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ENGINEERING DATA TRANSMITTAL

Page 1 of ____

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1	HNF-4578		0	Project W-314 STEP 200E Waste Transfer System	ES Q	1	1	1
1	HNF-4579		0	Project W-314 STEP 241-AN-04A Pump Pit	ES Q	1	1	1
1	HNF-4580		0	Project W-314 STEP 241-AN-01A Pump Pit	ES Q	1	1	1
1	HNF-4581		0	Project W-314 STEP Slurry Receiver 241-AN-04D	ES Q	1	1	1

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	1	Project Mgr. J.W. Lentsch	[signature]	9/20/99	R3-25	1	1	S.E. Mgr. D.L. McGrew	[signature]	9-16-99	R3-25
1	1	W314-Project Mgr. M.A. Lane	[signature]	9/24/99	G3-12	1	1	Design Authority D.E. Bowers	[signature]	9/24/99	S5-13
1	1	Eng. Mgr. J.L. Gilbert	[signature]	9/14/99	R3-25	1	1	Operations T.W. Bohan	[signature]	9/14/99	R3-47
1	1	Startup Mgr. J.S. Hammers	[signature]	9/13/99	R3-25	1	1 ENG	~~J.J. Rettkowski~~ J.D. Gubersk	[signature]	9/27/99	~~G3-12~~ R1-51
1	1	QA H.M. Chafin	[signature]	9-16-99	R3-25	1	1 SMSIC	R.J. FOGG ~~K.M. Bowen~~	[signature]	10/5/99	S5-12

18.	19.	20.	21. DOE APPROVAL (if required)
[signature] J.S. Hammers 9/13/99 Signature of EDT Originator Date	[signature] D.E. Bowers 9/24/99 Authorized Representative for Receiving Organization Date	[signature] D.E. Bowers 9/24/99 Design Authority/ Cognizant Manager Date	Ctrl. No. [] Approved [] Approved w/comments [] Disapproved w/comments

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HNF-4578, Rev. 0

Project W-314 Specific Test and Evaluation Plan for 200E Waste Transfer System

Jack S. Hammers
Numatec Hanford Company, Richland, WA 99352
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Key Words: Specific Test and Evaluation Plan, Project W-314, 200E Waste Transfer System

Abstract: This Specific Test and Evaluation Plan (STEP) defines the test & evaluation activities performed on the 200E Waste Transfer System

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Approved for Public Release

PROJECT W-314

SPECIFIC TEST AND EVALUATION PLAN

200E WASTE TRANSFER SYSTEM

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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 the newly constructed 200E Waste Transfer System in the W-314 Project. The STEP provides the outline for test and evaluation methods that verify the system's performance and compliance 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 describes all testing and evaluation activities required for documenting compliance to the project design criteria as it relates to the construction of the 200E Waste Transfer System. This STEP identifies the specific testing and evaluation activities required by the Project Development Specifications (PDS), Procurement Specifications and Construction Specifications to define critical characteristics and attributes for Structures, Systems and components used to construct or modify the 200E Waste Transfer System in the W-314 Project Scope of Work. Testing or evaluation may include Validations and Verifications (e.g., Commercial Grade Item Dedication activities...etc), Factory Tests & Inspections (FTIs), Construction Tests & Inspections (CTIs), and Preoperational Test Procedures (POTPs). 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 in various locations and facilities. The safety and communication procedures used to operate the area or facility (e.g., shop, tank farm, vendor facility...etc.) will be adhered to during the conduct of testing or inspection at these field locations. During the performance of 200 East Waste Transfer System field testing, the Operations Representative will be the direct line of communication with the Shift Office. During abnormal and casualty situations, the 200E Tank Farms Shift Manager will be the building emergency director/event commander.

4.0 GENERAL INFORMATION AND PREREQUISITES

4.1 Initial Conditions

Prior to starting a test or demonstration the following conditions must be performed and verified:

- Prerequisite tests and construction activities, specific to the test, are completed.
- Test boundaries shall be defined and secure.
- Locks and tags are correctly placed to allow performance of the test.
- Test and support personnel are briefed on the scope and purpose of the test.
- Pre-job briefings are held, as required, before testing is conducted.
- Required test apparatus is functional and can be operated in accordance with safe practices during the test.
- Newly installed and existing equipment, within the boundary of the test, are operable and capable of operating in the testing environment.

4.2 Measurement & Test Equipment

Measurement & Test Equipment used will be specified per the test document and controlled per the providing group's Measurement & Test Equipment program.

4.3 Functional Tests

Functional tests or demonstrations of Structures, Systems or Components, when required will be performed prior to conducting Preoperational Test Procedures. Functional tests and Demonstrations will be performed to approved procedures.

4.4 Temporary Modifications

Temporary modifications may be required in 200 East Tank Farms. Temporary modifications will be controlled per HNF-IP-0842, Vol. IV, section 4.5.

4.5 Equipment and Materials

Equipment installed by the contractor that fails during testing, or existing equipment that is damaged during the conduct of testing, will be the responsibility of the construction contractor. Existing facility Structures, Systems or Components found to be defective, will be the responsibility of River Protection Project (RPP) Operations. Rework or repair activities will be accomplished using an approved work package.

5.0 SCOPED TEST BOUNDARIES

5.1 Objective

Startup scoped test boundaries are developed during the planning of the various tests listed in this STEP. These boundaries will define a testable system or component relationship to allow the conduct of testing in a safe configuration compatible with facility operating conditions.

5.2 Administrative Controls

The 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 of energy sources.

5.3 Description

Table 5.3 lists the work and test scope drawings used for initial planning.

