Sta 4. (2)

JUN 09 1999

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 626838

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) TFRSO	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: W-314/TWRS	6. Design Authority/ Design Agent/Cog. Engr.: D.E. Bowers	7. Purchase Order No.: N/A
8. Originator Remarks: This EDT release the approved ATP's for the 241-AN-A and B packages part of Project W-314.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks: 11A. Design Baseline Document? ☐ Yes ☒ No USA not required per HNF-IP-0842, VOL IV, section 5.4, rev 11a. The ATPs in and of themselves are not work authorizing. The ATPs will be performed as part of a JCS work package that will be USA reviewed prior to performance of the work. These ATPs are not a design or facility modification and are not expected to result in an exposure > 1 person-REM (whole body) or > 10 person-REM (extremities) for the installation, maintenance and operation for the life of the ATPs. For the requirements of HNF-PRO-1622, PRO-1623 and HNF-MO-10, the PLANA review will be accomplished as part of the normal Radiological Work Planning process. DEB 5-27-99		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Design- nator	Reason for Trans- mittal	Origin- ator Dispo- sition	Receiv- er Dispo- sition
1	ATP-W314-001 <i>HNF-4642</i>		0	241-AN-A Valve Pit Manifold Valves & Position Indication ATP	ES Q <i>DEB 5/27/99</i>	1	1	1
1	ATP-W314-002 <i>HNF-4644</i>		0	241-AN-B Valve Pit Manifold Valves & Position Indication ATP	ES Q <i>DEB 5/27/99</i>	1	1	1
1	ATP-W314-003 <i>HNF-4646</i>		0	241-AN-B Pit Leak Detection ANB-WT-LDSTA-231 ATP	ES Q <i>DEB 5/27/99</i>	1	1	1
1	ATP-W314-004 <i>HNF-4648</i>		0	241-AN-A Pit Leak Detection ANA-WT-LDSTA-331 ATP	ES Q <i>DEB 5/27/99</i>	1	1	1
1	ATP-W314-005 <i>HNF-4650</i>		0	SN-268 Encasement Leak Detection ANB-WT-LDSTA-335 ATP <i>A DU 6-2-99</i>	ES Q <i>DEB 5/27/99</i>	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	4. Review	1. Approved	4. Reviewed no/comment
		2. Release	5. Post-Review	2. Approved w/comment	5. Reviewed w/comment
		3. Information	6. Dist. (Receipt Acknow. Required)	3. Disapproved w/comment	6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)									
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature
1	1	Design Agent	P.J. Bedell	<i>[Signature]</i>	63-12	1	1	Env TAD. Ihoff	<i>[Signature]</i>
1	1	Project Mgr.	M.A. Lane	<i>[Signature]</i>	63-12	1	1	Safety OMSzka	<i>[Signature]</i>
1	1	Eng. Mgr.	J.L. Gilbert	<i>[Signature]</i>	R3-25	1	1	Rad Eng RE Elder	<i>[Signature]</i>
1	1	Startup Mgr.	J.S. Hammers	<i>[Signature]</i>	R3-25	1	1	Maint OR Devalle	<i>[Signature]</i>
1	1	QA	H.M. Chafin	<i>[Signature]</i>	6-4-99 R3-25				
1	1	Design Authority	D.E. Bowers	<i>[Signature]</i>	5-27-99 R3-13				
1	1	Operations	T.W. Bohan	<i>[Signature]</i>	R3-47				

18. Signature of EPT Originator <i>[Signature]</i> Date <i>5-24-99</i>	19. N/A Authorized Representative Date for Receiving Organization	20. D.E. Bowers <i>5/27/99</i> Design Authority/ Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
---	---	---	---

241-AN-A Valve Pit Manifold Valves And Position Indication Acceptance Test Procedure

David W. VanDyke

Maintenance Concepts

Richland, WA 99352

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

EDT/ECN: 626838

UC: 2030

Org Code: LJH20000

Charge Code: 106065

B&R Code: EW3130010

Total Pages: 122

Key Words: Acceptance Test Procedure

Abstract: This document describes the method used to test design criteria for gear actuated ball valves installed in 241-AN-A Valve Pit located at 200E Tank Farms.

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: Document Control Services, P.O. Box 950, Mailstop H6-08, Richland WA 99352, Phone (509) 372-2420; Fax (509) 376-4989.

Release Approval Date

Approved For Public Release

**241-AN-A VALVE PIT MANIFOLD VALVES AND POSITION INDICATION
ACCEPTANCE TEST PROCEDURE**

TABLE OF CONTENTS**PAGE**

TEST EXECUTION SHEET	3
1.0 PURPOSE AND SCOPE	4
1.1 PURPOSE	4
1.2 SCOPE	4
2.0 INFORMATION	5
2.1 TERMS AND DEFINITIONS	5
2.2 RESPONSIBILITIES	5
2.3 RECORDS	9
2.4 REFERENCES	9
2.5 GENERAL INFORMATION	10
3.0 PRECAUTIONS AND LIMITATIONS	13
3.1 PERSONNEL SAFETY	13
3.2 RADIATION AND CONTAMINATION CONTROL	13
4.0 PREREQUISITES	14
4.1 SPECIAL TOOLS, EQUIPMENT, AND SUPPLIES	14
4.2 PERFORMANCE DOCUMENTS	14
4.3 CONSTRUCTION STATUS	14
5.0 PROCEDURE	16
5.1 TEST 2-WAY VALVES	16
5.2 TEST 3-WAY VALVES	60
5.3 VALVE TORQUING	114
5.4 ENCASEMENT VALVE TESTING	115
ATP PERFORMANCE LOG	117
ATP EXCEPTION LOG	118
ATP EXCEPTION RECORD	119
PROCEDURE SIGNATURE SHEET	120
PROCEDURE HISTORY SIGNATURE SHEET	121

TEST EXECUTION SHEET

DATE:		DOCUMENT NUMBER: HNF-4642	
DOCUMENT TITLE:		241-AN-A VALVE PIT TRANSFER VALVES	
TEST PERSONNEL (PRINT NAMES)			
TEST DIRECTOR:		RECORDER:	
OPERATIONS ENGINEER:		AUTHORIZED INSPECTOR:	
TEST EXECUTION			
TEST DIRECTOR SIGNATURE/DATE:		FLUOR DANIEL NORTHWEST CONSTRUCTION ENGINEER SIGNATURE/DATE:	
OPERATIONS ENGINEER SIGNATURE/DATE:		RECORDER SIGNATURE/DATE:	
APPROVAL AND ACCEPTANCE OF TEST RESULTS			
WITHOUT EXCEPTION _____ (✓)		WITH EXCEPTIONS RESOLVED WITH EXCEPTIONS REMAINING _____ (✓) _____ (✓)	
TEST DIRECTOR SIGNATURE/DATE:		W-314 PROJECT MANAGER SIGNATURE/DATE:	
FLUOR DANIEL NORTHWEST PROJECT MANAGER SIGNATURE/DATE:		FDNW QUALITY ASSURANCE SIGNATURE/DATE:	
LMHC QUALITY ASSURANCE SIGNATURE/DATE:		OPERATIONS ENGINEER SIGNATURE/DATE:	
AUTHORIZED INSPECTOR SIGNATURE/DATE:		DESIGN AUTHORITY SIGNATURE/DATE:	

•	ANB-WT-V-403	•	ANB-WT-V-404
Encasement Drain Valves			
•	ANA-WT-V-302	•	ANA-WT-V-318
•	ANA-WT-V-303	•	ANA-WT-V-319
•	ANA-WT-V-305	•	ANA-WT-V-321
•	ANA-WT-V-307	•	ANA-WT-V-403
•	ANA-WT-V-314	•	ANA-WT-V-404
•	ANA-WT-V-316		
Three-Way Valves			
•	ANA-WT-V-301	•	ANA-WT-V-315
•	ANA-WT-V-304	•	ANA-WT-V-317
•	ANA-WT-V-306	•	ANA-WT-V-320
•	ANA-WT-V-308	•	ANA-WT-V-322
•	ANA-WT-V-309	•	ANA-WT-V-323
•	ANA-WT-V-313		
Two-Way Valves			

Valve Pit:
This Acceptance Test Procedure will test the following valves in the 241-AN-A

1.2 SCOPE

- Equipment is properly installed, labeled, and documented on As-Built drawings
- New Manifold Valves in the 241-AN-A Valve Pit are fully operable using the handwheel of the valve operators
- New valve position indicators on the valve operators will show correct valve positions.
- New valve position switches will function properly
- New valve locking devices function properly.

The purpose of this procedure is to demonstrate the following:

1.1 PURPOSE

1.0 PURPOSE AND SCOPE

2.0 INFORMATION

2.1 TERMS AND DEFINITIONS

- 2.1.1 ATR - Acceptance Test Report
- 2.1.2 ATP - Acceptance Test Procedure

2.2 RESPONSIBILITIES

- 2.2.1 Each company or organization participating in the conduct of this procedure will designate personnel to assume the responsibilities and duties as defined herein for their respective roles. The names of these designees shall be provided to the Recorder for listing on the Working Copy of the Test Execution Sheet prior to the performance of any part of this procedure.
- 2.2.2 The Fluor Daniel Northwest Project Manager is responsible for the following:
- Designation of a test director
 - Signing the Test Execution Sheet when the Acceptance Test Procedure is approved and accepted as complete
- 2.2.3 The Operations Engineer is responsible for the following:
- Setting the safe boundaries for performing this procedure
 - Ensuring plant configuration is in proper status for performing this procedure
 - Signing for operations where applicable in this procedure.
 - Performing a Post-Test Review of Acceptance Test documentation
 - Obtaining concurrence from Tank Farm Shift Manager prior to commencing the test, or upon restart of testing after a temporary suspension of testing
- 2.2.4 The Operations Representative is responsible for the following:
- Ensuring that safe work boundaries for testing are complied with
 - Coordinating all support craft and personnel in field with the Test Director and the Construction Engineer.
 - Obtaining release of this ATP for field testing from shift office.

- Coordinating the ATP Exception Record when a test exception has been resolved
- Signing the ATP Exception Record when a test exception has been resolved
- Preparing and issuing an Acceptance Test Report for the approved and accepted Acceptance Test Procedure when testing is completed.
- Scheduling and conducting a pre-test meeting with acceptance test participants prior to start of testing
- Notification of the persons performing and witnessing the test prior to the start of testing
- Notification of all concerned parties when a change is made in the testing schedule
- Acting as liaison between the participants in acceptance testing
- Stopping any test which may cause damage to the system until the Acceptance Test Procedure has been revised.
- Approving field changes to the Acceptance Test Procedure in accordance with Section 2.5.
- Obtaining revisions to the Acceptance Test Procedure, as necessary, to comply with authorized field changes or to accommodate existing field conditions in accordance with Section 2.5.
- Taking necessary actions to clear exceptions to the Acceptance Test Procedure
- Evaluating recorded data, discrepancies, and exceptions
- Signing Test Execution Sheet when this Acceptance Test Procedure has been performed
- Signing ATP Exception Record when a retest to clear an exception has been executed and accepted
- Obtaining required signatures on the Acceptance Test Procedure Working Copy prior to reproduction and distribution

2.2 RESPONSIBILITIES (cont.)

2.2.5 The Test Director is responsible for the following:

2.2 RESPONSIBILITIES (cont.)

2.2.6 The Recorder is responsible for the following:

- Performing all recording duties using black ink
- Recording the names of all designated personnel on the Working Copy of this procedure prior to start of testing
- Observing tests, recording test data, and maintaining the ATP Performance Log
- Signing the Test Execution Sheet as the Recorder
- Initialing every test verification step requiring initials on the Working Copy of this Acceptance Test Procedure as that step is successfully performed, to indicate that Acceptance Criterion has been met
- Recording authorized field changes to this Acceptance Test Procedure
- Recording Test Exceptions and individual Test Procedure steps that are not performed satisfactorily on the ATP Exception Record and ensuring that the information is transferred (in ink or typed) to the master Working Copy of ATP Exception Record(s). Additional ATP Exception Records are to be added as needed
- Notifying the Test Director at the time any objection is made during performance of the Acceptance Test Procedure
- Submitting the completed master Working Copy of this Acceptance Test Procedure to the Test Director for approval signatures and distribution.

2.2.7 The Construction Engineer is responsible for the following:

- Ensuring all equipment required for performing this Acceptance Test Procedure listed in Section 4.1 will be available at the start of testing
- Obtaining from the NHC and LMHC Project Engineer any information or changes necessary to clear or resolve objections
- Coordinating field personnel and activities with the Test Director and Operations Representative
- Ensuring that field testing and inspection of the system or portion of the system to be tested has been completed prior to start of this ATP
- Providing technical input to test personnel as needed relating to the configuration of equipment and systems to be tested and utilized in this procedure.
- Post Review of Acceptance Test Documentation.

2.2 RESPONSIBILITIES (cont.)

2.2.8 Fluor Daniel Northwest Quality Assurance is responsible for the following:

- Review and approval of test exception resolutions
- Performing a Post-Test Review of Acceptance Test documentation
- Assisting Construction Engineer in Pre-Test verification of construction documentation (i.e. CWPs, submittals, receiving reports etc.

2.2.9 Lockheed Martin Quality Assurance is responsible for the following:

- Review and approval of test results
- Performing a Post-Test Review of Acceptance Test documentation

2.2.10 Fluor Daniel Hanford Authorized Inspector is responsible for the following:

- Witnessing test execution
- Approval and signature of acceptance upon completion of this procedure.

2.2.11 Industrial Health And Safety Tech. is responsible for the following:

- Monitor for toxic and combustible gases or vapors and report out of compliance levels to TWRS Industrial Hygiene technician
- Evaluate exposure potential using field data and according to HNF-SD-WM-HSP-002 or other industrial hygiene exposure prevention criteria and recording monitored levels in applicable steps in work package.

2.2.12 Quality Control is responsible for the following:

- Witness and signing, lift and records, torquing and the installation and removal of all temporary wiring and devices as applicable in this procedure.

2.3 RECORDS

2.3.1

The completed master "Working Copy" of this Acceptance Test Procedure, the completed "Test Execution Sheet", "Acceptance Test Report", the completed "ATP Performance Log" and "ATP Exception Log", and all "Test Exception Sheets" generated during performance of this Acceptance Test Procedure, shall be kept as permanent records in accordance with HNF-PRO-232.

