JUN 14 1995
Sta. 31 #67

ENGINEERING DATA TRANSMITTAL

Page 1 of 1
1. EDT 606400

2. To: (Receiving Organization) SST Retrieval Projects	3. From: (Originating Organization) Retrieval Engineering	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: W-320/77360	6. Cog. Engr.: W. M. Lane	7. Purchase Order No.: N/A
8. Originator Remarks: The attached specification is for approval.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 241-C-106
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
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		14. Required Response Date: June 8, 1995

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 Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-W320-ATP-002	ALL	0	Cathodic Protection - Addition of 6 Anodes to Existing Rectifier 31	SQ	1	N/A	N/A

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

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)										(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1,3	1	Cog.Eng.: W. M. Lane	<i>W.M. Lane</i>	6/1/95	S6-12	D. E. Bowers			S6-01	3	
1	1	Cog. Mgr.: J. P. Harris	<i>J.P. Harris</i>	6-1-95	S6-12	F. W. Bradshaw			S3-10	3	
1,3	1	QA: J. J. Huston	<i>J.J. Huston</i>	6-1-95	S6-12	T. H. May			S6-12	3	
1,3	1	Safety: M. N. Islam	<i>M.N. Islam</i>	6/1/95	R3-08	Project W-320 Files			S2-48	3	
1	1	Cathodic Cog. Eng.: J. N. Haberman	<i>J.N. Haberman</i>	6/5/95	R1-30	Central Files (orig. +2)			L8-04	3	
3	1	Env.: D. J. Carrell			H6-22	OSTI (2)			A3-36		
3		E. G. Allen			S6-12						
3		J. W. Bailey			S6-12						

18. W. M. Lane <i>W.M. Lane</i> 6/1/95 Signature of EDT Originator Date	19. Authorized Representative Date for Receiving Organization	20. J. P. Harris <i>J.P. Harris</i> 6-1-95 Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
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RELEASE AUTHORIZATION

Document Number: WHC-SD-W320-ATP-002, Rev. 0

Document Title: Cathodic Protection - Addition of 6 Anodes to Existing Rectifier 31

Release Date: June 8, 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

June 8, 1995

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SUPPORTING DOCUMENT		1. Total Pages 15
2. Title Cathodic Protection - Addition of 6 Anodes to Existing Rectifier 31	3. Number WHC-SD-W320-ATP-002	4. Rev No. 0
5. Key Words Project W-320, cathodic protection, rectifier	6. Author Name: W. M. Lane <i>W.M. Lane</i> Signature Organization/Charge Code 77360/D2M58	
7. Abstract Acceptance test procedure for Cathodic Protection - Addition of 6 Anodes to Existing Rectifier 31 for Project W-320.		
8. RELEASE STAMP <div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 10px auto;"> OFFICIAL RELEASE BY WHO DATE JUN 14 1995 <i>Sta. 31 #67</i> </div>		

TEST TITLE Cathodic Protection - Addition of (6) Anodes to Existing Rectifier 31LOCATION West side of 241-AY Tank Farm outside of west fencePROJECT NUMBER W-320WORK ORDER ER4319PROJECT TITLE Tank 241-C-106 Sluicing

Prepared By
ICF Kaiser Hanford Company
Richland, Washington

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

PROCEDURE APPROVAL

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Date

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Checker 2/13/95
Date

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Operations 4-19-95
Date

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

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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 additions are installed, connected, and function as required by project criteria.

2 REFERENCES

2.1 DRAWINGS

H-2-818708, Sh 1, Rev 0 Electrical - Cathodic Protection Plan #3

H-2-818708, Sh 2, Rev 0 Electrical - Cathodic Protection Details

2.2 SPECIFICATIONS

W-320-C7, 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

WHC 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.

WHC signs and dates the Exception Form and obtains other WHC 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 Buried piping in the 241-AY Tank Farm and the cathodic protection system 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 100 feet of test wire, 600 V, No. 18 AWG minimum.
- 7.2.5 Portable copper-copper sulphate reference electrode.
- 7.2.6 Pipe locator.

7.3 ABBREVIATIONS

ECN Engineering Change Notice

8 PIPE TEST CONDUCTORS, NATIVE POTENTIALS, ANODES, AND SYSTEM OPERATION

NOTE: The steps shown in Paragraphs 8.1 and 8.2 may be done concurrently.

