which allows adequate time for personnel response to shut off the vacuum pump This monitoring is continuous during Type 4 vapor sampling while the vacuum pump is running Shutdown of the electrical equipment on the Type 4 cart is manual upon receipt of a CGM alarm or indication

Additionally given that vapor sampling is not waste disturbing, the activity would not induce a GRE

Appendix F –Review of Readiness for Restart of Type 4 Vapor Sampling in Tank Farms

A-1 0 Meeting Minutes

MEETING MINUTES

Subject TYPE 4 VAPOR SAMPLING RESTART Operational Readiness

TO	Distribution	**BUILDING**	2704HV/G108A
FROM	Tom Pauly	**CHAIRMAN**	Tom Pauly

Department-Operation-Component	**Date of Meeting** November 10 1999	**Number Attending** 7

Distribution

*RG Brown	S7 12	JF Sickels	S7-03
*KW Gray	S8-04	DO Dobson	R4-06
*TG Goetz	R1-49	MD Hasty	S7-01
*CD Jackson	S7-34	GA Stanton	S7-01
*GP Janicek	S7-12		
*TR Pauly	S7-01		
*DD Wanner	S7-12		

*Denotes Attendee

The purpose of this meeting was to evaluate the appropriate level of documentation and review of readiness for restart of Type 4 Vapor Sampling in Tank Farms

Background Type 4 Vapor Sampling is used to sample tank vapor spaces for hazardous and toxic vapors The samples are obtained using sorbent traps and SUMMA canisters The sampling apparatus consists of the sample tube bundle which inserted into the tank vapor space through a riser and the Sample Cart itself, which is a two-wheel hand dolly containing the vacuum pump flow measurement devices valves and vapor drier Preparation of risers for vapor sampling will be performed using the JCS system similar to preparation of risers for core and grab sampling The vapor sampling activity is not waste-intrusive the sampling tube bundle is inserted into the vapor space above the waste

The Type 4 Vapor Sampling system was used routinely in tank farms until December 1997 when it was put into standby pending future missions Additional missions have now been identified, and it is currently intended to restart the Type 4 Vapor Sampling system early in the 2nd quarter of FY2000 Turnover of the Type 4 Vapor Sampling system to Operations will be documented via an "Acceptance for Beneficial Use" (ABU) form as per HNF-IP-0842 Vol IV Section 3 12 Acceptance of Structures Systems and Components for Beneficial Use

<u>Discussion</u> The attendees reviewed Attachment A Table 3 of HNF-IP-0842 Vol 1 Section 1 2 "Level of Readiness Review Score Sheet" (attached) It was agreed that the only "yes" answer was for question #12 since the operating procedure for Type 4 Vapor Sampling is going to be revised and updated This results in a total score of 10, which falls in the 0-12 category Routine operation for which no start-up review is required It was agreed to document this conclusion via meeting minutes and the meeting was adjourned

ATTACHMENT A

START-UP NOTIFICATION REPORT (cont)

Table 3 Level of Review Score Sheet (2 1 a 2 1 b)

Criteria	Score
1 Does the activity require start up of NEW Hazard Category 1 2 or 3 facility? (Yes = ORR)	NO
2 Is the activity a resumption of a Hazard Category 2 facility that has been shut down for more than 12 months? (Yes = ORR)	NO
3 Is the activity a resumption of a Hazard Category 1 facility that has been shut down for more than 6 months? (Yes = ORR)	NO
4 Does the activity involve restart after a facility shut down because of operations outside the safety basis? (Yes = ORR)	NO
5 Does the activity involve the restart of a Hazard Category 1 2 or 3 process that has been shut down for cause by DOE (significant disruption, accident directive violation etc)? (Yes = ORR)	NO
6 Does the activity require restart of Hazard Category 1 or 2 facility after substantial process system plant or facility modifications that require changes to the safety basis previously approved by DOE? (Yes = ORR)	NO
7 Does the activity cause a resumption of any Hazard Category 3 facility that has been shut down for more than 24 months? (Yes = 36)	NO
8 Does the activity involve modifications of any safety class systems structures or components (SSC)? (Yes = 25 No = 0)	0
9 If the activity is aimed at shutdown for decontamination or decommissioning are the activities significantly different than the previously operating activities? (Yes = 25 No = 0)	0
10 Does the activity require any Criticality Safety Limits and conditions that are different from those normally observed in the facility (e g normally operating under piece parts limits and now having to operate with mass limits)? (Yes = 15 No = 0)	0
11 Does the activity involve restart after an unplanned shutdown directed by management due to automatic actuation of active safety equipment failure of active safety equipment initiation of active safety equipment by an operator because of an abnormal condition or no proceduralized recovery plans currently existing? (Yes = 10 No = 0)	0
12 Has the activity resulted in a requirement for new or revised procedures controls operational requirements or other positive actions to be put in place prior to resuming operation? (Yes = 10 No = 0)	10
13 Does the activity involve modifications to any safety significant SSC as identified in the Authorization Basis? (Yes = 10 No = 0)	0
14 Does the activity increase reportable quantities or concentrations of chemicals produced purchased stored disposed of or released to the surface or atmosphere? (Yes = 10 No = 0)	0
15 Does the activity start up require any NEW capital equipment General Plant Project equipment Line Item equipment or expense equipment in excess of $500K? (Yes = 5 No = 0)	0
16 Does the activity require changes in personnel qualification/certification requirements or in the level of qualification/certification? (Yes = 5 No = 0)	0
17 Does the activity create a change in function for the affected work area?(Yes = 3 No = 0)	0
17 Will currently installed processing equipment require modifications new calibrations or new certification in order to support the activity? (Yes =3 No = 0)	0
19 Are new or different hazards created as a result of types of materials being processed or due to the process?(Yes = 3 No = 0)	0
0-12 No Review 8 24 MCS Standard Start Up Review 18 35 FDH Standard Start Up Review > 30 RA Total	10

ATTACHMENT A

START-UP NOTIFICATION REPORT (cont)

Score

0-12 Routine operation no start-up review required
8-24 Standard start-up review no Fluor Daniel Hanford involvement
18-35 Standard start up review Fluor Daniel Hanford may assign a start-up coach and review leader
> 30 Formal readiness assessment with DOE-RL involvement

A formal operational readiness review will be performed when required by DOE O 425 1