ENGINEERING CHANGE NOTICE

Page 1 of 3

1. ECN 654214

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [] *Direct Revision* [x] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	J.S. Hammers/TRS/R3-25/372-2657	DEB 7/2/99 ~~[x]~~ Yes [X] No	6/2/99
	6. *Project Title/No./Work Order No.* W-314, Tank Farm Restoration and Safe Operations/ W-314	7. Bldg./Sys./Fac. No. DEB 7/2/99 241-AN, 241-AN-A & B Valve Pits	8. Approval Designator ES Q DEB 7/2/99
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) HNF-1733, Rev 3, HNF-1902, Rev 3,	10. Related ECN No(s). N/A	11. Related PO No. NA

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[] Yes (fill out Blk. 12b) [x] No (NA Blks. 12b, 12c, 12d)	NA	NA Design Authority/Cog. Engineer Signature & Date	NA Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [X] Yes [] No

241-AN-A and 241-AN-B Valve Pit Specific Test & Evaluation Plan, HNF-1733, Rev 4 and HNF-1902, Rev 4. Revised construction testing to reflect current project scope. ~~Deleted Figure 1, 241-AN-A & B Valve Pit Logic Diagrams.~~ 7/12/99

14a. Justification (mark one)

Criteria Change	[]	Design Improvement	[X]	Environmental	[]	Facility Deactivation	[]
As-Found	[X]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

Corrected W-314 241-AN-A and 241-AN-B Valve Pit Specific Test & Evaluation Plans to reflect current Project Status. USQ is not required per HNF-IP-0842, VOL IV Section 5.4, rev 11b. The STEPs in and of themselves are not work authorizing and do not make any physical changes to the Tank Farm facilities. ~~If any~~ ~~etcetera~~ This modification will not change the collective dose since it has no impact on radiological sources, contamination control, or shielding. If any changes are required to tests as a result of this change, the ALARA reviews will be accomplished as a part of the normal radiological work planning process. DEB 7/2/99

15. Distribution (include name, MSIN, and no. of copies)

See attached Distribution Sheet, page 3.

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A-7900-013-2 (05/96) GEF095

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 654214

16. Design Verification Required	17. Cost Impact						18. Schedule Impact (days)		
	ENGINEERING			CONSTRUCTION					
[] Yes	Additional	[]	$	Additional	[]	$	Improvement	[]	None
[X] No	Savings	[]	$	Savings	[]	$	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	[]	NA	[x]
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	D.E. Bowers	7/2/99	Design Agent ~~MA LANE~~ NA		
W-314 Startup Mgr., J.S. Hammers	Hammers	6/7/99	PE		
W314 Proj. Mgr., ~~J.L. Homan~~ J. LENTSCH	J. Lentsch	7/12/99	QA ~~J.W. Middleton~~ NA		
QA H.M. Chafin	R Clayton FOR HMC	7-8-99	Safety		
S.E. Mgmt., D.L. McGrew	DL McG	7-12-99	Design		
DSTF Projects, T.H. Bohan	TH Bohan	7/7/99	Environ.		
Other			Other		
Safety O.M. JAKA	M. Jaka	7/6/99			
Environ. T.A. Dilhoff	TA Dilhoff	7/15/99			

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

DISTRIBUTION SHEET

To	From	Page 3 of 3
Distribution	Tank Farm Restoration and Safe Operation	Date 6/2/99
Project Title/Work Order		EDT No.
Project W-314, Tank Farm Restoration and Safe Operations, Specific Test and Evaluation Plan		ECN No. 654214

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
T. H. Bohan	S5-04	x			
D. E. Bowers	S5-13	x			
H. M. Chafin	R3-25	x			
J. W. Comer	R2-82	x			
D. O. Dobson	R4-06	x			
R. A. Dodd	R3-72	x			
J. D. Galbraith	R3-73	x			
J. L. Gilbert	R3-47	x			
J. S. Hammers	R3-25	X			
C. E. Hatch	A3-03	x			
M. A. Lane	G3-12	X			
J. W. Lentsch	R3-25	X			
D. L. McGrew	R3-25	x			
W. R. Swift	G3-08	x			
Project Files (2)	G3-12	x			
Central Files	B1-07	x			

S

Project W-314 Specific Test and Evaluation Plan for 241-AN-B Valve Pit

Jack S. Hammers
Numatec Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 654214 UC: 2030
Org Code: 8C610 Charge Code: 106051
B&R Code: EW3130010 Total Pages: ~~29~~ ~~29~~ 32 JH 7/5/99

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

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

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RECORD OF REVISION	(1) Document Number HNF-1902, Rev 4	Page 1

(2) Title
Specific Test and Evaluation Plan for 241-AN-B Valve Pit

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release (5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) EDT 622788 Dated December 30, 1977		
1	241-AN-B Valve Pit Specific Test and 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 Contruction Acceptance Test 1.4.C.B.C.15. Renumbered tests to parallel required tests for each architectural unit. Updated Logic Diagram. ECN 643769	TL Warnick	WH Hays
2	241-AN-B Valve Pit Specific Test & Evaluation Plan, HNF-1902, Rev. 2. Rename Construction Acceptance Test (CAT) to Construction Test & Inspection (CTI). Added test review, approval, and witness responsiblities.	TL Warnick	WH Hays
3	ECN 650509, 241-AN-B Valve Pit Specific Test and Evaluation Plan, HNF-1902, Rev. 3. Revised Work Scope and Construction Testing to reflect current project scope.	TL Warnick	WH Hays
4 RS	ECN 654214, 241-AN-B Valve Pit Specifc Test & Evaluation Plan, HNF-1902, Rev. 4. Revised construction testing to reflect current project scope. ~~Deleted Logic Diagrams~~ 7/12/99	JL Gruba	JS Hammers 7/15/99

PROJECT W-314

SPECIFIC TEST AND EVALUATION PLAN

241-AN-B VALVE PIT

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FIGURE 1 241-AN-B VALVE PIT LOGIC DIAGRAM 28

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 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 Tests & Inspections (FTIs), Construction Tests & Inspections (CTIs), Acceptance Test Procedures (ATPs), and Operational Test Procedures (OTPs). 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~~ Representative 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, Operations, Project QA, 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 may conduct 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~~ HNF-PRO-224. Drawings shall be retained in project status by the W-314 Project until such time as all work on the ~~241-AN-A~~ 241-AN-B valve pit is complete and accepted.

