DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	Tank Farm Projects	Date 04/28/95
Project Title/Work Order		EDT No. 611576
Acceptance Test Procedure for Cathodic Protection, Rectifier 31		ECN No. --

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
------	------	-----------------------------	-----------	------------------------------	-----------------

U.S. Department of Energy,
Richland Operations Office

C. R. Pacheco	S7-52	X			
---------------	-------	---	--	--	--

ICF Kaiser Hanford Company

J. L. Henderson	E6-22	X			
-----------------	-------	---	--	--	--

Westinghouse Hanford Company

R. L. Brown	B4-08	X			
H. M. Chafin	G6-07	X			
F. T. Clifton	G6-06	X			
K. A. Colosi	R3-27	X			
R. A. Dodd	S5-05				X
J. H. Haberman	R1-30	X			
M. D. Harding	S5-07	X			
M. N. Islam	R3-08				X
S. R. Nelson	G6-14				X
S. R. Pierce	S5-05	X			
Project Database	G6-51	X			
Project Files	R1-28	X			
Central Files (orig. +2)	L8-04	X			
OSTI (2)	L8-07	X			

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

APR 28 1995
35 Station 21

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT No 611576

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Waste Transfer Projects	4. Related EDT No.: 609760
5. Proj./Prog./Dept./Div.: W-030	6. Cog. Engr.: K. A. Colosi	7. Purchase Order No.: N/A
8. Originator Remarks: These Acceptance Test Procedures are being submitted for your approval.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: ASAP

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	Impact Level	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-W030-ATP-001		0	Cathodic Protection - Rectifier 31	2SQ	1		
2	WHC-SD-W030-ATP-002		0	Cathodic Protection - Rectifier 41	2SQ	1		
3	WHC-SD-W030-ATP-003		0	Cathodic Protection - Rectifier 11	2SQ	1		

16. KEY			
Impact Level (F)	Reason for Transmittal (G)		Disposition (H) & (I)
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1	1,2	Cog.Eng. K. A. Colosi R3-27	<i>K.A. Colosi</i>	3/14/95		J. H. Haberman (CP cog.) R1-30	<i>J.H. Haberman</i>	3/14/95		1	2
1	1,2	Cog. Mgr. G. L. Parsons S4-57	<i>G.L. Parsons</i>	3/14/95							
1	1,2	QA H. M. Chafin G6-07	<i>H.M. Chafin</i>	3/14/95							
1	1,2	Safety M. N. Islam R3-08	<i>M.N. Islam</i>	3/14/95							
1	1,2	Startup F. T. Clifton G6-06	<i>F.T. Clifton</i>	3/14/95							
1	1,2	Ops. M. D. Harding S0-09	<i>M.D. Harding</i>	3/15/95							
1	1,2	Facility Engr. S. R. Pierce R1-51	<i>S.R. Pierce</i>	3/15/95							

18. Signature of EDT Originator <i>K.A. Colosi</i> Date 3/14/95	19. Authorized Representative for Receiving Organization <i>K.A. Colosi</i> Date 3/14/95	20. Cognizant/Project Engineer's Manager <i>K.A. Colosi</i> Date 3/14/95	21. DOE APPROVAL (if required) Ltr. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
---	--	--	--

RELEASE AUTHORIZATION

Document Number: WHC-SD-W030-ATP-001, Rev. 0

Document Title: Acceptance Test Procedure for Cathodic Protection, Rectifier 31

Release Date: April 27, 1995

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

V.L. Birkland

V.L. Birkland

April 27, 1995

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.

This report has been reproduced from the best available copy. Available in paper copy and microfiche. Printed in the United States of America. Available to the U.S. Department of Energy and its contractors from:

U.S. Department of Energy
Office of Scientific and Technical Information (OSTI)
P.O. Box 62
Oak Ridge, TN 37831
Telephone: (615) 576-8401

Available to the public from:

U.S. Department of Commerce
National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161
Telephone: (703) 487-4650

SUPPORTING DOCUMENT		1. Total Pages <u>22</u>
2. Title Acceptance Test Procedure for Cathodic Protection, Rectifier 31	3. Number WHC-SD-W030-ATP-001	4. Rev No. 0
5. Key Words W-030, Cathodic, test, procedure	6. Author Name: F. T. Clifton <i>F. T. Clifton</i> Signature Organization/Charge Code 71620/NF101	
7. Abstract Acceptance test procedure for Project W-030 Cathodic Protection Installation, 241-AY and 241-AZ Tank Farm Ventilation Upgrade.		