TABLE 5.3 - 200E WTS WORK AND TEST SCOPE DRAWINGS

Drawing No.	Sheet No.	Rev.	Title
H-2-68354	2	1	Piping Plan Area #3
H-14-102674	1	1	Electrical Panelboard Schedule EDS-DP-709
H-14-103229	1	0	Civil Project Site Plan
H-14-103229	2	0	Civil Project Temporary Fences
H-14-103230	1	0	Civil Buffalo & 7th Intersection Plan
H-14-103231	1	0	Civil Typical Sections & Details
H-14-103232	1	0	Civil Typical Section & Details
H-14-103233	1	0	Structural Site Sections & Details
H-14-103233	2	0	Civil 241-AZ-VP Site Preparation
H-14-103234	1	0	Civil WT-3150 & WT-3160 Sta 0+00 to Sta 5+50
H-14-103235	1	0	Civil WT-3150 & WT-3160 Sta 5+50 to Sta 12+00
H-14-103236	1	0	Civil WT-3150 & WT-3160 STA 12+00 to Sta 17+00

Drawing No.	Sheet No.	Rev.	Title
H-14-103237	1	0	Civil WT-3150 & WT-3160 Sta 17+00 to Sta END
H-14-103238	1	0	Civil SN-636 & SN-630 Sta 0+00 to Sta 6+75
H-14-103239	1	0	Civil SN-636, SN-637 & SN-634 Sta 6+75 to Sta 14+00
H-14-103240	1	0	Civil WN-636, SN-637 & SN-634 Sta 14+00 to Sta 20+00
H-14-103241	1	0	Civil SN-636, SN-637 & SN-634 Sta 20+00 to Sta END
H-14-103242	1	0	Civil SN-634 Sta Equation to Sta END
H-14-103243	1	C	Civil Project Temporary Fence & Dwg. List
H-14-103244	1	A	Strl 241-AZ-VP Floor Plan & General Notes
H-14-103244	2	A	Strl 241-AZ-VP Sections
H-14-103244	3	A	Strl 241-AZ-VP Pit Details
H-14-103244	4	A	Strl 241-AZ-VP Pit Details
H-14-103245	1	A	Strl 241-AZ-VP Cover Blocks
H-14-103245	2	A	Strl 241-AZ-VP Cover Block Details
H-14-103245	3	A	Strl 241-AZ-VP Cover Block Details
H-14-103246	1	0	Civil 241-AZ-VP Site Preparations
H-14-103246	2	0	Strl Valve Pit Cover Blocks
H-14-103247	1	0	Strl Leak Detector Station Missile Shield
H-14-103250	1	0	Piping Jumper Arrangement Valve Pit 241-AZ-VP
H-14-103250	2	0	Piping Jumper Arrangement Section A-A
H-14-103250	3	0	Piping Jumper Arrangement Section B-B
H-14-103251	1	0	Piping Cross Site Transfer lines 244-A Tie-in details
H-14-103253	1	0	Jumper Assembly Valve Pit AZ-VP-AZ-VP-A-H-J
H-14-103253	2	0	Jumper Assembly Valve Pit AZ-VP-AZ-VP-A-H-J
H-14-103254	1	0	Jumper Assembly Valve Pit AZ-VP-AZ-VP-A-H-J
H-14-103254	2	0	Jumper Assembly Vale Pit AZ-VP-AZ-VP-A-H-J
H-14-103255	1	0	Jumper Assembly Valve Pit AZ-VP-AZ-VP-E-F-(L)

Drawing No.	Sheet No.	Rev.	Title
H-14-103255	2	0	Jumper Assembly Valve Pit AZ-VP-AZ-VP-E-F-(L)
H-14-103256	1	0	Jumper Assembly Valve Pit AZ-VP-AZ-VP-C-K
H-14-103257	1	0	Jumper Assembly Valve Pit AZ-VP-AZ-VP-B-Drain
H-14-103258	1	0	Jumper Assembly Valve Pit AZ-VP-AZ-VP-D-Drain
H-14-103259	1	0	Jumper Assembly Valve Pit AZ-VP-AZ-VP-G-Drain
H-14-103260	1	0	Pit Cover Painting Diagrams Valve Pit 241-AZ-VP
H-14-103260	2	0	Pit Cover Painting Diagrams Valve Pit 241-AZ-VP
H-14-103261	1	0	Funnel Assembly 2 and 3-Way Valves
H-14-103261	2	0	Funnel Assembly Details
H-14-103261	3	1	Funnel Assembly Details
H-14-103262	1	0	Valve handle Assembly 2 and 3-Way Valves
H-14-103263	1	0	Piping Valve Pit 241-AZ-VP Embedded Pipe Details
H-14-103263	2	0	Piping Valve Pit 241-AZ-VP Embedded Pipe Details
H-14-103263	3	0	Piping Valve Pit 241-AZ-VP Embedded Pipe Details
H-14-103263	4	0	Piping Valve Pit 241-AZ-VP Embedded Pipe Details
H-14-103264	1	0	Valve Actuator Arrangement Valve Pit 241-AZ-VP
H-14-103265	1	0	Valve Actuator Details
H-14-103265	2	0	Valve Actuator Details
H-14-103266	1	0	Piping Floor Drain Seal Assembly Valve Pit 241-AZ-VP
H-14-103266	2	0	Piping Floor Drain Seal Assembly Valve Pit 241-AZ-VP
H-14-103274	1	C	INSTM Valve Pit Plan 241-AZ-VP
H-14-103275	1	B	INSTM 241-AZ-VP Valve Pit Elevations & Details
H-14-103275	2	A	INSTM 241-AZ-VP Pump Pit Details
H-14-103276	1	C	INSTM Valve Position Switches Loop Diagram
H-14-103276	2	C	INSTM Valve Position Switches Loop Diagram
H-14-103277	1	C	INSTM Pump Pit Leak Detection LDE-221 Loop Diagram