6.0 SYSTEM BOUNDARIES

6.1 Objective

Recommended initial 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)-331,335 (B)-231,234. (Install all conduits and replacement leak detector boxes and conductors prior to this outage. Perform this installation during AN-A construction.	H-14-100937 H-14-100938	H-14-030001, sh 11	Distribution Panel EDS-DP-105, MAIN BREAKER	
Replace existing leak detector cabinets with new leak detector boxes	H-14-100937 H-14-100935 H-14-100938 H-14-100989 H-14-100990	H-14-020801, SH 2 H-2-71931, SH 1,2 H-14-030001, SH 6	DISTRIBUTION PANEL EDS-DP-101, BREAKER 11	All Three existing boxes and the new box can be installed during AN-A construction. AN-B pit leak detector will be temporarily connected to the new box until AN-B construction occurs.
Excavation for electrical equipment and conduit installation. Deenergize direct buried heat trace, leak detection, power and position indication circuits in the excavation area as shown on the following drawings: H-2-71925 sh 2,3, H-2-71930 sh 1,2, H-2-71928.	H-14-100935 H-14-100936 H-14-100939	H-14-030001,sh1 H-14-030001,sh10 H-14-030001,sh11	To be determined based on exact areas to be excavated and ressults of surface scan.	
EXCAVATION AROUND AN-B VALVE PIT				
Pressure Sources				
SL-160 (AZ-02A, SL-500, AX-A)	H-14-100933	H-14-020801,		Process Blank on SL-500 @ AX-A
SL-161 (Jmpr to Distributor @ AN-01A)	H-14-100941	sh 2		
SL-162 (Jmpr to Distrubutor @ AN-02A)	H-14-100942			
SL-163 (Process Blank @ AN-03A)				
SN-260 (AZ-02B, SN-800, AX-A, SN-214/201)			Remove L1,L2-E jumper at AA Valve Pit.Replace with a flex from E to L2. Install process blank on L1.	This provide isolation from transfers to AW.
1-1/2 RW (SW-PIT-101)		H-14-021801, SH1	Lock & Tag V-120 & V-122 Closed	
Electrical Sources				
Heat Trace			DISTRIBUTION PANEL EDS-DP-103, BREAKER 20	
SL-161	N/A	H-14-030001,sh10	DISTRIBUTION PANEL EDS-DP-105, BREAKER 35	
SL-162	N/A	H-14-030001,sh11	DISTRIBUTION PANEL EDS-DP-105, BREAKER 35	
SL-163	N/A	H-14-030001,sh11	DISTRIBUTION PANEL EDS-DP-103, BREAKER 19	
SL-160	N/A	H-14-030001,sh10	DISTRIBUTION PANEL EDS-DP-103, BREAKER 19	
SN-260	N/A	H-14-030001,sh10		
Leak Detectors			DISTRIBUTION PANEL EDS-DP-101, BREAKER 11	
LDE-VP-AN-B (LDE-114)	N/A	H-14-020801, SH 2		Deenergize leak detector, disconnect probe cable, install jumpers in place of probe connections, and reenergize leak detector circuit. (ECN Required)
LDE-241-AN-SL-160 (LDK-135)		H-2-71931, SH 1,2		
LDE-241-AN-SN-260 (LDK-110)		H-14-030001, SH 6		
Limit Switches			DISTRIBUTION PANEL EDS-DP-101, BREAKER 6	ECN 636365 references changes to H-2-71927, sh 3.
LS-VP-AN-B-1	N/A	H-14-030001, sh 6		
MISCELLANEOUS			DISTRIBUTION PANEL EDS-DP-103, BREAKER 26	
Depending on the limits of excavation, AN-105 SHMS (VTP-PNL-105E) may need to be de-energized.	N/A	H-14-030001, sh 11		

WORK ACTIVITY	PROJECT DRAWING	ESSENTIAL DRAWING	LOCK & TAG LOCATION	COMMENTS
COVER BLOCK REMOVAL AND INTERNAL PIT WORK				
Pressure Sources SL-160 (Process Blank @ AX-A on SL-500) SL-161 (Jmpr to Distrubutor @ AN-01A) SL-162 (Jmpr to Distrubutor @ AN-02A) SL-163 (Process Blank @ AN-03A) SN-260 (Process Blank @ AA valve pit) SN-261 (Jmpr to Pump @ AN-01A) SN-262 (Jmpr to SN-102PUMP @ AN-02A) SN-263 (Process Blank @ AN-03A)	H-14-100933 H-14-100941 H-14-100942	H-14-020801, sh 1,2 H-14-030001, sh 1	Motor Control Ctr EDS-MCC-101, CUBICLE B3 (CKT 108) Motor Control Ctr EDS-MCC-101, CUBICLE B4 (CKT 109)	Admin lock on pumps feeding SL-160 in AZ-02A & SN-260 in AZ-02B . Pumps have an admin lock(IP-1286) also.
Flush Line to nozzle R17		H-14-021801, sh 1	Lock & Tag V-133 and V-137 in the drain position	
SL-168 (Tie to AN-A Pit)	H-14-100941	H-14-020801, sh 2	TBD based on AN-A modification status	
SN-268 (Tie to AN-A Pit)	H-14-100941	H-14-020801, sh 2	TBD based on AN-A modification status	
Electrical Sources LDE-VP-AN-B (LDE-114)	N/A	H-14-020801, SH 2 H-2-71931, SH 1 H-14-030001, SH 6	DISTRIBUTION PANEL EDS-DP-101, BREAKER 11	Deenergize leak detector, disconnect probe cable, install jumpers in place of probe connections, and reenergize leak detector circuit. (ECN Required)
Limit Switches LS-VP-AN-B-1	N/A	H-14-030001, sh 6 H-2-71927, SH 3	DISTRIBUTION PANEL EDS-DP-101, BREAKER 6	ECN 836365 references changes to H-2-71927, sh 3 to show removal of this limit switch.
Hydro Test Jumper R5-R20-(B)	H-14-100961	NA	SHOP HYDRO TEST	
Hydro Test Jumper R7-R9-(B&C)	H-14-100962	NA	SHOP HYDRO TEST	
Hydro Test Jumper R14-R15-R16-(F)	H-14-100964	NA	SHOP HYDRO TEST	
Hydro Test Jumper R19-(D&F)	H-14-100965	NA	SHOP HYDRO TEST	
Leak Detector Installation AN-B VALVE PIT LEAK DETECTOR (LDE-231A&B)	H-14-100937 H-14-100989, sh 2	H-14-030001, sh 11 Breaker 30	Hang Lock and Tag on Disconnect on Leak Detection Relay Cabinet AN-A-WT-PNL-231.	
Valve Position Indication Test	H-14-100987	None	No Electrical boundries. Mechanically valve must be available to be cycled full stroke. This test will be included as part of the final OTP.	
OTP BOUNDRIES Pumps are locked out so that no waste may be transfered. Isolation from AN-A pit is maintained to ensure waste is not routed during valve manipulations during OTP. Leak detectors will be energized during the performance of the OTP.	H-14-100937 H-14-100942 H-14-100969 H-14-100975 H-14-100984 H-14-100987 H-14-100989 H-14-100990	H-14-020801, sh 1 H-14-020801, sh 2 H-14-030001, sh 1 H-14-030001, sh 11 H-2-71931, sh 1 H-2-71931, sh 2 H-2-71927, sh 3 H-2-99085, sh 5	Motor Control Center EDS-MCC-101, CUBICLE B3(CKT 108, Pump 101) Motor Control Center EDS-MCC-101, CUBICLE B4 (CKT 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-TEP-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, FTIs and CTIs 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 CWPs.

