

ENGINEERING CHANGE NOTICE

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1. ECN 643769

Proj.
ECN

2. Category (mark one) Supplemental ☐ Direct Revision ☐ Change ECN ☒ Temporary ☐ Standby ☐ Supersedeure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. S.K. Kujak/FDNW/B4-57/372-0811	4. USQ Required? ☐ Yes ☒ No	5. Date March 19, 1998																																				
	6. Project Title/No./Work Order No. Project W-314	7. Bldg./Sys./Fac. No. 241-AN-A & -B Valve Pits	8. Approval Designator Q																																				
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) Rev. 0 HNF-17337-1902, Rev. 0	10. Related ECN No(s). N/A	11. Related PO No. N/A																																				
	12a. Modification Work ☐ Yes (fill out Bk. 12b) ☒ No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. N/A	12c. Modification Work Complete N/A Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECN only) N/A Design Authority/Cog. Engineer Signature & Date																																			
13a. Description of Change 1) 241-AN-A Valve Pit Specific Test & Evaluation Plan, HNF-1733 Delete reference to Cathodic Protection ATP. Revise Table 5-1 by deleting 225A breaker replacement work activity and correcting panel numbers EDS-DP-105 & EDS-DP-106 to EDS-DP-103 & EDS-DP-105 respectively. Add drawing reference for Construction Acceptance Test 1.4.C.A.C.15. Renumbered tests to parallel required tests for each architectural unit. Updated Logic Diagram. 1) 241-AN-B Valve Pit Specific Test & Evaluation Plan, HNF-1902 Revise Table 5-1 by deleting 225A breaker replacement work activity and correcting panel numbers EDS-DP-105 & EDS-DP-106 to EDS-DP-103 & EDS-DP-105 respectively. Add drawing reference for Construction Acceptance Test 1.4.C.B.C.15. Renumbered tests to parallel required tests for each architectural unit. Updated Logic Diagram.																																							
13b. Design Baseline Document? ☐ Yes ☒ No																																							
14a. Justification (mark one) <table border="1"><tr><td>Criteria Change ☒</td><td>Design Improvement ☐</td><td>Environmental ☐</td><td>Facility Deactivation ☐</td></tr><tr><td>As-Found ☐</td><td>Facilitate Const ☐</td><td>Const. Error/Omission ☐</td><td>Design Error/Omission ☐</td></tr></table>				Criteria Change ☒	Design Improvement ☐	Environmental ☐	Facility Deactivation ☐	As-Found ☐	Facilitate Const ☐	Const. Error/Omission ☐	Design Error/Omission ☐																												
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14b. Justification Details Correct 241-AN-A & -B Valve Pit Specific Test & Evaluation Plans (STEPS) to reflect all required tests, requirements, and work boundaries.																																							
15. Distribution (include name, MSIN, and no. of copies) <table border="1"><tr><td>K.A. Boes</td><td>R3-25 (1)</td><td>S.K. Kujak</td><td>B4-57 (1)</td></tr><tr><td>D.E. Bowers</td><td>S5-13 (1)</td><td>R.L. Legg</td><td>R2-50 (1)</td></tr><tr><td>H.M. Chafin</td><td>R3-25 (1)</td><td>D.L. McGrew</td><td>R3-25 (1)</td></tr><tr><td>D.P. Devine</td><td>S5-50 (1)</td><td>B.L. Syverson</td><td>G3-12 (1)</td></tr><tr><td>R.A. Dodd</td><td>S5-07 (1)</td><td>T.K. Ravencraft</td><td>T4-07 (1)</td></tr><tr><td>W.H. Hays</td><td>E6-08 (1)</td><td>T.L. Warnick</td><td>E6-11 (1)</td></tr><tr><td>J.L. Homan</td><td>R2-58 (1)</td><td>Project Files</td><td>G3-11 (1)</td></tr><tr><td>R.W. Jacobson</td><td>R1-09 (1)</td><td></td><td></td></tr><tr><td>J.T. Koberg</td><td>G3-12 (1)</td><td>See dist att. (2 lists) ja</td><td></td></tr></table>				K.A. Boes	R3-25 (1)	S.K. Kujak	B4-57 (1)	D.E. Bowers	S5-13 (1)	R.L. Legg	R2-50 (1)	H.M. Chafin	R3-25 (1)	D.L. McGrew	R3-25 (1)	D.P. Devine	S5-50 (1)	B.L. Syverson	G3-12 (1)	R.A. Dodd	S5-07 (1)	T.K. Ravencraft	T4-07 (1)	W.H. Hays	E6-08 (1)	T.L. Warnick	E6-11 (1)	J.L. Homan	R2-58 (1)	Project Files	G3-11 (1)	R.W. Jacobson	R1-09 (1)			J.T. Koberg	G3-12 (1)	See dist att. (2 lists) ja	
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1. ECN (use no. from pg. 1)

643769

16. Design Verification Required		17. Cost Impact		18. Schedule Impact (days)	
☐ Yes ☒ No		ENGINEERING <i>EH</i> Additional ☒ \$ 750 Savings ☐ \$		CONSTRUCTION <i>PS</i> Additional ☐ \$ <i>NA</i> Savings ☐ \$	
		Improvement ☐ Delay ☐		<i>NA</i> Improvement ☐ Delay ☐	

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐
Criticality Specification	☐	Calibration Procedure	☐	Test Procedures/Specification	☐
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☐
Equipment Spec.	☐	Maintenance Procedure	☐	ASME Coded Item	☐
Const. Spec.	☐	Engineering Procedure	☐	Human Factor Consideration	☐
Procurement Spec.	☐	Operating Instruction	☐	Computer Software	☐
Vendor Information	☐	Operating Procedure	☐	Electric Circuit Schedule	☐
OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAR/SAR	☐	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
Radiation Work Permit	☐	Essential Material Specification	☐	Purchase Requisition	☐
Environmental Impact Statement	☐	Fac. Proc. Samp. Schedule	☐	Tickler File	☐
Environmental Report	☐	Inspection Plan	☐	N/A	☒
Environmental Permit	☐	Inventory Adjustment Request	☐		☐

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
N/A		

21. Approvals

Signature	Date	Signature	Date
Design Authority, D.E. Bowers <i>D.E. Bowers</i>	3/24/98	Design Agent, J.T. Koberg <i>J.T. Koberg</i>	3/23/98
W-314 Startup Mgr., W.H. Hays <i>W.H. Hays</i>	3-28-98	PE	
Project W-314 Proj. Mgr., J. L. Homan <i>J. L. Homan</i>	3-31-98	QA, H.M. Chafin <i>Hank M. Chafin</i>	3/31/98
QA, H.M. Chafin <i>Hank M. Chafin</i>	3-31-98	Safety	
DSTF OPS., R.A. Dodd <i>R.A. Dodd</i>	3-23-98	Design	
S.E. Mgmt., D.L. McGrew <i>D.L. McGrew</i>	3-5-98	Environ.	
Chief Test Director, R.L. Legg <i>R.L. Legg</i>	3-24-98	Other	
Environ.			
Safety			
Other <i>Terry W. Smith</i>	3/23/98		

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

PROJECT W-314 SPECIFIC TEST AND EVALUATION PLAN 241-AN-B VALVE PIT

William H. Hays

Numatec Hanford Company, Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 643769

UC: 2030

Org Code: 8C610

Charge Code: N314K

B&R Code: EW3130010

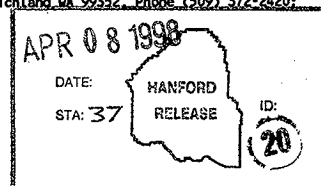
Total Pages: 29

Key Words: Specific Test and Evaluation Plan, Project W-314, 241-AN-B Valve Pit

Abstract: The Specific Test and Evaluation Plan (STEP) defines the test and evaluation activities performed on the 241-AN-B Valve Pit for the W-314 Project.