Drawing No.	Sheet No.	Rev.	Title
H-14-103278	1	C	INSTM ENCSD Low PT Leak DET LDE-222 Loop Diagram
H-14-103279	1	C	INSTM ENCSD Low PT Leak DET LDE-223 Loop Diagram
H-14-103280	1	B	INSTM ENCSD Low PT Leak DET LDE-224 Loop Diagram
H-14-103281	1	B	INSTM Interconnection Diagram Field Terminal Box
H-14-103281	2	C	INSTM Interconnection Diagram Field Terminal Box
H-14-103281	3	C	INSTM Interconnection Diagram Field Terminal Box
H-14-103282	1	C	INSTM Instrument List 241-AZ-VP Valve Pit
H-14-103282	2	C	INSTM Instrument List 241-AZ-VP Valve Pit
H-14-103282	3	B	INSTM Instrument List 241-AZ-VP Valve Pit
H-14-103283	1	B	INSTM MPS Terminal Box/Relay Encl. Plan
H-14-103284	1	B	INSTM MPS Box Plans
H-14-103284	2	B	INSTM MPS Box Elevations
H-14-103285	1	A	INSTM MPS field Terminal Box
H-14-103286	1	C	INSTM MPS Relay Enclosure
H-14-103287	1	C	INSTM Interconnection Diagram MPS Boxes
H-14-103306	1	A	Electrical Power & Control Plan 200-E WTS
H-14-103306	2	A	Electrical Power & Control Plan 200-E WTS
H-14-103307	1	A	Electrical Power & Control Plan AZ Valve Pit Area
H-14-103308	1	A	Electrical Installation Details Valve Pit 241-AZ-VP
H-14-103308	2	A	Electrical Installation Details Valve Pit 241-AZ-VP
H-14-103310	1	A	Electrical Wire Run List 200E Waste Transfer System
H-14-103311	1	A	Electrical Plans Profiles & DET Power & Signal Lines Mod.
H-14-103312	1	B	Electrical Lighting Plan 241-AZ Tank Farm
H-14-103313	1	B	Electrical Power Plan 241-AZ Tank Farm

5.4 System Turnover

Jurisdiction Transfer, to RPP Operations, of Startup scoped Structures, Systems and Components will occur once testing has been completed and test results are reviewed and accepted. The SSC(s) will be transferred to RPP Operations as described in the W-314 TEP (HNF-SD-W314-TEP-001).

6.0 TEST AND ACCEPTANCE

The Project 200 East Waste Transfer System Construction test and evaluations are performed by various methods including engineering analysis, vendor data review, Factory Test & Inspections or Construction Tests & Inspections defined in Procurement/Construction Specifications, engineering drawings, functional demonstrations, and Preoperational Tests. These verifications and tests will be documented in the W-314 Project 200E Waste Transfer System Requirements Verification Report (RVR), and in test evaluation reports.

6.1 Validation and Verification

Design requirements listed in the Project Development Specifications are reviewed by analysis and examination for project compliance. Commercial grade equipment utilized in a Safety Class application is qualified per appropriate procedures and programs. Equipment used in a non-safety class application is verified using vendor data to ensure the design requirements of the application are met.

6.2 Commercial Grade Item Dedications

Table 6-2 outlines testing that satisfies the Commercial Grade Item Dedication requirements. Development and execution responsibilities are in accordance with HNF-SD-W314-TEP-001.

TABLE 6-2

COMMERCIAL GRADE ITEM DEDICATION ACTIVITIES				
TEST NUMBER	TEST NAME	REFERENCE DOCUMENT(S)	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)
1.4.K._.CG.01	Rebar Tensile Test and Physical Inspection	W-314-C6, Section 01400, 1.7, 03300, 2.3.2		
1.4.K._.CG.02	Steel Plate, bar and shape Tensile test and physical inspection	W-314-C6, section 01400, 1.7, 05500, 1.3.2, 1.3.5, & 2.3.2.1		
1.4.K._.CG.03	Commercial Grade Dedication for instrumentation	W-314-C6, section 01400, 1.7, 13440, 1.2.3.2		
1.4.K._.CG.04	Commercial Grade Dedication for Piping Materials, verify pipe size and material	W-314-C6, section 01400, 1.7, 15493, 1.2.2.2 and 2.4; W-314-P3; and PDS-001 3.2.2.6, 3.3.1.15		
1.4.K._.CG.05	Commercial Grade Dedication for Electrical.	W-314-C6, section 01400, 1.7, 16400, 1.2.2.1		

6.3 Factory Tests & Inspections

Table 6-3 outlines the Factory Test & Inspections that will be performed for 200E Waste Transfer System and Components. Development and execution responsibilities are in accordance with HNF-SD-W314-TEP-001.

TABLE 6-3

FACTORY TESTS & INSPECTIONS				
TEST NUMBER	TEST NAME	REFERENCE DOCUMENT	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBERS(S)
1.4. K_.F.01	Valve Hydro and Leak tests	W-314-P1, section 3.9 & W-314-P5 section 3.9		
1.4.K._F.02	Pipe welding	W-314-P3, section 3.8		
1.4.K._.F.03	Leak Detector and misc relay panels	W-314-P6, section 3.4, 3.5, 3.6, 4.1, 4.2, 4.3 & Appendix A		

6.4 Construction Tests & Inspections

Table 6-4 lists the construction tests performed during fabrication and installation to verify functionality of structures, systems and components. Development and execution responsibilities are in accordance with HNF-SD-W314-TEP-001.

TABLE 6-4

CONSTRUCTION TEST & INSPECTION				
TEST NUMBER	TEST	REFERENCE DOCUMENT	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)
1.4.K._.C.01	In-Place Density Test	W-314-C6, section 02220, 3.7.1.2		
1.4.K._.C.02	Backfill Density Test & Cont. Soil Use	W-314-C6, Section 02220, 3.2, 3.3, 3.4, 3.5, 3.7.1,: PDS-001, 3.7.3.2.1, PDS-002, 3.7.3.2.1		
1.4.K._.C.03	Concrete Slump Test	W-314-C6, section 03300, 2.2.1.4, 2.3.2.1, 3.4.1; PDS-001, 3.3.1.4 PDS-002, 3.3.4.2		
1.4.K._.C.04	Concrete Air Content Test	W-314-C6, section 03300, 2.2.1.4, 2.3.2.1, 3.4.1; PDS-001, 3.3.1.4; PDS-002, 3.3.4.2		
1.4.K._.C.05	Concrete Test Cylinders	W-314-C6, section 03300, 2.2.1.4, 2.3.2.1, 3.4.1; PDS-001, 3.3.1.4; PDS-002, 3.3.4.2		
1.4.K._.C.06	Concrete Preplacement Inspections	W-314-C6, section 03300, 3.1, 3.2.2.1, 3.2.2.7 & 3.4.3; PDS-001, 3.3.1.4; PDS-002, 3.3.4.2		