MASTER

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. 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. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

8. **RELEASE STAMP**

ACCEPTANCE TEST PROCEDURE WHC-SD-W030-ATP-001

TEST TITLE Cathodic Protection - Rectifier 31

LOCATION 200-E Area (West side of 241-AY Tank Farm outside of west fence)

PROJECT NUMBER W-030

WORK ORDER CR1132

PROJECT TITLE Tank Farm Ventilation Upgrade

Prepared By
ICF Kaiser Hanford Company
Richland, Washington

For the U.S. Department of Energy
Contract DE-AC06-93RL12359

PROCEDURE APPROVAL

ICF KAISER HANFORD COMPANY (ICF KH)

<u>A. R. Snowwhite</u> ^{hRS}	<u>2-15-95</u>	<u>J. E. Breed</u>	<u>10-25-94</u>
Originator	Date	Technical Documents	Date
<u>C. Dubler</u>	<u>2-15-95</u>	<u>J. A. Schuchard</u> ²⁻¹⁵⁻⁹⁵	<u>11-4-94</u>
Checker	Date	Safety	Date
<u>R. F. Heringer</u> ^{RFH}	<u>2/21/95</u>	<u>C. E. Jester</u> ²⁻¹⁵⁻⁹⁵	<u>11-3-94</u>
Environmental	Date	Quality Engineering	Date
<u>R. Hollingsworth</u> ^{JWH}	<u>2/22/95</u>		
Project Management	<u>11-22-94</u>		
	Date		

Westinghouse Hanford Company (WHC)

<u>R. B. Cole</u>	<u>3-24-95</u>	<u>H. M. Chapin</u>	<u>3/14/95</u>
Projects Department	Date	Quality Assurance	Date
<u>H. B. [Signature]</u>	<u>3/20/95</u>	<u>M. D. Harding</u>	<u>3-15-95</u>
Safety	Date	Operations	Date

MASTER

EXECUTION AND TEST APPROVAL

EXECUTED BY

_____ Test Director/Organization	_____ Date	_____ Test Operator/Organization	_____ Date
_____ Recorder/Organization	_____ Date		

WITNESSES

_____ Witness/Organization	_____ Date	_____ Title III Inspector	_____ Date
_____ Witness/Organization	_____ Date	_____ Witness/Organization	_____ Date

A-E APPROVAL

ICF Kaiser Hanford Company (ICF KH)

Without exceptions _____	With exceptions resolved _____	With exceptions outstanding _____
--------------------------	--------------------------------	-----------------------------------

_____ Acceptance Inspection	_____ Date	_____ Design Engineer	_____ Date
_____ Project Manager	_____ Date		

TEST APPROVAL AND ACCEPTANCE

Westinghouse Hanford Company (WHC)

Without exceptions _____	With exceptions resolved _____	With exceptions outstanding _____
--------------------------	--------------------------------	-----------------------------------

_____ <Title or Department>	_____ Date	_____ <Title or Department>	_____ Date
_____ <Title or Department>	_____ Date	_____ Cathodic Protection Engineer	_____ Date

TABLE OF CONTENTS

Section

Page

	TITLE/PROCEDURE APPROVAL	1
	EXECUTION AND TEST APPROVAL	2
	TABLE OF CONTENTS	3
1	PURPOSE	4
2	REFERENCES	4
3	RESPONSIBILITIES	4
4	CHANGE CONTROL	7
5	EXECUTION	7
6	EXCEPTIONS	7
7	PREREQUISITES, EQUIPMENT/INSTRUMENTS, AND ABBREVIATIONS	8
8	RECTIFIER, CABLES, AND SYSTEM OPERATION	10
	EXCEPTION FORM	21

NOTE: At completion of test, enter pages added during performance of test to this Table of Contents.

1 PURPOSE

This Acceptance Test Procedure (ATP) has been prepared to demonstrate that the cathodic protection system functions as required by project criteria.