2.4 REFERENCES

2.4.1

The following documents were used to write or are referenced in this procedure:

- H-14-100941, "P & ID VALVE PIT 241-AN-A"
- H-14-100944, "JUMPER ARRANGEMENT VALVE PIT 241-AN-A"
- H-14-100969, "PIT COVER PAINTING DIAGRAM 241-AN-A"
- H-14-100975 sheet 1, "VALVE ACTUATOR ARRANGEMENT VALVE PIT 241-AN-A"
- H-14-100976 sheets 1 & 2, "VALVE ACTUATOR DETAILS"
- H-14-100987 sheet 1, "INSTM VALVE POSITION SWITCHES LOOP DIAGRAM"
- H-14-100987 sheet 2, "INSTM VALVE POSITION SWITCHES VALVE PIT A LOOP DIAGRAM"
- H-14-100987 sheet 3, "INSTM VALVE POSITION SWITCHES VALVE PIT B LOOP DIAGRAM"
- H-14-100988 sheet 1, "INSTM FIELD TERMINAL BOX INTERCONNECTION DIAGRAM"
- PBM, Inc. Drawing MPH-77-BW2 MP77-97144A, "2" MPH-77 3-WAY T-PORT SIDE ENTRY NON-ADJUST-O-SEAL BALL VALVE WITH REINFORCED STOP PIN AND MOUNTING BRACKET (FLOW PATTERN #5)"
- PBM Inc., Drawing MPH-79-BW2 MP79-97145A, "3" MPH-79 3-WAY T-PORT SIDE ENTRY NON-ADJUST-O-SEAL BALL VALVE W/ REINFORCED STOP PIN & MOUNTING BRACKET (FLOW PATTERN #5)"
- PBM, Inc. Drawing SPH-37-BW2 SP37-97142A, "2" SPH-37 2-WAY NON ADJUST-O-SEAL BALL VALVE WITH BUTT WELD (SCH. 40) PIPE CONNECTIONS, KYNAR SEATS AND SEALS, AND PREPARED FOR STEM EXTENSION"
- PBM, Inc. Drawing SPH-39-BW2 SP39-97143A, "3" SPH-39 2-WAY NON ADJUST-O-SEAL BALL VALVE WITH BUTT WELD (SCH. 40) PIPE CONNECTIONS, KYNAR SEATS AND SEALS, AND PREPARED FOR STEM EXTENSION".
- SUBMITTAL # W-314-C1-101A INSTALLATION AND OPERATING INSTRUCTIONS FOR WESTLOCK ACCUTRAK 1000, 2000, AND AT6.

2.5 GENERAL INFORMATION

- 2.5.1 All steps in this Acceptance Test Procedure are performed at the 241-AN-A Valve Pit and at Terminal Box AN241-WT-TBX-101, unless otherwise noted.
- 2.5.2 The OPEN or CLOSED position of a 2-way valve is indicated by the position of flow ports on decal, on the round indicating disc, attached to the valve extension handle. (Ref. H-14-100976).
- 2.5.3 The three positions (A, B, and C) of a 3-way valve in the valve pit are indicated at the valve operator by the position of flow ports on decal on the round Indicating Disc attached to the valve extension handle (see H-14-100976).
- 2.5.4 Valves are aligned such that the stripes on decal align with stripes on housing when valve is in the fully CLOCKWISE position: (Closed for Two-Way OR "C", or 180° for Three-Way).
- 2.5.5 ACCEPTANCE CRITERIA: All Test Procedure steps using the word VERIFY are considered Acceptance Criteria steps, and each must have successful execution indicated by having initials and the date entered in the provided space to be considered complete.
- 2.5.6 All entries recorded in this procedure shall be made in black ink, except for those noted using the redline method.
- 2.5.7 Editorial changes to this procedure may be made by the Test Director and Cognizant Engineer per HNF-IP-0842 Vol I sect. 2.11 "Technical Procedure Requirements", as long as the changes do not impact operational facility safety function or performance, and will not compromise or influence the test data. Any technical change must be made by ECN.
- 2.5.8 Acceptance Test steps detailed in individual Test Sections shall be performed sequentially, unless otherwise noted or as directed by the Test Director.
- Individual Test Sections may be performed out of sequence at the direction of the Test Director, if the intent of the test is not compromised.
 - As required by subsection 2.2.6, as each step is completed, the Recorder will check off, enter appropriate mark or initial each Test step as required in the spaces provided on the Working Copy of this Acceptance Test Procedure.
 - Any step that requires verification of data must also be recorded on the Working Copy.

2.5 GENERAL INFORMATION (Cont).

- 2.5.9 Any non-conformance of the instrumentation, unexpected results or exceptions during testing shall be sequentially numbered and recorded in the ATP Exception Log and on individual ATP Exception Records. Thus, case-by-case resolution, recording, approval, and distribution of each exception will be achieved.
- 2.5.10 When an exception is identified during testing, initiate an ATP Exception Record in the following manner (an example of a test exception would be when the system, fabricated per the design media, does not perform as expected):
- Number each exception sequentially as it occurs and record it on the ATP Exception Log
 - Enter the sequential exception number, Date, and a description of the exception on an ATP Exception Record; identify additional detail as required
 - Enter the name of the initiator of the objecting party for each exception in the "Initiator Of Exception" section of the ATP Exception Record
 - Enter a description of actions planned to resolve each exception on the ATP Exception Record when such a determination is made.
- 2.5.11 Resolve test exceptions in the following manner:
- Record the action taken to resolve each exception in the "Resolution of Exception" section of the ATP Exception Record (the action taken does not have to be the same as the recorded planned action)
 - When the action taken results in an acceptable retest, initial and date the Correction Approval section of the Exception Sheet
 - When the action taken does not result in an acceptable retest, provide a detailed explanation of why the retest action was not acceptable, and what additional plans are required. The explanation may include why the system should be Accepted-As-Is. The Project Engineer then signs and dates the Resolution of Exception section of the ATP Exception Record, and obtains any other approvals required
 - Distribute requisite copies of the completed ATP Exception Records to the client at the completion of the Acceptance Test Procedure.
- 2.5.12 Upon completion of the Acceptance Test Procedure, obtain approval of the test performance. The Acceptance Test will be complete when all the test sections have been performed, all test exceptions resolved, and the Acceptance Test Report is prepared. The test will be approved by checking the proper response, with or without exceptions, on the Test Execution Sheet under the "Approval and Acceptance of Test Results" Section of the Test Execution Sheet.

2.5 GENERAL INFORMATION (Cont).

NOTE - The following three sections detail the possible conditions that may exist at the completion of the Acceptance Test Procedure, and the steps necessary to complete Procedure acceptance in those conditions.

2.5.13 The completed test may be approved without test exceptions:

- Check applicable space on Test Execution Sheet to show that the Acceptance Test Procedure has been performed and no exceptions have been recorded
- Appropriate individual Test Performers will sign and date the Test Execution Sheet in the spaces provided
- Distribute requisite copies as directed by the client
- Send the Master Copy of the completed Acceptance Test Procedure to the client.

2.5.14 The completed test may be approved with exceptions resolved:

- Check applicable space on Test Execution Sheet to show that this procedure has been performed with exceptions recorded and resolved
- Appropriate individual Test Performers will sign and date the Test Execution Sheet in the spaces provided
- Distribute requisite copies as directed by the client
- Send the Master Copy of the completed Acceptance Test Procedure to the client.

2.5.15 The completed test may be approved with test exceptions outstanding:

- Check applicable space on Test Execution Sheet to show that this procedure has been performed with exceptions recorded, part or all of which are presently outstanding, unresolved
- Appropriate individual Test Performers will sign and date the Test Execution Sheet in the spaces provided
- Distribute requisite copies as directed by the client
- Send the Master Copy of the completed Acceptance Test Procedure to the client.
- All outstanding exceptions shall be added to project punchlist.

2.5.16 It is the intent to perform this Acceptance Test Procedure uninterrupted from beginning to end. If testing is terminated due to time constraints at the end of an individual Test Section, the system will be placed in a safe configuration by the Test Director, with concurrence of the Operations Engineer, and the terminated test configuration noted in the ATP Performance Log. The test will restart at the next scheduled shift by establishing the noted test configuration, and documenting this in ATP Performance Log.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 PERSONNEL SAFETY

- 3.1.1 Individuals shall carry out their assigned work in a safe manner to protect themselves, others, and the equipment from undue hazards and to prevent damage to property and environment.
- 3.1.2 Operations Representative shall assure the safety of all activities within their areas to prevent injury, property damage, or interruption of operation.
- 3.1.3 Any hazard identified during the performance of the procedure shall be reported to the appropriate waste tank farm facility line manager.
- 3.1.4 Performance of test activities shall always include safety and health aspects as delineated in the Operations Manuals and as directed by the Test Director.
- 3.1.5 The primary safety concerns for the performance of this Acceptance Test Procedure are related to the force required to operate valve operator handwheel. Maintain proper body alignment at all times while operating valve handwheel.

3.2 RADIATION AND CONTAMINATION CONTROL

Work in Radiological Areas will be performed using an approved Radiation Work Permit, following review by Radiological Control per the ALARA Program (HNF-IP-0842, Volume VII, Section 1.1).

4.0 PREREQUISITES

4.1 SPECIAL TOOLS, EQUIPMENT, AND SUPPLIES

The following supplies shall be available at the test site:

- Electrician protective gloves
- Electrician protective eyewear (goggles or face shield)
- Calibrated Volt Ohm Meter (Fluke)
- Long-shank lockout padlock
- Ruler, with minimum scale markings of 1/16 inch
- Fuse Puller
- Torquing Screwdriver (17-20 inch lbs)
- 24 volt dc Power Supply.

NOTE - Calibrated electrical test equipment data shall be recorded at the beginning of each individual test section.

4.2 PERFORMANCE DOCUMENTS

The following documents are required to be at the test site, before and during the performance of this procedure:

- HNF-4642 "241-AN-A VALVE PIT MANIFOLD VALVES AND POSITION INDICATION ACCEPTANCE TEST PROCEDURE".

4.3 CONSTRUCTION STATUS

- 4.3.1 All documentation and construction work is complete to the point of support for this ATP.

Construction Engineer Signature

Date

4.4 CONDITIONS AND ACTIONS

The following conditions must be met before this Acceptance Test Procedure (ATP) may commence.

NOTE- The following shall be documented on ATP Performance Log DAILY if test is stopped and continued OR if personnel changes during performance of this ATP.

- 4.4.1 A pre-job briefing has been held. and all participants have been thoroughly briefed on job safety, hazards, and their responsibilities before performing this ATP.

Test Director Signature

Date

- 4.4.2 Test Director **VERIFY** 241-AN-A Valve Pit is isolated from all other Transfer Routes by SIGNING below.

Test Director Signature

Date

- 4.4.3 Test Director **VERIFY** Section 4.0 has been COMPLETED by SIGNING below.

Test Director Signature

Date

5.0 PROCEDURE

5.1 TEST 2-WAY VALVES

5.1.1 TEST 2-inch valve ANA-WT-V-301:

5.1.1.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.1.2 ENSURE that ANA-WT-V-301 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.1.3 VERIFY the indicator line is oriented to BLOCK flow from L3 to ANA-WT-V-302.

_____/_____
Test Director Initial Date

___ 5.1.1.4 VERIFY the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

___ 5.1.1.5 PLACE the long-shank padlock through the locking device in the ANA-WT-V-301 handwheel.

___ 5.1.1.6 VERIFY that limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.1.1.7 REMOVE the long-shank padlock that was placed on the handwheel.

___ 5.1.1.8 REMOVE the cover from ANA-WT-V-301 valve position sensor assembly.

___ 5.1.1.9 ADJUST the top cam so the pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.1.10 POSITION ANA-WT-V-301 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

5.1.1.11 VERIFY the indicator line is oriented to show flow from L3 to ANA-WT-V-302.

5.1.1.12 VERIFY the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

5.1.1.13 PLACE the long-shank padlock through the locking device in the ANA-WT-V-301 handwheel.

5.1.1.14 VERIFY that limited movement of the handwheel does NOT cause valve movement in either direction.

5.1.1.15 REMOVE the long-shank padlock that was placed on the handwheel.

5.1.1.16 ADJUST the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

5.1.1.17 ENSURE top CAM is NOT positioned at the non contact switch for valve position A when in position B.

5.1.1.18 VERIFY installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

5.1.1.19 APPLY 24 vdc to Terminal TB-DC4-22 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.1.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-2 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.1.21 **VERIFY** the voltage recorded in Step 5.1.1.20 is at a nominal voltage of "24" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.1.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-1 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.1.23 **VERIFY** the voltage recorded in Step 5.1.1.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.1.24 **POSITION** ANA-WT-V-301 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.1.25 **VERIFY** that ANA-WT-V-301 valve operator position indicator is oriented to BLOCK flow from "L3" to ANA-WT-V-302.

_____/_____
Test Director Initial Date

- ___ 5.1.1.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-2 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.1.27 **VERIFY** the voltage recorded in Step 5.1.1.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

- 5.1.1.28 MEASURE AND RECORD the voltage BETWEEN Terminal TB-DC1-1 AND the NEGATIVE Terminal on the 24 volt dc power supply.
- VOLTAGE _____
- 5.1.1.29 VERIFY the voltage recorded in Step 5.1.1.28 is at a nominal voltage of "24" Volts dc.

Test Director Initial _____ / _____
Date _____

NOTE -

The next step prepares limit switch cover for torquing. All valves will be torqued at onetime at end of this ATP and QC lbs. Shall verify. The Torque value will be between 17 and 20 inch

- 5.1.1.30 REPLACE limit switch cover AND TIGHTEN bolts in preparation for torque.

- 5.1.1.31 POSITION valve ANA-WT-V-301 as directed by the Test Director.

- 5.1.1.32 RECORD the final position for valve ANA-WT-V-301 below.

OPEN	CLOSED
------	--------

- 5.1.1.33 VERIFY by signing below that test 5.1.1 is complete.

Test Director Signature _____ Date _____
Operations Signature _____ Date _____

5.1 TEST 2-WAY VALVES (Cont.)

5.1.2 TEST 2-inch valve ANA-WT-V-309:

5.1.2.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.2.2 **ENSURE** that ANA-WT-V-309 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.2.3 **VERIFY** the indicator line is oriented to BLOCK flow from Blank Connection "C" to ANA-WT-V-307.

_____/_____
Test Director Initial / Date

___ 5.1.2.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial / Date

___ 5.1.2.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-309 handwheel.

___ 5.1.2.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial / Date

___ 5.1.2.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

___ 5.1.2.8 **REMOVE** the cover from ANA-WT-V-309 valve position sensor assembly.

___ 5.1.2.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.2.10 **POSITION** ANA-WT-V-309 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

- 5.1.2.11 **VERIFY** the indicator line is oriented to show flow from Blank Connection "C" to ANA-WT-V-307.

Test Director Initial / Date
- 5.1.2.12 **VERIFY** the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

Test Director Initial / Date
- 5.1.2.13 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-309 handwheel.

5.1.2.14 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

Test Director Initial / Date
- 5.1.2.15 **REMOVE** the long-shank padlock that was placed on the handwheel.

5.1.2.16 **ADJUST** the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

5.1.2.17 **ENSURE** top CAM is NOT positioned at the non contact switch for valve position A when in position B.