CONSTRUCTION TEST & INSPECTION				
TEST NUMBER	TEST	REFERENCE DOCUMENT	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)
1.4.K._.C.07	Concrete Placement Inspections	W-314-C6, section 03300 3.2 & 3.4; PDS-001, 3.3.1.4; PDS-002, 3.3.4.2		
1.4.K._.C.08	Concrete Post-Placement Inspections	W-314-C6, section 03300 3.2, 3.3 & 3.4		
1.4.K._.C.09	Expansion Anchor Inspections	W-314-C6, section 05055 3.4.1		
1.4.K._.C.10	Structural Weld Examinations	W-314-C6, section 05500, 3.5		
1.4.K._.C.11	Cover Block Special Protective Coating Surface Preparation Inspection	W-314-C6, section 09855, 3.2 & 3.4, PDS-002, 3.7.1.2.1; PDS-005, 3.2.2.6, 3.2.2.7, 3.3.1.2.1		
1.4.K._.C.12	Cover Block Special Protective Coating Application	W-314-C6, section 09855, 3.2.2, 3.2.3, 3.2.4, 3.3, 3.4, PDS-002, 3.7.1.2.1; PDS-005, 3.2.2.1, 3.2.2.2, 3.2.2.8, 3.2.4, 3.3.1.2.2		
1.4.K._.C.13	Pit Special Protective Coating Surface Preparation Inspection	W-314-C6, section 09855, 3.2.2, 3.2.3, 3.2.4, 3.3 & 3.4, PDS-002, 3.7.1.2.1; PDS-005, 3.2.2.6 , 3.3.1.2.1		
1.4.K._.C.14	Pit Special Protective Coating Application	W-314-C6, section 09855, 3.2.2, 3.2.3, 3.2.4, 3.3, 3.4, PDS-002, 3.7.1.2.1; PDS-005, 3.2.2.1, 3.2.2.2, 3.2.2.8, 3.2.4, 3.3.1.2.2		
1.4.K._.C.15	Cover Block Painting Diagrams	W-314-C6, section 09855, PDS-002, 3.3.3.1, 3.7.1.2.12		
1.4.K._C.16	Leak Detector Fabrication Wiring Continuity	W-314-C6, section 13440, 3.3.1.1 & section 16400, 3.3.1.1		
1.4.K._.C.17	Leak Detector Cabinet Installation Wiring Continuity	W-314-C6, section 13440, 3.3.1.1 & section 16400, 3.3.1.1		
1.4.K._.C.18	Cover Block installation Wiring Continuity	W-314-C6, section 13440, 3.3.1.1 & section 16400, 3.3.1.1		
1.4.K._.C.19	Terminal Box Conduit & Cable Installation Wiring Continuity	W-314-C6, section 13440, 3.3.1.1 & section 16400, 3.3.1.1		
1.4.K._.C.20	Valve Limit Switch Wiring Continuity	W-314-C6, section 13440, 3.3.1.1 & section 16400, 3.3.1.1		
1.4.K._.C.21	Leak Detector Installation Wiring Continuity	W-314-C6, section 13440, 3.3.1.1 & section 16400, 3.3.1.1		
1.4.K._.C.22	Cover Block Wiring Shielding Resistance to Ground	W-314-C6, section 13440, 3.2.1.2		
1.4.K._.C.23	Terminal Box Conduit & Cable Shielding Resistance to Ground	W-314-C6, section 13440, 3.3.1.2		
1.4.K._.C.24	Valve Limit Switch Shielding Resistance to Ground	W-314-C6, section 13440, 3.3.1.2		
1.4.K._.C.25	Leak Detector Shielding Resistance to Ground	W-314-C6, section 13440, 3.3.1.2		
1.4.K._.C.26	Leak Detector Fabrication Voltage Verification	W-314-C6, section 16400, 3.3.1.2		

CONSTRUCTION TEST & INSPECTION				
TEST NUMBER	TEST	REFERENCE DOCUMENT	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)
1.4.K._.C.27	Leak Detector Installation Voltage Verification	W-314-C6, section 16400, 3.3.1.2		
1.4.K._.C.28	Holiday Testing of Piping Protective Coatings	W-314-C6 section 15493, 3.1.6.3		
1.4.K._.C.29	Piping Fabrication Welding Non-Destructive Examination	W-314-C6, section 15493, 3.3, W-314-P3; PDS-001, 3.2.2.4, 3.3.1.5, 3.3.4; PDS-002, 3.3.4		
1.4.K._.C.30	Jumper Fabrication Welding Non-Destructive Examination	W-314-C8; W-314-P1, P3 & P5 PDS-001, 3.3.1.5, 3.3.4; PDS-002, 3.3.4		
1.4.K._.C.31	Piping Fabrication Cleanliness Inspection	W-314-C6, section 15493, 3.2.2.4, 3.2.2.5; W-314-P3; PDS-001, 3.3.4		
1.4.K._.C.32	Piping Fabrication Pressure Tests	W-314-C6, section 15493, 3.2.3; W-314-P3; PDS-001, 3.3.1.2		
1.4.K._.C.33	Piping Installation Cleanliness Inspection	W-314-C6, section 15493, 3.2.2.5; PDS-001, 3.3.4		
1.4.K._.C.34	Piping Installation Pressure Tests	W-314-C6, section 15493, 3.2.3; PDS-001, 3.3.1.2		
1.4.K._.C.35	Jumper Pressure Tests	W-314-C8; PDS-001, 3.3.1.2		
1.4.K._.C.36	Jumper Fabrication Inspections	W-314-C8; W-314-P1, P3 & P5 PDS-001, 3.3.1.5, 3.3.4; PDS-002, 3.3.4		
1.4.K._.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		
1.4.K._.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, 3.7.2.2.2; PDS-003, 3.3.1.		
1.4.K._.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.		
1.4.K._.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, 3.7.2.2.2; PDS-003, 3.2.1.4.2, 3.2.1.4.5, 3.2.2.2, 3.3.1.		
1.4.K._.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, 3.7.2.2.2; PDS-003, 3.3.1.		
1.4.K._.C.42	Piping Installation Configuration Verification	PDS-001, 3.2.2, 3.3.1.15		
1.4.K._.C.43	Cathodic Protection	N/A		
1.4.K._.C.44	Jumper Fit Up & Installation	RPP Operations Requirement		
1.4.K._.C.45	Cover Block Fit & Installation	RPP Operations Requirement		
1.4.K._.C.46	Load test Cover Block lifting bails & Lifting bail Magnetic Particle Test	W-314-C6, section 03300, 3.2.5; PDS-002, 3.3.4.2		