2 REFERENCES

2.1 DRAWINGS

- *H-2-91041, Sh 1, Rev 4 Cathodic Protection - Plot Plan, Test Stations and Jumpers
- *H-2-91041, Sh 2, Rev 3 Cathodic Protection - Plot Plan, Anode Installation
- *H-2-91041, Sh 15, Rev 1 Electrical - Cathodic Protection Plan
- *H-2-91042, Sh 2, Rev 3 Cathodic Protection - Plot Plan Anode Installation
- H-2-131087, Sh 11, Rev 0 Piping Details - Passive Filter
- H-2-131378, Sh 3, Rev 0 Cathodic Protection Plan - AY Tank Farm
- H-2-131379, Sh 1, Rev 0 Cathodic Protection - Details
- *Drawings that show existing cathodic protection systems

2.2 SPECIFICATIONS

- W-030-C3, Rev 0 Construction Specification (Section 16640)

2.3 ENGINEERING CHANGE NOTICES (ECN)

Prior to final test approval, enter ECNs written against this ATP.

3 RESPONSIBILITIES

3.1 GENERAL

Each company or organization participating in this ATP will designate personnel to assume the responsibilities and duties as defined herein for their respective roles. The designees shall become familiar with this ATP and the systems involved to the extent that they can perform their assigned duties.

3.2 WHC PROJECT ENGINEER

- 3.2.1 Designates a Test Director.
- 3.2.2 Coordinates testing with the Facility Manager.
- 3.2.3 Acts as liaison between the participants in acceptance testing.
- 3.2.4 Distributes the approved testing schedule before start of testing.

- 3.2.5 Schedules and conducts a pretest kickoff meeting with test participants when necessary.
 - 3.2.6 Notifies the persons performing and witnessing the test 2 days before the start of testing.
 - 3.2.7 Schedules a dry run when necessary.
 - 3.2.8 Notifies concerned parties when a change is made in the testing schedule.
 - 3.2.9 Signs Execution and Test Approval page when test is approved and accepted.
 - 3.2.10 Takes necessary action to clear exceptions to the test.
 - 3.2.11 Signs Exception Form when exception has been resolved.
 - 3.2.12 Provides a distribution list for the approved and accepted ATP(ATR).
- 3.3 TEST DIRECTOR
- 3.3.1 Coordinates and directs acceptance testing.
 - 3.3.2 Confirms that field testing and inspection of the system or portion of the system to be tested has been completed.
 - 3.3.3 Stops any test which, in his or her judgment, may cause damage to the system until the problem has been resolved.
 - 3.3.4 After verifying there is no adverse impact, may alter the sequence in which systems or subsystems are tested.
 - 3.3.5 Ensures that required environmental conditions are maintained.
 - 3.3.6 If a test is to be suspended for a period of time, ensures that the system is left in a safe mode.
 - 3.3.7 Before restarting suspended test, re verifies the test prerequisites.
 - 3.3.8 Initiates ECNs to document required changes to the ATP.
 - 3.3.9 Reviews recorded data, discrepancies, and exceptions.
 - 3.3.10 Obtains information or changes necessary to clear or resolve objections during the performance of the test.
 - 3.3.11 Signs Execution and Test Approval page when test has been performed.
 - 3.3.12 Signs Exception Form when exception has been resolved.
 - 3.3.13 Obtains required signatures on the ATP Master prior to reproduction and distribution.

- 3.4 WITNESSES (Provided by Participating Organizations. One witness shall be a Title III acceptance inspector.)
- 3.4.1 Witness the tests.
 - 3.4.2 Review results of testing.
 - 3.4.3 Assist the Test Director when requested.
 - 3.4.4 Sign Execution and Test Approval page when test has been performed.
 - 3.4.5 Sign Exception Form when exception has been resolved.
- 3.5 RECORDER (Provided by ICF KH)
- 3.5.1 Prepares a Field copy from the ATP Master.
 - 3.5.2 Records names of all designated personnel on Field copy of ATP prior to start of testing.
 - 3.5.3 Records test instrument identification numbers and calibration expiration dates.
 - 3.5.4 Initials and dates every test step on the Field copy as it is completed next to the step number or on a data sheet, when provided. Records test data. On data sheets where there is not room for both the initial and date, date may be entered at bottom of column.
 - 3.5.5 Records objections and exceptions on an Exception form. Uses additional Exception forms as needed. Notifies the Test Director at time the objection is made.
 - 3.5.6 Signs Execution and Test Approval page when test has been performed.
 - 3.5.7 After test is finished, assigns alpha numeric page numbers to added data sheets and Exception forms. Records page numbers in the Table of Contents.
 - 3.5.8 Transfers Field copy entries for each step to the Master in ink or type, signs, and dates. Transmits the completed Master to the Test Director for approval signature routing. Transmits the Field copy to Construction Document Control for inclusion in the official project file.
 - 3.5.9 Signs Exception Form when exception has been resolved and transmits to Test Director.
- 3.6 TEST OPERATOR
- 3.6.1 Performs test under direction of the Test Director.
 - 3.6.2 Provides labor, equipment, and test instruments required for performing tests which have not been designated as being provided by others.

