

S

SEP 22 2000

4

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT

629698

2. To: (Receiving Organization) Distribution		3. From: (Originating Organization) DST Maintenance & Reliability Eng		4. Related EDT No.: N/A							
5. Proj./Prog./Dept./Div.: RPP Corrosion Probe		6. Design Authority/Design Agent/Cog. Engr.: EC Norman <i>Resp.</i>		7. Purchase Order No.: N/A							
8. Originator Remarks: This document satisfies the requirements of Milestone A.1-3 of FY 2000 TTP # RLO-9-WT-41				9. Equip./Component No.: N/A							
				10. System/Bldg./Facility: N/A							
				12. Major Assem. Dwg. No.: N/A							
11. Receiver Remarks:		11A. Design Baseline Document? ☐ Yes ☒ No		13. Permit/Permit Application No.: N/A							
				14. Required Response Date: N/A							
15. DATA TRANSMITTED											
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition			
1	RPP-6402		0	Acceptance Test Report for	N/A	1	1				
				Fourth-Generation							
				Hanford Corrosion							
				Monitoring System							
16. KEY											
Approval Designator (F)		Reason for Transmittal (G)			Disposition (H) & (I)						
E, S, Q, D OR N/A (See WHC-CM-3-5, Sec. 12.7)		1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)			1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged						
17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
		Design Authority				1	1	EA Fredenburg	<i>E. Fredenburg</i>	9/19/00	
		Design Agent									
1	1	<i>Resp.</i> Cog. Engr. EC Norman	<i>E. C. Norman</i>	9/18/00							
1	1	Cog. Mgr. DH Shuford	<i>DH Shuford</i>	9/22/00							
		QA									
		Safety									
		Env.									
18. <i>E. C. Norman</i> EC Norman Signature of EDT Originator		19. <i>GP Duncan</i> GP Duncan Authorized Representative for Receiving Organization		20. <i>DH Shuford</i> DH Shuford Design Authority/Consent Manager		21. DOE APPROVAL (if required) Ctrl No. _____ ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments					

[illegible]

Acceptance Test Report for Fourth-Generation Hanford Corrosion Monitoring System

E. C. Norman

CH2M HILL Hanford Group, Inc.

Richland, WA 99352

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

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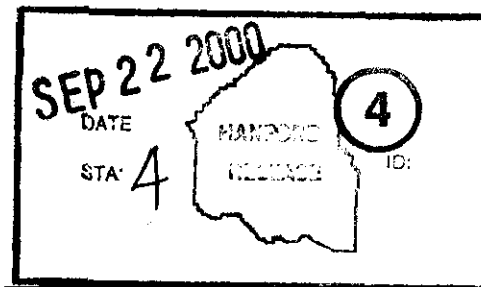
Abstract: This document satisfies the requirements of Milestone A.1-3 of
FY 2000 TTP # RLO-9-WT-41

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Release Approval

9-22-00
Date



Release Stamp

Approved For Public Release

ACCEPTANCE TEST REPORT FOR FOURTH GENERATION
HANFORD CORROSION MONITORING SYSTEM

G. L. Edgemon
Hiline Engineering & Fabrication, Inc.
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Richland, Washington 99352

ACCEPTANCE TEST REPORT FOR FOURTH GENERATION HANFORD CORROSION MONITORING SYSTEM

1.0 PURPOSE

This Acceptance Test Report (ATR) will document the satisfactory operation of the corrosion probe cabinets destined for installation on tanks 241-AN-102 and 241-AN-107. This ATR will be performed by the manufacturer on each cabinet prior to delivery to the site.

2.0 TEST OBJECTIVES

The objective of this procedure is to demonstrate and document the acceptance of the corrosion monitoring cabinets to be installed on tanks 241-AN-102 and 241-AN-107. One cabinet will be installed on each tank. Each cabinet will contain corrosion monitoring hardware to be connected to existing corrosion probes already installed in each tank. The test will consist of a continuity test of the cabinet wiring from the end of cable to be connected to corrosion probe, through the appropriate intrinsic safety barriers and out to the 15 pin D-shell connectors to be connected to the corrosion monitoring instrument. Additional testing will be performed using a constant current and voltage source provided by the corrosion monitoring hardware manufacturer to verify proper operation of corrosion monitoring instrumentation (input a known signal and see if the instrumentation records the proper value).