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James Cardal 4-8-98
Release Approval Date

Release Stamp

Approved for Public Release

PROJECT W-314
SPECIFIC TEST AND EVALUATION PLAN
241-AN-B VALVE PIT

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1.0 PURPOSE

The purpose of this Specific Test and Evaluation Plan (STEP) is to provide a detailed written plan for the systematic testing of modifications made to the 241-AN-B Valve Pit by the W-314 Project. The STEP develops the outline for test procedures that verify the system's performance to the established Project design criteria. The STEP is a "lower tier" document based on the W-314 Test & Evaluation Plan (TEP).

2.0 SCOPE

This STEP encompasses all testing activities required to demonstrate compliance to the project design criteria as it relates to the modifications of the 241-AN-B valve pit. The Project Design Specifications (PDS) identify the specific testing activities required for the Project. Testing includes Validations and Verifications (e.g., Commercial Grade Item Dedication activities...etc), Factory Acceptance Tests (FATs), installation tests and inspections, Construction Acceptance Tests (CATs), Acceptance Test Procedures (ATPs), Pre-Operational Test Procedures (POTPs), and Operational Test Procedures (OTPs). It should be noted that POTPs are not required for testing of the modifications to the 241-AN-B Valve Pit. The STEP will be utilized in conjunction with the TEP for verification and validation.

3.0 ADMINISTRATIVE

3.1 Safety Information/Communications

Testing and inspection activities will be performed to the safety and communication procedures of the testing facility (e.g., shop, mockup, tank farm, vendor facility...etc.)

During the performance of 241-AN Tank Farm ATPs and OTPs, the Operations Test Director will be the direct line of communication with the Shift Office. During abnormal and casualty situations, the Double-Shell Tank Farms Shift Manager will be the building emergency director/event commander.

4.0 GENERAL INFORMATION AND PREREQUISITES

4.1 Initial Conditions

Prerequisite tests and all required construction, specific to the test, shall be completed prior to beginning any test. Test boundaries shall be verified as being appropriate and secure. Required locks and tags shall be correctly placed to allow performance of the test without disturbing the lock and tag. Required personnel shall be available and briefed on the steps of the test (a pre-job briefing is a prerequisite that must be satisfied before performing a Construction Work Package (CWP), ATP, and/or OTP). Required test apparatus shall be functional and set up in a safe configuration for the test. Installed and existing equipment, required for the test, shall be verified to be ready to operate in the test conditions.

4.2 Measurement & Test Equipment

Instruments used will be specified per the test document and controlled per the performing agency's Measurement & Test Equipment program.

4.3 Functional Tests

Functional tests, when required for calibration of equipment, will be performed prior to the associated ATP or OTP. Functional tests will be performed to approved documents.

4.4 Temporary Modifications

Temporary modifications may be required in 241-AN Tank Farm. Temporary modifications will be made per HNF-IP-0842, Vol. IV, section 4.5.

4.5 Equipment and Materials

Equipment installed by the project that fails during testing, or existing equipment that is damaged by testing, will be the responsibility of the construction contractor. Existing facility SSCs, not damaged but found defective, will be the responsibility of Double-Shell Tanks organization. Initiation of repairs will be accomplished by the creation of either a work package, using JCS, or a Construction Work Package (CWP).

5.0 ASSIGNMENTS OF RESPONSIBILITY

The design agent (FDNW) will provide test directors for the Acceptance Test Procedures. Tank Farm Operations will provide a qualified Tank Farm Shift Manager or Operations Engineer who will be the Test Directors for all OTPs. This representative will accept the results of the ATPs for Tank Farm Operations. Roles and responsibilities for construction, TWRs Operations, TFRSO Startup Group, W-314 Project Management, Acceptance Inspection, and Quality Assurance are defined in the W-314 TEP, Chapter three.

5.1 Joint Test Review Group

The JTRG will consist of the Chief Test Director (from the TWRS Testing and Systems Readiness organization), Engineering manager (of the facility that will operate the equipment), W-314 Startup Manager, the Design Authority, applicable Test Director for each ATP & OTP, and W-314 Project Manager. The JTRG provides Tank Farm Operations with a high level of confidence that the test can be performed safely and efficiently. The review by the JTRG provides a basis for test procedure approval and release. The JTRG conducts thorough reviews of ATPs and OTPs to ensure compliance with applicable procedural requirements, to ensure they can be performed safely, and to ensure the scope of testing and inspections provide a product that satisfies operational and safety requirements. The JTRG reviews test procedure data, and provides their recommendation concerning the final acceptance that test results satisfy the design specifications as stated in the ATPs, OTPs, or test plans.

5.2 Test Configuration Control

Testing shall be conducted using detailed test procedures and the latest versions of all ECNs and Drawings for the Project. Configuration control shall conform to HNF-PRO-440 and HNF-PRO-226. Drawings shall be retained in project status by the W-314 Project until such time as all work on the 241-AN-B valve pit is complete and accepted.

6.0 SYSTEM BOUNDARIES

6.1 Objective

Specific system boundaries are identified for use in planning and implementing the various tests listed in this STEP. These system boundaries will provide safe work boundaries which allow testing to proceed in a safe environment, isolated from facility hazards.

6.2 Administrative Controls

Where actual physical isolations are not possible (e.g., pit nozzles...etc), Lock and Tag system (HNF-IP-0842, Vol. II, Sections 4.9.1 and 4.10.1), as a minimum, will be utilized to establish the required administrative controls.

6.3 Description

The table below lists the work and test boundaries for 241-AN-B valve pit work. These boundaries are estimates and may be modified at the time of execution to match current conditions in the farm and the job. This table will not be modified to reflect those changes.

