AUG 9 1999

Sta 15

22

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT

140140

2. To: (Receiving Organization) Safety Issue Resolutions (SIR)		3. From: (Originating Organization) COGEMA Engineering Corp.		4. Related EDT No.: 140119, 140120, 140125, 140133	
5. Proj./Prog./Dept./Div.: Flammable Gas Project		6. Design Authority/ Design Agent/Cog. Engr.: NS Cannon		7. Purchase Order No.: N/A	
8. Originator Remarks: For review/approval/issue				9. Equip./Component No.: N/A	
				10. System/Bldg./Facility: 241-SY-101	
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: 08-03-99	

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-4917	A11	0	Multifunction Instrument Tree (MIT) Neutron and Gamma Probe Acceptance for Beneficial Use (ABU)	Q, S	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 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed 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
4/1	1	Design Authority	PF Kison	8/4/99	74-11	4/1	1	JD Adrian	J. Adrian	8/4/99
		Design Agent				4/1		DL Sparks	DL Sparks	8/5/99
4/1	1	Cog. Eng.	DA Barnes	8/4/99						
4/1	1	Cog. Mgr.	KM Hall	8/4/99						
4/1	1	QA	RR True	8-5-99						
4/1	1	Safety	LS Krogsrud	8/4/99						
4/1	1	SIR	RE Bauer	8/5/99						

18. NS Cannon Signature of EDT Originator 8-5-99 Date		19. RE Bauer Authorized Representative for Receiving Organization 8/5/99 Date		20. KM Hall Design Authority/ Cognizant Manager 8/4/99 Date		21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
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Multifunction Instrument Tree (MIT) Neutron and Gamma Probe Acceptance for Beneficial Use (ABU)

N. S. Cannon

COGEMA Engineering Corporation, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 140140

UC: 2070

Org Code: 08E00

Charge Code: 106033BA10 - HAN 920201

B&R Code: EW3120074

Total Pages: 12

Key Words: acceptance test, operational test, ATP/OTP, OTR, 241-SY-101, interstitial liquid level (ILL), neutron, gamma, probe, multifunction instrument tree (MIT), flammable gas, inventory, hazard, liquid observation well (LOW)

Abstract: This report documents the completion of the final Acceptance for Beneficial Use (ABU) of the MIT neutron and gamma probes for application at Tank 241-SY-101.

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Christine Whittingham 8-9-99
Release Approval Date

Release Stamp

Approved for Public Release

MULTIFUNCTION INSTRUMENT TREE (MIT) NEUTRON AND GAMMA PROBE ACCEPTANCE FOR BENEFICIAL USE (ABU)

N. Scott Cannon
COGEMA Engineering Corporation

August 1999

TABLE OF CONTENTS

1.0 INTRODUCTION 1-1

2.0 REFERENCES 2-1

3.0 MIT PROBE ACCEPTANCE FOR BENEFICIAL USE (FINAL) 3-1

APPENDIX

 Planned ABU from Engineering Task Plan (HNF-3322) A-1

MULTIFUNCTION INSTRUMENT TREE (MIT) NEUTRON AND GAMMA PROBE ACCEPTANCE FOR BENEFICIAL USE (ABU)

1.0 INTRODUCTION

The multifunction instrument tree (MIT) probe program has been developed to modify existing Liquid Observation Well (LOW) neutron and gamma probes for use in the validation shafts of the two MITs installed in Tank 241-SY-101. One of the program objectives is that the modified MIT probes be completely compatible with the existing LOW van instrumentation and procedures. The major program objective is to produce neutron and gamma scans from Tank 241-SY-101 that would assist in evaluating waste feature structure and elevation. The MIT probe program is described in greater detail in the engineering task plan (HNF-3322).

In accordance with the engineering task plan, a test plan (HNF-3595) was written, reduced diameter (allowing insertion into the MIT validation tube) neutron and gamma probes were acquired, an acceptance and operational test procedure (HNF-3838) was written, acceptance and operational testing of the MIT probes was performed, and a report of these test results (HNF-4369) has been issued.