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, 1.5.2.1;	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, 1.2.2.1 and 2.4; PDS-001 3.2.2.6	Shop		Test Reports must be accepted prior to fabrication of piping spools.
1.4.C.B.CG.5	Comerical Grade Dedication for Electrical.	W-314-C3, section 16400, 2.4.1	Shop		Test Reports must be accepted prior to installing any components or parts in fabricated assemblies or firld locations.

7.3 Factory Tests & Inspections

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

TABLE 7-3

FACTORY TESTS & INSPECTIONS						
TEST NUMBER	TEST NAME	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES	1) REVIEW, 2) APPROVAL, & 3) WITNESS RESPONSIBILITIES
1.4.C.B.F.1	Valve Hydro and Leak tests	W-314-P1, section 3.9	Factory		Prior to shipping	Design Agent - 1, 2, 3 Design Authority - 1, 2, & 3

7.4 Construction Tests & Inspections

The table below lists the construction tests performed during fabrication, modification and installation to verify functionality of structures, systems and components following installation. AI 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 TESTS & INSPECTIONS						
TEST NUMBER	TEST	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES	1) REVIEW, 2) APPROVAL, & 3) WITNESS RESPONSIBILITIES
1.4.C.B.C.1	In-Place Density Test	W-314-C1, section 02220, 3.1.6.2	Field	CWP	Required prior to excavation for all excavations	QC-3
1.4.C.B.C.2	Backfill Density Test & Cont. Soil Use	W-314-C1, section 02220, 3.3, 3.4, 3.6.1; PDS-001, 3.3.1.6, 3.3.1.7	Field	CWP	During & after backfill	QC-3
1.4.C.B.C.3	Concrete Slump Test	W-314-C1, section 03300, 3.4.1 ~~1.5.2.1~~, 3.4.1; PDS-001, 3.3.1.4; PDS-002,3.3.4.2	Field	CWP	During concrete placement	QC-3
1.4.C.B.C.4	Concrete Air Content Test	W-314-C1, section 03300, 3.4.1 ~~1.5.2.1;~~PDS-001 3.3.1.4; PDS-002, 3.3.4.2	Field	CWP	During concrete placement	QC-3
1.4.C.B.C.5	Concrete Test Cylinders	W-314-C1, section 03300, 3.4.1 ~~1.5.2.1;~~PDS-001 3.3.1.4; PDS-002,3.3.4.2	Field, Lab	Testing Agency Report	Cast cylinders during concrete placement	QC-3
1.4.C.B.C.6	Concrete Preplacement Inspections	W-314-C1, section 03300, 3.1, 3.2.1, 3.2.2.1, & 3.4.2; PDS-001, 3.3.1.4; PDS-002 3.3.4.2, ~~3.7.3.2.4~~	Field	CWP	Prior to Placing Concrete	QC-3
1.4.C.B.C.7	Concrete Placement Inspections	W-314-C1, section 03300, 3.2 & 3.4.2; PDS-001, 3.3.1.4; PDS-002, 3.3.4.2	Field	CWP	During concrete placement	QC-3
1.4.C.B.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.	QC-3
1.4.C.B.C.9	Expansion Anchor Inspections	W-314-C1, section 05055, 3.4.1	Field	CWP	During anchor installation	QC-3
1.4.C.B.C.10	Structural Weld Examinations	W-314-C1, section 05500, 3.4.1	Shop, Field	CWP	Prior to coating any structural pieces.	QC-3
1.4.C.B.C.11	Cover Block Special Protective Coating Surface Preparation Inspection	W-314-C1, section 09855, 3.2.2 & 3.4.2; PDS-005, 3.3.1.2.1, 3.2.2.6	Shop, Field	CWP	Prior to application of coatings	QC-3
1.4.C.B.C.12	Cover Block Special Protective Coating Application	W-314-C1, section 09855, 3.4.1; PDS-005, 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	QC-3
1.4.C.B.C.13	Pit Special Protective Coating Surface Preparation Inspection	W-314-C1, section 09855, 3.2.2 & 3.4.2; PDS-005, 3.3.1.2.1, 3.2.2.6	Shop, Field	CWP	Prior to application of coatings	QC-3
1.4.C.B.C.14	Pit Special Protective Coating Application	W-314-C1, section 09855, 3.4.1; PDS-005 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	QC-3
1.4.C.B.C.15	Cover Block Painting Diagrams	W-314-C1, section 09855, 3.3.6 & 3.4.2; PDS-002,~~3.7.3.2.5,~~ 3.3.3.1	Shop	CWP	Verify painting diagram matches information given in drawing s referenced in section 3.3.6.	QC-3
1.4.C.B.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.	QC-3