TABLE 5-1 241-AN-B VALVE PIT WORK AND TEST BOUNDARIES

WORK ACTIVITY	PROJECT DRAWING	ESSENTIAL DRAWING	LOCK & TAG LOCATION	COMMENTS
Power feed to Leak Detection Relay Cabinets (A)31-135 (B)21-124. (Insert all conductors and replacement leak detector boxes and conductors prior to 995 tagging. - Verify the installation during AN-B construction.	H-14-100337 H-14-100598	H-14-030001, sh 11	Distribution Panel EDS-DP-105, MAIN BREAKER	
Replace existing leak detector cabinets with new leak detector boxes	H-14-100337 H-14-100595 H-14-100596 H-14-100597 H-14-100598 H-14-100599	H-14-030001, SH 2 H-14-030001, SH 12 H-14-030001, SH 6 H-14-030001, SH 11	DISTRIBUTION PANEL EDS-DP-101, BREAKER 11	All Three existing boxes and the new box can be installed during AN-B construction. AN-B get leak detector boxes installed and connected to the new box and AN-B construction occurs.
Excavation for electrical equipment and receiver installation. Demergize defect excavation area as shown on the following drawings: H-2-71025 sh 2,3, H-2-71030 sh 1,2, H-2-71028.	H-14-100335 H-14-100336 H-14-100596 H-14-100599	H-14-030001, SH 1 H-14-030001, SH 2 H-14-030001, SH 6 H-14-030001, SH 11	To be determined based on extent need to be excavated and results of surface scan.	
EXCAVATION AROUND AN-B VALVE PIT Pressure Sources SL-160 (A)202A, SL-500, AX-A SL-160 (A)202B, SL-500, AX-B SL-162 (Imp to Blinacore @ AN-02A) SL-163 (Pressure Blank @ AN-03) SH-250 (P to 105, SH-060, AX-A, SH-242/091)	H-14-100333 H-14-100334 H-14-100335 H-14-100542	H-14-030001, sh 2	Remove L1,L2,E Jumper at AA Valve Pit Enclosure with a flex from E to L2. Install process blank on L1.	Process Blank on SL-500 @ AX-A This provides isolation from transfers to ANV.
1-1/2 RW (SW-PIT-101) Electrical Sources Leak Trate SL-162 SL-163 SL-160 SH-250 Leak Detectors LDE-XP-AN-B (LDE-114, 135) LDE-XP-AN-B (LDE-114, 135) LDE-241-AN-SH-250 (LDE-110)	N/A N/A N/A N/A N/A N/A N/A	H-14-021801, SH H-14-030001, SH 10 H-14-030001, SH 11 H-14-030001, SH 12 H-14-030001, SH 6 H-14-030001, SH 11 H-14-030001, SH 2 H-14-030001, SH 6 H-14-030001, SH 11	Lock & Tag V-120 & V-122 Closed DISTRIBUTION PANEL EDS-DP-103, BREAKER 20 DISTRIBUTION PANEL EDS-DP-105, BREAKER 35 DISTRIBUTION PANEL EDS-DP-105, BREAKER 35 DISTRIBUTION PANEL EDS-DP-105, BREAKER 35 DISTRIBUTION PANEL EDS-DP-105, BREAKER 35 DISTRIBUTION PANEL EDS-DP-105, BREAKER 19 DISTRIBUTION PANEL EDS-DP-101, BREAKER 11	
Link Switches LS-V-AN-B-1	N/A	H-14-030001, sh 6	DISTRIBUTION PANEL EDS-DP-101, BREAKER 6	Demergize leak detector, disconnect probe from leak detector, disconnect probe from connections, and reenergize leak detector circuit. (EDH Required)
MUSCIEL ANSCUPE Depending on the bank of excavation, AN-165 SH-MS (VTR-PRL-105E) may need to be de-energized.	N/A	H-14-030001, sh 11	DISTRIBUTION PANEL EDS-DP-103, BREAKER 26	ENR 030365 references changes to H-2-71027, sh 3.

WORK ACTIVITY	PROJECT DRAWING	ESSENTIAL DRAWING	LOCK & TAG LOCATION	COMMENTS
COVER BLOCK REMOVAL AND INTERNAL FIT WORK				
Pressure Sources SH-100 (Process Blank @ A/C or SL 500) SH-102 (Imp to Discharge @ AN-52A) SH-103 (Imp to Discharge @ AN-52A) SH-105 (Process Blank @ AN-5A) SH-106 (Process Blank @ AN-5A) SH-201 (Imp to Pump @ AN-1A) SH-202 (Imp to SH-107 NMP @ AN-52A) SH-203 (Process Blank @ AN-5A)	H-14-100333 H-14-100641 H-14-100642 H-14-100643	H-14-020801, sh 1,2 H-14-030801, sh 1	Motor Control Ctr EDS-MCC-101, CIRCULE 83 (CCT 109) Motor Control Ctr EDS-MCC-101, CIRCULE 84 (CCT 109)	Advis lock on pump feeding SL-100 to A-2-02A & SH-203 to A-2-033. Pumps have an advise lock (IP-1209) also.
Phan. Lie to nozzle R17		H-14-020801, sh 1	Lock & Tag V-133 and V-137 in the drain position	
SL-105 (Tr to ANA PH)	H-14-100641	H-14-020801, sh 2	TBD based on ANA modification status	
SH-208 (Tr to ANA PH)	H-14-100641	H-14-020801, sh 2	TBD based on ANA modification status	
Electrical Sources LUCVP-ANS (LDE-114)	N/A	H-14-020801, sh 2 H-2-71831, sh 1 H-2-71831, sh 2 H-14-030801, sh 6	DISTRIBUTION PANEL EDS-OP-101, BREAKER 11	Disconnect risk detector, disconnect probe and disconnect cable and disconnect connections, and reconfigure risk detector alarm. (ECN Required)
Link Switches LS-VP-AN-B-1	N/A	H-14-020801, sh 6 H-2-71827, sh 5	DISTRIBUTION PANEL EDS-OP-101, BREAKER 8	ECN 630355 references changes to H-2-71827, sh 3 to show removal of flow tank switch.
Hydro Test Jumper R20A-DRAIN	H-14-100638	N/A	SHOP HYDRO TEST	
Hydro Test Jumper R5-R24-B	H-14-100641	N/A	SHOP HYDRO TEST	
Hydro Test Jumper R2-84-B (452)	H-14-100632	N/A	SHOP HYDRO TEST	
Hydro Test Jumper R11A-DRAIN	H-14-100637	N/A	SHOP HYDRO TEST	
Hydro Test Jumper R11-C	H-14-100633	N/A	SHOP HYDRO TEST	
Hydro Test Jumper R14-R15-R16-F (36)	H-14-100634	N/A	SHOP HYDRO TEST	
Hydro Test Jumper R18-B (DMF)	H-14-100635	N/A	SHOP HYDRO TEST	
Hydro Test Jumper R1-C (DE)	H-14-100639	N/A	SHOP HYDRO TEST	
Hydro Test Jumper R1A-DRAIN	H-14-100636	N/A	SHOP HYDRO TEST	
Leak Detector Installation ANS VALVE FIT LEAK DETECTOR (LDE-231A48) SH-620 ENCASUREMENT LEAK DETECTOR (LDE-234)	H-14-100637 H-14-100638, sh 2 H-14-100639, sh 2	H-14-020801, sh 11 Breaker 30 H-14-030801, sh 11 Breaker 29	Hang Lock and Tag on Disconnect on Leak Detection Relay Cabinet ANA-WF-PNL-201. Hang Lock and Tag on Disconnect on Leak Detection Relay Cabinet ANA-WF-PNL-204.	
Valve Position Indication Test	H-14-100637	None	No Electrical boundaries. Mechanically valve must be available to be cycled for stroke. This test will be included as part of the final OTP.	
OTP BOUNDRIES Pumps are isolated off so that no waste may be transferred. Isolation from ANA, PE and SH-203 is required. The test will be included as part of the final OTP. Link detectors will be engaged during the performance of the OTP.	H-14-100637 H-14-100642 H-14-100639 H-14-100640 H-14-100641 H-2-71831, sh 1 H-2-71831, sh 2 H-2-58685, sh 5	H-14-020801, sh 1 H-14-020801, sh 2 H-14-030801, sh 1 H-14-030801, sh 2 H-2-71831, sh 1 H-2-71831, sh 2 H-2-58685, sh 5	Motor Control Center EDS-MCC-101, CIRCULE 83 (CCT 109) Motor Control Center EDS-MCC-101, CIRCULE 84 (CCT 109 Pump 102)	

6.4 System Turnover

Following completion and acceptance of all the required testing and testing data within a given boundary, the systems and equipment in that area will be ready for release to operations for their control and use. The SSC(s) will be released to TWRS Operations by using the Acceptance for Beneficial Use process described in the W-314 TEP (HNF-SD-W314-001).

7.0 TEST AND ACCEPTANCE

The Project W-314 241-AN-B Valve Pit modification STEP includes design verifications performed by various methods including engineering analysis, Vendor data review, FATs and CATs performed in accordance with Procurement/Construction Specifications, drawings, and system functional tests performed in accordance with ATPs and OTPs. These verifications and tests will be documented in the W-314 Project 241-AN-B Requirements Verification Report (RVR), HNF-1534, Rev.0, and in specific test documentation (e.g., ATRs, OTRs, CWP...etc.). In addition, approved calibration and functional test procedures will be performed in preparation for the above listed tests.

7.1 Validation and Verification

All design requirements listed in the Project Development Specifications are formally reviewed by analysis and examination for project compliance. Commercial grade equipment utilized in Safety Class applications, will be qualified per appropriate procedures and programs. Equipment used in non-safety class applications will be verified using vendor data to ensure the design requirements of the application are met. These reviews are documented in the 241-AN-B Valve Pit RVR. This report is listed in the reference section of this document.