CONSTRUCTION TEST & INSPECTION				
TEST NUMBER	TEST	REFERENCE DOCUMENT	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)
1.4.K._.C.47	Jumper support leg adjustment	H-14-103253, SH 1, Note7 H-14-103254, SH1, Note 7 H-14-103255, SH1, Note 7 H-14-103256, SH1, Note 7 H-14-103257, SH1, Note 7 H-14-103258, SH1, Note 7 H-14-103259, SH1, Note 7		
1.4.K._.C.48	Final Special Protective Coating inspection of pit & cover block	W-314 Project Management requirement		
1.4.K._.C.49	Concrete Embedment Installation	W-314-C6, section 03300, 3.4.3		
1.4.K._.C.50	Leak Detection Relay Cabinets	W-314-C6, section 13440, 3.1.3		
1.4.K._.C.51	Intrinsically Safe Wiring Color Coded/Labeled	W-314-C6, 13440, Section 3.1.4		
1.4.K._.C.52	Intrinsically Safe Wiring	W-314-C6, section 13440, 3.1.4		
1.4.K._.C.53	Valves	W-314-C6, section 15493, 3.2.4.1, 3.2.4.2, 3.2.4.3; W-314-C8; W-314-P1 & P5; PDS-002, 3.2.2.1, 3.2.2.2, 3.2.2.5, 3.2.2.7, 3.2.2.8		
1.4.K._.C.54	Labeling	W-314-C6, section 16400, 1.3.1b, PDS-002, 3.3.3.1; PDS-003, 3.3.3.1, 3.3.3.4		
1.4.K._.C.55	Enclosure Type	W-314-C6, section 16400, 2.2.9		
1.4.K._.C.56	Painted Surface Preparation Inspection	W-314-C6, section 09900, 3.2.2, & 3.4		
1.4.K._.C.57	Paint Application	W-314-C6, section 09900, 3.3 & 3.4		
1.4.K._.C.58	Stainless Steel Pit Liner *Preinstallation*	W-314-C6, section 05555, 1.3.1,		
1.4.K._.C.59	Stainless Steel Pit Liner Installation	W-341-C6, section 05555, 3.1, 3.2, 3.3, 3.4 & 3.5		
1.4.K._.C.60	Road bed Preparation	W-314-C6, section 02235, 3.1, 3.2 & 3.6		
1.4.K._.C.61	Asphalt Application	W-314-C6, section 02512, 3.1, 3.2		
1.4.K._.C.62	Buried Pipe	PDS-001, 3.3.1.5, 3.3.1.6, 3.3.1.7, 3.7.1.2.1, 3.7.3.2.2		
1.4.K._.C.63	Valve Pit Construction	PDS-002, 3.7.1.1.9, 3.7.1.2.1, 3.7.1.2.2, 3.7.1.2.3, 3.7.1.2.12		
1.4.K._.C.64	Valve Pit Cover Block Inspection	PDS-002, 3.7.1.2.5 - 3.7.1.2.12		
1.4.K._.C.65	Area Lighting Inspections	PDS-002, 3.7.3.1.3, 3.7.3.1.4 3.7.3.2.2, 3.7.3.2.3		

6.5 Preoperational Testing

Table 6-5 lists the preoperational tests performed to demonstrate Structure, System and Components function in accordance with engineering requirements. Development and execution responsibilities are in accordance with HNF-SD-W314-TEP-001

TABLE 6-5

PREOPERATIONAL TEST PROCEDURES				
TEST DOCUMENT	TEST DESCRIPTION	REFERENCE DOCUMENT	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)
1.4.k._.T1	Encasement Leak Detection	PDS-001, 3.2.4.5, 3.3.2.1, 3.7.2.1.1, 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, 3.7.5.1.1.1, 3.7.5.1.1.3, 3.7.5.1.1.4, 3.7.5.1.1.5		
1.4.k._.T2	AZ Valve Pit Leak Detection	PDS-003, 3.2.1.1.1, 3.2.1.1.2, 3.2.1.1.3, 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, 3.2.1.4.1, 3.2.1.4.3, 3.2.4.4, 3.3.2.1		
1.4.k._.T3	Valve Manifold and Indication	PDS-002, 3.2.1.1.1, 3.2.2.1a, 3.2.2.1b, 3.2.2.2, 3.3.2.1, 3.3.7.3, 3.7.2.2.1		

6.6 200E Waste Transfer System Completion

200E Waste Transfer System 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 **200E Waste Transfer System** ABU) and included in the turnover of documents. This checklist will be completed by the W-314 Startup Manager or his designee.

REFERENCES

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

HNF-PRO-2000, *Construction Program Execution Phase*, Fluor Daniel Hanford Company, Richland, Washington.