3.0 RESPONSIBILITIES

3.1 TEST COORDINATION AND PERFORMANCE

A representative from the receiving organization shall be responsible for the coordination, scheduling, performance, and documentation of this test procedure.

3.2 TEST WITNESSES

A representative from the receiving organization shall perform the function of test witness. All corrosion probe tree assembly testing shall be witnessed, verified and approved with the Test Engineers signature.

3.2 RECEIPT INSPECTION

Cabinets will be subjected to receipt inspection and inspection by a certified National Electric Code (NEC) inspector from the appropriate organizations within the Hanford Site prior to acceptance by the Hanford Site.

4.0 DOCUMENTATION

4.1 TEST RECORD

Any personnel involved in the performance of this test including the Test Engineer shall fill out a line in Section 7.0 RECORDS.

Test results shall be recorded by the Test Engineer. Unacceptable conditions or readings are to be referred to Section 8.0 EXCEPTIONS. A complete working copy of this procedure and all exception records shall be maintained as lifetime records in accordance with RPP-PRO-222, Rev. 0, Quality Assurance Records Standards.

4.2 EXCEPTIONS

Exceptions by step number, and other notes are to be recorded under Section 8.0 EXCEPTIONS. This section must be dispositioned (including the generation of any required ECNs) and signed off by the Test Engineer prior to final ATP acceptance. If no exceptions are encountered, this section shall be so noted and closed out with the signature of the Test Engineer. During the performance of this test errors in text may be encountered which require correction/adjustment to complete the test. The correction is to be noted in the ATP and listed as an exception in Section 8.0 EXCEPTIONS.

4.3 TEST EXECUTION RECORD

Approval of the ATP results shall be accepted by the Test Engineer as indicated by signature in Section 9.0 TEST EXECUTION RECORD.

5.0 TEST EQUIPMENT

- Multimeter
- Constant Voltage/Current Source

6.0 ACCEPTANCE TEST

Complete acceptance test procedure is to be performed on each cabinet.

6.1 CONTINUITY TEST

Using a standard multimeter, electrical continuity shall be verified on each of the 24 conductors used for picking up signal from corrosion probe electrodes. To perform this continuity check, make the necessary connections between each pin on the connector that will be attached to the existing corrosion probe and its respective pin in the 15 pin D-type connector that will be attached to the corrosion monitoring hardware. Use the data cable that will be used in the final field installation for this test. The continuity check will be performed starting with channel 1, and ending with channel 8.

- 6.1.1 Record model, serial number, and calibration expiration date of multimeter below.

Instrument: Fluke Model 87 III SN: 70821340

Calibration Expiration Date: 03/20/01

- 6.1.2 Check continuity on each channel of **Cabinet #1**. Circle Yes or No in regard to whether continuity exists.

<u>Conductor</u>	<u>Continuity</u>
Channel 1 Working Electrode	☒ Yes / ☐ No
Channel 1 Counter Electrode	☒ Yes / ☐ No
Channel 1 Reference Electrode	☒ Yes / ☐ No
Channel 2 Working Electrode	☒ Yes / ☐ No
Channel 2 Counter Electrode	☒ Yes / ☐ No
Channel 2 Reference Electrode	☒ Yes / ☐ No
Channel 3 Working Electrode	☒ Yes / ☐ No
Channel 3 Counter Electrode	☒ Yes / ☐ No
Channel 3 Reference Electrode	☒ Yes / ☐ No
Channel 4 Working Electrode	☒ Yes / ☐ No
Channel 4 Counter Electrode	☒ Yes / ☐ No
Channel 4 Reference Electrode	☒ Yes / ☐ No
Channel 5 Working Electrode	☒ Yes / ☐ No
Channel 5 Counter Electrode	☒ Yes / ☐ No
Channel 5 Reference Electrode	☒ Yes / ☐ No
Channel 6 Working Electrode	☒ Yes / ☐ No
Channel 6 Counter Electrode	☒ Yes / ☐ No
Channel 6 Reference Electrode	☒ Yes / ☐ No
Channel 7 Working Electrode	☒ Yes / ☐ No
Channel 7 Counter Electrode	☒ Yes / ☐ No
Channel 7 Reference Electrode	☒ Yes / ☐ No
Channel 8 Working Electrode	☒ Yes / ☐ No
Channel 8 Counter Electrode	☒ Yes / ☐ No
Channel 8 Reference Electrode	☒ Yes / ☐ No