7.2 Commercial Grade Item Dedication

The following table lists the testing that will be performed to satisfy the Commercial Grade Item Dedication requirements for the modification of 241-AN-B Valve Pit. Note that acceptance criteria are included in the individual drawings, specifications, procedures, and CWP's.

TABLE 7-2

COMMERCIAL GRADE ITEM DEDICATION ACTIVITIES					
TEST NUMBER	TEST NAME	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES
1.4.C.B.CG.1	Rebar Tensile Test and Physical Inspection	W-314-C1, section 03300, 1.5.2.2;	Shop		Test reports must be in place prior to installing any Rebar.
1.4.C.B.CG.2	Steel Plate, bar and shape Tensile test and physical inspection	W-314-C1, section 05500, 1.3.2.1	Shop		Test reports must be in place prior to installing any items for which testing was required.
1.4.C.B.CG.3	Commercial Grade Dedication for instrumentation	W-314-C1, section 13440, 2.3.2	Shop		Tests must be documented as acceptable prior to installing any components in field locations
1.4.C.B.CG.4	Commercial Grade Dedication for Piping Materials, verify pipe size	W-314-C1, section 15493, 1.2.3.1 and 2.4; RVR App.A 3.2.2.6	Shop		Test Reports must be accepted prior to fabrication of piping spools.

7.3 Factory Acceptance Testing

The following table lists the FATs that will be performed to modify 241-AN-B Valve Pit. Note that acceptance criteria are included in the individual drawings, specifications, procedures, and CWP's.

TABLE 7-3

FACTORY ACCEPTANCE TESTS					
TEST NUMBER	TEST NAME	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES
1.4.C.B.F.1	Hydro and Leak tests	W-314-P1, section 3.9	Factory		Prior to shipping

7.4 Construction Acceptance Testing

The table below lists the construction tests performed during fabrication, modification and installation to verify functionality of structures, systems and components following installation. All inspection activities performed during construction are referenced in "ACCEPTANCE INSPECTION PLAN", W-314-C1-1, REV. B. Note that acceptance criteria are included in the individual test drawings, specifications, procedures, and CWPs.

TABLE 7-4

CONSTRUCTION ACCEPTANCE TESTS					
TEST NUMBER	TEST	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES
1.4.C.A.C.1	In-Place Density Test	W-314-C1, section 02220, 3.1.6.2	Field	CWP	Required prior to excavation for all excavations
1.4.C.A.C.2	Backfill Density Test & Cont. Soil Use	W-314-C1, section 02220, 3.3, 3.4, 3.6.1; RVR App.A 3.3.1.6, 3.3.1.7	Field	CWP	During & after backfill
1.4.C.A.C.3	Concrete Slump Test	W-314-C1, section 03300, 1.5.2.1, 3.4.1; RVR App.A 3.3.1.4, App.B 3.3.4.2	Field	CWP	During concrete placement
1.4.C.A.C.4	Concrete Air Content Test	W-314-C1, section 03300, 1.5.2.1; RVR App.A 3.3.1.4, App.B 3.3.4.2	Field	CWP	During concrete placement
1.4.C.A.C.5	Concrete Test Cylinders	W-314-C1, section 03300, 1.5.2.1; RVR App.A 3.3.1.4, App.B 3.3.4.2	Field, Lab	Testing Agency Report	Cast cylinders during concrete placement
1.4.C.A.C.6	Concrete Preplacement Inspections	W-314-C1, section 03300, 3.1, 3.2.1, 3.2.2.1, & 3.4.2; RVR App.A 3.3.1.4; App.B 3.3.4.2, 3.7.3.2.4	Field	CWP & Concrete pour slip	Prior to Placing Concrete
1.4.C.A.C.7	Concrete Placement Inspections	W-314-C1, section 03300, 3.2 & 3.4.2; RVR App.A 3.3.1.4; App.B 3.3.4.2	Field	CWP	During concrete placement
1.4.C.A.C.8	Concrete Post-Placement Inspections	W-314-C1, section 03300, 3.2, 3.3 & 3.4.2	Field	CWP	Prior to Cover block Installation.
1.4.C.A.C.9	Expansion Anchor Inspections	W-314-C1, section 05055, 3.4.1	Field	CWP	During anchor installation
1.4.C.A.C.10	Structural Weld Examinations	W-314-C1, section 05500, 3.4.1	Shop, Field	CWP	Prior to coating any structural pieces.
1.4.C.A.C.11	Cover Block Special Protective Coating Surface Preparation Inspection	W-314-C1, section 09855, 3.2.2 & 3.4.2; RVR App.D 3.3.1.2.1	Shop, Field	CWP	Prior to application of coatings
1.4.C.A.C.12	Cover Block Special Protective Coating Application	W-314-C1, section 09855, 3.4.1; RVR App.D 3.2.2.1, 3.2.2.2, 3.2.2.8, 3.2.4, 3.3.1.2.2	Shop, Field	CWP	During application of each coat
1.4.C.A.C.13	Pit Special Protective Coating Surface Preparation Inspection	W-314-C1, section 09855, 3.2.2 & 3.4.2; RVR App.D 3.3.1.2.1	Shop, Field	CWP	Prior to application of coatings
1.4.C.A.C.14	Pit Special Protective Coating Application	W-314-C1, section 09855, 3.4.1; RVR App.D 3.2.2.1, 3.2.2.2, 3.2.2.8, 3.2.4, 3.3.1.2.2	Shop, Field	CWP	During application of each coat
1.4.C.A.C.15	Cover Block Painting Diagrams	W-314-C1, section 09855, 3.3.6 & 3.4.2; RVR App.B 3.7.3.2.5	Shop	CWP	Verify painting diagram matches information given in drawing s referenced in section 3.3.6.