W-314-P1, *Procurement Specification Ball Valves AN Valve Pit Upgrades,* Fluor Daniel Northwest, Inc., Richland, Washington.

W-314-P3, *Procurement Specification Design and Fabrication for a Double-containment Piping System* , Fluor Daniel Northwest, Inc., Richland, Washington.

W-314-P5 *Procurement Specification 3-Inch Block Valves,* Fluor Daniel Northwest, Inc., Richland, Washington.

W-314-P6, *Procurement Specification Leak Detector Panel Fabrication,* Fluor Daniel Northwest, Inc., Richland, Washington.

HNF-SD-W314-PDS-001, *Project Development Specification - Transfer Piping,* Fluor Daniel Northwest, Inc., Richland, Washington.

HNF-SD-W314-PDS-002, *Project Development Specification for Valve Pit Manifold,* Fluor Daniel Northwest, Inc., Richland, Washington.

HNF-SD-W314-PDS-003, *Project Development Specification for Pit Leak Detection,* Fluor Daniel Northwest, Inc., Richland, Washington.

HNF-SD-W314-PDS-005, *Project Development Specification for Special Protective Coating,* Fluor Daniel Northwest, Inc., Richland, Washington.

HNF-SD-W314-TEP-001, *Test and Evaluation Plan for W-314 Tank Farm Restoration and Safe Operations,* Numatec Hanford Corporation, Richland, Washington.

HNF-IP-0842, *RPP Administration,* Fluor Daniel Hanford Company, Richland, Washington.

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

W-314-C6-1, *Acceptance Inspection Plan,* Fluor Daniel Hanford Corporation, Richland, Washington.

W-314-C6, *Construction Specification 200 East Waste Transfer System,* Fluor Daniel Northwest, Inc., Richland, Washington.

W-314-C7, *Construction Specification 200 East Waste Transfer System (W-058 Tie-In),* Fluor Daniel Northwest, Inc., Richland, Washington.

W-314-C8, *Construction Specification Jumper Fabrication,* Fluor Daniel Northwest, Inc., Richland, Washington.

200E WASTE TRANSFER SYSTEM CONSTRUCTION TEST COMPLETION CHECK LIST

PAGE _____ OF _____

TEST NUMBER	TEST NAME	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)	ACCEPTANCE COMPLETED DATE	ITEM COMPLETED & RESULTS ACCEPTED INITIALS
COMMERCIAL GRADE DEDICATION ACTIVITIES					
1.4.K._.CG.01	Rebar Tensile Test and Physical Inspection				
1.4.K._.CG.02	Steel Plate, bar and shape Tensile test and physical Inspection				
1.4.K._.CG.03	Commercial Grade Dedication for instrumentation				
1.4.K._.CG.04	Commercial Grade Dedication for Piping Materials				
1.4.K._.CG.05	Commercial Grade Dedication for Electrical				
THIS SIGNATURE CERTIFIES ALL COMMERCIAL GRADE ITEM DEDICTION ACTIVITIES ARE COMPLETE; _____ DATE _____					
FACTORY ACCEPTANCE TESTS					
1.4.K._.F.01	Hydro and Leak tests				
1.4.K._.F.02	Pipe system welding				
1.4.K._.F.03	Leak Detector & misc relay panels				
THIS SIGNATURE CERTIFIES ALL FACTORY ACCEPTANCE TESTS ACTIVITIES ARE COMPLETE; _____ DATE _____					
CONSTRUCTION ACCEPTANCE TESTS					
1.4.K._.C.01	In-Place Density Test				

200E WASTE TRANSFER SYSTEM CONSTRUCTION TEST COMPLETION CHECK LIST **PAGE _____ OF _____**

TEST NUMBER	TEST NAME	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)	ACCEPTANCE COMPLETED DATE	ITEM COMPLETED & RESULTS ACCEPTED INITIALS
1.4.K._.C.02	Backfill Density Test				
1.4.K._.C.03	Concrete Slump Test				
1.4.K._.C.04	Concrete Air Content Test				
1.4.K._.C.05	Concrete Test Cylinders				
1.4.K._.C.06	Concrete Pre-placement Inspections				
1.4.K._.C.07	Concrete Placement Inspections				
1.4.K._.C.08	Concrete Post-Placement Inspections				
1.4.K._.C.09	Expansion Anchor Inspections				
1.4.K._.C.10	Structural Weld Examinations				
1.4.K._.C.11	Cover Block Special Protective Coating Surface Preparation Inspection				
1.4.K._.C.12	Cover Block Special Protective Coating Surface				
1.4.K._.C.13	Pit Special Protective Coating Preparation Inspection				
1.4.K._.C.14	Pit Special Protective Coating Application				

200E WASTE TRANSFER SYSTEM CONSTRUCTION TEST COMPLETION CHECK LIST **PAGE _____ OF _____**

TEST NUMBER	TEST NAME	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)	ACCEPTANCE COMPLETED DATE	ITEM COMPLETED & RESULTS ACCEPTED
					INITIALS
1.4.K._.C.15	Cover Block Painting Diagrams				
1.4.K._.C.16	Leak Detector Fabrication Wiring Continuity				
1.4.K._.C.17	Leak Detector Cabinet Installation Wiring Continuity				
1.4.K._.C.18	Cover Block Installation Wiring Continuity				
1.4.K._.C.19	Terminal Box Conduit & Cable Installation Wiring Continuity				
1.4.K._.C.20	Valve Limit Switch Wiring Continuity				
1.4.K._.C.21	Leak Detector Installation Wiring Continuity				
1.4.K._.C.22	Cover Block Wiring Shielding Resistance to Ground				
1.4.K._.C.23	Terminal Box Conduit & Cable Shielding Resistance to Ground				
1.4.K._.C.24	Valve Limit Switch Shielding Resistance to Ground				
1.4.K._.C.25	Leak Detector Shielding Resistance to Ground				
1.4.K._.C.26	Leak Detector Fabrication Voltage Verification				