Cabinet #1 in
this document is
the cabinet to
be installed on
tank 241-AN-107
EIN-
AN107-WST-ENCL-108
EChorman 9/22/00

- 6.1.3 Check continuity on each channel of **Cabinet #2**. Circle Yes or No in regard to whether continuity exists.

<u>Conductor</u>	<u>Continuity</u>
Channel 1 Working Electrode	☐ Yes / ☐ No
Channel 1 Counter Electrode	☐ Yes / ☐ No
Channel 1 Reference Electrode	☐ Yes / ☐ No
Channel 2 Working Electrode	☐ Yes / ☐ No
Channel 2 Counter Electrode	☐ Yes / ☐ No
Channel 2 Reference Electrode	☐ Yes / ☐ No
Channel 3 Working Electrode	☐ Yes / ☐ No
Channel 3 Counter Electrode	☐ Yes / ☐ No
Channel 3 Reference Electrode	☐ Yes / ☐ No
Channel 4 Working Electrode	☐ Yes / ☐ No
Channel 4 Counter Electrode	☐ Yes / ☐ No
Channel 4 Reference Electrode	☐ Yes / ☐ No
Channel 5 Working Electrode	☐ Yes / ☐ No
Channel 5 Counter Electrode	☐ Yes / ☐ No
Channel 5 Reference Electrode	☐ Yes / ☐ No
Channel 6 Working Electrode	☐ Yes / ☐ No
Channel 6 Counter Electrode	☐ Yes / ☐ No
Channel 6 Reference Electrode	☐ Yes / ☐ No
Channel 7 Working Electrode	☐ Yes / ☐ No
Channel 7 Counter Electrode	☐ Yes / ☐ No
Channel 7 Reference Electrode	☐ Yes / ☐ No
Channel 8 Working Electrode	☐ Yes / ☐ No
Channel 8 Counter Electrode	☐ Yes / ☐ No
Channel 8 Reference Electrode	☐ Yes / ☐ No

Cabinet #2 in this document is the cabinet to be installed on tank 241-AW-102
EIN-
AN102-WST-ENCL-106
Echoman 9/22/00

- 6.1.4 Test Engineer sign that steps 6.1.1 through 6.1.3 are complete.

 9/13/00
Test Engineer Date

6.2 INSTRUMENTATION FUNCTIONAL TEST

Using a constant current and constant voltage source of between 0.1 – 20 microamps and 0.1 to 200 mV respectively, check operation of corrosion monitoring instrumentation by putting instrumentation in measuring configuration and properly measuring/recording the known signal provided by the source. Constant current and voltage source should be checked for accuracy with calibrated multimeter prior to start of testing. Constant current and voltage source should be measured by corrosion monitoring software/hardware using the actual cables to be used in the final field installation. Constant current and voltage source should be measured after passing through the intrinsic safety barrier system to be used in final field installation.

Connect constant current/voltage source to appropriate pins at end of data cable to be connected to corrosion probe in final field installation. This cable should run back through the intrinsic safety barriers and be properly connected to corrosion monitoring instrumentation per vendor instruction. Launch corrosion monitoring software and record on each channel for a minimum of one minute to verify that known current/voltage signal is being properly recorded by software. Test will be considered a success on each channel if that channel records values within +/- 10% of the source values for current and voltage.

- 6.2.1 Record model, serial number, and calibration expiration date of multimeter below.

Instrument: Fluke Model 87 III SN: 70821340

Calibration Expiration Date: 03/20/01

- 6.2.2 Record model and serial number of constant current/voltage source below.