- 3.6.3 Requests in writing from the Test Director those services, materials, or equipment that have been designated as being supplied by others.
- 3.6.4 Confirms that all equipment required for performing test will be available at the start of testing.
- 3.6.5 Signs the Execution and Test Approval page.

3.7 DESIGN ENGINEER ACCEPTANCE INSPECTION

- 3.7.1 Evaluate results.
- 3.7.2 Sign for A-E Approval on Execution and Test Approval page.

4 CHANGE CONTROL

Required changes to this ATP must be processed on ECNs in accordance with company procedures. If a need for change is discovered in the course of running the test, the test shall be stopped until the ECN is approved. However, this does not prevent the running of another portion of the test unaffected by the change.

5 EXECUTION

5.1 OCCUPATIONAL SAFETY AND HEALTH

Individuals shall carry out their assigned work in a safe manner to protect themselves and others from undue hazards and to prevent damage to property and environment. Facility line managers shall assure the safety of activities within their areas to prevent injury, property damage, or interruption of operation. Performance of test activities shall always include safety and health aspects.

5.2 PERFORMANCE

- 5.2.1 Conduct testing in accordance with ICF KH Procedure CON 3.5 (Performance and Recording of Acceptance Test Procedures).
- 5.2.2 Perform test following the steps and requirements of this procedure.

6 EXCEPTIONS

6.1 GENERAL

Exceptions to the required test results are sequentially numbered and recorded on individual Exception forms. This enables case-by-case resolution and approval of each exception.

Errors/exceptions in the ATP itself shall NOT be processed as test exceptions (see Section 4 CHANGE CONTROL).

6.2 RECORDING

- 6.2.1 Number each exception sequentially as it occurs and record it on an Exception Form (KEH-428), sample appended.
- 6.2.2 Enter name and organization of objecting party for each exception.
- 6.2.3 Enter planned action to resolve each exception when such determination is made.

6.3 RETEST/RESOLUTION

Record the action taken to resolve each exception. Action taken may not be the same as planned action.

- 6.3.1 When action taken results in an acceptable retest, sign and date Retest Execution and Acceptance section of the Exception Form.
- 6.3.2 When action taken does not involve an acceptable retest, strike out the Retest Execution and Acceptance section of the Exception Form.

6.4 APPROVAL AND ACCEPTANCE

The customer provides final approval and acceptance of exceptions by checking one of the following on Exception Form:

- 6.4.1 Retest Approved and Accepted: Applicable when Retest Execution and Acceptance section is completed.
- 6.4.2 Exception Accepted-As-Is: Requires detailed explanation.
- 6.4.3 Other: Requires detailed explanation.

The customer signs and dates the Exception Form and obtains other customer internal approvals, if required.

6.5 DISTRIBUTION

A copy of the approved Exception Form is distributed to each participant. The signed original is attached to the ATP Master.

7 PREREQUISITES, EQUIPMENT/INSTRUMENTS, AND ABBREVIATIONS

7.1 PREREQUISITES

The following conditions shall exist at start of testing for that portion of the system being tested.

- 7.1.1 All tank farm buried piping systems and the cathodic protection systems have been inspected for compliance with construction documents.
- 7.1.2 Reference documents (including this ATP) have been verified for correct revision number and outstanding ECNs.

- 7.1.3 A Prejob Safety Analysis has been prepared and a Prejob Safety Meeting has been conducted.
- 7.1.4 Test instruments (except Waveform Analyzer) have a valid calibration stamp attached. Test instrument identification numbers and calibration expiration dates have been recorded in Para 7.2.