CONSTRUCTION TESTS & INSPECTIONS						
TEST NUMBER	TEST	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES	1) REVIEW, 2) APPROVAL, & 3) WITNESS RESPONSIBILITIES
1.4.C.B.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.	QC-3
1.4.C.B.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.	QC-3
1.4.C.B.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.	QC-3
1.4.C.B.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.	QC-3
1.4.C.B.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.	QC-3
1.4.C.B.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	QC-3
1.4.C.B.C.23	Terminal Box Conduit & Cable Shielding Resistance to Ground	W-314-C1, section 13440, 3.2.1.2	Field	CWP	Complete prior to performing ATP	QC-3
1.4.C.B.C.24	Valve Limit Switch Shielding Resistance to Ground	W-314-C1, section 13440, 3.2.1.2	Field	CWP	Complete prior to performing ATP	QC-3
1.4.C.B.C.25	Leak Detector Shielding Resistance to Ground	W-314-C1, section 13440, 3.2.1.2	Field	CWP	Complete prior to performing ATP	QC-3
1.4.C.B.C.26	Leak Detector Fabrication Voltage Verification	W-314-C1, section 16400, 3.3.1.2	Field	CWP	Prior to energizing equipment.	QC-3
1.4.C.B.C.27	Leak Detector Installation Voltage Verification	W-314-C1, section 16400, 3.3.1.2	Field	CWP	Prior to energizing equipment.	QC-3
1.4.C.B.C.28	Holiday Testing of Piping Protective Coatings	W-314-C1, section 15493, 3.1.6.3	Field	CWP	Prior to Backfill.	QC-3
1.4.C.B.C.29	Piping Fabrication Welding Non-Destructive Examination	W-314-C1, section 15493, 3.2.1 & Appendix A, 3.3 & 4.1; PDS-001, 3.2.2.4, 3.3.1.5, 3.3.4; PDS-002, 3.3.4.1	Shop, Field	CWP	Prior to any form of pressure testing.	QC-3
1.4.C.B.C.30	Jumper Fabrication Welding Non-Destructive Examination	W-314-C1, section 15493, 3.2.1 & Appendix A, 3.3 & 4.1; PDS-001, 3.3.1.5, 3.3.4; PDS-002, 3.3.4.1	Shop, Field	CWP	Prior to any form of pressure testing.	QC-3
1.4.C.B.C.31	Piping Fabrication Cleanliness Inspection	W-314-C1, section 15493, 3.2.3.5; PDS-001, 3.3.4	Shop Field	CWP	Prior to any form of pressure testing	QC-3
1.4.C.B.C.32	Piping Fabrication Pressure Tests	W-314-C1, section 15493, 3.2.4; PDS-001, 3.3.1.2	Shop Field	CWP	Test Nozzle spools prior to installation in the field.	QC-3 Lead Test Engr -3
1.4.C.B.C.33	Piping Installation Cleanliness Inspection	W-314-C1, section 15493, 3.2.3.5; PDS-001, 3.3.4	Shop Field	CWP	Prior to any form of pressure testing	QC-3
1.4.C.B.C.34	Piping Installation Pressure Tests	W-314-C1, section 15493, 3.2.4; PDS-001, 3.3.1.2	Shop Field	CWP	Test Nozzle spools prior to installation in the field.	QC-3 Lead Test Engr -3
1.4.C.B.C.35	Jumper Pressure Tests	W-314-C1, section 15493, Appendix A, 3.6 & 4.3, PDS-001, 3.3.1.2	Shop	CWP	Test all Jumpers prior to installation in the valve pit	QC-3 Lead Test Engr -3

CONSTRUCTION TESTS & INSPECTIONS						
TEST NUMBER	TEST	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES	1) REVIEW, 2) APPROVAL, & 3) WITNESS RESPONSIBILITIES
1.4.C.B.C.36	Jumper Fabrication Inspections	W-314-C1, section 15493, Appendix A, 4.2	Shop	CWP	Prior to shop hydro	QC-3
1.4.C.B.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.	QC-3 Lead Test Engr -2,3 Operations -2,3 Cog. Engr. -2
1.4.C.B.C.38	Leak Detector Cabinet Installation Electrical & Instrumentation Configuration & Code Compliance	PDS-001, 3.3.1.1, 3.3.1.10, 3.3.1.11, 3.3.1.12, PDS-003 3.3.1.1, 3.3.1.2, 3.3.1.3	Field	CWP	Prior to performing OTP	NEC Insp. -3
1.4.C.B.C.39	Terminal Box Conduit & Cable Installation Electrical & Instrumentation Configuration & Code Compliance	PDS-001, 3.3.1.1 3.3.1.10, 3.3.1.11, 3.3.1.12, PDS-003 3.3.1.1, 3.3.1.2, 3.3.1.3	Field	CWP	Prior to performing OTP	NEC Insp. -3
1.4.C.B.C.40	Leak Detector Installation Electrical & Instrumentation Configuration & Code Compliance	PDS-001, 3.3.1.1, 3.3.1.10, 3.3.1.11, 3.3.1.12, PDS-003 3.3.1.2	Field	CWP	Prior to performing OTP	NEC Insp.-3
1.4.C.B.C.41	Valve Limit Switch Installation Electrical & Instrumentation Configuration & Code Compliance	PDS-001, 3.3.1.1, 3.3.1.10, 3.3.1.11, 3.3.1.12, PDS-003 3.3.1.2	Field	CWP	Prior to performing OTP	NEC Insp.-3
1.4.C.B.C.42	Piping Installation Configuration Verification	PDS-001, 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	QC-3
1.4.C.B.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	QC-3
1.4.C.B.C.44	Jumper Fit Up & Installation	TWRS Operations Requirement	Field	CWP JCS	TWRS Operations witness balance & installation	Operations -2,3
1.4.C.B.C.45	Cover Block Fit & Installation	TWRS Operations requirement; ~~PDS-002~~, ~~3.7.3.2.5~~	Field	CWP JCS	TWRS Operations witness cover block fit, balance, & installation	QC-3 Operations -2,3
1.4.C.B.C.46	Load test Cover Block lifting bails & Lifting bail Magnetic Particle Test	W-314-C1, 03300, section 3.2.5; PDS-002, 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.	QC-3
1.4.C.B.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	QC-3
1.4.C.B.C.48	Final Special Protective Coating inspection of pit & cover block	W-314 Project Management requirement	Field	CWP	Prior to installation of cover block	QC-3
1.4.C.B.C.49	Leak Detector/Drain Plug Mock-up	PDS-001, 3.7.2.1.1.5, PDS-003, 3.2.1.1.4, 3.2.1.1.5, 3.2.1.1.6, 3.2.1.2.1, 3.2.1.2.2, 3.2.1.2.3, 3.2.1.3.1, 3.2.1.3.2, 3.2.1.3.3, 3.2.2.2, 3.2.4.3, 3.3.2.1	Field	CWP	Mockup testing must be completed and results approved prior to installation in the field	QC-3 Design Agent - 1,2&3 COG - 1,2&3 OPS - 1,2&3