CONSTRUCTION ACCEPTANCE TESTS					
TEST NUMBER	TEST	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES
1.4.C.A.C.16	Leak Detector Fabrication Wiring Continuity	W-314-C1, section 13440, 3.2.1.1 & section 16400, 3.3.1.1	Shop, Field	CWP	Complete prior to performing ATP.
1.4.C.A.C.17	Leak Detector Cabinet Installation Wiring Continuity	W-314-C1, section 13440, 3.2.1.1 & section 16400, 3.3.1.1	Shop, Field	CWP	Complete prior to performing ATP.
1.4.C.A.C.18	Cover Block installation Wiring Continuity	W-314-C1, section 13440, 3.2.1.1 & section 16400, 3.3.1.1	Shop, Field	CWP	Complete prior to performing ATP.
1.4.C.A.C.19	Terminal Box Conduit & Cable Installation Wiring Continuity	W-314-C1, section 13440, 3.2.1.1 & section 16400, 3.3.1.1	Shop, Field	CWP	Complete prior to performing ATP.
1.4.C.A.C.20	Valve Limit Switch Wiring Continuity	W-314-C1, section 13440, 3.2.1.1 & section 16400, 3.3.1.1	Shop, Field	CWP	Complete prior to performing ATP.
1.4.C.A.C.21	Leak Detector Installation Wiring Continuity	W-314-C1, section 13440, 3.2.1.1 & section 16400, 3.3.1.1	Shop, Field	CWP	Complete prior to performing ATP.
1.4.C.A.C.22	Cover Block Wiring Shielding Resistance to Ground	W-314-C1, section 13440, 3.2.1.2, H-14-100936 SH3, NOTE 24	Field	CWP	Complete prior to performing ATP
1.4.C.A.C.23	Terminal Box Conduit & Cable Shielding Resistance to Ground	W-314-C1, section 13440, 3.2.1.2, H-14-100936 SH3, NOTE 24	Field	CWP	Complete prior to performing ATP
1.4.C.A.C.24	Valve Limit Switch Shielding Resistance to Ground	W-314-C1, section 13440, 3.2.1.2, H-14-100936 SH3, NOTE 24	Field	CWP	Complete prior to performing ATP
1.4.C.A.C.25	Leak Detector Shielding Resistance to Ground	W-314-C1, section 13440, 3.2.1.2, H-14-100936 SH3, NOTE 24	Field	CWP	Complete prior to performing ATP
1.4.C.A.C.26	Leak Detector Fabrication Voltage Verification	W-314-C1, section 16400, 3.3.1.2	Field	CWP	Prior to energizing equipment.
1.4.C.A.C.27	Leak Detector Installation Voltage Verification	W-314-C1, section 16400, 3.3.1.2	Field	CWP	Prior to energizing equipment.
1.4.C.A.C.28	Holiday Testing of Piping Protective Coatings	W-314-C1, section 15493, 3.1.6.3	Field	CWP	Prior to Backfill.
1.4.C.A.C.29	Piping Fabrication Welding Non-Destructive Examination	W-314-C1, section 15493, 3.2.1 & Appendix A, 3.3 & 4.1; RVR App. A 3.2.2.4, 3.3.1.5, 3.3.4, App. B 3.3.4.1	Shop, Field	CWP	Prior to any form of pressure testing.
1.4.C.A.C.30	Jumper Fabrication Welding Non-Destructive Examination	W-314-C1, section 15493, 3.2.1 & Appendix A, 3.3 & 4.1; RVR App. A 3.3.1.5, 3.3.4, App. B 3.3.4.1	Shop, Field	CWP	Prior to any form of pressure testing.
1.4.C.A.C.31	Piping Fabrication Cleanliness Inspection	W-314-C1, section 15493, 3.2.3.5; RVR App. A 3.3.4	Shop Field	CWP	Prior to any form of pressure testing
1.4.C.A.C.32	Piping Fabrication Pressure Tests	W-314-C1, section 15493, 3.2.4; RVR App. A 3.3.1.2	Shop	CWP	Test Nozzle spools prior to installation in the field.
1.4.C.A.C.33	Piping Installation Cleanliness Inspection	W-314-C1, section 15493, 3.2.3.5; RVR App. A 3.3.4	Shop Field	CWP	Prior to any form of pressure testing
1.4.C.A.C.34	Piping Installation Pressure Tests	W-314-C1, section 15493, 3.2.4; RVR App. A 3.3.1.2	Shop	CWP	Test Nozzle spools prior to installation in the field.
1.4.C.A.C.35	Jumper Pressure Tests	W-314-C1, section 15493, Appendix A, 3.6 & 4.3	Shop	CWP	Test all Jumpers prior to installation in the valve pit
1.4.C.A.C.36	Jumper Fabrication Inspections	W-314-C1, section 15493, Appendix A, 4.2	Shop	CWP	Prior to shop hydro

CONSTRUCTION ACCEPTANCE TESTS					
TEST NUMBER	TEST	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES
1.4.C.A.C.37	Jumper In service Leak Test & Pit Configuration Verification	HNF-SD-BIO-001, section 5.3.2.18, TSR-006, AC 5.12.2.a	Field	CWP and Leak Test Procedure	Installation of all jumpers and required changes at associated tank central pump pits.
1.4.C.A.C.38	Leak Detector Cabinet Installation Electrical & Instrumentation Configuration & Code Compliance	RVR App. A 3.3.1.10, 3.3.1.11, 3.3.1.12, App. C 3.3.1.1, 3.3.1.2, 3.3.1.3	Field	CWP	Prior to performing OTP
1.4.C.A.C.39	Terminal Box Conduit & Cable Installation Electrical & Instrumentation Configuration & Code Compliance	RVR App. A 3.3.1.10, 3.3.1.11, 3.3.1.12, App. C 3.3.1.1, 3.3.1.2, 3.3.1.3	Field	CWP	Prior to performing OTP
1.4.C.A.C.40	Leak Detector Installation Electrical & Instrumentation Configuration & Code Compliance	RVR App. A 3.3.1.10, 3.3.1.11, 3.3.1.12, App. C 3.3.1.2	Field	CWP	Prior to performing OTP
1.4.C.A.C.41	Valve Limit Switch Installation Electrical & Instrumentation Configuration & Code Compliance	RVR App. A 3.3.1.10, 3.3.1.11, 3.3.1.12, App. C 3.3.1.2	Field	CWP	Prior to performing OTP
1.4.C.A.C.42	Piping Installation Configuration Verification	RVR App. A 3.2.2.1, 3.2.2.6, 3.2.2.7, 3.2.2.8, 3.2.2.9, 3.2.2.10, 3.3.1.8	Shop, Field	CWP	Prior to installation of the wall nozzles
1.4.C.A.C.43	Cathodic Protection	W-314-C1, section 16640, 3.3.1, 3.3.2	Field	CWP	After nozzle installation and prior to application of protective coating on pipe
1.4.C.A.C.44	Jumper Fit Up & Installation	TWRS Operations Requirement	Field	CWP	TWRS Operations witness balance & installation
1.4.C.A.C.45	Cover Block Fit & Installation	TWRS Operations Requirement; RVR App.B 3.7.3.2.5	Field	CWP	TWRS Operations witness cover block fit, balance, & installation
1.4.C.A.C.46	Load test Cover Block lifting bails & Lifting bail Magnetic Particle Test	W-314-C1, 03300, section 3.2.5; RVR App.B 3.3.4.2, 3.7.3.2.4	Shop	CWP	Prior to Special Protective Coating Application/Installation. Lifting bail Mag. Particle test must be performed AFTER load test.
1.4.C.A.C.47	Jumper support leg adjustment	H-14-100948, Note 7 H-14-100949, SH1, Note 7 H-14-100950, SH1, Note 7 H-14-100952, SH1, Note 7 H-14-100953, SH1, Note 7	Field	CWP	Prior to Cover Block Installation
1.4.C.A.C.48	Final Special Protective Coating inspection of pit & cover block	W-314 Project Management requirement	Field	CWP	Prior to installation of cover block

7.5 Acceptance Testing

Acceptance testing will be conducted by utilizing ATPs. ATPs are separate "stand alone" documents which obtain their requirements from the applicable PDS, drawings, and vendor data. ATPs will ensure that the SSCs are fabricated and/or installed properly per the design. Detailed ATPs will be required after the CAT functional checks and/or inspections are completed and, will validate overall SSC installation as a whole. The acceptance criteria shall be specified in the test procedures and/or on approved drawings and specifications. These tests will be performed on components in their installed condition but may not exercise the entire system as an operational unit. The table below describes the ATPs that will be performed for 241-AN-B Valve Pit modification and upgrade acceptance testing. An Acceptance Test Report (ATR) will be generated when all test exceptions have been cleared and the test has been successfully completed. Note that acceptance criteria are included in the individual test document.