7.2 EQUIPMENT/INSTRUMENTS

Supplied by Test Operator unless otherwise noted. {Delete items not required. Add any additional necessary items.}

- 7.2.1 Voltohmmeter (VOM): Digital, portable, 0-150 V ac/dc.
Instrument No. _____ Expiration Date _____
- 7.2.2 Waveform Analyzer: Hand held instrument with display of ON-OFF pipe-to-soil potential, DC potential or AC potential, MCMiller Co, Model WFA-1.
- 7.2.3 Test leads with insulated covers for wire clips.
- 7.2.4 Portable test reel, containing a minimum of 200 feet of test wire, 600 V, No. 18 AWG minimum.
- 7.2.5 Portable copper-copper sulphate reference electrode. (Not required by ATP but may be required if required values are not attainable by use of permanent reference electrodes.)
- 7.2.6 Pipe locator.

7.3 ABBREVIATIONS

- ADC/UCNI Authorized Derivative Classifier/Unclassified Controlled Nuclear Information
- ECN Engineering Change Notice

8 RECTIFIER, CABLES, AND SYSTEM OPERATION

8.1 The following steps will verify (1) rectifier nameplate data, (2) rectifier input wiring is correctly terminated and color coded, and (3) anode header cable, anode loop cable, and negative return cables are properly labeled and connected.

8.1.1 Record nameplate data for Rectifier 31.

Make	_____
Model	_____
Serial Number	_____
AC Line Input Voltage	_____
AC Line Frequency	_____
Number of Phases	_____
DC Output Voltage	_____
DC Output Current	_____

8.1.2 Verify that rectifier input circuit breaker is OPEN.

8.1.3 Open disconnect switch on pole near Instrument Building 241-AY-801 that supplies ac input power to Rectifiers 7, 8 and 31.

8.1.4 Verify no dc voltage at rectifier output terminals.

8.1.5 Verify the rectifier case is filled with oil to the indicated level and that oil is CLEAR.

8.1.6 Verify the ac wiring, from disconnect switch on pole near Instrument Building 241-AY-801, is terminated on the ac input terminals of rectifier.

8.1.6.1 Phase A (Red).

8.1.6.2 Phase B (Yellow)

8.1.6.3 Phase C (Blue or Black)

8.1.6.4 Ground (Green)

8.1.7 Verify the rectifier output cables are properly labeled.

8.1.7.1 (+) FR31 (Anode Feeder Cable).

8.1.7.2 (+) FR31E (Anode Feeder Cable).

8.1.7.3 (+) LR31 (Anode Loop Cable).

- _____ 8.1.7.4 (+) LR31E (Anode Loop Cable).
- _____ 8.1.7.5 (-) R31 (Negative Return Cable).
- 8.1.8 Verify the anode feeder and anode loop cables are terminated at the rectifier positive terminals.
- _____ 8.1.8.1 (+) FR31 (Anode Feeder Cable).
- _____ 8.1.8.2 (+) FR31E (Anode Feeder Cable).
- _____ 8.1.8.3 (+) LR31 (Anode Loop Cable).
- _____ 8.1.8.4 (+) LR31E (Anode Loop Cable).
- _____ 8.1.9 Verify the negative return cable (-) R31 is connected to rectifier negative terminal.
- _____ 8.1.10 Verify the rectifier case is connected to the ground rod.

NOTE: The steps in Paragraphs 8.2 and 8.3 may be done concurrently.

8.2 The following steps will verify pipe test conductors are (1) terminated on designated terminals in accordance with the Drawings and (2) labeled correctly with the pipe number or reference electrode. Record terminal number to which each conductor is connected.

- _____ 8.2.1 Test Station T(31-201)
- 8-inch V-AY1202-M9 Terminals _____ and _____
w/12" ENC-M26
- Reference Electrode Terminal _____
- _____ 8.2.2 Test Station T(31-202)
- 8-inch V-AY2101-M9 Terminals _____ and _____
w/12" ENC-M26
- Reference Electrode Terminal _____
- _____ 8.2.3 Test Station T(31-203)
- 8-inch V-AY2202-M9 Terminals _____ and _____
w/12-inch ENC-M26
- Reference Electrode Terminal _____
- _____ 8.2.4 Test Station T(31-204)
- 10-inch V-AY1200-M9 Terminals _____ and _____
w/14-inch ENC-M26
- Reference Electrode Terminal _____

_____ 8.2.5 Test Station T(31-205)
 10-inch V-AY2200-M9 Terminals _____ and _____
 w/14-inch ENC-M26
 Reference Electrode Terminal _____

_____ 8.2.6 Test Station T(22-31)
 4-inch V-AX100-M26 Terminals _____ and _____
 Reference Electrode Terminal _____

8.3 Using a VOM, measure and record resistance between each set of pipe test
 conductors that are identified as being connected to the same pipe.
 Resistance measured shall be less than 1 ohm.