A number of neutron and gamma probe scans have been obtained from the Tank 241-SY-101 MITs, starting on February 8, 1999, in cooperation with Operations. Now that the MIT probes are fully demonstrated, this document transfers ownership of these probes to Operations, utilizing the final acceptance for beneficial use (ABU) form that follows in Section 3.0. For comparison, the original ABU planned in the engineering task plan is provided in the Appendix.

2.0 REFERENCES

- Cannon, N. S., 1998a, *Engineering Task Plan for Determining the Interstitial Liquid Level in Tank 241-SY-101 Utilizing a Neutron Probe in the Multifunction Instrument Tree*, HNF-3322, Rev. 0, COGEMA Engineering Corp. For Fluor Daniel Hanford Inc., Richland, Washington.
- Cannon, N. S., 1998b, *Test Plan for Neutron Probe Application to Tank 241-SY-101 MITs*, HNF-3595, Rev. 0, COGEMA Engineering Corp. for Fluor Daniel Hanford, Inc., Richland, Washington.
- Cannon, N. S., 1999a, *Acceptance and Operational Test Procedure for Neutron and Gamma Probe Application to Tank 241-SY-101 MITs*, HNF-3838, Rev. 1, COGEMA Engineering Corp. for Fluor Daniel Hanford Inc., Richland, Washington.
- Cannon, N. S., 1999b, *Acceptance and Operational Test Report for Neutron and Gamma Probe Application to Tank 241-SY-101 MITs*, HNF-4369, Rev. 0, COGEMA Engineering Corp. for Fluor Daniel Hanford Inc., Richland, Washington.
- LMHC, 1998, *Liquid Observation Well (LOW) Surveillance Van Startup and Operation Procedure*, TO-040-333, Rev. A-4 (or latest revision), Lockheed Martin Hanford Corporation for Fluor Daniel Hanford, Inc., Richland, Washington.
- LOW Surveillance Van Maintenance Manual, Rev. A-3, 1998, Greenspan, Inc., Houston, Texas.

3.0 MIT PROBE ACCEPTANCE FOR BENEFICIAL USE (FINAL)

ACCEPTANCE FOR BENEFICIAL USE (ABU)					
3. Document No. HNF-4917	4. Project No. NA	5. SSC Designator GS	6. System/Bldg/ Facility 241-SY-101	7. Equip/Component No.	8. ECN/EDT No. EDT 140140
9. Final ABU (x) Partial ABU ()			10. ATP Rerun Required () Yes (x) No		
11. Description of Work Modify Neutron/Gamma Probes to operate with the existing LOW Surveillance Vans at Tank 241-SY-101 MITs in accordance with procedure TO-040-333. These modified probes will be referred to as the 'MIT probes'. This ABU documents the completion of all activities necessary for the deployment of MIT probes with the existing LOW vans at Tank 241-SY-101 MITs. Completed items include the engineering task plan (HNF-3322), procurement of the MIT probes, the acceptance/operational test procedure (HNF-3838, Rev. 1), and the acceptance/operational test report (HNF-4369)					
12. Description of Work to be Completed NA		13. Scheduled Completion Date NA	14. Responsibility for Completion NA	15. Impact on Operations/Safety NA	

16. Documents or Other Items/Tasks to be Updated	17. Funding Source	18. Document Number	19. Responsibility for Completion	20. Required prior to final ABU (Yes/No)
---	---------------------------	----------------------------	--	---

TRAINING:

• Training manuals	()			
• Training to Operating Crews	(x)		NA	J. D. Adrian
• Training to Maintenance Crews	(x)		NA	J. D. Adrian
				Not Necessary*
				Not Necessary*

ENGINEERING:

• Engineering Task Plan	(x)		HNF-3322	N. S. Cannon	Completed
• Engineering Procedure	()				
• Final Safety Analysis Report (FSAR)	()				
• Safety Assessment (SA)	()				