TABLE 7-5

ACCEPTANCE TEST PROCEDURES				
TEST DOCUMENT	TEST DESCRIPTION	REFERENCE DOCUMENT	LOCATION	INTERDEPENDENCIES
	Pit Leak Detection	RVR App. A 3.3.2, 3.7.2.1.2.1, 3.7.2.1.2.2, 3.7.2.1.2.3, 3.7.2.1.3.1, 3.7.2.1.3.2, 3.7.2.1.3.3, App. C 3.2.1.1.3, 3.2.2.5	Field	Leak Detector installed and energized
	Encasement Leak Detection	RVR App. A 3.2.4.5, 3.3.2, 3.7.2.1.2.1, 3.7.2.1.2.2, 3.7.2.1.2.3, 3.7.2.1.3.1, 3.7.2.1.3.2, 3.7.2.1.3.3	Field	Leak Detector installed and energized
	Valve Manifold and Indicators (Position Switches)	RVR App. B 3.3.2, 3.7.2.1.1.4, 3.7.2.2.1, 3.7.2.2.3, 3.7.2.2.4	Field	After equipment installation on cover block

7.6 Operational Testing

Operational testing will be conducted by utilizing OTPs. OTPs will be planned, scheduled, and conducted, on the installed SSCs, after completion and acceptance of all other test results. These detailed procedures shall determine if the installed SSCs meet the PDS functional requirements. Included in the OTP will be acceptance criteria to delineate pass/fail requirements. Operational testing is performed with actual plant equipment, operating procedures, and personnel. If an OTP has been generated but the testing of the corresponding SSC won't be performed for an extended period of time (e.g., a year or more), then the OTP must be reviewed again, prior to performance of the test, to ensure that it is still applicable. A Operational Test Report (OTR) will be generated when all test exceptions have been cleared and the test has been successfully completed. Testing of valve operators (with the valves connected), drain plug and leak detectors will be conducted with these components in their normal operating positions. Test conditions will meet the required code, design and authorization basis (i.e., Basis for Interim Operation, Technical Safety Requirements, and HNF-IP-1266, "TANK FARM OPERATIONS ADMINISTRATIVE CONTROLS") to verify that the system is functional and safe to operate. The following table describes the various sections of the OTP for 241-AN-B valve pit modifications. Note that acceptance criteria are included in the individual test document.

TABLE 7-6

OPERATIONAL TEST PROCEDURE					
Test Section	Test Description	Reference Document	Location	Test Document	Interdependencies
	Architectural: This section verifies that all components are physically in place per the drawings, that they have been correctly labeled, painted, etc. Items included are electrical boxes, cover blocks, shielding blocks, valve operators, position indicators, valve handles, drain plug handles, and jumpers between cover blocks and terminal boxes. Piping jumpers and internal pit coating are specifically excluded from this inspection as they will be verified as part of earlier construction tests witnessed by operations.	RVR App. A 3.3.3.1, 3.3.3.2, 3.3.3.3; App. B 3.2.1.1.1, 3.2.2.1, 3.2.2.2, 3.3.3.1, 3.7.3.1.1, 3.7.3.2.1, 3.7.3.2.3, App. C 3.3.3.1	Field	OTP-314-002	All equipment in place,
	Valve Operation: This section tests the operation of the valve operators and valve position indication. Operators are verified to be able to move the valves and remote indication of the position switches at the terminal box is verified for all positions of each valve. Verify functionality of valve locking devices.		Field	OTP-314-002	All equipment in place. Locks and tags in place to prevent inadvertent transfer of waste.
	Leak Detector and Drain plug Operation: This section verifies the operation of the leak detector and the drain plug by adding water to the pit until the leak detector actuates the alarms at 271-AN and all other appropriate locations, and actuates the master pump shutdown. Acceptance criteria for operation is the amount and rate of water that the system should detect per the design verification report. This detection test shall be repeated no less than three (3) times.	RVR App. C 3.2.4.4	Field	OTP-314-002	All equipment in place, current calibration of the leak detector and the master pump shutdown system not in alarm.

7.7 241-AN-B Valve Pit Test Completion

241-AN-B Valve Pit testing will be considered successfully completed when the **TEST COMPLETION CHECKLIST** (attached to the end of this STEP) is completely signed off. This checklist is a "stand alone" document that will be listed on the 241-AN-B Valve Pit ABU (HNF-SD-W314-ABU-003) and included in the turnover of documents. This checklist will be completed by the W-314 Startup Manager or his designee.

REFERENCES

- HNF-PRO-229, *Technical Procedure Standard*, Fluor Daniel Hanford Company, Richland, Washington.
- HNF-PRO-242, Rev. 1, *Engineering Drawing Requirements*, Fluor Daniel Hanford Company, Richland, Washington.
- HNF-PRO-440, *Engineering Document Change Control Requirements*, Fluor Daniel Hanford Company, Richland, Washington.
- HNF-PRO-446, *Testing Practices Requirements*, Fluor Daniel Hanford Company, Richland, Washington.
- HNF-PRO-572, *Project Acceptance and Closeout*, Fluor Daniel Hanford Company, Richland, Washington.
- W-314-C1, *Construction Specification for Tank Farm Restoration and Safe Operations AN Valve Pit Upgrades*, Fluor Daniel Northwest, Inc., Richland, Washington.
- W-314-P1, *Procurement Specification Ball Valves AN Valve Pit Upgrades*, Fluor Daniel Northwest, Inc., Richland, Washington.
- W-314-P2, *Procurement Specification Impact Wrench AN Valve Pit Upgrades*, Fluor Daniel Northwest, Inc., Richland, Washington.
- HNF-SD-W314-PDS-001, Rev. 0, *Project Development Specification - Transfer Piping*, Fluor Daniel Northwest, Inc., Richland, Washington.
- HNF-SD-W314-PDS-002, Rev. 0, *Project Development Specification for Valve Pit Manifold*, Fluor Daniel Northwest, Inc., Richland, Washington.
- HNF-SD-W314-PDS-003, Rev. 0, *Project Development Specification for Pit Leak Detection*, Fluor Daniel Northwest, Inc., Richland, Washington.
- HNF-SD-W314-PDS-005, Rev. 0, *Project Development Specification for Special Protective Coating*, Fluor Daniel Northwest, Inc., Richland, Washington.
- HNF-1534, Rev. 0, *Requirements Verification Report for AN Valve Pit Upgrades (WBS 1.4.C)*, Fluor Daniel Northwest, Inc., Richland, Washington.
- HNF-SD-W314-ABU-003, Rev. 0, *AN-B VALVE PIT UPGRADE Acceptance For Beneficial Use*, Rev. 0, Numatec Hanford Corporation, Richland, Washington.
- HNF-SD-W314-TEP-001, Rev. 0, *Test and Evaluation Plan for W-314 Tank Farm Restoration and Safe Operations*, Numatec Hanford Corporation, Richland, Washington.
- HNF-CM-3-5, *Document Control and Records Management*, Fluor Daniel Hanford Company, Richland, Washington.
- HNF-IP-0842, *THRS Administration*, Fluor Daniel Hanford Company, Richland, Washington.

HNF-IP-1266, *Tank Farm Operations Administrative Controls*, Fluor Daniel Hanford Company, Richland, Washington.

HNF-SD-WM-BIO-001, Rev. F, *TWRS Basis for Interim Operation*, Fluor Daniel Hanford Corporation, Richland, Washington.

W-314-C1-1, Rev. B, *Acceptance Inspection Plan*, Fluor Daniel Hanford Corporation, Richland, Washington.