_____ 8.3.1 Record the following VOM data:
 Manufacturer _____
 Model _____
 Serial Number _____
 Calibration Sticker Data _____

_____ 8.3.2 Test Station T(31-201)
 8-inch V-AY1202-M9 w/12-inch ENC-M26 _____ ohms

_____ 8.3.3 Test Station T(31-202)
 8-inch V-AY2101-M9 w/12-inch ENC-M26 _____ ohms

_____ 8.3.4 Test Station T(31-203)
 8-inch V-AY2202-M9 w/12-inch ENC-M26 _____ ohms

_____ 8.3.5 Test Station T(31-204)
 10-inch V-AY1200-M9 w/14-inch ENC-M26 _____ ohms

_____ 8.3.6 Test Station T(31-205)
 10-inch V-AY2200-M9 w/14-inch ENC-M26 _____ ohms

_____ 8.3.7 Test Station T(22-31)
 4-inch V-AX100-M26 _____ ohms

8.4 The following steps will verify proper operation of Rectifier 31.

8.4.1 Open the input circuit breaker on Rectifiers 7, 8, 9, and 14 (Reference Drawings H-2-91041, Sh 2 and H-2-91042, Sh 2).

8.4.2 Verify Rectifier 31 input circuit breaker is OPEN.

8.4.3 Verify COARSE and FINE transformer taps on rectifier are set at the lowest levels (Coarse - A and Fine - 1).

8.4.4 Close disconnect switch on pole near Instrument Building 241-AY-801 that supplies ac input power to Rectifiers 7, 8, and 31.

8.4.5 Close rectifier input circuit breaker. Using meter on rectifier, record volts and amperes, and then open input circuit breaker. Set fine tap to next higher setting and leave coarse tap as previously set. Close input circuit breaker again and record volts and amperes, then open the input circuit breaker. Continue adjusting the output of the rectifier in steps until either the dc volts or dc amperes (whichever is first) approaches, but does not exceed, the nameplate rating of rectifier.

<u>Transformer Taps</u>		<u>dc Output</u>	
<u>Coarse</u>	<u>Fine</u>	<u>Volts</u>	<u>Amp</u>
A	1	_____	_____
A	2	_____	_____
A	3	_____	_____
A	4	_____	_____
A	5	_____	_____
B	1	_____	_____
B	2	_____	_____
B	3	_____	_____
B	4	_____	_____
B	5	_____	_____
C	1	_____	_____
C	2	_____	_____
C	3	_____	_____
C	4	_____	_____

<u>Transformer Taps</u>		<u>dc Output</u>	
<u>Coarse</u>	<u>Fine</u>	<u>Volts</u>	<u>Amp</u>
C	5	_____	_____
D	1	_____	_____
D	2	_____	_____
D	3	_____	_____
D	4	_____	_____
D	5	_____	_____

8.4.6 Open rectifier input circuit breaker and the disconnect switch on the pole near Building 241-AY-801.

NOTE: Anode ground bed tests (voltage output tests of each anode) will not be required by this ATP since the majority of anodes are existing, and their voltage output would affect the output of the new anodes which would result in erroneous voltage values for the new anodes.

8.5 The following steps will verify proper operation of the cathodic protection system:

8.5.1 Position the 10-position DIP switch on the Pulse Generator (located in the rectifier control panel) as follows: SW1, 2, and 3 in the OFF position and SW4, 5, 6, 7, 8, 9, and 10 in the ON position.

8.5.2 Close Rectifier 31 input circuit breaker and the disconnect switch on the pole near Instrument Building 241-AY-801 and verify the rectifier has been energized for 24 hours prior to this test.

8.5.3 Measure and record the ON and OFF pipe to soil potential of each protected pipe by use of the Waveform Analyzer. OFF values should be equal to or more negative than (-)0.85 V dc (ie, (-)0.86 V dc) or the ON values should be 100 mV more negative than the OFF values. If these values are not attainable by use of the existing permanent reference electrode a portable reference electrode may be used.

NOTE: Connect positive terminal of the Waveform Analyzer to the reference electrode terminal and the common terminal on the Waveform Analyzer to the pipe test conductor terminal. Turn the Mode switch from the OFF position to the WFA position, record values, then turn to the OFF position.