16. Documents or Other Items/Tasks to be Updated	17. Funding Source	18. Document Number	19. Responsibility for Completion	20. Required prior to final ABU (Yes/No)
• Functional Design Criteria (FDC) ()				
• Design Review Report ()				
• Conceptual Design Report (CDR) ()				
• Supplemental Design Requirements Document (SDRD) ()				
• System Design Description (SDD) ()				
• Test procedures/specifications Test Report (x)		ATP/OTP (HNF-3838 Rev.1) ATR/OTR (HNF-4369 Rev. 0)	N. S. Cannon	Completed
• Safety Equipment List ()				
• Environmental Impact Statement ()				
• Environmental Report ()				
• Environmental Permits ()				
• Stress/Seismic Analysis ()				
• Stress/Design Report ()				
• Equipment Specification ()				
• Procurement Specification (x)		Included in PR A31978 & A31980	N. S. Cannon	Completed
• Construction Specification ()				
• Essential Material Specification ()				
• Technical Specification ()				
• As-built Drawing (x)		H-2-829671 and ECN 650901 for H-2-75401	P. R. Deichelborer	Completed
• Interface Control Drawing ()				
• Computer Software ()				
OPERATIONS:				
• Operating and Maintenance Manuals ()				
• Operating Procedures (x)		TO-040-333**	D. A. Barnes	Completed
• Operation Instructions ()				
• Calibration Procedures (x)		TO-040-333**	D. A. Barnes	Completed

16. Documents or Other Items/Tasks to be Updated	17. Funding Source	18. Document Number	19. Responsibility for Completion	20. Required prior to final ABU (Yes/No)
• Preventative Maintenance Procedures ()				
• Operations Safety Requirements ()				
QUALITY ASSURANCE:				
• Inspection Plan (x)		Part of ATP/OTP (HNF-3838, Rev. 1)	R. R. True	Completed
• QAPP ()				
• QAP JP ()				
• NEC Inspection ()				
PROCUREMENT ACTIVITIES:				
• Vendor Information (x)		Vendor Maintenance Manual, 1998	N. S. Cannon	Supplied to End User
• Material List ()				
• Spare Parts ()				
• Purchase Requisition(s) (x)		PR A31978 & A319830 (PO 1075 & 1076)	N. S. Cannon	Received & Inspected
• ALARA Management Worksheet ()				
• Other <u>Commercial Grade Item forms</u> ()				

* No changes were required for the actual operation or maintenance procedures of the probes, so that training wasn't necessary. This is primarily because the 1.5 Ci neutron source was found adequate, so that use of the 3 Ci source isn't required.

** No changes were required in the TO-040-333 procedure to operate the MIT probes.

PROJECTS: CHARACTERIZATION OPERATIONS AND ENGINEERING

	Signature	Date
Cog/Field Engineer DA Barnes	<i>David Barnes</i>	8/4/99
Cog/Field Engineer		
Cog/Field Engineer		
Cog/Field Mgr. KM Hall	<i>Lm Sasaki for KM Hall</i>	8/4/99
QA RR True	<i>R.R. True</i>	8-5-99
Safety LS Krogsrud	<i>P.A. Nickflett for</i>	8/4/99
Environmental NA		
Modification Projects		
DS Tank Operations		
Design Authority PF Kison	<i>PF Kison</i>	8/4/99
Design Engineer		
Design Engineer		
Design Engineer		
Design Engineer		

APPENDIX

Planned ABU from Engineering Task Plan (HNF-3322)

ACCEPTANCE FOR BENEFICIAL USE (ABU)					
3. Document No. HNF-3322	4. Project No. NA	5. SSC Designator GS	6. System/Bldg/ Facility 241-SY-101	7. Equip/Component No.	8. ECN/EDT No. EDT 140119
9. Final ABU () Partial ABU ()			10. ATP Rerun Required () Yes () No		
11. Description of Work Modify Neutron/Gamma Probes to operate with the existing LOW Surveillance Vans at Tank 241-SY-101 MITs in accordance with procedure TO-040-333. This ABU documents the completion of all activities necessary for the deployment of modified neutron and gamma probes with the existing LOW vans at Tank 241-SY-101 MITs.					
12. Description of Work to be Completed		13. Scheduled Completion Date	14. Responsibility for Completion	15. Impact on Operations/Safety	
16. Documents or Other Items/Tasks to be Updated		17. Funding Source	18. Document Number	19. Responsibility for Completion	20. Required prior to final ABU (Yes/No)
<u>TRAINING:</u>					
• Training manuals ()					
• Training to Operating Crews (x)			TBD	J. D. Adrian	Yes
• Training to Maintenance Crews (x)			TBD	J. D. Adrian	Yes
<u>ENGINEERING:</u>					
• Engineering Task Plan (x)			HNF-3322	N. S. Cannon	Yes
• Engineering Procedure ()					
• Final Safety Analysis Report (FSAR) ()					
• Safety Assessment (SA) ()					
• Functional Design Criteria (FDC) ()					