CONSTRUCTION TESTS & INSPECTIONS						
TEST NUMBER	TEST	REFERENCE DOCUMENT	LOCATION	TEST DOCUMENT	INTERDEPENDENCIES	1) REVIEW, 2) APPROVAL, & 3) WITNESS RESPONSIBILITIES
1.4.C.B.C.50	PLC Cabinet electrical and instrumentation configuration and code compliance	1.4.C.B.C.39, Terminal Box Conduit & Cable Installation Electrical & Instrumentation Configuration & Code Compliance	Field	CWP	Prior to ATP	NEC Insp-3
1.4.C.B.C.51	PLC Cabinet wiring (External) continuity	1.4.C.B.C.17, Leak Detector Cabinet Installation Wiring Continuity	Field	CWP	Complete prior to ATP	QC-3
1.4.C.B.C.52	PLC Cabinet shielding resistance to ground	1.4.C.B.C.23, Terminal Box Conduit & Cable Shielding Resistance to Ground	Field	CWP	Complete prior to ATP	QC-3
1.4.C.A.C.53	PLC Cabinet voltage verification	1.4.C.B.C.27, Leak Detector Installation Voltage Verification	Field	CWP	Complete prior to Energizing	QC-3
~~1.4.C.A.C.53~~	~~PLC Cabinet electrical and instrumentation configuration and code compliance~~	~~1.4.C.A.C.34, Terminal Box Conduit & Cable Installation Electrical & Instrumentation Configuration & Code Compliance~~	~~Field~~	~~CWP~~	~~Prior to ATP~~	~~NEC Insp-3~~
1.4.C.B.C.54	Concrete Embedment Installation	W-314-C1, Rev 1, 03300, Section 3.4.3	Inspection	CWP	Prior to Installing Equipment	QC-2,3
1.4.C.B.C.55	Leak Detection Relay Cabinets	W-314-C1, Rev 1, 13440, Section 3.1.3	Inspection	CWP	Prior to Installing Wiring	QC-2,3
1.4.C.B.C.56	Intrinsicaly SafeWiring Color Coded	W-314-C1, Rev 1, 13440, Section 3.1.4.1	Field	CWP	Prior to ATP	QC-2,3
1.4.C.B.C.57	Intrinsically Safe Wiring	W-314-C1, Rev 1, 13440, Section 3.1.4.2, 3.1.4.3, 3.1.4.4, 3.1.4.5	Field	CWP	Prior to ATP	QC-2,3
1.4.C.B.C.58	Valves	W-314-C1, Rev 1, 15493, Section 3.2.5, 3.2.5.1, 3.2.5.2, 3.2.5.3	Field	CWP	~~Prior to installation of Coverblocks~~	QC-2,3
1.4.C.B.C.59	Labeling	W-314-C1, Rev 1, 16400, Section 1.3.1b	Inspection	CWP		QC-2.3
1.4.C.B.C.60	Enclosure Type	W-314-C1, Rev 1 16400, Section 2.2.9	Inspection	CWP		QC-2,3
~~1.4.C.A.C.61~~	~~Labeling~~	~~W-314-C1, Rev 1., 16640, Section 1.3.1.2b~~	~~Inspection~~	~~CWP~~		~~QC-2,3~~

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 CTI 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. These tests will be performed on components in their installed condition but may not exercise the entire system as an operational unit. 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 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	1) REVIEW, 2) APPROVAL, & 3) WITNESS RESPONSIBILITIES
~~HNF~~ ATP-314-004	Pit Leak Detection 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,	~~PDS-001, 3.3.2, 3.7.2.1.2.4, 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, PDS-003, 3.2.2.5, 3.2.1.1.3~~ PDS-003, 3.2.1.1.3, 3.2.1.1.5, 3.2.1.1.6, 3.2.1.2.1, 3.2.1.2.2, 3.2.1.2.3, 3.2.1.3.1, 3.2.1.3.2, 3.2.1.3.3, 3.2.4.4, 3.3.2.1	Field	Leak Detector installed ~~and energized~~	Chief Test Director-1,2 Design Agent -1,2 Design Authority-1,2 Project Manager-1,2 Engineering Manager-1,2 Operations-1,2 Startup Manager-1,2 QA-1,2 ~~Lead Test Engineer-1,2~~ ~~Const Mgmt-1,2~~
~~HNF ATP-314-005~~	~~Encasement Leak Detection~~	~~PDS-001, 3.2.4.5, 3.3.2.1, 3.7.2.1.1.4, 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~~	~~Same as above.~~
~~HNF-2626~~ ATP-314-002	Valve Manifold and Indicators (Position Switches)	~~PDS-002, 3.3.2, 3.7.2.1.1.4, 3.7.2.2.1, 3.7.2.2.3, 3.7.2.2.4~~ PDS-002, 3.2.1.1.1, 3.2.2.1a, 3.2.2.1b, 3.2.2.2,	Field	After equipment installation on cover block	Same as above.

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	1) REVIEW, 2) APPROVAL, & 3) WITNESS RESPONSIBILITIES
OTP-314-XXX	The OTP will verify operations and maintenance procedure adequacy. It will verify valve cycling, actuator removal and replacement, probe checks and troubleshooting procedures	PDS-001, 3.3.3.1, 3.3.3.2, 3.3.3.3, PDS-002, 3.2.1.1.1, 3.2.2.1a, 3.2.2.1b, 3.2.2.7, 3.3.31, 3.7.2.2.1 PDS-003, 3.3.3.1, 3.2.2.2	Field		All equipment in place. Locks & tags in place to prevent inadvertent transfer of waste. ATP-314-001, 004 complete	Design Authority-1,2 Project Manager-1,2 Chief Test Director-1,2 Startup Manager-1,2 QA-1,2 Engineering Manager-1,2
	~~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.~~	~~PDS-001, 3.3.3.1, 3.3.3.2, 3.3.3.3; PDS-002, 3.2.1.1.1, 3.2.2.1, 3.2.2.2, 3.3.3.1, 3.7.3.1.1.1, 3.7.3.2.1, 3.7.3.2.3, PDS-003, 3.3.3.1~~	~~Field~~	~~OTP-314-001~~	~~All equipment in place,~~	~~Design Agent-1,2 Design Authority-1,2 W-314 PM-1,2 W-314 QA-1,2 Lead Test Engineer-1,2 Const Mgmt-1,2 Chief Test Director-1,2 TF Ops-1,2,3~~

	~~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-314-001~~	~~All equipment in place. Locks and tags in place to prevent inadvertent transfer of waste.~~	~~Same as above.~~
	~~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).~~	~~PDS-003, 3.2.4.4~~	~~Field~~	~~OTP-314-001~~	~~All equipment in place, current calibration of the leak detector and the master pump shutdown system not in alarm.~~	~~Same as above.~~

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.