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

8.1.1 Test Station T(31-204)

4 inch SL-100-M9 w/6 inch ENC-M26a Terminals ____ and ____

4 inch SN-200-M9 w/6 inch ENC-M26a Terminals ____ and ____

4 inch 225# STM Terminals ____ and ____

Reference Electrode Terminal ____

8.1.2 Test Station T(31-205)

4 inch SL-100-M9 w/6 inch ENC-M26a Terminals ____ and ____

6 inch PSW - S505 Terminals ____ and ____

6 inch PSW - S508 Terminals ____ and ____

3 inch PW-4513 Terminals ____ and ____

Reference Electrode Terminal ____

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

8.2.1 Record the following VOM data:

Manufacturer _____

Model _____

Serial Number _____

Calibration Sticker Data _____

8.2.2 Test Station T(31-204)

4 inch SL-100-M9 w/6 inch ENC-M26a _____ ohms

4 inch SN-200-M9 w/6 inch ENC-M26a _____ ohms

4 inch 225# STM _____ ohms

_____ 8.2.3	Test Station T(31-205)	
	4 inch SL-100-M9 w/6 inch ENC-M26a	_____ ohms
	6 inch PSW - S505	_____ ohms
	6 inch PSW - S508	_____ ohms
	3 inch PW-4513	_____ ohms

_____ 8.3 Open the input circuit breaker on Rectifier 31.

_____ 8.4 Connect the 6 coiled and taped anode lead cables, in Anode Distribution box ADB(31-7), to spare terminals.

_____ 8.4.1 A(31-331) Anode Lead Cable

_____ 8.4.2 A(31-332) Anode Lead Cable

_____ 8.4.3 A(31-333) Anode Lead Cable

_____ 8.4.4 A(31-334) Anode Lead Cable

_____ 8.4.5 A(31-335) Anode Lead Cable

_____ 8.4.6 A(31-336) Anode Lead Cable

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 provide the native potential of each new pipe using both the permanent reference electrode and a portable reference electrode for comparison.

NOTE: Connect the pipe test conductor to the positive terminal of the Wave Form Analyzer and the lead from the permanent or portable reference electrode to the common terminal of the Wave Form Analyzer. Turn the mode switch, on the Wave Form Analyzer, to the DC position. (Place the portable reference electrode directly above the pipe for those tests that require the use of the portable reference electrode).

_____ 8.5.1	Test Station T(31-204)	<u>Volts</u>
	Permanent Reference Electrode and 4-inch SL-100-M9 w/6" ENC-M26a	_____
	Portable Reference Electrode and 4-inch SL-100-M9 w/6" ENC-M26a	_____
	Permanent Reference Electrode and 4-inch SN-200-M9 w/6" ENC-M26a	_____

Portable Reference Electrode and 4-inch
SN-200-M9 w/6" ENC-M26a

8.5.2 Test Station T(31-205)

Permanent Reference Electrode and 4-inch
SL-100-M9 w/6" ENC-M26a

Portable Reference Electrode and 4-inch
SL-100-M9 w/6" ENC-M26a

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

8.6.1 Verify position of 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.

8.6.2 Close Rectifier 31 input circuit breaker and verify the rectifier has been energized for 24 hours prior to the following test.

8.6.3 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 permanent reference electrode, a portable reference electrode may be used. For unprotected pipe there is no criteria and the values will be recorded for record purposes.

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.

8.6.3.1 Test Station T(31-204)

Reference Electrode and
4-inch SL-100-M9
w/6-inch ENC-M26a

On _____ Off _____

Reference Electrode and
4-inch SN-200-M9
w/6-inch ENC-M26a

On _____ Off _____

Reference Electrode and
4-inch 225# STM (Unprotected)

On _____ Off _____

_____ 8.6.3.2 Test Station T(31-205)

Reference Electrode and
4-inch SL-100-M9
w/6-inch ENC-M26a

On _____ Off _____

Reference Electrode and
6-inch PSW-S508 (Unprotected)

On _____ Off _____

Reference Electrode and
3-inch PW-4513 (Unprotected)

On _____ Off _____

Reference Electrode and
6-inch PSW-S505 (Unprotected)

On _____ Off _____

_____ 8.7 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)