16. Documents or Other Items/Tasks to be Updated	17. Funding Source	18. Document Number	19. Responsibility for Completion	20. Required prior to final ABU (Yes/No)
• Design Review Report ()				
• Conceptual Design Report (CDR) ()				
• Supplemental Design Requirements Document (SDRD) ()				
• System Design Description (SDD) ()				
• Test procedures/specifications Test Report (x)		ATP/OTP & OTR (Document # TBD)	N. S. Cannon	Yes
• Safety Equipment List ()				
• Environmental Impact Statement ()				
• Environmental Report ()				
• Environmental Permits ()				
• Stress/Seismic Analysis ()				
• Stress/Design Report ()				
• Equipment Specification ()				
• Procurement Specification (x)		Included in PR A31978 & A31980	N. S. Cannon	Yes
• Construction Specification ()				
• Essential Material Specification ()				
• Technical Specification ()				
• As-built Drawing (x)		TBD	P. R. Deichelborer	Yes
• Interface Control Drawing ()				
• Computer Software ()				
OPERATIONS:				
• Operating and Maintenance Manuals ()				
• Operating Procedures (x)		TO-040-333*	D. A. Barnes	Yes
• Operation Instructions ()				
• Calibration Procedures (x)		TO-040-333*	D. A. Barnes	Yes
• Preventative Maintenance Procedures ()				
• Operations Safety Requirements ()				

16. Documents or Other Items/Tasks to be Updated	17. Funding Source	18. Document Number	19. Responsibility for Completion	20. Required prior to final ABU (Yes/No)
<u>QUALITY ASSURANCE:</u>				
• Inspection Plan (x)		TBD	R. R. True	Yes
• QAPP ()				
• QAP JP ()				
• NEC Inspection ()				
<u>PROCUREMENT ACTIVITIES:</u>				
• Vendor Information (x)		TBD	N. S. Cannon	Yes
• Material List ()				
• Spare Parts ()				
• Purchase Requisition(s) (x)		PR A31978 & A319830	N. S. Cannon	Yes
• ALARA Management Worksheet ()				
• Other <u>Commercial Grade Item forms</u> ()				

• Minor changes (if any) are expected for the procedures.

<u>PROJECTS: CHARACTERIZATION OPERATIONS AND ENGINEERING</u>	
Signature	Date
Cog/Field Engineer DA Barnes	
Cog/Field Engineer	
Cog/Field Engineer	
Cog/Field Mgr. NW Kirch	
QA RR True	
Safety LS Krogsrud	
Environmental NA	
Modification Projects	
DS Tank Operations	
Design Authority PF Kison	
Design Engineer	
Design Engineer	
Design Engineer	
Design Engineer	
Design Engineer	

DISTRIBUTION SHEET

To Distribution	From Electrical I & C	Page 1 of 1			
		Date August 3, 1999			
Project Title/Work Order Multifunction Instrument Tree (MIT) Neutron and Gamma Probe Acceptance for Beneficial Use (ABU)		EDT No. 140140			
		ECN No. NA			
Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
J. D. Adrian	T4-01	X			
D. A. Barnes	R2-12	X			
R. E. Bauer	G1-54	X			
N. S. Cannon (3)	L6-38	X			
J. D. Criddle, Jr.	S7-12	X			
P. R. Deichelbohrer	S7-12	X			
K. M. Hall	R2-12	X			
G. D. Johnson	S7-73	X			
N. W. Kirch	R2-11	X			
P. F. Kison	T4-07	X			
L. S. Krogsrud	T4-07	X			
D. C. Larsen	T4-08	X			
M. D. Rickenbach	H3-28	X			
D. Scott, Jr.	S5-07	X			
D. L. Sparks	S5-03	X			
F. S. Stong	S7-12	X			
R. R. True	T4-07	X			
R. P. Tucker	T4-07	X			
Central Files (1) + Orig.	A3-88	X			