5.1.2.18 **VERIFY** installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

Test Director Initial / Date
- 5.1.2.19 **APPLY** 24 vdc to Terminal TB-DC4-30 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.2.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-22 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.2.21 **VERIFY** the voltage recorded in Step 5.1.2.20 is at a nominal voltage of "24" Volts dc.

_____/_____
Test Director Initial / Date

- ___ 5.1.2.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-21 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.2.23 **VERIFY** the voltage recorded in Step 5.1.2.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial / Date

- ___ 5.1.2.24 **POSITION** ANA-WT-V-309 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.2.25 **VERIFY** that ANA-WT-V-309 valve operator position indicator is oriented to BLOCK flow from "Blank Connection "C"" to ANA-WT-V-307.

_____/_____
Test Director Initial / Date

- ___ 5.1.2.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-22 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.2.27 **VERIFY** the voltage recorded in Step 5.1.2.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial / Date

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.2.28 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-21 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.2.29 **VERIFY** the voltage recorded in Step 5.1.2.28 is at a nominal voltage of "24" Volts dc.

_____/_____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.1.2.30 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.
- ___ 5.1.2.31 **POSITION** valve ANA-WT-V-309 as directed by the Test Director.
- ___ 5.1.2.32 **RECORD** the final position for valve ANA-WT-V-309 below.

✓ OPEN	✓ CLOSED

- 5.1.2.33 **VERIFY** by signing below that test 5.1.2 is complete.

Test Director Signature Date

Operations Signature Date

5.1 TEST 2-WAY VALVES (Cont.)

5.1.3 TEST 3-inch valve ANA-WT-V-322:

5.1.3.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

____ 5.1.3.2 **ENSURE** that ANA-WT-V-322 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

____ 5.1.3.3 **VERIFY** the indicator line is oriented to BLOCK flow from Blank Connection "G" to ANA-WT-V-321.

____ / ____
Test Director Initial Date

____ 5.1.3.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

____ / ____
Test Director Initial Date

____ 5.1.3.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-322 handwheel.

____ 5.1.3.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

____ / ____
Test Director Initial Date

____ 5.1.3.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

____ 5.1.3.8 **REMOVE** the cover from ANA-WT-V-322 valve position sensor assembly.

____ 5.1.3.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

____ 5.1.3.10 **POSITION** ANA-WT-V-322 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

5.1.3.11 VERIFY the indicator line is oriented to show flow from Blank Connection "G" to ANA-WT-V-321.

Test Director Initial / Date

5.1.3.12 VERIFY the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

Test Director Initial / Date

5.1.3.13 PLACE the long-shank padlock through the locking device in the ANA-WT-V-322 handwheel.

5.1.3.14 VERIFY limited movement of the handwheel does NOT cause valve movement in either direction.

Test Director Initial / Date

5.1.3.15 REMOVE the long-shank padlock that was placed on the handwheel.

5.1.3.16 ADJUST the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

5.1.3.17 ENSURE top CAM is NOT positioned at the non contact switch for valve position A when in position B.

5.1.3.18 VERIFY installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

Test Director Initial / Date

5.1.3.19 APPLY 24 vdc to Terminal TB-DC4-42 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.3.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-52 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.3.21 **VERIFY** the voltage recorded in Step 5.1.3.20 is at a nominal voltage of "24" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.3.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-51 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.3.23 **VERIFY** the voltage recorded in Step 5.1.3.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.3.24 **POSITION** ANA-WT-V-322 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.3.25 **VERIFY** that ANA-WT-V-322 valve operator position indicator is oriented to BLOCK flow from "Blank Connection "G"" to ANA-WT-V-321.

_____/_____
Test Director Initial Date

- ___ 5.1.3.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-52 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.3.27 **VERIFY** the voltage recorded in Step 5.1.3.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

___ 5.1.3.28 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-51 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

___ 5.1.3.29 **VERIFY** the voltage recorded in Step 5.1.3.28 is at a nominal voltage of "24" Volts dc.

_____/_____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

___ 5.1.3.30 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

___ 5.1.3.31 **POSITION** valve ANA-WT-V-322 as directed by the Test Director.

___ 5.1.3.32 **RECORD** the final position for valve ANA-WT-V-322 below.

✓ OPEN	✓ CLOSED

5.1.3.33 **VERIFY** by signing below that test 5.1.3 is complete.

Test Director Signature Date

Operations Signature Date

5.1 TEST 2-WAY VALVES (Cont.)

5.1.4 TEST 3-inch valve ANA-WT-V-323:

5.1.4.1 **RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.4.2 **ENSURE** that ANA-WT-V-323 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.4.3 **VERIFY** the indicator line is oriented to BLOCK flow from Connector "L1" to ANA-WT-V-321.

_____/_____
Test Director Initial Date

___ 5.1.4.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

___ 5.1.4.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-323 handwheel.

___ 5.1.4.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.1.4.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

___ 5.1.4.8 **REMOVE** the cover from ANA-WT-V-323 valve position sensor assembly.

___ 5.1.4.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.4.10 **POSITION** ANA-WT-V-323 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.4.11 **VERIFY** the indicator line is oriented to show flow from Connector "L1" to ANA-WT-V-321.

Test Director Initial

/

Date

- ___ 5.1.4.12 **VERIFY** the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

Test Director Initial

/

Date

- ___ 5.1.4.13 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-323 handwheel.

- ___ 5.1.4.14 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

Test Director Initial

/

Date

- ___ 5.1.4.15 **REMOVE** the long-shank padlock that was placed on the handwheel.

- ___ 5.1.4.16 **ADJUST** the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.1.4.17 **ENSURE** top CAM is NOT positioned at the non contact switch for valve position A when in position B.

- ___ 5.1.4.18 **VERIFY** installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

Test Director Initial

/

Date

- ___ 5.1.4.19 **APPLY** 24 vdc to Terminal TB-DC4-43 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.4.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-54 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.4.21 **VERIFY** the voltage recorded in Step 5.1.4.20 is at a nominal voltage of "24" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.4.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-53 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.4.23 **VERIFY** the voltage recorded in Step 5.1.4.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.4.24 **POSITION** ANA-WT-V-323 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.4.25 **VERIFY** that ANA-WT-V-323 valve operator position indicator is oriented to BLOCK flow from Connector "L1" to ANA-WT-V-321.

_____/_____
Test Director Initial Date

- ___ 5.1.4.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-54 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.4.27 **VERIFY** the voltage recorded in Step 5.1.4.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.4.28 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-53 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.4.29 **VERIFY** the voltage recorded in Step 5.1.4.28 is at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.1.4.30 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.
- ___ 5.1.4.31 **POSITION** valve ANA-WT-V-323 as directed by the Test Director.
- ___ 5.1.4.32 **RECORD** the final position for valve ANA-WT-V-323 below.

✓ OPEN	✓ CLOSED

- 5.1.4.33 **VERIFY** by signing below that test 5.1.4 is complete.

Test Director Signature Date

Operations Signature Date

5.1 TEST 2-WAY VALVES (Cont.)

5.1.5 TEST 2-inch valve ANA-WT-V-304:

5.1.5.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.5.2 **ENSURE** that ANA-WT-V-304 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.5.3 **VERIFY** the indicator line is oriented to BLOCK flow from Connector "L5" to ANA-WT-V-303.

_____/_____
Test Director Initial Date

___ 5.1.5.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

___ 5.1.5.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-304 handwheel.

___ 5.1.5.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.1.5.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

___ 5.1.5.8 **REMOVE** the cover from ANA-WT-V-304 valve position sensor assembly.

___ 5.1.5.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.5.10 **POSITION** ANA-WT-V-304 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.5.11 **VERIFY** the indicator line is oriented to show flow from Connector "L5" to ANA-WT-V-303.

Test Director Initial

Date

- ___ 5.1.5.12 **VERIFY** the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

Test Director Initial

Date

- ___ 5.1.5.13 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-304 handwheel.

- ___ 5.1.5.14 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

Test Director Initial

Date

- ___ 5.1.5.15 **REMOVE** the long-shank padlock that was placed on the handwheel.

- ___ 5.1.5.16 **ADJUST** the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.1.5.17 **ENSURE** top CAM is NOT positioned at the non contact switch for valve position A when in position B.

- ___ 5.1.5.18 **VERIFY** installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

Test Director Initial

Date

- ___ 5.1.5.19 **APPLY** 24 vdc to Terminal TB-DC4-25 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.5.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-10 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.5.21 **VERIFY** the voltage recorded in Step 5.1.5.20 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.5.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-9 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.5.23 **VERIFY** the voltage recorded in Step 5.5.5.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.5.24 **POSITION** ANA-WT-V-304 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.5.25 **VERIFY** that ANA-WT-V-304 valve operator position indicator is oriented to BLOCK flow from Connector "L5" to ANA-WT-V-303.

_____/_____
Test Director Initial Date

- ___ 5.1.5.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-10 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.5.27 **VERIFY** the voltage recorded in Step 5.1.5.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.5.28 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-9 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.5.29 **VERIFY** the voltage recorded in Step 5.1.5.28 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial / Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.1.5.30 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.
- ___ 5.1.5.31 **POSITION** valve ANA-WT-V-304 as directed by the Test Director.
- ___ 5.1.5.32 **RECORD** the final position for valve ANA-WT-V-304 below.

✓	✓
OPEN	CLOSED

- 5.1.5.33 **VERIFY** by signing below that test 5.1.5 is complete.

Test Director Signature Date

Operations Signature Date

5.1 TEST 2-WAY VALVES (Cont.)**5.1.6 TEST 2-inch valve ANA-WT-V-306:**

5.1.6.1 **RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.6.2 **ENSURE** that ANA-WT-V-306 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.6.3 **VERIFY** the indicator line is oriented to BLOCK flow from Connector "L7" to ANA-WT-V-305.

_____/_____
Test Director Initial Date

___ 5.1.6.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

___ 5.1.6.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-306 handwheel.

___ 5.1.6.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.1.6.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

___ 5.1.6.8 **REMOVE** the cover from ANA-WT-V-306 valve position sensor assembly.

___ 5.1.6.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.6.10 **POSITION** ANA-WT-V-306 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.6.11 **VERIFY** the indicator line is oriented to show flow from Connector "L7" to ANA-WT-V-305.

Test Director Initial / _____
Date

- ___ 5.1.6.12 **VERIFY** the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

Test Director Initial / _____
Date

- ___ 5.1.6.13 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-306 handwheel.

- ___ 5.1.6.14 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

Test Director Initial / _____
Date

- ___ 5.1.6.15 **REMOVE** the long-shank padlock that was placed on the handwheel.

- ___ 5.1.6.16 **ADJUST** the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.1.6.17 **ENSURE** top CAM is NOT positioned at the non contact switch for valve position A when in position B.

- ___ 5.1.6.18 **VERIFY** installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

Test Director Initial / _____
Date

- ___ 5.1.6.19 **APPLY** 24 vdc to Terminal TB-DC4-27 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.6.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-15 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.6.21 **VERIFY** the voltage recorded in Step 5.1.6.20 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.6.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-14 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.6.23 **VERIFY** the voltage recorded in Step 5.1.6.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.6.24 **POSITION** ANA-WT-V-306 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.6.25 **VERIFY** that ANA-WT-V-306 valve operator position indicator is oriented to BLOCK flow from Connector "L7" to ANA-WT-V-305.

_____/_____
Test Director Initial Date

- ___ 5.1.6.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-15 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.6.27 **VERIFY** the voltage recorded in Step 5.1.6.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.6.28 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-14 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.6.29 **VERIFY** the voltage recorded in Step 5.1.6.28 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial / Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.1.6.30 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.
- ___ 5.1.6.31 **POSITION** valve ANA-WT-V-306 as directed by the Test Director.
- ___ 5.1.6.32 **RECORD** the final position for valve ANA-WT-V-306 below.

✓	✓
OPEN	CLOSED

- 5.1.6.33 **VERIFY** by signing below that test 5.1.6 is complete.

Test Director Signature

Date

Operations Signature

Date

5.1 TEST 2-WAY VALVES (Cont.)

5.1.7 TEST 2-inch valve ANA-WT-V-308:

5.1.7.1 **RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.7.2 **ENSURE** that ANA-WT-V-308 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.7.3 **VERIFY** the indicator line is oriented to BLOCK flow from Connector "L9" to ANA-WT-V-307.

_____/_____
Test Director Initial Date

___ 5.1.7.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

___ 5.1.7.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-308 handwheel.

___ 5.1.7.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.1.7.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

___ 5.1.7.8 **REMOVE** the cover from ANA-WT-V-308 valve position sensor assembly.

___ 5.1.7.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.7.10 **POSITION** ANA-WT-V-308 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.7.11 **VERIFY** the indicator line is oriented to show flow from Connector "L9" to ANA-WT-V-307.

_____/_____
Test Director Initial Date

- ___ 5.1.7.12 **VERIFY** the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

_____/_____
Test Director Initial Date

- ___ 5.1.7.13 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-308 handwheel.

- ___ 5.1.7.14 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

- ___ 5.1.7.15 **REMOVE** the long-shank padlock that was placed on the handwheel.

- ___ 5.1.7.16 **ADJUST** the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.1.7.17 **ENSURE** top CAM is NOT positioned at the non contact switch for valve position A when in position B.

- ___ 5.1.7.18 **VERIFY** installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

_____/_____
Test Director Initial Date

- ___ 5.1.7.19 **APPLY** 24 vdc to Terminal TB-DC4-29 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.7.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-20 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.7.21 **VERIFY** the voltage recorded in Step 5.1.7.20 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.7.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-19 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.7.23 **VERIFY** the voltage recorded in Step 5.1.7.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.7.24 **POSITION** ANA-WT-V-308 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.7.25 **VERIFY** that ANA-WT-V-308 valve operator position indicator is oriented to BLOCK flow from Connector "L9" to ANA-WT-V-307.

_____/_____
Test Director Initial Date

- ___ 5.1.7.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-20 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.7.27 **VERIFY** the voltage recorded in Step 5.1.7.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

5.1.7.28 MEASURE AND RECORD the voltage BETWEEN Terminal TB-DC1-19 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

5.1.7.29 VERIFY the voltage recorded in Step 5.1.7.28 at a nominal voltage of 24 Volts dc.

Test Director Initial _____ / _____ Date _____

NOTE -

The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC shall verify. The Torque value will be between 17 and 20 inch lbs.

5.1.7.30 REPLACE limit switch cover AND TIGHTEN bolts in preparation for torque.

5.1.7.31 POSITION valve ANA-WT-V-308 as directed by the Test Director.

5.1.7.32 RECORD the final position for valve ANA-WT-V-308 below.

OPEN	/
CLOSED	/

5.1.7.33 VERIFY by signing below that test 5.1.7 is complete.

Test Director Signature _____ Date _____
Operations Signature _____ Date _____

5.1 TEST 2-WAY VALVES (Cont.)

5.1.8 TEST 3-inch valve ANA-WT-V-313:

5.1.8.1 **RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.8.2 **ENSURE** that ANA-WT-V-313 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.8.3 **VERIFY** the indicator line is oriented to BLOCK flow from Connector "L14" to ANA-WT-V-314.