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TEST NUMBER	TEST NAME	TEST PROCEDURE/DOCUMENT NUMBER	DATE TEST COMPLETED	PRINT NAME	SIGNATURE
COMMERCIAL GRADE ITEM DEDICATION ACTIVITIES					
1.4.C.A.OG.1	Rebar Tensile Test and Physical Inspection				
1.4.C.A.OG.2	Steel Plate, bar and shape Tensile test and physical inspection				
1.4.C.A.OG.3	Commercial Grade Dedication for instrumentation				
1.4.C.A.OG.4	Commercial Grade Dedication for Piping Materials				
1.4.C.A.OG.5	Commercial Grade Dedication for Electrical				
FACTORY ACCEPTANCE TESTS					
1.4.C.A.F.1	Hydro and Leak tests				
CONSTRUCTION ACCEPTANCE TESTS					
1.4.C.A.C.1	In-Place Density Test				
1.4.C.A.C.2	Backfill Density Test				
1.4.C.A.C.3	Concrete Slump Test				
1.4.C.A.C.4	Concrete Air Content Test				
1.4.C.A.C.5	Concrete Test Cylinders				
1.4.C.A.C.6	Concrete Pre-placement Inspections				

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TEST NUMBER	TEST NAME	TEST PROCEDURE/DOCUMENT NUMBER	DATE TEST COMPLETED	TEST COMPLETED AND RESULTS ACCEPTED (I.E., ALL EXCEPTIONS RESOLVED)	
				PRINT NAME	SIGNATURE
1.4.C.A.C.7	Concrete Placement Inspections				
1.4.C.A.C.8	Concrete Post-Placement Inspections				
1.4.C.A.C.9	Expansion Anchor Inspections				
1.4.C.A.C.10	Structural Weld Examinations				
1.4.C.A.C.11	Cover Block Special Protective Coating Surface Preparation Inspection				
1.4.C.A.C.12	Cover Block Special Protective Coating Surface Preparation Inspection				
1.4.C.A.C.13	Pit Special Protective Coating Application				
1.4.C.A.C.14	Pit Special Protective Coating Application				
1.4.C.A.C.15	Cover Block Painting Diagrams				
1.4.C.A.C.16	Leak Detector Fabrication Wiring Continuity				
1.4.C.A.C.17	Leak Detector Cabinet Installation Wiring Continuity				
1.4.C.A.C.18	Cover Block Installation Wiring Continuity				
1.4.C.A.C.19	Terminal Box Conduit & Cable Installation Wiring Continuity				

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TEST NUMBER	TEST NAME	TEST PROCEDURE/DOCUMENT NUMBER	DATE TEST COMPLETED	TEST COMPLETED AND RESULTS ACCEPTED (i.e., ALL EXCEPTIONS RESOLVED)	
				PRINT NAME	SIGNATURE
1.4.C.A.C.20	Valve Limit Switch Wiring Continuity				
1.4.C.A.C.21	Leak Detector Installation Wiring Continuity				
1.4.C.A.C.22	Cover Block Wiring Shielding Resistance to Ground				
1.4.C.A.C.23	Terminal Box Conduit & Cable Shielding Resistance to Ground				
1.4.C.A.C.24	Valve Limit Switch Shielding Resistance to Ground				
1.4.C.A.C.25	Leak Detector Shielding Resistance to Ground				
1.4.C.A.C.26	Leak Detector Fabrication Voltage Verification				
1.4.C.A.C.27	Leak Detector Installation Voltage Verification				
1.4.C.A.C.28	Holiday Testing of Piping Protective Coatings				
1.4.C.A.C.29	Piping Fabrication Welding Non-Destructive Examination				
1.4.C.A.C.30	Jumper Fabrication Welding Non-Destructive Examination				
1.4.C.A.C.31	Piping Fabrication Cleanliness Inspection				
1.4.C.A.C.32	Piping Fabrication Pressure Tests				

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TEST NUMBER	TEST NAME	TEST PROCEDURE/DOCUMENT NUMBER	DATE TEST COMPLETED	TEST COMPLETED AND RESULTS ACCEPTED (i.e., ALL EXCEPTIONS RESOLVED)	
				PRINT NAME	SIGNATURE
14.C.A.C.33	Piping Installation Cleanliness Inspection				
14.C.A.C.34	Piping Installation Pressure Tests				
14.C.A.C.35	Jumper Pressure Tests				
14.C.A.C.36	Jumper Fabrication Inspections				
14.C.A.C.37	Jumper In service Leak Test & Pit Configuration Verification				
14.C.A.C.38	Leak Detector Cabinet Installation Electrical & Instrumentation Configuration & Code Compliance				
14.C.A.C.39	Terminal Box Conduit & Cable Installation Electrical & Instrumentation Configuration & Code Compliance				
14.C.A.C.40	Leak Detector Installation Electrical & Instrumentation Configuration & Code Compliance				
14.C.A.C.41	Valve Limit Switch Installation Electrical & Instrumentation Configuration & Code Compliance				
14.C.A.C.42	Piping Installation Configuration Verification				

241-AN-B VALVE PIT UPGRADE TEST COMPLETION CHECKLIST

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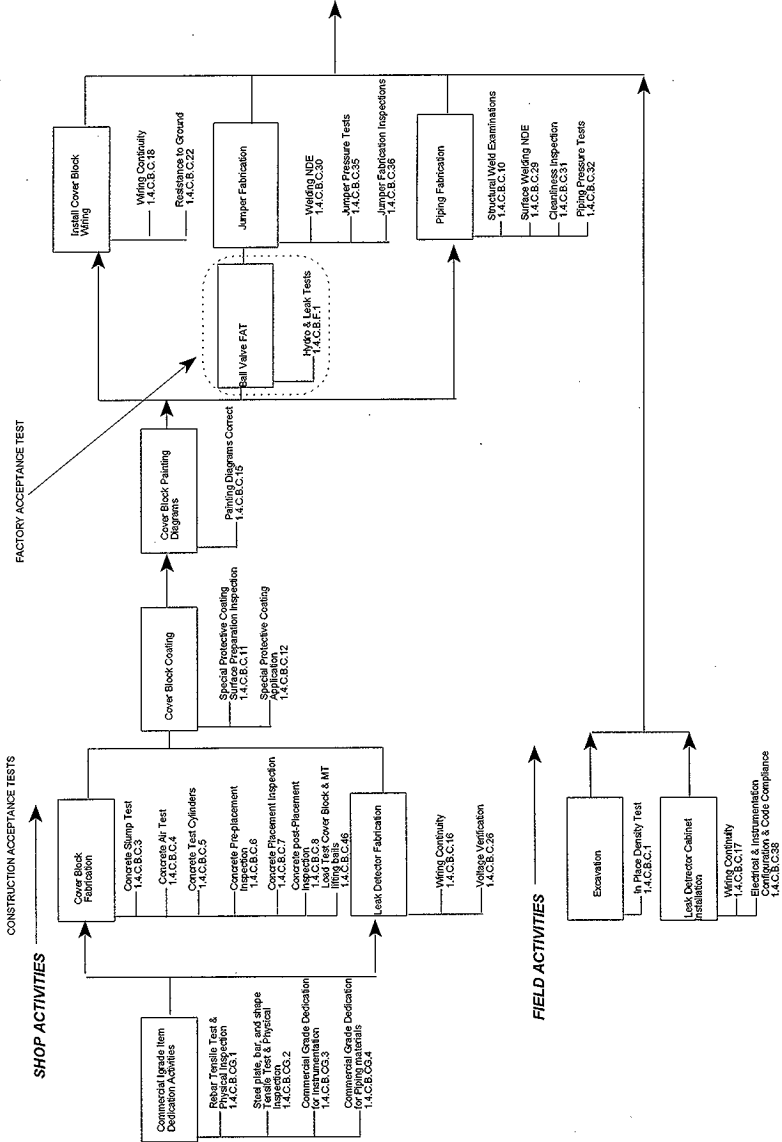
TEST NUMBER	TEST NAME	TEST PROCEDURE/DOCUMENT NUMBER	DATE TEST COMPLETED	TEST COMPLETED AND RESULTS ACCEPTED (I.E., ALL EXCEPTIONS RESOLVED)	PRINT NAME	SIGNATURE
1.4.C.A.C.43	Cathodic Protection					
1.4.C.A.C.44	Jumper Fit Up & Installation					
1.4.C.A.C.45	Cover Block Fit Up & Installation					
1.4.C.A.C.46	Load test Cover Block lifting bolts & Lifting ball Magneto Particle Test					
1.4.C.A.C.47	Jumper support leg adjustment					
1.4.C.A.C.48	Final Special Protective Coating inspection of pit & cover block					
ACCEPTANCE TEST PROCEDURES						
	Pit Leak Detection					
	Encasement Leak Detection					
	Valve Manifold and Indicators (Position Switches)					