200E WASTE TRANSFER SYSTEM CONSTRUCTION TEST COMPLETION CHECK LIST

PAGE _____ OF _____

TEST NUMBER	TEST NAME	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)	ACCEPTANCE COMPLETED DATE	ITEM COMPLETED & RESULTS ACCEPTED INITIALS
1.4.K._.C.27	Leak Detector Installation Voltage Verification				
1.4.K._.C.28	Holiday Testing of Piping Protective Coatings				
1.4.K._.C.29	Piping Fabrication Welding Non-Destructive Examination				
1.4.K._.C.30	Jumper Fabrication Welding Non-Destructive Examination				
1.4.K._.C.31	Piping Fabrication Cleanliness Inspection				
1.4.K._.C.32	Piping Fabrication Pressure Tests				
1.4.K._.C.33	Piping Installation Cleanliness Inspection				
1.4.K._.C.34	Piping Installation Pressure Tests				
1.4.K._.C.35	Jumper Pressure Tests				
1.4.K._.C.36	Jumper Fabrication Inspections				
1.4.K._.C.37	Jumper In service Leak Test & Pit Configuration Verification				

200E WASTE TRANSFER SYSTEM CONSTRUCTION TEST COMPLETION CHECK LIST **PAGE _____ OF _____**

TEST NUMBER	TEST NAME	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)	ACCEPTANCE COMPLETED DATE	ITEM COMPLETED & RESULTS ACCEPTED INITIALS
1.4.K._.C.38	Leak Detector Cabinet Installation Electrical & Instrumentation Configuration & Code Compliance				
1.4.K._.C.39	Terminal Box Conduit & Cable Installation Electrical & Instrumentation Configuration & Code Compliance				
1.4.K._.C.40	Leak Detector Element Installation Electrical & Instrumentation Configuration & Code Compliance				
1.4.K._.C.41	Valve Limit Switch Installation Electrical & Instrumentation Configuration & Code Compliance				
1.4.K._.C.42	Piping Installation Configuration Verification				
1.4.K._.C.43	Cathodic Protection N/A				
1.4.K._.C.44	Jumper Fit Up & Installation				
1.4.K._.C.45	Cover Block Fit Up & Installation				
1.4.K._.C.46	Load test Cover Block lifting bails & Lifting bail Magnetic Particle Test				

200E WASTE TRANSFER SYSTEM CONSTRUCTION TEST COMPLETION CHECK LIST **PAGE _____ OF _____**

TEST NUMBER	TEST NAME	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)	ACCEPTANCE COMPLETED DATE	ITEM COMPLETED & RESULTS ACCEPTED INITIALS
1.4.K._.C.47	Jumper support leg adjustment				
1.4.K._.C.48	Final Special Protective Coating inspection of pit & cover block				
1.4.K._.C.49	Concrete Embedment Installation				
1.4.K._.C.50	Leak Detection Relay Cabinets				
1.4.K._.C.51	Intrinsically Safe Wiring Color Coded				
1.4.K._.C.52	Intrinsically Safe Wiring				
1.4.K._.C.53	Valves				
1.4.K._.C.54	Labeling				
1.4.K._.C.55	Enclosure Type				
1.4.K._.C.56	Painted Surface Preparation Inspection				
1.4.K._.C.57	Paint Application				
1.4.K._.C.58	Stainless Steel Pit Liner Reinstallation				
1.4.K._.C.59	Stainless Steel Pit Liner Installation				

200E WASTE TRANSFER SYSTEM CONSTRUCTION TEST COMPLETION CHECK LIST **PAGE _____ OF _____**

TEST NUMBER	TEST NAME	ACCEPTANCE DOCUMENT(S)	ACCEPTANCE NUMBER(S)	ACCEPTANCE COMPLETED DATE	ITEM COMPLETED & RESULTS ACCEPTED INITIALS
1.4.K._.C.60	Road Bed Preperation				
1.4.K._.C.61	Asphalt Application				
1.4.K._.C.62	Buried Pipe				
1.4.K._.C.63	Valve Pit Construction				
1.4.K._.C.64	Valve Pit Cover Block Inspection				
1.4.K._.C.65	Area Lighting Inspections				
THIS SIGNATURE CERTIFIES ALL CONSTRUCTION ACCEPTANCE TEST ACTIVITIES ARE COMPLETE; _____ DATE _____					
PREOPERATIONAL TEST ACTIVITIES					
1.4.k._.T1	Encasement Leak Detection				
1.4.k._.T2	AZ Valve Pit Leak Detection				
1.4.k._.T3	Valve Manifold and Indicators (Position Switches)				
THIS SIGNATURE CERTIFIES ALL PREOPERATIONAL TEST ACTIVITIES ARE COMPLETE; _____ DATE _____					

FIGURE 1

FLOW CHART - 200E WTS

CONSTRUCTION TESTS AND ACTIVITIES
(Interdependencies from Tables 6.2, 6.3, 6.4)