_____/_____
Test Director Initial Date

___ 5.1.8.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

___ 5.1.8.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-313 handwheel.

___ 5.1.8.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.1.8.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

___ 5.1.8.8 **REMOVE** the cover from ANA-WT-V-313 valve position sensor assembly.

___ 5.1.8.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.8.10 **POSITION** ANA-WT-V-313 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.8.11 **VERIFY** the indicator line is oriented to show flow from Connector "L14" to ANA-WT-V-314.

____ / ____
Test Director Initial Date

- ___ 5.1.8.12 **VERIFY** the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

____ / ____
Test Director Initial Date

- ___ 5.1.8.13 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-313 handwheel.

- ___ 5.1.8.14 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ___ 5.1.8.15 **REMOVE** the long-shank padlock that was placed on the handwheel.

- ___ 5.1.8.16 **ADJUST** the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.1.8.17 **ENSURE** top CAM is NOT positioned at the non contact switch for valve position A when in position B.

- ___ 5.1.8.18 **VERIFY** installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

- ___ 5.1.8.19 **APPLY** 24 vdc to Terminal TB-DC4-33 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.8.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-29 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.8.21 **VERIFY** the voltage recorded in Step 5.1.8.20 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.8.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-28 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.8.23 **VERIFY** the voltage recorded in Step 5.1.8.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.8.24 **POSITION** ANA-WT-V-313 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.8.25 **VERIFY** that ANA-WT-V-313 valve operator position indicator is oriented to BLOCK flow from Connector "L14" to ANA-WT-V-314.

_____/_____
Test Director Initial Date

- ___ 5.1.8.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-29 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.8.27 **VERIFY** the voltage recorded in Step 5.1.8.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.8.28 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-28 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.8.29 **VERIFY** the voltage recorded in Step 5.1.8.28 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.1.8.30 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.
- ___ 5.1.8.31 **POSITION** valve ANA-WT-V-313 as directed by the Test Director.
- ___ 5.1.8.32 **RECORD** the final position for valve ANA-WT-V-313 below.

✓ OPEN	✓ CLOSED

- 5.1.8.33 **VERIFY** by signing below that test 5.1.8 is complete.

Test Director Signature Date

Operations Signature Date

5.1 TEST 2-WAY VALVES (Cont.)

5.1.9 TEST 3-inch valve ANA-WT-V-315:

5.1.9.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.9.2 **ENSURE** that ANA-WT-V-315 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.9.3 **VERIFY** the indicator line is oriented to BLOCK flow from Connector "L15" to ANA-WT-V-314.

_____/_____
Test Director Initial Date

___ 5.1.9.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

___ 5.1.9.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-315 handwheel.

___ 5.1.9.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.1.9.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

___ 5.1.9.8 **REMOVE** the cover from ANA-WT-V-315 valve position sensor assembly.

___ 5.1.9.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.9.10 **POSITION** ANA-WT-V-315 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.9.11 **VERIFY** the indicator line is oriented to show flow from Connector "L15" to ANA-WT-V-314.

_____/_____
Test Director Initial Date

- ___ 5.1.9.12 **VERIFY** the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

_____/_____
Test Director Initial Date

- ___ 5.1.9.13 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-315 handwheel.

- ___ 5.1.9.14 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

- ___ 5.1.9.15 **REMOVE** the long-shank padlock that was placed on the handwheel.

- ___ 5.1.9.16 **ADJUST** the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.1.9.17 **ENSURE** top CAM is NOT positioned at the non contact switch for valve position A when in position B.

- ___ 5.1.9.18 **VERIFY** installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

_____/_____
Test Director Initial Date

- ___ 5.1.9.19 **APPLY** 24 vdc to Terminal TB-DC4-35 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.9.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-34 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.9.21 **VERIFY** the voltage recorded in Step 5.1.9.20 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.9.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-33 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.9.23 **VERIFY** the voltage recorded in Step 5.1.9.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.9.24 **POSITION** ANA-WT-V-315 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.9.25 **VERIFY** that ANA-WT-V-315 valve operator position indicator is oriented to BLOCK flow from Connector "L15" to ANA-WT-V-314.

_____/_____
Test Director Initial Date

- ___ 5.1.9.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-34 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.9.27 **VERIFY** the voltage recorded in Step 5.1.9.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

___ 5.1.9.28 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-33 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

___ 5.1.9.29 **VERIFY** the voltage recorded in Step 5.1.9.28 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

___ 5.1.9.30 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

___ 5.1.9.31 **POSITION** valve ANA-WT-V-315 as directed by the Test Director.

___ 5.1.9.32 **RECORD** the final position for valve ANA-WT-V-315 below.

✓ OPEN	✓ CLOSED

5.1.9.33 **VERIFY** by signing below that test 5.1.9 is complete.

Test Director Signature Date

Operations Signature Date

5.1 TEST 2-WAY VALVES (Cont.)

5.1.10 TEST 3-inch valve ANA-WT-V-317:

5.1.10.1 **RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.10.2 **ENSURE** that ANA-WT-V-317 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.10.3 **VERIFY** the indicator line is oriented to BLOCK flow from Connector "L16" to ANA-WT-V-316.

_____/_____
Test Director Initial Date

___ 5.1.10.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

___ 5.1.10.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-317 handwheel.

___ 5.1.10.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.1.10.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

___ 5.1.10.8 **REMOVE** the cover from ANA-WT-V-317 valve position sensor assembly.

___ 5.1.10.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.10.10 **POSITION** ANA-WT-V-317 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.10.11 **VERIFY** the indicator line is oriented to show flow from Connector "L16" to ANA-WT-V-316.

____ / ____
Test Director Initial Date

- ___ 5.1.10.12 **VERIFY** the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

____ / ____
Test Director Initial Date

- ___ 5.1.10.13 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-317 handwheel.

- ___ 5.1.10.14 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ___ 5.1.10.15 **REMOVE** the long-shank padlock that was placed on the handwheel.

- ___ 5.1.10.16 **ADJUST** the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.1.10.17 **ENSURE** top CAM is NOT positioned at the non contact switch for valve position A when in position B.

- ___ 5.1.10.18 **VERIFY** installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

- ___ 5.1.10.19 **APPLY** 24 vdc to Terminal TB-DC4-37 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.10.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-39 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.10.21 **VERIFY** the voltage recorded in Step 5.1.10.20 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.10.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-38 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.10.23 **VERIFY** the voltage recorded in Step 5.1.10.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.10.24 **POSITION** ANA-WT-V-317 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.10.25 **VERIFY** that ANA-WT-V-317 valve operator position indicator is oriented to BLOCK flow from Connector "L16" to ANA-WT-V-316.

_____/_____
Test Director Initial Date

- ___ 5.1.10.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-39 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.10.27 **VERIFY** the voltage recorded in Step 5.1.10.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

___ 5.1.10.28 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-38 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

___ 5.1.10.29 **VERIFY** the voltage recorded in Step 5.1.10.28 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial / Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

___ 5.1.10.30 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

___ 5.1.10.31 **POSITION** valve ANA-WT-V-317 as directed by the Test Director.

___ 5.1.10.32 **RECORD** the final position for valve ANA-WT-V-317 below.

✓ OPEN	✓ CLOSED

5.1.10.33 **VERIFY** by signing below that test 5.1.10 is complete.

_____ Test Director Signature	_____ Date
_____ Operations Signature	_____ Date

5.1 TEST 2-WAY VALVES (Cont.)**5.1.11 TEST 3-inch valve ANA-WT-V-320:**

5.1.11.1 **RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.1.11.2 **ENSURE** that ANA-WT-V-320 is CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

___ 5.1.11.3 **VERIFY** the indicator line is oriented to BLOCK flow from Connector "L19" to ANA-WT-V-319.

_____/_____
Test Director Initial Date

___ 5.1.11.4 **VERIFY** the indicator line is lined up with the correct reference pins for the CLOSED position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

___ 5.1.11.5 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-320 handwheel.

___ 5.1.11.6 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.1.11.7 **REMOVE** the long-shank padlock that was placed on the handwheel.

___ 5.1.11.8 **REMOVE** the cover from ANA-WT-V-320 valve position sensor assembly.

___ 5.1.11.9 **ADJUST** the top cam so pointer on the CAM is centered on the non-contact switch wired for valve position A.

___ 5.1.11.10 **POSITION** ANA-WT-V-320 OPEN by rotating the valve handwheel COUNTER CLOCKWISE until the handwheel turns no farther.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.11.11 **VERIFY** the indicator line is oriented to show flow from Connector "L19" to ANA-WT-V-319.

Test Director Initial / _____
Date

- ___ 5.1.11.12 **VERIFY** the indicator line is lined up with the correct reference pins for the FLOW THROUGH position, AND within the RED area on the decal.

Test Director Initial / _____
Date

- ___ 5.1.11.13 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-320 handwheel.

- ___ 5.1.11.14 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

Test Director Initial / _____
Date

- ___ 5.1.11.15 **REMOVE** the long-shank padlock that was placed on the handwheel.

- ___ 5.1.11.16 **ADJUST** the bottom CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.1.11.17 **ENSURE** top CAM is NOT positioned at the non contact switch for valve position A when in position B.

- ___ 5.1.11.18 **VERIFY** installation of positive jumpers located within the valve position sensor terminal block. Refer to drawing H-14-100987, sheet 1, for positive lead jumper locations.

Test Director Initial / _____
Date

- ___ 5.1.11.19 **APPLY** 24 vdc to Terminal TB-DC4-40 in Field Terminal Box AN241-WT-TBX-101, using the 24 vdc power supply.

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.11.20 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-47 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.11.21 **VERIFY** the voltage recorded in Step 5.1.11.20 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.11.22 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-46 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.11.23 **VERIFY** the voltage recorded in Step 5.1.11.22 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.1.11.24 **POSITION** ANA-WT-V-320 CLOSED by rotating the valve handwheel CLOCKWISE until the handwheel turns no farther.

- ___ 5.1.11.25 **VERIFY** that ANA-WT-V-320 valve operator position indicator is oriented to BLOCK flow from Connector "L19" to ANA-WT-V-319.

_____/_____
Test Director Initial Date

- ___ 5.1.11.26 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-47 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.11.27 **VERIFY** the voltage recorded in Step 5.1.11.26 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

5.1 TEST 2-WAY VALVES (Cont.)

- ___ 5.1.11.28 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-46 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.1.11.29 **VERIFY** the voltage recorded in Step 5.1.11.28 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.1.11.30 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

- ___ 5.1.11.31 **POSITION** valve ANA-WT-V-320 as directed by the Test Director.

- ___ 5.1.11.32 **RECORD** the final position for valve ANA-WT-V-320 below.

✓ OPEN	✓ CLOSED

- 5.1.11.33 **VERIFY** by signing below that test 5.1.11 is complete.

Test Director Signature Date

Operations Signature Date

5.2 TEST 3-WAY VALVES

5.2.1 TEST 2-inch valve ANA-WT-V-302.

5.2.1.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

- ___ 5.2.1.2 **ENSURE** that 2-inch valve ANA-WT-V-302 is in Position "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.
- ___ 5.2.1.3 **VERIFY** ANA-WT-V-302 is in Position "A" by the line indicator tee connecting ANA-WT-V-301 and Blank Connection "A".

_____/_____
Test Director Initial Date

- ___ 5.2.1.4 **VERIFY** the indicator lines are lined up with the correct reference pins, AND within the RED area on the decal.

_____/_____
Test Director Initial Date

- ___ 5.2.1.5 **VERIFY** the indicator lines are oriented to BLOCK flow from ANA-WT-V-303.

_____/_____
Test Director Initial Date

- ___ 5.2.1.6 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-302 handwheel.

- ___ 5.2.1.7 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

- ___ 5.2.1.8 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.1.6.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.1.9 **REMOVE** the cover from ANA-WT-V-302 valve position sensor assembly.
- ___ 5.2.1.10 **ADJUST** the top CAM so pointer on the CAM is centered on the non-contact switch wired for valve position A.
- ___ 5.2.1.11 **ENSURE** the middle and the bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.1.12 **POSITION** ANA-WT-V-302, to allow flow from ANA-WT-V-303 to ANA-WT-V-301 by rotating the valve handwheel **CLOCKWISE** until the valve is at mid position.
- ___ 5.2.1.13 **VERIFY** that ANA-WT-V-302 valve position indicator is aligned to **ALLOW FLOW** from ANA-WT-V-303 to ANA-WT-V-301.
- _____/_____
Test Director Initial Date
- ___ 5.2.1.14 **VERIFY** the indicator line is lined up with the correct reference pins for the "B" or "MID" position, **AND** black stripe within the **RED** area on the decal is aligned as to be touching the applicable line on valve housing.
- _____/_____
Test Director Initial Date
- ___ 5.2.1.15 **VERIFY** the indicator lines are oriented to **BLOCK** flow from Blank Connection "A".
- _____/_____
Test Director Initial Date
- ___ 5.2.1.16 **ADJUST** the middle CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.
- ___ 5.2.1.17 **ENSURE** the top and bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.1.18 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-302 handwheel.
- ___ 5.2.1.19 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.
- _____/_____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.1.20 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.1.18.
- ___ 5.2.1.21 **POSITION** ANA-WT-V-302, to allow flow from ANA-WT-V-303 to Blank Connection "A" by rotating the valve handwheel **CLOCKWISE** as far as it will go.
- ___ 5.2.1.22 **VERIFY** that ANA-WT-V-302 valve position indicator is aligned to allow flow from ANA-WT-V-303 to Blank Connection "A".

____ / ____
Test Director Initial Date

- ___ 5.2.1.23 **ADJUST** the lower CAM so pointer on the CAM is centered on the non-contact switch wired for valve position C.
- ___ 5.2.1.24 **ENSURE** the top and middle CAMs are **NOT** positioned at their associated non-contact switches.
- ___ 5.2.1.25 **VERIFY** the indicator lines are lined up with the correct reference pins, **AND** within the **RED** area on the decal black stripe to black stripe alignment.