241-AN-B VALVE PIT UPGRADE TEST COMPLETION CHECKLIST

PAGE 0F

TEST NUMBER	TEST NAME	TEST PROCEDURE/DOCUMENT NUMBER	DATE TEST COMPLETED	TEST COMPLETED AND RESULTS ACCEPTED (i.e., ALL EXCEPTIONS RESOLVED)	PRINT NAME	SIGNATURE
OPERATIONAL TEST PROCEDURE						
	Architectural: This section verifies that all components are physically in place per the drawings, that they have been correctly installed, painted, etc. Items included are electrical boxes, cover blocks, shielding blocks, valve operators, position indicators, valve handles, drain plug handles, and jumpers between cover blocks and terminal boxes. Piping jumpers and terminal pit flooding are specified on drawings and this inspection as they will be verified as part of earlier construction tests witnessed by operations.					
	Valve Operation: This section tests the operation of the valve operators and valve position indication. Operators are verified to operate the valves and remote indication of the position switches at the terminal box is verified for all positions of each valve. Verify functionality of valve locking devices.					
	Leak Detector and Drain plug Operation: This section verifies the operation of the leak detector and the drain plug by adding water to the pit until the leak detector actuates the alarms at 271-AN and all other appropriate locations, and actuates the master pump shutdown. Acceptance criteria for this test is the amount and rate of water that the detector will detect per the design verification report. This deflection test shall be repeated no less than three (3) times.					

241-AN-B VALVE PIT LOGIC DIAGRAM
(SEE TEP FIGURE B-3 FOR HIGHER LEVEL LOGIC)



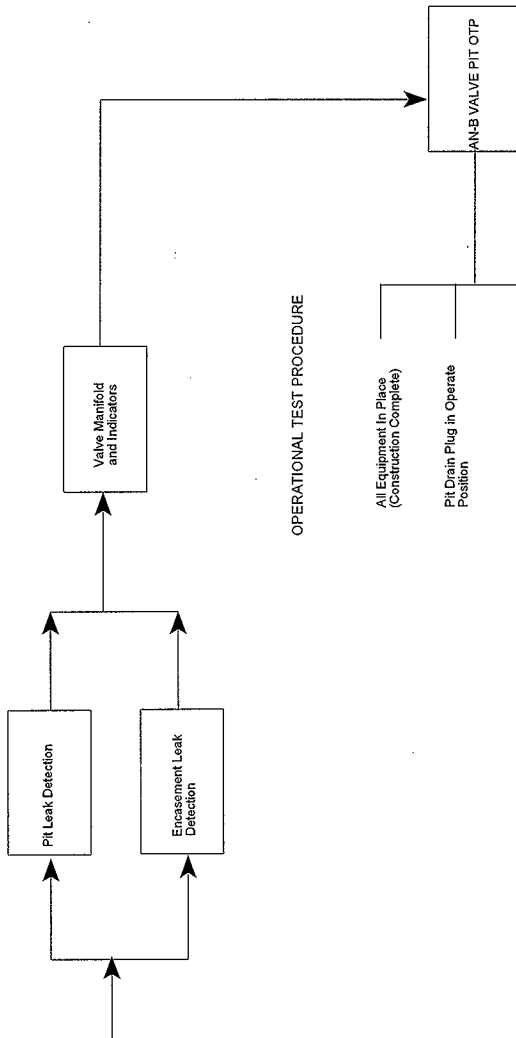
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graph TD
    A[PI Drive Plug Housing Installation] --> D[Backfill]
    A --> E[PI Coating]
    B[Terminal Box Conduit & Cable Installation] --> D
    B --> E
    D --> F[Jumper Installation]
    E --> F
    F --> G[Cover Block Installation]
    G --> H[Leak Detector Install]
    H --> I[Valve Operators Valve Function Unit Switch Installation]
    
    D --- D1[Wiring Continuity  
1.4.C.B.C.18]
    D --- D2[Shielding Resistance to Ground  
1.4.C.B.C.23]
    D --- D3[Electrical & Instrumentation Configuration & Code  
1.4.C.B.C.29]
    
    E --- E1[Special Protective Coating Surface Preparation Inspection  
1.4.C.B.C.14]
    E --- E2[Special Protective Coating Application  
1.4.C.B.C.14]
    
    F --- F1[Jumper In-service Leak Test  
1.4.C.B.C.37]
    F --- F2[Verification Configuration & Code  
1.4.C.B.C.44]
    F --- F3[Jumper Support Leg  
1.4.C.B.C.47]
    
    G --- G1[Final System Pressure Testing  
1.4.C.B.C.48]
    G --- G2[Inspection for pipe block  
1.4.C.B.C.48]
    G --- G3[Cover Block fit up & Installation  
1.4.C.B.C.45]
    
    I --- I1[Wiring Continuity  
1.4.C.B.C.21]
    I --- I2[Shielding Resistance to Ground  
1.4.C.B.C.25]
    I --- I3[Voltage Verification  
1.4.C.B.C.27]
    I --- I4[Electrical & Instrumentation Configuration & Code Compliance  
1.4.C.B.C.40]
  
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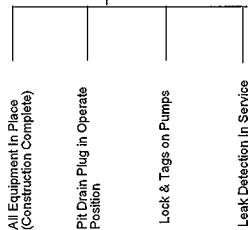
The flowchart illustrates the sequential steps for wellhead installation, from initial housing and conduit setup to final valve operation and system verification. Each step is governed by specific industry standards and codes, ensuring a safe and compliant installation process.

241-AN-B VALVE PIT LOGIC DIAGRAM [cont.]
(SEE TEP FIGURE B-3 FOR HIGHER LEVEL LOGIC)

ACCEPTANCE TEST PROCEDURES



OPERATIONAL TEST PROCEDURE



DISTRIBUTION SHEET

To DISTRIBUTION	From Tank Farm Restoration and Safe Operation	Page 1 of 1
		Date 4/6/98
Project Title/Work Order		EDT No. N/A
Project W-314 Specific Test and Evaluation Plan 241-AN-A Valve Pit, HNF-1733 Proj. W-314 STEP 241-AN-B Valve Pit, HNF-1902		ECN No. 643769

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
K. A. Boes	R3-25	x			
D. E. Bowers	S5-13	x			
R. L. Brown	R3-38	x			
H. M. Chafin	R3-25	x			
M. P. DeLozier	R2-50	x			
D. P. Devine	S5-50	x			
D. O. Dobson	R2-50	x			
R. A. Dodd	S5-07	x			
J. D. Galbraith	H5-49	x			
P. A. Haine	R3-47	x			
C. E. Hatch	S4-49	x			
W. H. Hays	E6-08	x			
J. L. Homang	R2-58	x			
R. W. Jacobson	R1-09	x			
J. T. Koberg	G3-12	x			
S. K. Kujak	B4-57	x			
J. R. LaPointe	R2-88	x			
S. L. Leckband	R3-47	x			
R. L. Legg	R2-50	x			
D. L. McGrew	R3-25	x			
P. C. Miller	R1-51	x			
D. R. Nunamaker	T4-07	x			
E. A. Pacquet	R3-47	x			
T. K. Ravencraft	S5-04	x			
D. W. Reberger	S5-13	x			
M. D. Rickenbach	G3-12	x			
C. A. Rieck	S2-48	x			
B. L. Syverson	G3-12	x			
W. T. Thompson	G3-21	x			
M. W. Tiffany	R1-49	x			
T. L. Warnick	E6-11	x			
S. U. Zaman	R3-01	x			
Project Files	R1-29	x			
IPF #23	T3-12	x (2)			
Central Files	B1-07	x			