			<u>Volts</u>	
_____	8.5.3.1	Test Station T(41-7)		
		Reference Electrode and 2-inch PW-4531	On _____	Off _____
_____	8.5.3.2	Test Station T(41-5)		
		Reference Electrode and 2-inch PW-4531	On _____	Off _____
_____	8.5.3.3	Test Station T(41-28)		
		Reference Electrode and 2-inch SL-505	On _____	Off _____
_____	8.5.3.4	Test Station T(41-8)		
		Reference Electrode and 2-inch SL-504	On _____	Off _____
_____	8.5.3.5	Test Station T(41-10)		
		Reference Electrode and 2-inch SL-504	On _____	Off _____
_____	8.5.3.6	Test Station T(41-24)		
		Reference Electrode and 2-inch PW-4522	On _____	Off _____
		Reference Electrode and 2-inch PW-4523	On _____	Off _____
		Reference Electrode and 2-inch PW-4526	On _____	Off _____
_____	8.5.3.7	Test Station T(41-26)		
		Reference Electrode and 2-inch PW-4523	On _____	Off _____
_____	8.5.3.8	Test Station T(41-12)		
		Reference Electrode and 2-inch SL-504	On _____	Off _____
_____	8.5.3.9	Test Station T(41-13)		
		Reference Electrode and 2-inch SL-504	On _____	Off _____
_____	8.5.3.10	Test Station T(41-15)		
		Reference Electrode and 2-inch SL-504	On _____	Off _____

_____	8.5.3.11	Test Station T(41-46)		
		Reference Electrode and 2-inch SL-502	On _____	Off _____
_____	8.5.3.12	Test Station T(41-16)		
		Reference Electrode and 2-inch SL-502	On _____	Off _____
_____	8.5.3.13	Test Station T(41-20)		
		Reference Electrode and 2-inch SL-502	On _____	Off _____
		Reference Electrode and 3-inch DR-370	On _____	Off _____
_____	8.5.3.14	Test Station T(41-23)		
		Reference Electrode and 2-inch DR-370	On _____	Off _____
_____	8.5.3.15	Test Station T(41-6)		
		Reference Electrode and 2-inch SL-502	On _____	Off _____
_____	8.5.3.16	Test Station T(41-52)		
		Reference Electrode 1 and 2-inch SL-100	On _____	Off _____
		Reference Electrode 1 and 2-inch SL-101	On _____	Off _____
_____	8.5.3.17	Test Station T(41-53)		
		Reference Electrode 1 and 3-inch DR-314	On _____	Off _____
_____	8.5.3.18	Test Station T(41-36)		
		Reference Electrode and 2-inch SL-502	On _____	Off _____
		Reference Electrode and 3-inch DR-327	On _____	Off _____
_____	8.5.3.19	Test Station (T06-1A)		
		Reference Electrode and 14-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____

_____	8.5.3.20	Test Station (T06-2)		
		Reference Electrode and 8-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____
_____	8.5.3.21	Test Station (T06-3)		
		Reference Electrode and 6-inch inlet	On _____	Off _____
		Reference Electrode and 6-inch exhaust	On _____	Off _____
_____	8.5.3.22	Test Station (T06-4)		
		Reference Electrode and 6-inch inlet	On _____	Off _____
_____	8.5.3.23	Test Station (T06-5)		
		Reference Electrode and 6-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____
		Reference Electrode and 2-inch SL-504	On _____	Off _____
_____	8.5.3.24	Test Station (T06-6)		
		Reference Electrode and 10-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____
_____	8.5.3.25	Test Station (T06-7)		
		Reference Electrode and 10-inch inlet	On _____	Off _____
		Reference Electrode and 12-inch exhaust	On _____	Off _____
_____	8.5.3.26	Test Station (T06-8)		
		Reference Electrode and 14-inch inlet	On _____	Off _____
		Reference Electrode and 12-inch exhaust	On _____	Off _____