____ / ____
Test Director Initial Date

- ___ 5.2.1.26 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-302 handwheel.
- ___ 5.2.1.27 **VERIFY** limited movement of the handwheel does **NOT** cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ___ 5.2.1.28 **REMOVE** the long-shank padlock that was placed on the handwheel in step 5.2.1.26.
- ___ 5.2.1.29 **VERIFY** installation of positive jumpers located on the valve position sensor terminal block. Refer to drawing H-14-100987, sh 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.1.30 **APPLY** 24 volts dc to Terminals TB-DC4-23 in Field Terminal Box AN241-WT-TBX-101, using the 24 volt dc power supply.
- ___ 5.2.1.31 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-5 AND the NEGATIVE Terminal on the 24 volt power supply.
- VOLTAGE _____
- ___ 5.2.1.32 **VERIFY** the voltage recorded in Step 5.2.1.31 at a nominal voltage of 24 Volts dc.
- _____/_____
Test Director Initial Date
- ___ 5.2.1.33 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-4 AND the NEGATIVE Terminal on the 24 volt power supply.
- VOLTAGE _____
- ___ 5.2.1.34 **VERIFY** the voltage recorded in Step 5.2.1.33 is at a nominal voltage of "0" Volts dc.
- _____/_____
Test Director Initial Date
- ___ 5.2.1.35 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-3 AND the NEGATIVE Terminal on the 24 volt power supply.
- VOLTAGE _____
- ___ 5.2.1.36 **VERIFY** the voltage recorded in Step 5.2.1.35 is at a nominal voltage of "0" Volts dc.
- _____/_____
Test Director Initial Date
- NOTE- To ensure proper alignment for mid position of Three-Way Valve, When rotating in counter clockwise rotation, go past the "B" or mid position, then rotate to Mid position from a Clockwise direction.
- ___ 5.2.1.37 **POSITION** ANA-WT-V-302, to allow flow from ANA-WT-V-301 to ANA-WT-V-303 by rotating the valve handwheel COUNTER-CLOCKWISE until the valve is at the mid position.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.1.38 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-5 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.1.39 **VERIFY** the voltage recorded in Step 5.2.1.38 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.1.40 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-4 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.1.41 **VERIFY** the voltage recorded in Step 5.2.1.40 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.1.42 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-3 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.1.43 **VERIFY** the voltage recorded in Step 5.2.1.42 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.1.44 **POSITION** ANA-WT-V-302 to allow flow from ANA-WT-V-301 to Blank Connection "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

- ___ 5.2.1.45 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-5 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

5.2 TEST 3-WAY VALVES (Cont.)

5.2.1.46 VERIFY the voltage recorded in Step 5.2.1.45 is at a nominal voltage of "0" Volts dc.

Test Director Initial / Date

5.2.1.47 MEASURE AND RECORD the voltage BETWEEN Terminal TB-DC1-4 AND the NEGATIVE Terminal on the 24 volt dc power supply.

5.2.1.48 VERIFY the voltage recorded in Step 5.2.1.47 is at a nominal voltage of "0" Volts dc.

Test Director Initial / Date

5.2.1.49 MEASURE AND RECORD the voltage BETWEEN Terminal TB-DC1-3 AND the NEGATIVE Terminal on the 24 volt dc power supply.

5.2.1.50 VERIFY the voltage recorded in Step 5.2.1.49 at a nominal voltage of 24 Volts dc.

Test Director Initial / Date

NOTE -

The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC shall verify. The Torque value will be between 17 and 20 inch lbs.

5.2.1.51 REPLACE limit switch cover AND TIGHTEN bolts in preparation for torque.

5.2.1.52 POSITION valve ANA-WT-V-302 as directed by the Test Director.

5.2.1.53 RECORD the final position for the valve ANA-WT-V-302 below.

POS. "A"	POS. "B"	POS. "C"
----------	----------	----------

5.2.1.54 VERIFY by signing below that test 5.2.1 is complete.

Test Director Signature

Operations Signature

5.2 TEST 3-WAY VALVES (Cont.)

5.2.2 TEST 2-inch valve ANA-WT-V-303.

5.2.2.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

- ___ 5.2.2.2 **ENSURE** that 2-inch valve ANA-WT-V-303 is in Position "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.
- ___ 5.2.2.3 **VERIFY** ANA-WT-V-303 is in Position "A" by the line indicator tee connecting ANA-WT-V-302 and ANA-WT-V-304.

____ / ____
Test Director Initial Date

- ___ 5.2.2.4 **VERIFY** the indicator lines are lined up with the correct reference pins, AND within the RED area on the decal.

____ / ____
Test Director Initial Date

- ___ 5.2.2.5 **VERIFY** the indicator lines are oriented to BLOCK flow from ANA-WT-V-305.

____ / ____
Test Director Initial Date

- ___ 5.2.2.6 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-303 handwheel.

- ___ 5.2.2.7 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ___ 5.2.2.8 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.2.6.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.2.9 **REMOVE** the cover from ANA-WT-V-303 valve position sensor assembly.
- ___ 5.2.2.10 **ADJUST** the top CAM so pointer on the CAM is centered on the non-contact switch wired for valve position A.
- ___ 5.2.2.11 **ENSURE** the middle and the bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.2.12 **POSITION** ANA-WT-V-303, to allow flow from ANA-WT-V-302 to ANA-WT-V-305 by rotating the valve handwheel **CLOCKWISE** until the valve is at mid position.
- ___ 5.2.2.13 **VERIFY** that ANA-WT-V-303 valve position indicator is aligned to **ALLOW FLOW** from ANA-WT-V-302 to ANA-WT-V-305.

____ / ____
Test Director Initial Date

- ___ 5.2.2.14 **VERIFY** the indicator line is lined up with the correct reference pins for the "B" or "MID" position, **AND** black stripe within the **RED** area on the decal is aligned as to be touching the applicable line on valve housing.

____ / ____
Test Director Initial Date

- ___ 5.2.2.15 **VERIFY** the indicator lines are oriented to **BLOCK** flow from ANA-WT-V-304.

____ / ____
Test Director Initial Date

- ___ 5.2.2.16 **ADJUST** the middle CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.2.2.17 **ENSURE** the top and bottom CAMs are NOT positioned at their associated non-contact switches.

- ___ 5.2.2.18 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-303 handwheel.

- ___ 5.2.2.19 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.2.20 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.2.18.
- ___ 5.2.2.21 **POSITION** ANA-WT-V-303, to allow flow from ANA-WT-V-305 to ANA-WT-V-304 by rotating the valve handwheel **CLOCKWISE** as far as it will go.
- ___ 5.2.2.22 **VERIFY** that ANA-WT-V-303 valve position indicator is aligned to allow flow from ANA-WT-V-305 to ANA-WT-V-304.

____ / ____
Test Director Initial Date

- ___ 5.2.2.23 **ADJUST** the lower CAM so pointer on the CAM is centered on the non-contact switch wired for valve position C.
- ___ 5.2.2.24 **ENSURE** the top and middle CAMs are **NOT** positioned at their associated non-contact switches.
- ___ 5.2.2.25 **VERIFY** the indicator lines are lined up with the correct reference pins, **AND** within the **RED** area on the decal black stripe to black stripe alignment.

____ / ____
Test Director Initial Date

- ___ 5.2.2.26 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-303 handwheel.
- ___ 5.2.2.27 **VERIFY** limited movement of the handwheel does **NOT** cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ___ 5.2.2.28 **REMOVE** the long-shank padlock that was placed on the handwheel in step 5.2.2.26.
- ___ 5.2.2.29 **VERIFY** installation of positive jumpers located on the valve position sensor terminal block. Refer to drawing H-14-100987, sh 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.2.30 **APPLY** 24 volts dc to Terminal TB-DC4-24 in Field Terminal Box AN241-WT-TBX-101, using the 24 volt dc power supply.
- ___ 5.2.2.31 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-8 AND the NEGATIVE Terminal on the 24 volt power supply.
- VOLTAGE _____
- ___ 5.2.2.32 **VERIFY** the voltage recorded in Step 5.2.2.31 at a nominal voltage of 24 Volts dc.
- _____/_____
Test Director Initial / Date
- ___ 5.2.2.33 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-7 AND the NEGATIVE Terminal on the 24 volt power supply.
- VOLTAGE _____
- ___ 5.2.2.34 **VERIFY** the voltage recorded in Step 5.2.2.33 is at a nominal voltage of "0" Volts dc.
- _____/_____
Test Director Initial / Date
- ___ 5.2.2.35 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-6 AND the NEGATIVE Terminal on the 24 volt power supply.
- VOLTAGE _____
- ___ 5.2.2.36 **VERIFY** the voltage recorded in Step 5.2.2.35 is at a nominal voltage of "0" Volts dc.
- _____/_____
Test Director Initial / Date
- NOTE- To ensure proper alignment for mid position of Three-Way Valve, When rotating in counter clockwise rotation, go past the "B" or mid position, then rotate to Mid position from a Clockwise direction.
- ___ 5.2.2.37 **POSITION** ANA-WT-V-303, to allow flow from ANA-WT-V-302 to ANA-WT-V-305 by rotating the valve handwheel COUNTER-CLOCKWISE until the valve is at the mid position.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.2.38 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-8 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.2.39 **VERIFY** the voltage recorded in Step 5.2.2.38 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.2.40 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-7 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.2.41 **VERIFY** the voltage recorded in Step 5.2.2.40 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.2.42 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-6 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.2.43 **VERIFY** the voltage recorded in Step 5.2.2.42 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.2.44 **POSITION** ANA-WT-V-303 to allow flow from ANA-WT-V-302 to ANA-WT-V-304 by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

- ___ 5.2.2.45 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-8 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.2.46 **VERIFY** the voltage recorded in Step 5.2.2.45 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.2.47 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-7 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.2.48 **VERIFY** the voltage recorded in Step 5.2.2.47 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.2.49 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-6 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.2.50 **VERIFY** the voltage recorded in Step 5.2.2.49 at a nominal voltage of 24 Volts dc.

____ / ____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.2.2.51 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

- ___ 5.2.2.52 **POSITION** valve ANA-WT-V-303 as directed by the Test Director.

- ___ 5.2.2.53 **RECORD** the final position for the valve ANA-WT-V-303 below.

✓ POS. "A"	✓ POS. "B"	✓ POS. "C"

- 5.2.2.54 **VERIFY** by signing below that test 5.2.2 is complete.

Test Director Signature Date

Operations Signature Date

5.2 TEST 3-WAY VALVES (Cont.)

5.2.3 TEST 2-inch valve ANA-WT-V-305.

5.2.3.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

- ___ 5.2.3.2 **ENSURE** that 2-inch valve ANA-WT-V-305 is in Position "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.
- ___ 5.2.3.3 **VERIFY** ANA-WT-V-305 is in Position "A" by the line indicator tee connecting ANA-WT-V-303 and ANA-WT-V-306.
- _____ / _____
Test Director Initial Date
- ___ 5.2.3.4 **VERIFY** the indicator lines are lined up with the correct reference pins, AND within the RED area on the decal.
- _____ / _____
Test Director Initial Date
- ___ 5.2.3.5 **VERIFY** the indicator lines are oriented to BLOCK flow from ANA-WT-V-307.
- _____ / _____
Test Director Initial Date
- ___ 5.2.3.6 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-305 handwheel.
- ___ 5.2.3.7 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.
- _____ / _____
Test Director Initial Date
- ___ 5.2.3.8 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.3.6.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.3.9 **REMOVE** the cover from ANA-WT-V-305 valve position sensor assembly.
- ___ 5.2.3.10 **ADJUST** the top CAM so pointer on the CAM is centered on the non-contact switch wired for valve position A.
- ___ 5.2.3.11 **ENSURE** the middle and the bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.3.12 **POSITION** ANA-WT-V-305, to allow flow from ANA-WT-V-303 to ANA-WT-V-307 by rotating the valve handwheel **CLOCKWISE** until the valve is at mid position.
- ___ 5.2.3.13 **VERIFY** that ANA-WT-V-305 valve position indicator is aligned to **ALLOW FLOW** from ANA-WT-V-303 to ANA-WT-V-307.

_____/_____
Test Director Initial Date

- ___ 5.2.3.14 **VERIFY** the indicator line is lined up with the correct reference pins for the "B" or "MID" position, **AND** black stripe within the **RED** area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

- ___ 5.2.3.15 **VERIFY** the indicator lines are oriented to **BLOCK** flow from ANA-WT-V-306.

_____/_____
Test Director Initial Date

- ___ 5.2.3.16 **ADJUST** the middle CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.2.3.17 **ENSURE** the top and bottom CAMs are NOT positioned at their associated non-contact switches.

- ___ 5.2.3.18 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-305 handwheel.

- ___ 5.2.3.19 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ____ 5.2.3.20 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.3.18.
- ____ 5.2.3.21 **POSITION** ANA-WT-V-305, to allow flow from ANA-WT-V-307 to ANA-WT-V-306 by rotating the valve handwheel **CLOCKWISE** as far as it will go.
- ____ 5.2.3.22 **VERIFY** that ANA-WT-V-305 valve position indicator is aligned to allow flow from ANA-WT-V-307 to ANA-WT-V-306.

____ / ____
Test Director Initial Date

- ____ 5.2.3.23 **ADJUST** the lower CAM so pointer on the CAM is centered on the non-contact switch wired for valve position C.
- ____ 5.2.3.24 **ENSURE** the top and middle CAMs are **NOT** positioned at their associated non-contact switches.
- ____ 5.2.3.25 **VERIFY** the indicator lines are lined up with the correct reference pins, **AND** within the **RED** area on the decal black stripe to black stripe alignment.

____ / ____
Test Director Initial Date

- ____ 5.2.3.26 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-305 handwheel.
- ____ 5.2.3.27 **VERIFY** limited movement of the handwheel does **NOT** cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ____ 5.2.3.28 **REMOVE** the long-shank padlock that was placed on the handwheel in step 5.2.3.26.
- ____ 5.2.3.29 **VERIFY** installation of positive jumpers located on the valve position sensor terminal block. Refer to drawing H-14-100987, sh 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

___ 5.2.3.30 **APPLY** 24 volts dc to Terminal TB-DC4-26 in Field Terminal Box AN241-WT-TBX-101, using the 24 volt dc power supply.

___ 5.2.3.31 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-13 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.3.32 **VERIFY** the voltage recorded in Step 5.2.3.31 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.3.33 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-12 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.3.34 **VERIFY** the voltage recorded in Step 5.2.3.33 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.3.35 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-11 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.3.36 **VERIFY** the voltage recorded in Step 5.2.3.35 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

NOTE- To ensure proper alignment for mid position of Three-Way Valve, When rotating in counter clockwise rotation, go past the "B" or mid position, then rotate to Mid position from a Clockwise direction.

___ 5.2.3.37 **POSITION** ANA-WT-V-305, to allow flow from ANA-WT-V-303 to ANA-WT-V-307 by rotating the valve handwheel COUNTER-CLOCKWISE until the valve is at the mid position.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.3.38 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-13 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.3.39 **VERIFY** the voltage recorded in Step 5.2.3.38 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.3.40 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-12 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.3.41 **VERIFY** the voltage recorded in Step 5.2.3.40 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.3.42 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-11 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.3.43 **VERIFY** the voltage recorded in Step 5.2.3.42 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.3.44 **POSITION** ANA-WT-V-305 to allow flow from ANA-WT-V-303 to ANA-WT-V-306 by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

- ___ 5.2.3.45 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-13 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.3.46 **VERIFY** the voltage recorded in Step 5.2.3.45 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.3.47 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-12 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.3.48 **VERIFY** the voltage recorded in Step 5.2.3.47 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.3.49 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-11 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.3.50 **VERIFY** the voltage recorded in Step 5.2.3.49 at a nominal voltage of 24 Volts dc.