HNF-PRO-1819, *PHMC Engineering Requirements*, Fluor Daniel Hanford Company, Richland, Washington.

HNF-PRO-224, *Document Control Program Standards*, 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, *TWRS 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. 1, *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	TEST COMPLETED AND RESULTS ACCEPTED (i.e., ALL EXCEPTIONS RESOLVED)	
				PRINT NAME	SIGNATURE
COMMERCIAL GRADE ITEM DEDICATION ACTIVITIES					
1.4.C.B.CG.1	Rebar Tensile Test and Physical Inspection				
1.4.C.B.CG.2	Steel Plate, bar and shape Tensile test and physical Inspection				
1.4.C.B.CG.3	Commercial Grade Dedication for instrumentation				
1.4.C.B.CG.4	Commercial Grade Dedication for Piping Materials				
1.4.C.B.CG.5	Commercial Grade Dedication for Electrical				
FACTORY ACCEPTANCE TESTS					
1.4.C.B.F.1	Hydro and Leak tests				
CONSTRUCTION ACCEPTANCE TESTS					
1.4.C.B.C.1	In-Place Density Test				
1.4.C.B.C.2	Backfill Density Test				
1.4.C.B.C.3	Concrete Slump Test				
1.4.C.B.C.4	Concrete Air Content Test				
1.4.C.B.C.5	Concrete Test Cylinders				
1.4.C.B.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.B.C.7	Concrete Placement Inspections				
1.4.C.B.C.8	Concrete Post-Placement Inspections				
1.4.C.B.C.9	Expansion Anchor Inspections				
1.4.C.B.C.10	Structural Weld Examinations				
1.4.C.B.C.11	Cover Block Special Protective Coating Surface Preparation Inspection				
1.4.C.B.C.12	Cover Block Special Protective Coating Surface Applicaton ~~Preparation Inspection~~				
1.4.C.B.C.13	Pit Special Protective Coating Preparaton Inspection ~~Application~~				
1.4.C.B.C.14	Pit Special Protective Coating Application				
1.4.C.B.C.15	Cover Block Painting Diagrams				
1.4.C.B.C.16	Leak Detector Fabrication Wiring Continuity				
1.4.C.B.C.17	Leak Detector Cabinet Installation Wiring Continuity				
1.4.C.B.C.18	Cover Block Installation Wiring Continuity				
1.4.C.B.C.19	Terminal Box Conduit & Cable Installation Wiring Continuity				

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.B.C.20	Valve Limit Switch Wiring Continuity				
1.4.C.B.C.21	Leak Detector Installation Wiring Continuity				
1.4.C.B.C.22	Cover Block Wiring Shielding Resistance to Ground				
1.4.C.B.C.23	Terminal Box Conduit & Cable Shielding Resistance to Ground				
1.4.C.B.C.24	Valve Limit Switch Shielding Resistance to Ground				
1.4.C.B.C.25	Leak Detector Shielding Resistance to Ground				
1.4.C.B.C.26	Leak Detector Fabrication Voltage Verification				
1.4.C.B.C.27	Leak Detector Installation Voltage Verification				
1.4.C.B.C.28	Holiday Testing of Piping Protective Coatings				
1.4.C.B.C.29	Piping Fabrication Welding Non-Destructive Examination				
1.4.C.B.C.30	Jumper Fabrication Welding Non-Destructive Examination				
1.4.C.B.C.31	Piping Fabrication Cleanliness Inspection				

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.B.C.32	Piping Fabrication Pressure Tests				
1.4.C.B.C.33	Piping Installation Cleanliness Inspection				
1.4.C.B.C.34	Piping Installation Pressure Tests				
1.4.C.B.C.35	Jumper Pressure Tests				
1.4.C.B.C.36	Jumper Fabrication Inspections				
1.4.C.B.C.37	Jumper In service Leak Test & Pit Configuration Verification				
1.4.C.B.C.38	Leak Detector Cabinet Installation Electrical & Instrumentation Configuration & Code Compliance				
1.4.C.B.C.39	Terminal Box Conduit & Cable Installation Electrical & Instrumentation Configuration & Code Compliance				
1.4.C.B.C.40	Leak Detector Installation Electrical & Instrumentation Configuration & Code Compliance				
1.4.C.B.C.41	Valve Limit Switch Installation Electrical & Instrumentation Configuration & Code Compliance				

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.B.C.42	Piping Installation Configuration Verification				
1.4.C.B.C.43	Cathodic Protection				
1.4.C.B.C.44	Jumper Fit Up & Installation				
1.4.C.B.C.45	Cover Block Fit Up & Installation				
1.4.C.B.C.46	Load test Cover Block lifting bails & Lifting bail Magnetic Particle Test				
1.4.C.B.C.47	Jumper support leg adjustment				
1.4.C.B.C.48	Final Special Protective Coating inspection of pit & cover block				
1.4.C.B.C.49	Leak Detector/Drain Plug Mock-up				
1.4.C.B.C.50	PLC Cabinet electrical and instrumentation configuration and code compliance				
1.4.C.B.C.51	PLC Cabinet wiring (External) continuity				
1.4.C.B.C.52	PLC Cabinet shielding resistance to ground				
1.4.C.B.C.53	PLC Cabinet voltage verification				