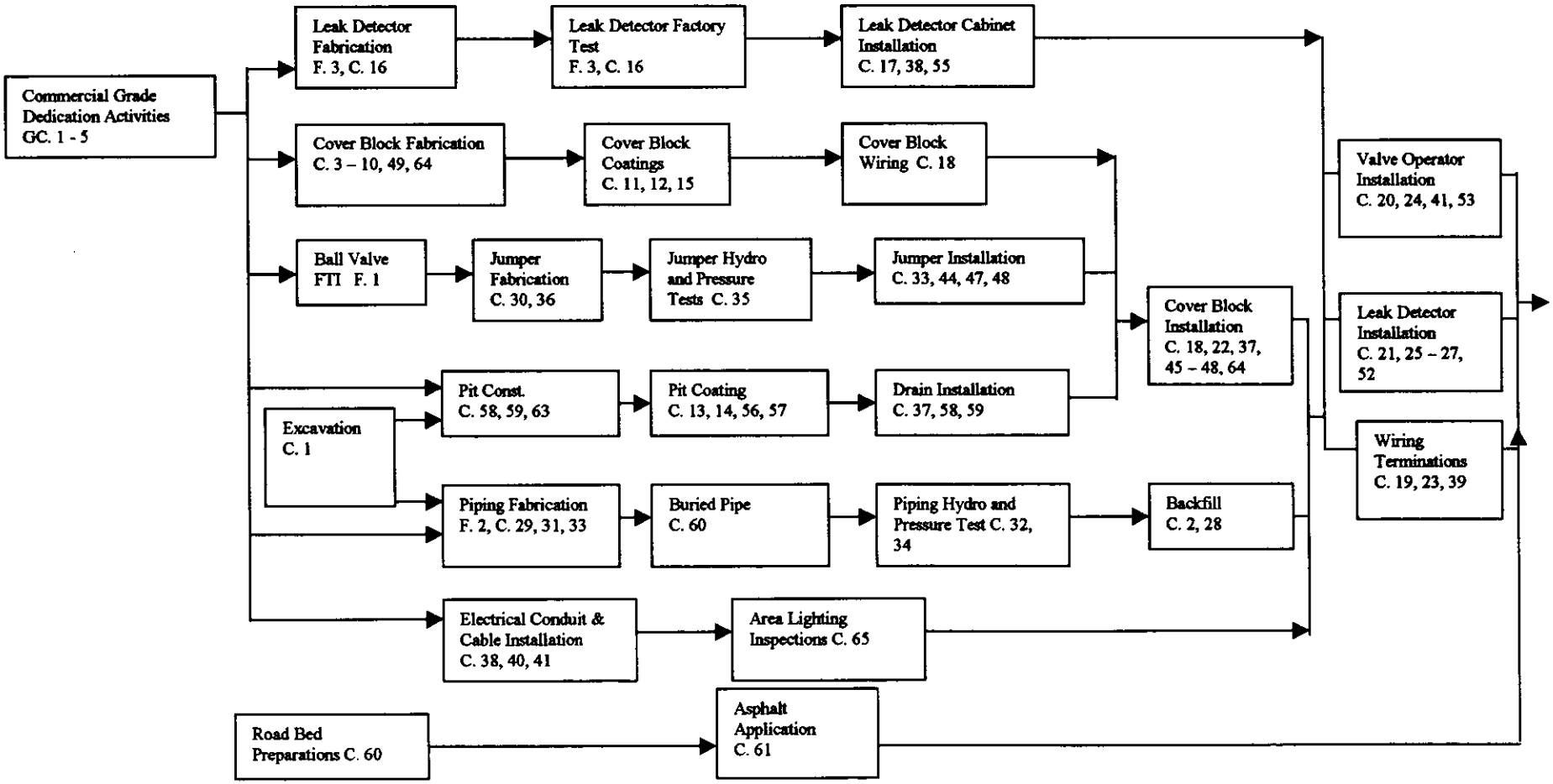
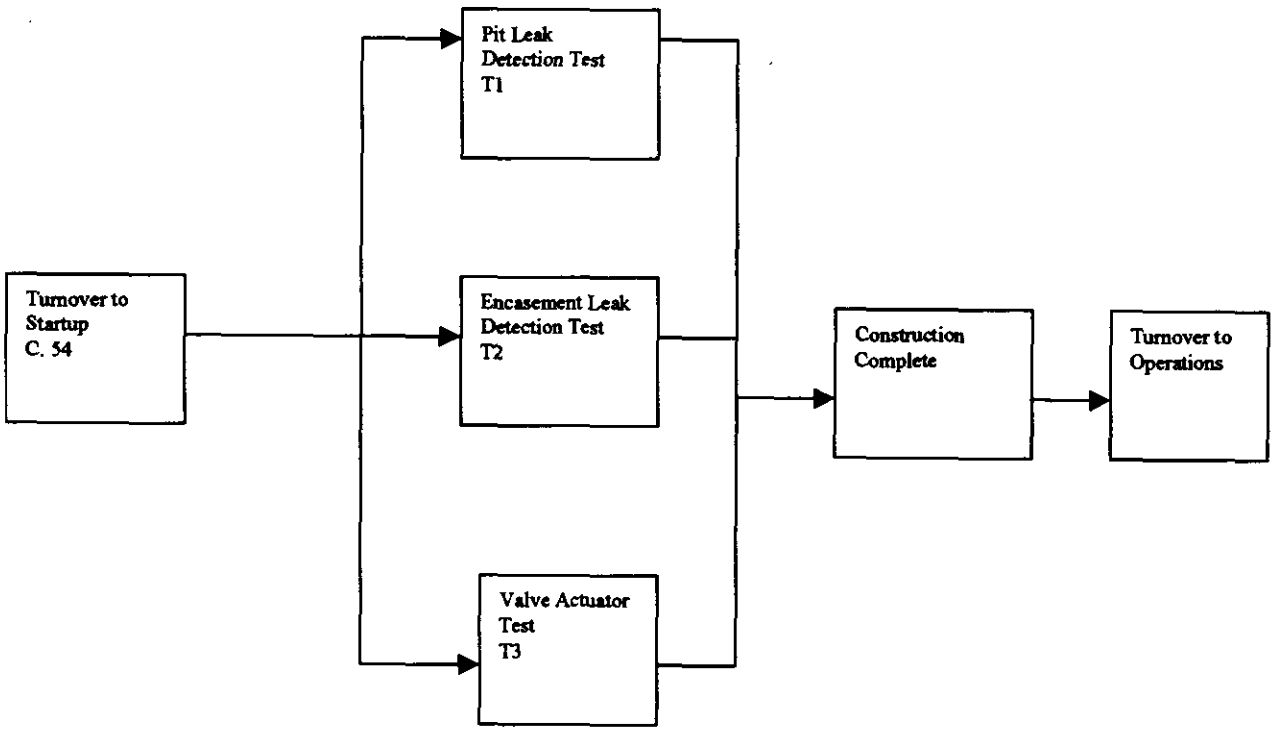


FIGURE 2

TESTING ACTIVITIES