____ / ____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.2.3.51 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

- ___ 5.2.3.52 **POSITION** valve ANA-WT-V-305 as directed by the Test Director.

- ___ 5.2.3.53 **RECORD** the final position for the valve ANA-WT-V-305 below.

✓ POS. "A"	✓ POS. "B"	✓ POS. "C"

- 5.2.3.54 **VERIFY** by signing below that test 5.2.3 is complete.

Test Director Signature Date

Operations Signature Date

5.2 TEST 3-WAY VALVES (Cont.)**5.2.4 TEST 2-inch valve ANA-WT-V-307.****5.2.4.1 RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

- ____ 5.2.4.2 **ENSURE** that 2-inch valve ANA-WT-V-307 is in Position "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.
- ____ 5.2.4.3 **VERIFY** ANA-WT-V-307 is in Position "A" by the line indicator tee connecting ANA-WT-V-309 and ANA-WT-V-305.
- ____ /
Test Director Initial Date
- ____ 5.2.4.4 **VERIFY** the indicator lines are lined up with the correct reference pins, AND within the RED area on the decal.
- ____ /
Test Director Initial Date
- ____ 5.2.4.5 **VERIFY** the indicator lines are oriented to BLOCK flow from ANA-WT-V-308.
- ____ /
Test Director Initial Date
- ____ 5.2.4.6 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-307 handwheel.
- ____ 5.2.4.7 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.
- ____ /
Test Director Initial Date
- ____ 5.2.4.8 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.4.6.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.4.9 **REMOVE** the cover from ANA-WT-V-307 valve position sensor assembly.
- ___ 5.2.4.10 **ADJUST** the top CAM so pointer on the CAM is centered on the non-contact switch wired for valve position A.
- ___ 5.2.4.11 **ENSURE** the middle and the bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.4.12 **POSITION** ANA-WT-V-307, to allow flow from ANA-WT-V-308 to ANA-WT-V-309 by rotating the valve handwheel **CLOCKWISE** until the valve is at mid position.
- ___ 5.2.4.13 **VERIFY** that ANA-WT-V-307 valve position indicator is aligned to **ALLOW FLOW** from ANA-WT-V-308 to ANA-WT-V-309.

_____/_____
Test Director Initial Date

- ___ 5.2.4.14 **VERIFY** the indicator line is lined up with the correct reference pins for the "B" or "MID" position, **AND** black stripe within the **RED** area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

- ___ 5.2.4.15 **VERIFY** the indicator lines are oriented to **BLOCK** flow from ANA-WT-V-305.

_____/_____
Test Director Initial Date

- ___ 5.2.4.16 **ADJUST** the middle CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.2.4.17 **ENSURE** the top and bottom CAMs are NOT positioned at their associated non-contact switches.

- ___ 5.2.4.18 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-307 handwheel.

- ___ 5.2.4.19 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ____ 5.2.4.20 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.4.18.
- ____ 5.2.4.21 **POSITION** ANA-WT-V-307, to allow flow from ANA-WT-V-308 to ANA-WT-V-305 by rotating the valve handwheel **CLOCKWISE** as far as it will go.
- ____ 5.2.4.22 **VERIFY** that ANA-WT-V-307 valve position indicator is aligned to allow flow from ANA-WT-V-308 to ANA-WT-V-305.

____ / ____
Test Director Initial Date

- ____ 5.2.4.23 **ADJUST** the lower CAM so pointer on the CAM is centered on the non-contact switch wired for valve position C.
- ____ 5.2.4.24 **ENSURE** the top and middle CAMs are **NOT** positioned at their associated non-contact switches.
- ____ 5.2.4.25 **VERIFY** the indicator lines are lined up with the correct reference pins, **AND** within the **RED** area on the decal black stripe to black stripe alignment.

____ / ____
Test Director Initial Date

- ____ 5.2.4.26 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-307 handwheel.
- ____ 5.2.4.27 **VERIFY** limited movement of the handwheel does **NOT** cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ____ 5.2.4.28 **REMOVE** the long-shank padlock that was placed on the handwheel in step 5.2.4.26.
- ____ 5.2.4.29 **VERIFY** installation of positive jumpers located on the valve position sensor terminal block. Refer to drawing H-14-100987, sh 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

___ 5.2.4.30 **APPLY** 24 volts dc to Terminal TB-DC4-28 in Field Terminal Box AN241-WT-TBX-101, using the 24 volt dc power supply.

___ 5.2.4.31 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-18 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.4.32 **VERIFY** the voltage recorded in Step 5.2.4.31 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.4.33 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-17 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.4.34 **VERIFY** the voltage recorded in Step 5.2.4.33 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.4.35 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-16 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.4.36 **VERIFY** the voltage recorded in Step 5.2.4.35 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

NOTE- To ensure proper alignment for mid position of Three-Way Valve, When rotating in counter clockwise rotation, go past the "B" or mid position, then rotate to Mid position from a Clockwise direction.

___ 5.2.4.37 **POSITION** ANA-WT-V-307, to allow flow from ANA-WT-V-309 to ANA-WT-V-308 by rotating the valve handwheel COUNTER-CLOCKWISE until the valve is at the mid position.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.4.38 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-18 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.4.39 **VERIFY** the voltage recorded in Step 5.2.4.38 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.4.40 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-17 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.4.41 **VERIFY** the voltage recorded in Step 5.2.4.40 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.4.42 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-16 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.4.43 **VERIFY** the voltage recorded in Step 5.2.4.42 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.4.44 **POSITION** ANA-WT-V-307 to allow flow from ANA-WT-V-309 to ANA-WT-V-305 by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

- ___ 5.2.4.45 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-18 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.4.46 **VERIFY** the voltage recorded in Step 5.2.4.45 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.4.47 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-17 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.4.48 **VERIFY** the voltage recorded in Step 5.2.4.47 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.4.49 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-16 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.4.50 **VERIFY** the voltage recorded in Step 5.2.4.49 at a nominal voltage of 24 Volts dc.

____ / ____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.2.4.51 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

- ___ 5.2.4.52 **POSITION** valve ANA-WT-V-307 as directed by the Test Director.

- ___ 5.2.4.53 **RECORD** the final position for the valve ANA-WT-V-307 below.

✓ POS."A"	✓ POS."B"	✓ POS."C"

- 5.2.4.54 **VERIFY** by signing below that test 5.2.4 is complete.

Test Director Signature Date

Operations Signature Date

5.2 TEST 3-WAY VALVES (Cont.)

5.2.5 TEST 3-inch valve ANA-WT-V-314.

5.2.5.1 **RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

- ____ 5.2.5.2 **ENSURE** that 2-inch valve ANA-WT-V-314 is in Position "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.
- ____ 5.2.5.3 **VERIFY** ANA-WT-V-314 is in Position "A" by the line indicator tee connecting ANA-WT-V-313 and ANA-WT-V-315.
- ____ /
Test Director Initial / Date
- ____ 5.2.5.4 **VERIFY** the indicator lines are lined up with the correct reference pins, AND within the RED area on the decal.
- ____ /
Test Director Initial / Date
- ____ 5.2.5.5 **VERIFY** the indicator lines are oriented to BLOCK flow from ANA-WT-V-316.
- ____ /
Test Director Initial / Date
- ____ 5.2.5.6 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-314 handwheel.
- ____ 5.2.5.7 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.
- ____ /
Test Director Initial / Date
- ____ 5.2.5.8 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.5.6.

5.2 TEST 3-WAY VALVES (Cont.)

- 5.2.5.9 REMOVE the cover from ANA-WT-V-314 valve position sensor assembly.
- 5.2.5.10 ADJUST the top CAM so pointer on the CAM is centered on the non-contact switch wired for valve position A.
- 5.2.5.11 ENSURE the middle and the bottom CAMs are NOT positioned at their associated non-contact switches.
- 5.2.5.12 POSITION ANA-WT-V-314, to allow flow from ANA-WT-V-313 to ANA-WT-V-316 by rotating the valve handwheel CLOCKWISE until the valve is at mid position.
- 5.2.5.13 VERIFY that ANA-WT-V-314 valve position indicator is aligned to ALLOW FLOW from ANA-WT-V-313 to ANA-WT-V-316.
- 5.2.5.14 VERIFY the indicator line is lined up with the correct reference pins for the "B" or "MID" position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.
- 5.2.5.15 VERIFY the indicator lines are oriented to BLOCK flow from ANA-WT-V-315.
- 5.2.5.16 ADJUST the middle CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.
- 5.2.5.17 ENSURE the top and bottom CAMs are NOT positioned at their associated non-contact switches.
- 5.2.5.18 PLACE the long-shank padlock through the locking device in the ANA-WT-V-314 handwheel.
- 5.2.5.19 VERIFY limited movement of the handwheel does NOT cause valve movement in either direction.
- Test Director Initial / Date
- Test Director Initial / Date
- Test Director Initial / Date
- Test Director Initial / Date
- Test Director Initial / Date

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.5.20 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.5.18.
- ___ 5.2.5.21 **POSITION** ANA-WT-V-314, to allow flow from ANA-WT-V-316 to ANA-WT-V-315 by rotating the valve handwheel **CLOCKWISE** as far as it will go.
- ___ 5.2.5.22 **VERIFY** that ANA-WT-V-314 valve position indicator is aligned to allow flow from ANA-WT-V-316 to ANA-WT-V-315.

____ / ____
Test Director Initial Date

- ___ 5.2.5.23 **ADJUST** the lower CAM so pointer on the CAM is centered on the non-contact switch wired for valve position C.
- ___ 5.2.5.24 **ENSURE** the top and middle CAMs are **NOT** positioned at their associated non-contact switches.
- ___ 5.2.5.25 **VERIFY** the indicator lines are lined up with the correct reference pins, **AND** within the **RED** area on the decal black stripe to black stripe alignment.

____ / ____
Test Director Initial Date

- ___ 5.2.5.26 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-314 handwheel.
- ___ 5.2.5.27 **VERIFY** limited movement of the handwheel does **NOT** cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ___ 5.2.5.28 **REMOVE** the long-shank padlock that was placed on the handwheel in step 5.2.5.26.
- ___ 5.2.5.29 **VERIFY** installation of positive jumpers located on the valve position sensor terminal block. Refer to drawing H-14-100987, sh 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

____ 5.2.5.30 **APPLY** 24 volts dc to Terminal TB-DC4-34 in Field Terminal Box AN241-WT-TBX-101, using the 24 volt dc power supply.

____ 5.2.5.31 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-32 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

____ 5.2.5.32 **VERIFY** the voltage recorded in Step 5.2.5.31 at a nominal voltage of 24 Volts dc.

____ / ____
Test Director Initial Date

____ 5.2.5.33 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-31 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

____ 5.2.5.34 **VERIFY** the voltage recorded in Step 5.2.5.33 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

____ 5.2.5.35 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-30 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

____ 5.2.5.36 **VERIFY** the voltage recorded in Step 5.2.5.35 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

NOTE- To ensure proper alignment for mid position of Three-Way Valve, When rotating in counter clockwise rotation, go past the "B" or mid position, then rotate to Mid position from a Clockwise direction.

____ 5.2.5.37 **POSITION** ANA-WT-V-314, to allow flow from ANA-WT-V-313 to ANA-WT-V-316 by rotating the valve handwheel COUNTER-CLOCKWISE until the valve is at the mid position.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.5.38 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-32 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.5.39 **VERIFY** the voltage recorded in Step 5.2.5.38 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.5.40 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-31 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.5.41 **VERIFY** the voltage recorded in Step 5.2.5.40 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.5.42 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-30 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.5.43 **VERIFY** the voltage recorded in Step 5.2.5.42 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.5.44 **POSITION** ANA-WT-V-314 to allow flow from ANA-WT-V-313 to ANA-WT-V-315 by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

- ___ 5.2.5.45 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-32 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.5.46 **VERIFY** the voltage recorded in Step 5.2.5.45 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.5.47 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-31 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.5.48 **VERIFY** the voltage recorded in Step 5.2.5.47 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.5.49 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-30 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.5.50 **VERIFY** the voltage recorded in Step 5.2.5.49 at a nominal voltage of 24 Volts dc.

____ / ____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.2.5.51 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

- ___ 5.2.5.52 **POSITION** valve ANA-WT-V-314 as directed by the Test Director.

- ___ 5.2.5.53 **RECORD** the final position for the valve ANA-WT-V-314 below.

✓ POS. "A"	✓ POS. "B"	✓ POS. "C"

- 5.2.5.54 **VERIFY** by signing below that test 5.2.5 is complete.

Test Director Signature Date

Operations Signature Date

5.2 TEST 3-WAY VALVES (Cont.)**5.2.6 TEST 3-inch valve ANA-WT-V-316.****5.2.6.1 RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

- ___ 5.2.6.2 **ENSURE** that 2-inch valve ANA-WT-V-316 is in Position "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.
- ___ 5.2.6.3 **VERIFY** ANA-WT-V-316 is in Position "A" by the line indicator tee connecting ANA-WT-V-318 and ANA-WT-V-314.
- _____/_____
Test Director Initial Date
- ___ 5.2.6.4 **VERIFY** the indicator lines are lined up with the correct reference pins, AND within the RED area on the decal.
- _____/_____
Test Director Initial Date
- ___ 5.2.6.5 **VERIFY** the indicator lines are oriented to BLOCK flow from ANA-WT-V-317.
- _____/_____
Test Director Initial Date
- ___ 5.2.6.6 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-316 handwheel.
- ___ 5.2.6.7 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.
- _____/_____
Test Director Initial Date
- ___ 5.2.6.8 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.6.6.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.6.9 **REMOVE** the cover from ANA-WT-V-316 valve position sensor assembly.
- ___ 5.2.6.10 **ADJUST** the top CAM so pointer on the CAM is centered on the non-contact switch wired for valve position A.
- ___ 5.2.6.11 **ENSURE** the middle and the bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.6.12 **POSITION** ANA-WT-V-316, to allow flow from ANA-WT-V-318 to ANA-WT-V-317 by rotating the valve handwheel **CLOCKWISE** until the valve is at mid position.
- ___ 5.2.6.13 **VERIFY** that ANA-WT-V-316 valve position indicator is aligned to **ALLOW FLOW** from ANA-WT-V-318 to ANA-WT-V-317.
- _____/_____
Test Director Initial Date
- ___ 5.2.6.14 **VERIFY** the indicator line is lined up with the correct reference pins for the "B" or "MID" position, **AND** black stripe within the **RED** area on the decal is aligned as to be touching the applicable line on valve housing.
- _____/_____
Test Director Initial Date
- ___ 5.2.6.15 **VERIFY** the indicator lines are oriented to **BLOCK** flow from ANA-WT-V-314.
- _____/_____
Test Director Initial Date
- ___ 5.2.6.16 **ADJUST** the middle CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.
- ___ 5.2.6.17 **ENSURE** the top and bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.6.18 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-316 handwheel.
- ___ 5.2.6.19 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.
- _____/_____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.6.20 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.6.18.
- ___ 5.2.6.21 **POSITION** ANA-WT-V-316, to allow flow from ANA-WT-V-317 to ANA-WT-V-314 by rotating the valve handwheel **CLOCKWISE** as far as it will go.
- ___ 5.2.6.22 **VERIFY** that ANA-WT-V-316 valve position indicator is aligned to allow flow from ANA-WT-V-317 to ANA-WT-V-314.