_____	8.5.3.27	Test Station (T06-9)		
		Reference Electrode and 14-inch inlet	On _____	Off _____
		Reference Electrode and 12-inch exhaust	On _____	Off _____
_____	8.5.3.28	Test Station T(24-1)		
		Reference Electrode and 6-inch inlet	On _____	Off _____
_____	8.5.3.29	Test Station T(24-2)		
		Reference Electrode and 8-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____
_____	8.5.3.30	Test Station T(24-3)		
		Reference Electrode and 10-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____
_____	8.5.3.31	Test Station T(24-4)		
		Reference Electrode and 14-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____
_____	8.5.3.32	Test Station T(24-6)		
		Reference Electrode and 14-inch inlet	On _____	Off _____
		Reference Electrode and 12-inch exhaust	On _____	Off _____
_____	8.5.3.33	Test Station T(24-7)		
		Reference Electrode and 14-inch inlet	On _____	Off _____
		Reference Electrode and 12-inch exhaust	On _____	Off _____

_____	8.5.3.34	Test Station T(24-8)		
		Reference Electrode and 14-inch inlet	On _____	Off _____
		Reference Electrode and 12-inch exhaust	On _____	Off _____
_____	8.5.3.35	Test Station T(24-9)		
		Reference Electrode and 10-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____
_____	8.5.3.36	Test Station T(24-10)		
		Reference Electrode and 8-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____
_____	8.5.3.37	Test Station T(24-11)		
		Reference Electrode and 8-inch inlet	On _____	Off _____
		Reference Electrode and 8-inch exhaust	On _____	Off _____
		Reference Electrode and 2-inch SL-504	On _____	Off _____
_____	8.5.3.38	Test Station T(31-201)		
		Reference Electrode and 8-inch V-AY1202-M9 w/12-inch ENC-M26	On _____	Off _____
_____	8.5.3.39	Test Station T(31-202)		
		Reference Electrode and 8-inch V-AY2101-M9 w/12-inch ENC-M26	On _____	Off _____
_____	8.5.3.40	Test Station T(31-203)		
		Reference Electrode and 8-inch V-AY2202-M9 w/12-inch ENC-M26	On _____	Off _____

- _____ 8.5.3.41 Test Station T(31-204)
Reference Electrode and On _____ Off _____
10-inch V-AY1200-M9
w/14-inch ENC-M26
- _____ 8.5.3.42 Test Station T(31-205)
Reference Electrode and On _____ Off _____
10-inch V-AY2200-M9
w/14-inch ENC-M26
- _____ 8.5.3.43 Test Station T(22-31)
Reference Electrode and On _____ Off _____
4-inch V-AX100-M26
- _____ 8.5.3.44 Waste storage tanks are not cathodically protected,
therefore, the voltage recorded here is for reference only.
- _____ a. Test Station T(41-61)
Deep reference electrode 10 feet and Tank 241-AY-101
nearest pipe riser. _____ volts ON _____ volts OFF
Deep reference electrode 25 feet and Tank 241-AY-101
nearest pipe riser. _____ volts ON _____ volts OFF
- _____ b. Test Station T(41-62)
Deep reference electrode 10 feet and Tank 241-AY-102
nearest pipe riser. _____ volts ON _____ volts OFF
Deep reference electrode 25 feet and Tank 241-AY-102
nearest pipe riser. _____ volts ON _____ volts OFF
- _____ 8.5.3.45 Turn the mode switch on the Waveform Analyzer to the OFF
position and disconnect leads.
- _____ 8.5.4 Open input circuit breaker on Rectifier 31 and close input
circuit breaker on Rectifiers 7, 8, 9, and 14.
- _____ 8.5.5 Testing complete, secure from test.

END OF TEST

EXCEPTION NO.		Project No.		ATP No.		Rev.		
Recorded by			Organization		Date Recorded		ATP Page No.	
Step No.		Requirement						
Description of Problem								
Objector 1 (Name/Organization)				Objector 2 (Name/Organization)				
Planned Action								
Action Taken								
RETEST EXECUTION AND ACCEPTANCE								
Retest Installation Contractor		Date		Recorder		Date		
Witness 1 (Name/Organization)		Date		Witness 2 (Name/Organization)		Date		
Field Engineering		Date		Test Director (Name/Organization)		Date		
Design Engineering (Author of ATP)		Date		A-E Project Engineer		Date		
APPROVAL AND ACCEPTANCE - OPERATING CONTRACTOR								
☐ Retest Approved and Accepted ☐ Exception Accepted-as-is* ☐ Other*								
* Explanation								
Approver 1		Date		Approver 2		Date		
Approver 3		Date		Approver 4		Date		

KEH-428 (6-85)