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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)	
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~~1.4.C.B.C.54~~	~~PLC Cabinet electrical and instrumentation configuration and code compliance~~				
1.4.C.B.C.54	Concrete Embedment Installation				
1.4.C.B.C.55	Leak Detection Relay Cabinets				
1.4.C.B.C.56	Intrinsically Safe Wiring Color Coded				
1.4.C.B.C.57	Intrinsically Safe Wiring				
1.4.C.B.C.58	Valves				
1.4.C.B.C.59	Labeling				
1.4.C.B.C.60	Enclosure Type				
ACCEPTANCE TEST PROCEDURES					
ATP-314-004	Pit Leak Detection				
~~ATP-314-005~~	~~Encasement Leak Detection~~				
ATP-314-002 ~~HNF-2626~~	Valve Manifold and Indicators (Position Switches)				
OPERATIONAL TEST PROCEDURE					

241-AN-B VALVE PIT UPGRADE TEST COMPLETION CHECKLIST

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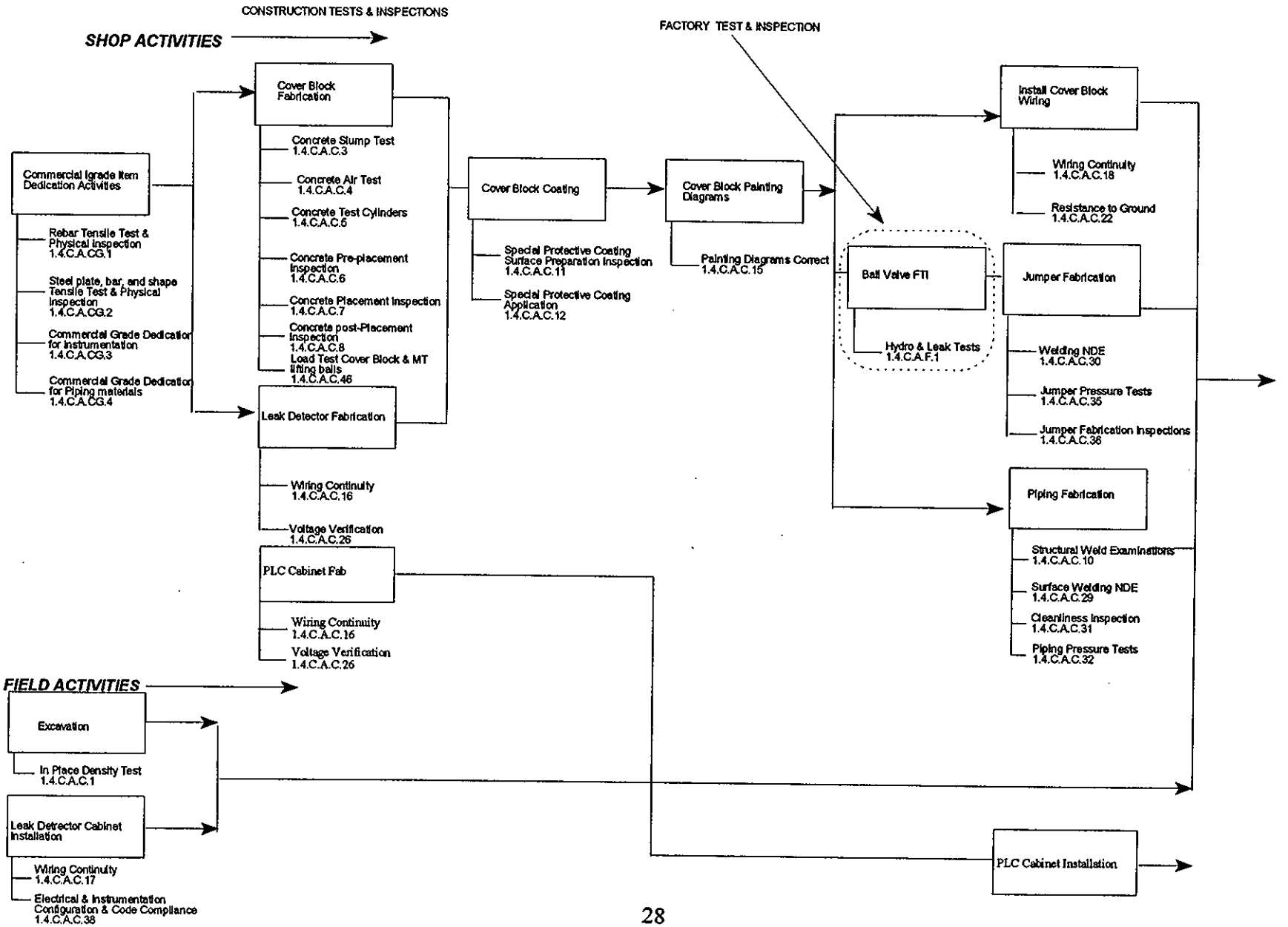
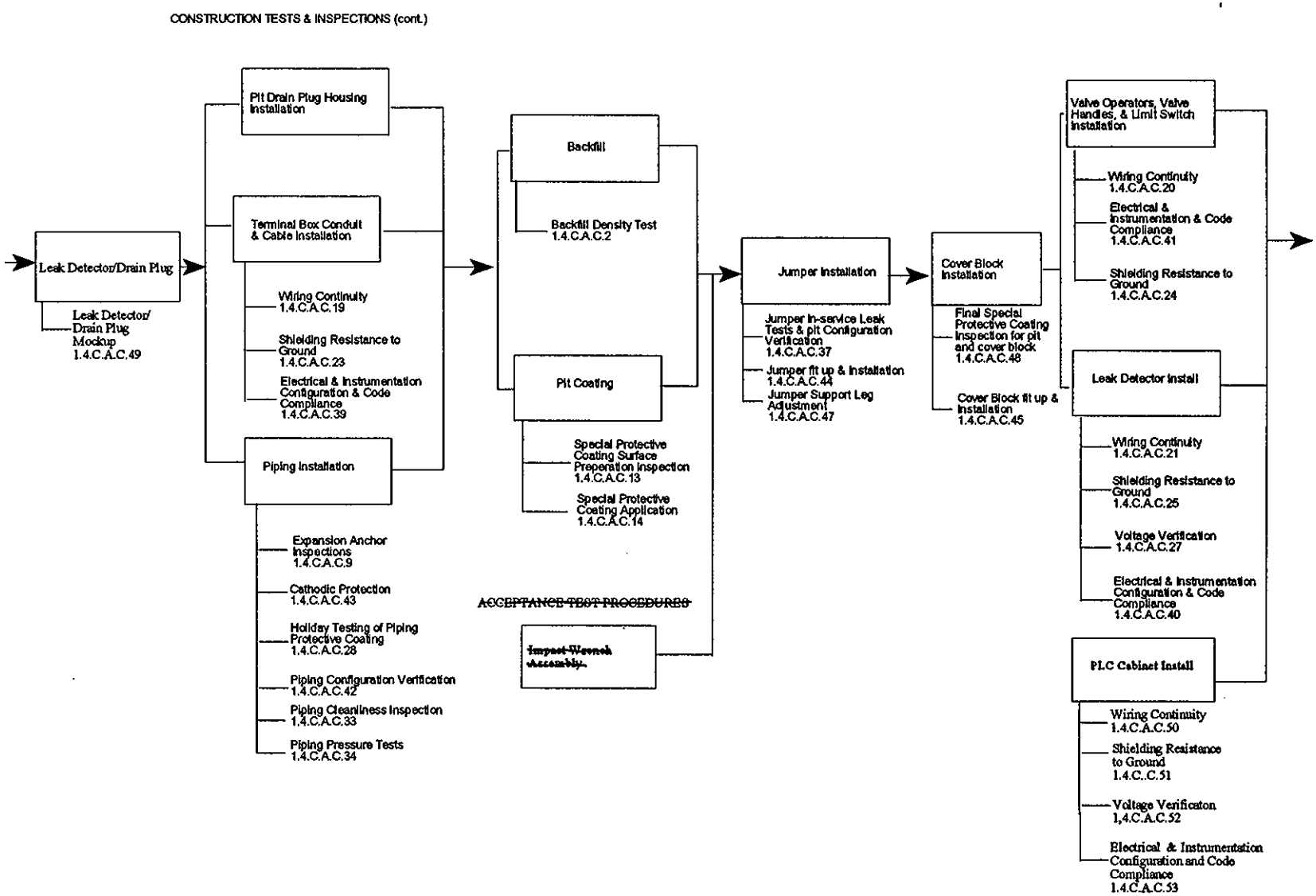
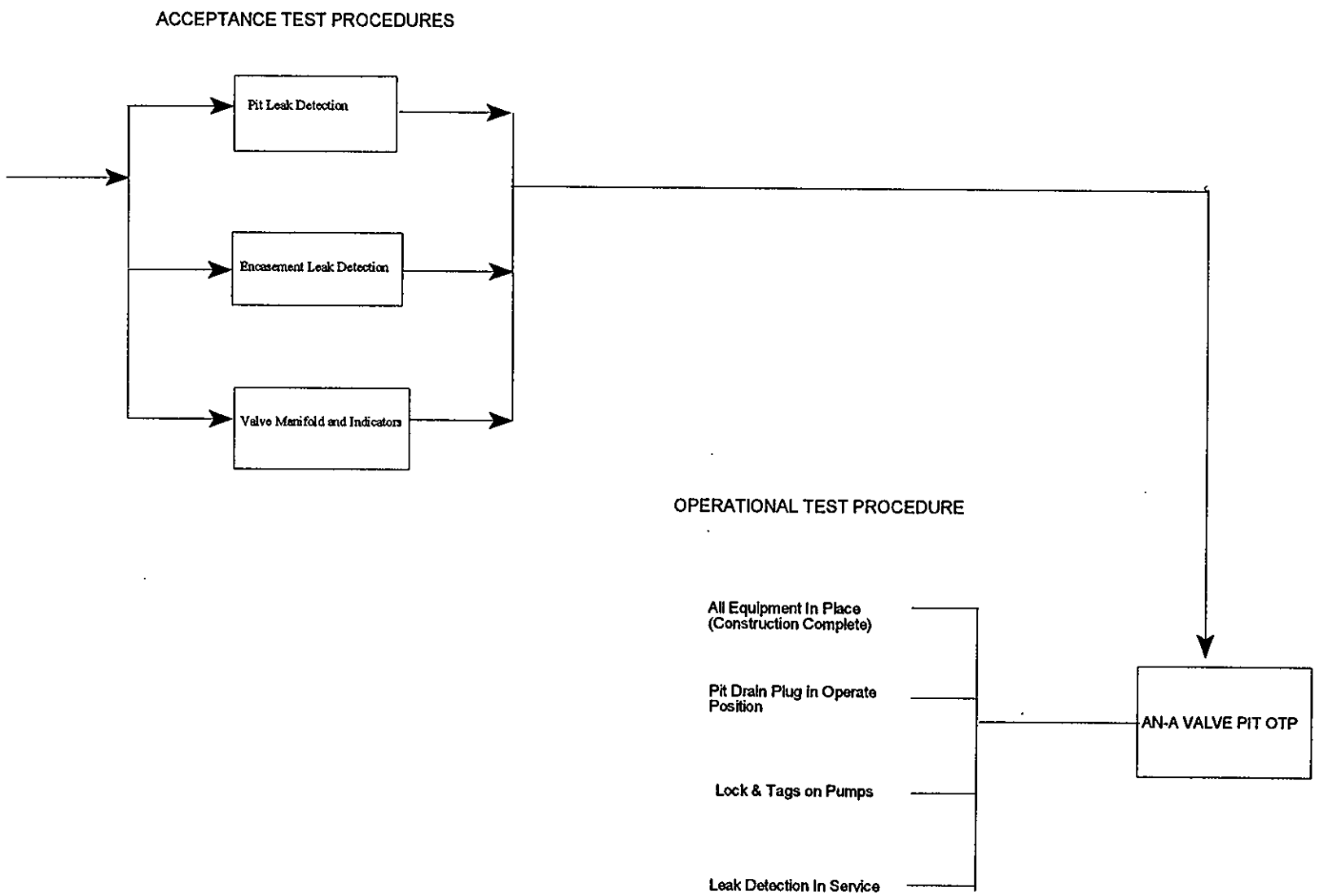
				PRINT NAME	SIGNATURE
OTP-314-002	~~Architectural:~~ ~~This section verifies that all components are physically in place per the drawings, that they have been correctly labeled, painted, etc. Items included are electrical boxes, cover blocks, shielding blocks, valve operators, position indicators, valve 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.~~				
	~~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.~~				
	~~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).~~				

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



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



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