____ / ____
Test Director Initial Date

- ___ 5.2.6.23 **ADJUST** the lower CAM so pointer on the CAM is centered on the non-contact switch wired for valve position C.
- ___ 5.2.6.24 **ENSURE** the top and middle CAMs are **NOT** positioned at their associated non-contact switches.
- ___ 5.2.6.25 **VERIFY** the indicator lines are lined up with the correct reference pins, **AND** within the **RED** area on the decal black stripe to black stripe alignment.

____ / ____
Test Director Initial Date

- ___ 5.2.6.26 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-316 handwheel.
- ___ 5.2.6.27 **VERIFY** limited movement of the handwheel does **NOT** cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ___ 5.2.6.28 **REMOVE** the long-shank padlock that was placed on the handwheel in step 5.2.6.26.
- ___ 5.2.6.29 **VERIFY** installation of positive jumpers located on the valve position sensor terminal block. Refer to drawing H-14-100987, sh 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

___ 5.2.6.30 **APPLY** 24 volts dc to Terminal TB-DC4-36 in Field Terminal Box AN241-WT-TBX-101, using the 24 volt dc power supply.

___ 5.2.6.31 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-37 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.6.32 **VERIFY** the voltage recorded in Step 5.2.6.31 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial / Date

___ 5.2.6.33 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-36 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.6.34 **VERIFY** the voltage recorded in Step 5.2.6.33 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial / Date

___ 5.2.6.35 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-35 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.6.36 **VERIFY** the voltage recorded in Step 5.2.6.35 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial / Date

NOTE- To ensure proper alignment for mid position of Three-Way Valve, When rotating in counter clockwise rotation, go past the "B" or mid position, then rotate to Mid position from a Clockwise direction.

___ 5.2.6.37 **POSITION** ANA-WT-V-316, to allow flow from ANA-WT-V-318 to ANA-WT-V-317 by rotating the valve handwheel COUNTER-CLOCKWISE until the valve is at the mid position.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.6.38 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-37 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.6.39 **VERIFY** the voltage recorded in Step 5.2.6.38 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.6.40 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-36 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.6.41 **VERIFY** the voltage recorded in Step 5.2.6.40 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.6.42 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-35 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.6.43 **VERIFY** the voltage recorded in Step 5.2.6.42 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

- ___ 5.2.6.44 **POSITION** ANA-WT-V-316 to allow flow from ANA-WT-V-318 to ANA-WT-V-314 by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

- ___ 5.2.6.45 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-37 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.6.46 **VERIFY** the voltage recorded in Step 5.2.6.45 is at a nominal voltage of "0" Volts dc.

Test Director Initial / _____
Date

- ___ 5.2.6.47 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-36 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.6.48 **VERIFY** the voltage recorded in Step 5.2.6.47 is at a nominal voltage of "0" Volts dc.

Test Director Initial / _____
Date

- ___ 5.2.6.49 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-35 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.6.50 **VERIFY** the voltage recorded in Step 5.2.6.49 at a nominal voltage of 24 Volts dc.

Test Director Initial / _____
Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.2.6.51 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

- ___ 5.2.6.52 **POSITION** valve ANA-WT-V-316 as directed by the Test Director.

- ___ 5.2.6.53 **RECORD** the final position for the valve ANA-WT-V-316 below.

✓ POS. "A"	✓ POS. "B"	✓ POS. "C"

- 5.2.6.54 **VERIFY** by signing below that test 5.2.6 is complete.

Test Director Signature _____
Date

Operations Signature _____
Date

5.2 TEST 3-WAY VALVES (Cont.)

5.2.7 TEST 3-inch valve ANA-WT-V-318.

5.2.7.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.2.7.2 **ENSURE** that 2-inch valve ANA-WT-V-318 is in Position "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

___ 5.2.7.3 **VERIFY** ANA-WT-V-318 is in Position "A" by the line indicator tee connecting ANA-WT-V-319 and Blank Connection "F".

_____/_____
Test Director Initial Date

___ 5.2.7.4 **VERIFY** the indicator lines are lined up with the correct reference pins, AND within the RED area on the decal.

_____/_____
Test Director Initial Date

___ 5.2.7.5 **VERIFY** the indicator lines are oriented to BLOCK flow from ANA-WT-V-316.

_____/_____
Test Director Initial Date

___ 5.2.7.6 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-318 handwheel.

___ 5.2.7.7 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.2.7.8 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.7.6.

5.2 TEST 3-WAY VALVES (Cont.)

- ____ 5.2.7.9 **REMOVE** the cover from ANA-WT-V-318 valve position sensor assembly.
- ____ 5.2.7.10 **ADJUST** the top CAM so pointer on the CAM is centered on the non-contact switch wired for valve position A.
- ____ 5.2.7.11 **ENSURE** the middle and the bottom CAMs are NOT positioned at their associated non-contact switches.
- ____ 5.2.7.12 **POSITION** ANA-WT-V-318, to allow flow from ANA-WT-V-319 to ANA-WT-V-316 by rotating the valve handwheel **CLOCKWISE** until the valve is at mid position.
- ____ 5.2.7.13 **VERIFY** that ANA-WT-V-318 valve position indicator is aligned to ALLOW FLOW from ANA-WT-V-319 to ANA-WT-V-316.

____ / ____
Test Director Initial Date

- ____ 5.2.7.14 **VERIFY** the indicator line is lined up with the correct reference pins for the "B" or "MID" position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

____ / ____
Test Director Initial Date

- ____ 5.2.7.15 **VERIFY** the indicator lines are oriented to BLOCK flow from Blank Connection "F".

____ / ____
Test Director Initial Date

- ____ 5.2.7.16 **ADJUST** the middle CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.
- ____ 5.2.7.17 **ENSURE** the top and bottom CAMs are NOT positioned at their associated non-contact switches.
- ____ 5.2.7.18 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-318 handwheel.
- ____ 5.2.7.19 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.7.20 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.7.18.
- ___ 5.2.7.21 **POSITION** ANA-WT-V-318, to allow flow from ANA-WT-V-316 to Blank Connection "F" by rotating the valve handwheel **CLOCKWISE** as far as it will go.
- ___ 5.2.7.22 **VERIFY** that ANA-WT-V-318 valve position indicator is aligned to allow flow from ANA-WT-V-316 to Blank Connection "F".

Test Director Initial_____
Date

- ___ 5.2.7.23 **ADJUST** the lower CAM so pointer on the CAM is centered on the non-contact switch wired for valve position C.
- ___ 5.2.7.24 **ENSURE** the top and middle CAMs are **NOT** positioned at their associated non-contact switches.
- ___ 5.2.7.25 **VERIFY** the indicator lines are lined up with the correct reference pins, **AND** within the **RED** area on the decal black stripe to black stripe alignment.

Test Director Initial_____
Date

- ___ 5.2.7.26 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-318 handwheel.
- ___ 5.2.7.27 **VERIFY** limited movement of the handwheel does **NOT** cause valve movement in either direction.

Test Director Initial_____
Date

- ___ 5.2.7.28 **REMOVE** the long-shank padlock that was placed on the handwheel in step 5.2.3.26.
- ___ 5.2.7.29 **VERIFY** installation of positive jumpers located on the valve position sensor terminal block. Refer to drawing H-14-100987, sh 1, for positive lead jumper locations.

Test Director Initial_____
Date

5.2 TEST 3-WAY VALVES (Cont.)

___ 5.2.7.30 **APPLY** 24 volts dc to Terminal TB-DC4-38 in Field Terminal Box AN241-WT-TBX-101, using the 24 volt dc power supply.

___ 5.2.7.31 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-42 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.7.32 **VERIFY** the voltage recorded in Step 5.2.7.31 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.7.33 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-41 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.7.34 **VERIFY** the voltage recorded in Step 5.2.7.33 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.7.35 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-40 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.7.36 **VERIFY** the voltage recorded in Step 5.2.7.35 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

NOTE- To ensure proper alignment for mid position of Three-Way Valve, When rotating in counter clockwise rotation, go past the "B" or mid position, then rotate to Mid position from a Clockwise direction.

___ 5.2.7.37 **POSITION** ANA-WT-V-318, to allow flow from ANA-WT-V-319 to ANA-WT-V-316 by rotating the valve handwheel COUNTER-CLOCKWISE until the valve is at the mid position.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.7.38 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-42 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.7.39 **VERIFY** the voltage recorded in Step 5.2.7.38 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial / Date

- ___ 5.2.7.40 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-41 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.7.41 **VERIFY** the voltage recorded in Step 5.2.7.40 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial / Date

- ___ 5.2.7.42 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-40 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.7.43 **VERIFY** the voltage recorded in Step 5.2.7.42 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial / Date

- ___ 5.2.7.44 **POSITION** ANA-WT-V-318 to allow flow from ANA-WT-V-319 to Blank Connection "F" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

- ___ 5.2.7.45 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-42 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.7.46 **VERIFY** the voltage recorded in Step 5.2.7.45 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.7.47 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-41 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.7.48 **VERIFY** the voltage recorded in Step 5.2.7.47 is at a nominal voltage of "0" Volts dc.

____ / ____
Test Director Initial Date

- ___ 5.2.7.49 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-40 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.7.50 **VERIFY** the voltage recorded in Step 5.2.7.49 at a nominal voltage of 24 Volts dc.

____ / ____
Test Director Initial Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.2.7.51 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

- ___ 5.2.7.52 **POSITION** valve ANA-WT-V-318 as directed by the Test Director.

- ___ 5.2.7.53 **RECORD** the final position for the valve ANA-WT-V-318 below.

✓ POS."A"	✓ POS."B"	✓ POS."C"

- 5.2.7.54 **VERIFY** by signing below that test 5.2.7 is complete.

Test Director Signature Date

Operations Signature Date

5.2 TEST 3-WAY VALVES (Cont.)

5.2.8 TEST 3-inch valve ANA-WT-V-319.

5.2.8.1 **RECORD** calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

___ 5.2.8.2 **ENSURE** that 2-inch valve ANA-WT-V-319 is in Position "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

___ 5.2.8.3 **VERIFY** ANA-WT-V-319 is in Position "A" by the line indicator tee connecting ANA-WT-V-321 and ANA-WT-V-318.

_____/_____
Test Director Initial Date

___ 5.2.8.4 **VERIFY** the indicator lines are lined up with the correct reference pins, AND within the RED area on the decal.

_____/_____
Test Director Initial Date

___ 5.2.8.5 **VERIFY** the indicator lines are oriented to BLOCK flow from ANA-WT-V-320.

_____/_____
Test Director Initial Date

___ 5.2.8.6 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-319 handwheel.

___ 5.2.8.7 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

___ 5.2.8.8 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.8.6.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.8.9 **REMOVE** the cover from ANA-WT-V-319 valve position sensor assembly.
- ___ 5.2.8.10 **ADJUST** the top CAM so pointer on the CAM is centered on the non-contact switch wired for valve position A.
- ___ 5.2.8.11 **ENSURE** the middle and the bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.8.12 **POSITION** ANA-WT-V-319, to allow flow from ANA-WT-V-321 to ANA-WT-V-320 by rotating the valve handwheel **CLOCKWISE** until the valve is at mid position.
- ___ 5.2.8.13 **VERIFY** that ANA-WT-V-319 valve position indicator is aligned to **ALLOW FLOW** from ANA-WT-V-321 to ANA-WT-V-320.

_____/_____
Test Director Initial Date

- ___ 5.2.8.14 **VERIFY** the indicator line is lined up with the correct reference pins for the "B" or "MID" position, **AND** black stripe within the **RED** area on the decal is aligned as to be touching the applicable line on valve housing.

_____/_____
Test Director Initial Date

- ___ 5.2.8.15 **VERIFY** the indicator lines are oriented to **BLOCK** flow from ANA-WT-V-318.

_____/_____
Test Director Initial Date

- ___ 5.2.8.16 **ADJUST** the middle CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.

- ___ 5.2.8.17 **ENSURE** the top and bottom CAMs are NOT positioned at their associated non-contact switches.

- ___ 5.2.8.18 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-319 handwheel.

- ___ 5.2.8.19 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.

_____/_____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.8.20 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.8.18.
- ___ 5.2.8.21 **POSITION** ANA-WT-V-319, to allow flow from ANA-WT-V-320 to ANA-WT-V-318 by rotating the valve handwheel **CLOCKWISE** as far as it will go.
- ___ 5.2.8.22 **VERIFY** that ANA-WT-V-319 valve position indicator is aligned to allow flow from ANA-WT-V-320 to ANA-WT-V-318.

____ / ____
Test Director Initial Date

- ___ 5.2.8.23 **ADJUST** the lower CAM so pointer on the CAM is centered on the non-contact switch wired for valve position C.
- ___ 5.2.8.24 **ENSURE** the top and middle CAMs are **NOT** positioned at their associated non-contact switches.
- ___ 5.2.8.25 **VERIFY** the indicator lines are lined up with the correct reference pins, **AND** within the **RED** area on the decal black stripe to black stripe alignment.

____ / ____
Test Director Initial Date

- ___ 5.2.8.26 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-319 handwheel.
- ___ 5.2.8.27 **VERIFY** limited movement of the handwheel does **NOT** cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ___ 5.2.8.28 **REMOVE** the long-shank padlock that was placed on the handwheel in step 5.2.8.26.
- ___ 5.2.8.29 **VERIFY** installation of positive jumpers located on the valve position sensor terminal block. Refer to drawing H-14-100987, sh 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

___ 5.2.8.30 **APPLY** 24 volts dc to Terminal TB-DC4-39 in Field Terminal Box AN241-WT-TBX-101, using the 24 volt dc power supply.

___ 5.2.8.31 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-45 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.8.32 **VERIFY** the voltage recorded in Step 5.2.8.31 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.8.33 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-44 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.8.34 **VERIFY** the voltage recorded in Step 5.2.8.33 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.8.35 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-43 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.8.36 **VERIFY** the voltage recorded in Step 5.2.8.35 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

NOTE- To ensure proper alignment for mid position of Three-Way Valve, When rotating in counter clockwise rotation, go past the "B" or mid position, then rotate to Mid position from a Clockwise direction.

___ 5.2.8.37 **POSITION** ANA-WT-V-319, to allow flow from ANA-WT-V-321 to ANA-WT-V-320 by rotating the valve handwheel COUNTER-CLOCKWISE until the valve is at the mid position.