Instrument: CPL Test Box SN: 168 1/1

- 6.2.3 Check known constant current/voltage signal against measured current/voltage value on corrosion monitoring software/hardware on **Cabinet #1**.

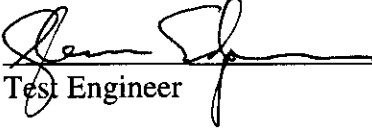
Channel	Constant Current Source Value	Constant Voltage Source Value	Instrument Recorded Current Value	Instrument Recorded Voltage Value
1	<u>249 nA</u>	<u>102 mV</u>	<u>248 nA</u>	<u>102 mV</u>
2	<u>249 nA</u>	<u>102 mV</u>	<u>249 nA</u>	<u>102 mV</u>
3	<u>249 nA</u>	<u>102 mV</u>	<u>249 nA</u>	<u>102 mV</u>
4	<u>249 nA</u>	<u>102 mV</u>	<u>251 nA</u>	<u>102 mV</u>

5	<u>249 nA</u>	<u>102 mV</u>	<u>250 nA</u>	<u>102 mV</u>
6	<u>249 nA</u>	<u>102 mV</u>	<u>250 nA</u>	<u>102 mV</u>
7	<u>249 nA</u>	<u>102 mV</u>	<u>250 nA</u>	<u>102 mV</u>
8	<u>249 nA</u>	<u>102 mV</u>	<u>249 nA</u>	<u>102 mV</u>

6.2.4 Check known constant current/voltage signal against measured current/voltage value on corrosion monitoring software/hardware on **Cabinet #2**.

Channel	Constant Current Source Value	Constant Voltage Source Value	Instrument Recorded Current Value	Instrument Recorded Voltage Value
1	<u>249 nA</u>	<u>102 mV</u>	<u>252 nA</u>	<u>102 mV</u>
2	<u>249 nA</u>	<u>102 mV</u>	<u>252 nA</u>	<u>102 mV</u>
3	<u>249 nA</u>	<u>102 mV</u>	<u>250 nA</u>	<u>102 mV</u>
4	<u>249 nA</u>	<u>102 mV</u>	<u>250 nA</u>	<u>102 mV</u>
5	<u>249 nA</u>	<u>102 mV</u>	<u>251 nA</u>	<u>102 mV</u>
6	<u>249 nA</u>	<u>102 mV</u>	<u>251 nA</u>	<u>102 mV</u>
7	<u>249 nA</u>	<u>102 mV</u>	<u>251 nA</u>	<u>102 mV</u>
8	<u>249 nA</u>	<u>102 mV</u>	<u>252 nA</u>	<u>102 mV</u>

6.2.5 Test Engineer sign that steps 6.2.1 through 6.2.4 are complete.

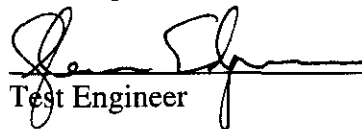

 Test Engineer

9/13/00
 Date

7.0 RECORDS

TEST ENGINEER

Test Engineer Sign In:

 9/13/00
 Test Engineer Date

TEST WITNESSES

Print Name

Signature

Position

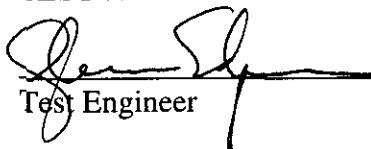
Date

<u>EC Norman</u>	<u>Edgar C. Norman</u>	<u>Engineer</u>	<u>9/13/00</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
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<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

8.0 EXCEPTIONS

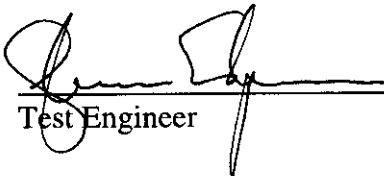
ITEM	STEP	DESCRIPTION	DISPOSITION

TEST APPROVED WITH WITHOUT EXCEPTIONS (CIRCLE WITH OR WITHOUT):

 9/13/00
 Test Engineer Date

9.0 TEST EXECUTION RECORD

Section	Accept/Reject	Remarks
6.1	Accept	No exceptions
6.2	Accept	No exceptions

 9/13/00
Test Engineer Date