5.2 TEST 3-WAY VALVES (Cont.)

5.2.8.38 MEASURE AND RECORD the voltage BETWEEN Terminal TB-DC1-45 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE

5.2.8.39 VERIFY the voltage recorded in Step 5.2.8.38 is at a nominal voltage of "0" Volts dc.

Test Director Initial

Date

5.2.8.40 MEASURE AND RECORD the voltage BETWEEN Terminal TB-DC1-44 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE

5.2.8.41 VERIFY the voltage recorded in Step 5.2.8.40 at a nominal voltage of 24 Volts dc.

Test Director Initial

Date

5.2.8.42 MEASURE AND RECORD the voltage BETWEEN Terminal TB-DC1-43 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE

5.2.8.43 VERIFY the voltage recorded in Step 5.2.8.42 is at a nominal voltage of "0" Volts dc.

Test Director Initial

Date

5.2.8.44 POSITION ANA-WT-V-319 to allow flow from ANA-WT-V-321 to ANA-WT-V-318 by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

5.2.8.45 MEASURE AND RECORD the voltage BETWEEN Terminal TB-DC1-45 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE

CONTINUOUS

Document No.

HNF-4642

Rev/Mod

0

Release Date

Page 106 of 121

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.8.46 **VERIFY** the voltage recorded in Step 5.2.8.45 is at a nominal voltage of "0" Volts dc.

Test Director Initial / _____
Date

- ___ 5.2.8.47 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-44 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.8.48 **VERIFY** the voltage recorded in Step 5.2.8.47 is at a nominal voltage of "0" Volts dc.

Test Director Initial / _____
Date

- ___ 5.2.8.49 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-43 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.8.50 **VERIFY** the voltage recorded in Step 5.2.8.49 at a nominal voltage of 24 Volts dc.

Test Director Initial / _____
Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.2.8.51 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

- ___ 5.2.8.52 **POSITION** valve ANA-WT-V-319 as directed by the Test Director.

- ___ 5.2.8.53 **RECORD** the final position for the valve ANA-WT-V-319 below.

✓ POS. "A"	✓ POS. "B"	✓ POS. "C"

- 5.2.8.54 **VERIFY** by signing below that test 5.2.8 is complete.

Test Director Signature _____
Date

Operations Signature _____
Date

5.2 TEST 3-WAY VALVES (Cont.)

5.2.9 TEST 3-inch valve ANA-WT-V-321.

5.2.9.1 RECORD calibrated electrical test equipment data below.

ELECTRICAL TEST EQUIPMENT DATA TABLE

TOOL NAME	ID. NUMBER	CAL DUE DATE	INITIAL/DATE

- ___ 5.2.9.2 **ENSURE** that 2-inch valve ANA-WT-V-321 is in Position "A" by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.
- ___ 5.2.9.3 **VERIFY** ANA-WT-V-321 is in Position "A" by the line indicator tee connecting ANA-WT-V-323 and ANA-WT-V-322.
- _____/_____
Test Director Initial Date
- ___ 5.2.9.4 **VERIFY** the indicator lines are lined up with the correct reference pins, AND within the RED area on the decal.
- _____/_____
Test Director Initial Date
- ___ 5.2.9.5 **VERIFY** the indicator lines are oriented to BLOCK flow from ANA-WT-V-319.
- _____/_____
Test Director Initial Date
- ___ 5.2.9.6 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-321 handwheel.
- ___ 5.2.9.7 **VERIFY** limited movement of the handwheel does NOT cause valve movement in either direction.
- _____/_____
Test Director Initial Date
- ___ 5.2.9.8 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.9.6.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.9.9 REMOVE the cover from ANA-WT-V-321 valve position sensor assembly.
- ___ 5.2.9.10 ADJUST the top CAM so pointer on the CAM is centered on the non-contact switch wired for valve position A.
- ___ 5.2.9.11 ENSURE the middle and the bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.9.12 POSITION ANA-WT-V-321, to allow flow from ANA-WT-V-323 to ANA-WT-V-319 by rotating the valve handwheel CLOCKWISE until the valve is at mid position.
- ___ 5.2.9.13 VERIFY that ANA-WT-V-321 valve position indicator is aligned to ALLOW FLOW from ANA-WT-V-323 to ANA-WT-V-319.

____ / ____
Test Director Initial Date

- ___ 5.2.9.14 VERIFY the indicator line is lined up with the correct reference pins for the "B" or "MID" position, AND black stripe within the RED area on the decal is aligned as to be touching the applicable line on valve housing.

____ / ____
Test Director Initial Date

- ___ 5.2.9.15 VERIFY the indicator lines are oriented to BLOCK flow from ANA-WT-V-322.

____ / ____
Test Director Initial Date

- ___ 5.2.9.16 ADJUST the middle CAM so pointer on the CAM is centered on the non-contact switch wired for valve position B.
- ___ 5.2.9.17 ENSURE the top and bottom CAMs are NOT positioned at their associated non-contact switches.
- ___ 5.2.9.18 PLACE the long-shank padlock through the locking device in the ANA-WT-V-321 handwheel.
- ___ 5.2.9.19 VERIFY limited movement of the handwheel does NOT cause valve movement in either direction.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.9.20 **REMOVE** the long-shank padlock that was placed on the handwheel in Step 5.2.9.18.
- ___ 5.2.9.21 **POSITION** ANA-WT-V-321, to allow flow from ANA-WT-V-319 to ANA-WT-V-322 by rotating the valve handwheel **CLOCKWISE** as far as it will go.
- ___ 5.2.9.22 **VERIFY** that ANA-WT-V-321 valve position indicator is aligned to allow flow from ANA-WT-V-319 to ANA-WT-V-322.

____ / ____
Test Director Initial Date

- ___ 5.2.9.23 **ADJUST** the lower CAM so pointer on the CAM is centered on the non-contact switch wired for valve position C.
- ___ 5.2.9.24 **ENSURE** the top and middle CAMs are **NOT** positioned at their associated non-contact switches.
- ___ 5.2.9.25 **VERIFY** the indicator lines are lined up with the correct reference pins, **AND** within the **RED** area on the decal black stripe to black stripe alignment.

____ / ____
Test Director Initial Date

- ___ 5.2.9.26 **PLACE** the long-shank padlock through the locking device in the ANA-WT-V-321 handwheel.
- ___ 5.2.9.27 **VERIFY** limited movement of the handwheel does **NOT** cause valve movement in either direction.

____ / ____
Test Director Initial Date

- ___ 5.2.9.28 **REMOVE** the long-shank padlock that was placed on the handwheel in step 5.2.9.26.
- ___ 5.2.9.29 **VERIFY** installation of positive jumpers located on the valve position sensor terminal block. Refer to drawing H-14-100987, sh 1, for positive lead jumper locations.

____ / ____
Test Director Initial Date

5.2 TEST 3-WAY VALVES (Cont.)

___ 5.2.9.30 **APPLY** 24 volts dc to Terminal TB-DC4-41 in Field Terminal Box AN241-WT-TBX-101, using the 24 volt dc power supply.

___ 5.2.9.31 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-50 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.9.32 **VERIFY** the voltage recorded in Step 5.2.9.31 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.9.33 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-49 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.9.34 **VERIFY** the voltage recorded in Step 5.2.9.33 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

___ 5.2.9.35 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-48 AND the NEGATIVE Terminal on the 24 volt power supply.

VOLTAGE _____

___ 5.2.9.36 **VERIFY** the voltage recorded in Step 5.2.9.35 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial Date

NOTE- To ensure proper alignment for mid position of Three-Way Valve, When rotating in counter clockwise rotation, go past the "B" or mid position, then rotate to Mid position from a Clockwise direction.

___ 5.2.9.37 **POSITION** ANA-WT-V-321, to allow flow from ANA-WT-V-323 to ANA-WT-V-319 by rotating the valve handwheel COUNTER-CLOCKWISE until the valve is at the mid position.

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.9.38 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-50 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.9.39 **VERIFY** the voltage recorded in Step 5.2.9.38 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial / Date

- ___ 5.2.9.40 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-49 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.9.41 **VERIFY** the voltage recorded in Step 5.2.9.40 at a nominal voltage of 24 Volts dc.

_____/_____
Test Director Initial / Date

- ___ 5.2.9.42 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-48 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.9.43 **VERIFY** the voltage recorded in Step 5.2.9.42 is at a nominal voltage of "0" Volts dc.

_____/_____
Test Director Initial / Date

- ___ 5.2.9.44 **POSITION** ANA-WT-V-321 to allow flow from ANA-WT-V-323 to ANA-WT-V-322 by rotating the valve handwheel COUNTER-CLOCKWISE until the handwheel turns no farther.

- ___ 5.2.9.45 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-50 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

5.2 TEST 3-WAY VALVES (Cont.)

- ___ 5.2.9.46 **VERIFY** the voltage recorded in Step 5.2.9.45 is at a nominal voltage of "0" Volts dc.

Test Director Initial / _____
Date

- ___ 5.2.9.47 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-49 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.9.48 **VERIFY** the voltage recorded in Step 5.2.9.47 is at a nominal voltage of "0" Volts dc.

Test Director Initial / _____
Date

- ___ 5.2.9.49 **MEASURE AND RECORD** the voltage BETWEEN Terminal TB-DC1-48 AND the NEGATIVE Terminal on the 24 volt dc power supply.

VOLTAGE _____

- ___ 5.2.9.50 **VERIFY** the voltage recorded in Step 5.2.9.49 at a nominal voltage of 24 Volts dc.

Test Director Initial / _____
Date

NOTE - The next step prepares limit switch cover for torquing. All valves will be torqued at one time at end of this ATP and QC Shall verify. The Torque value will be between 17 and 20 inch lbs.

- ___ 5.2.9.51 **REPLACE** limit switch cover AND **TIGHTEN** bolts in preparation for torque.

- ___ 5.2.9.52 **POSITION** valve ANA-WT-V-321 as directed by the Test Director.

- ___ 5.2.9.53 **RECORD** the final position for the valve ANA-WT-V-321 below.

✓ POS. "A"	✓ POS. "B"	✓ POS. "C"

- 5.2.9.54 **VERIFY** by signing below that test 5.2.9 is complete.

Test Director Signature _____
Date

Operations Signature _____
Date

5.2 TEST 3-WAY VALVES (Cont.)

5.2.10 **VERIFY** by signing below that Section 5.2 is complete.

Test Director Signature

Date

Operations Signature

Date

5.3 VALVE TORQUING

5.3.1 **QC VERIFY** all valve limit switch covers for valves are installed and bolts torqued between 17 and 22 inch lbs. **AND RECORD** below.

Valve Number	Limit Switch Cover (✓)	Limit Switch Cover Bolts Torqued (✓)	Valve Number	Limit Switch Cover (✓)	Limit Switch Cover Bolts Torqued (✓)
ANA-WT-V-301			ANA-WT-V-320		
ANA-WT-V-309			ANA-WT-V-302		
ANA-WT-V-322			ANA-WT-V-303		
ANA-WT-V-323			ANA-WT-V-305		
ANA-WT-V-304			ANA-WT-V-307		
ANA-WT-V-306			ANA-WT-V-314		
ANA-WT-V-308			ANA-WT-V-316		
ANA-WT-V-313			ANA-WT-V-318		
ANA-WT-V-315			ANA-WT-V-319		
ANA-WT-V-317			ANA-WT-V-321		

TOOL NAME

ID. NUMBER

CAL DUE DATE

INITIAL/DATE

QC. Signature

Date

5.3.2 **VERIFY** by signing below that Section 5.3 is complete.

Test Director Signature

Date

Operations Signature

Date

5.4 ENCASEMENT VALVE TESTING

5.4.1 Test Encasement Drain Valve ANA-WT-403.

___ 5.4.1.1 **ENSURE** valve labeling on "TEE" handle is correct.

___ 5.4.1.2 **ENSURE** "TEE" handle fits through coverblock, into funnel and sets into valve.

___ 5.4.1.3 **ROTATE** "TEE" handle to "DRAIN" position AND **VERIFY** valve aligns properly with applicable line on coverblock.

____ / ____
Test Director Initial Date

___ 5.4.1.4 **ROTATE** "TEE" handle to "HYDRO" position AND **VERIFY** valve aligns properly with applicable line on coverblock.

____ / ____
Test Director Initial Date

___ 5.4.1.5 **ROTATE** "TEE" handle to "OPERATE" position AND **VERIFY** valve aligns properly with applicable line on coverblock.

____ / ____
Test Director Initial Date

___ 5.4.1.6 **POSITION** valve as directed by the Test Director.

___ 5.4.1.7 **RECORD** the final position for valve ANA-WT-V-403 below.

OPERATE	HYDRO	DRAIN

5.4 ENCASEMENT VALVE TESTING (Cont).

- 5.4.2 Test Encasement Drain Valve ANA-WT-404.
- ___ 5.4.2.1 **ENSURE** valve labeling on "TEE" handle is correct.
- ___ 5.4.2.2 **ENSURE** "TEE" handle fits through coverblock, into funnel and sets into valve.
- ___ 5.4.2.3 **ROTATE** "TEE" handle to "DRAIN" position AND **VERIFY** valve aligns properly with applicable line on coverblock.
- ___ Test Director Initial / Date
- ___ 5.4.2.4 **ROTATE** "TEE" handle to "HYDRO" position AND **VERIFY** valve aligns properly with applicable line on coverblock.
- ___ Test Director Initial / Date
- ___ 5.4.2.5 **ROTATE** "TEE" handle to "OPERATE" position AND **VERIFY** valve aligns properly with applicable line on coverblock.
- ___ Test Director Initial / Date
- ___ 5.4.2.6 **POSITION** valve as directed by the Test Director.
- ___ 5.4.2.7 **RECORD** the final position for valve ANA-WT-V-404 below.

OPERATE	HYDRO	DRAIN

- 5.4.3 **VERIFY** by signing below that Section 5.4 is complete.

___ Test Director Signature ___ Date

___ Operations Signature ___ Date

This page may be reproduced as necessary.

Page _____ of _____

[illegible]

This page may be reproduced as necessary.

Page _____ of _____

[illegible]

ATP EXCEPTION RECORD

This page may be reproduced as necessary.

Page _____ of _____

ATP STEP NUMBER:		ATP EXCEPTION Log#:	
DESCRIPTION OF EXCEPTION:			
INITIATOR NAME/ORGANIZATION:			
DATE OF EXCEPTION:			
RESOLUTION OF EXCEPTION:			
CORRECTION APPROVAL:			
TEST DIRECTOR INITIAL:		DATE:	
DATE OF RESOLUTION:			
TEST DIRECTOR SIGNATURE:		DATE:	
PROJECT ENGINEER SIGNATURE:		DATE:	
QUALITY ASSURANCE SIGNATURE:		DATE:	

INITIALS

[illegible]

PROCEDURE HISTORY SIGNATURE SHEET

Type	Document No.	Rev/Mod	Release Date	Page
CONTINUOUS	HNF-4642	0		121 of 121