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To DISTRIBUTION	From DC LARSEN	Page 1 of 1 <hr/> Date 11/30/94
Project Title/Work Order ACCEPTANCE TEST REPORT FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101, WHC-SD-WM-ATR-069, REV 1		EDT No. N/A <hr/> ECN No. 198638

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
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Central Files (2)	L8-04	X			
GT BEAR	R1-51	X			
JL DEICHMAN	H4-19				X
GL DUNFORD	R2-36				X
LE EFFERDING	H0-33	X			
JM GRAY	S7-54	X			
CE HANSON	H5-09				X
R JOHNSON	H5-09	X			
GD JOHNSON	R2-78				X
NW KIRCH	R2-11				X
TJ KLOS	T4-07	X			
LS KROGSRUD	R3-08	X			
JW LENTSCH	S7-15	X			
ML MCELROY	S1-57	X			
DR NUNAMAKER	T4-07	X			
FE PANISKO	P8-34				X
MA PAYNE	S7-14				X
RW REED	R1-51	X			
SH RIFAEY	S6-12				X
MH SHANNON	H4-61				X
RG SOBOCINSKI	H5-09	X			
O.S.T.I. (2)	L8-07	X			

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Page 1 of 2

1. ECN 198638

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ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. A. C. Zuehlke / L6-37 / 376-3143		4. Date 11/29/94
	5. Project Title/No./Work Order No. HYDROGEN MITIGATION	6. Bldg./Sys./Fac. No. N/A	7. Impact Level Q
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-ATR-069, Rev. 0	9. Related ECN No(s). N/A	10. Related PO No. N/A
11a. Modification Work ☐ Yes (fill out Blk. 11b) ☒ No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. N/A	11c. Modification Work Complete N/A Cog. Engineer Signature & Date	11d. Restored to Original Condition (Temp. or Standby ECN only) N/A Cog. Engineer Signature & Date

12. Description of Change

This change revises WHC-SD-WM-ATR-069, Rev 0, to reflect testing performed per WHC-SD-WM-ATP-069, Rev. 2. Changes were incorporated as a complete revision.

13a. Justification (mark one)	Criteria Change ☐	Design Improvement ☒	Environmental ☐
As-Found ☐	Facilitate Const. ☐	Const. Error/Omission ☐	Design Error/Omission ☐

13b. Justification Details

WHC-SD-WM-ATR-069, Rev. 0 describes testing performed per WHC-SD-WM-ATP-069, Rev. 1. Changes to the ATR reflect actual system testing performed per WHC-SD-WM-ATP-069, Rev. 2.

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Page 2 of 2

1. ECN (use no. from pg. 1)

ECN-198638

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15. Design Verification Required ☐ Yes ☒ No		16. Cost Impact <table border="0"> <tr> <th colspan="2">ENGINEERING</th> <th colspan="2">CONSTRUCTION</th> </tr> <tr> <td>Additional</td> <td>☐ \$</td> <td>Additional</td> <td>☐ \$</td> </tr> <tr> <td>Savings</td> <td>☐ \$</td> <td>Savings</td> <td>☐ \$</td> </tr> </table>				ENGINEERING		CONSTRUCTION		Additional	☐ \$	Additional	☐ \$	Savings	☐ \$	Savings	☐ \$	17. Schedule Impact (days) Improvement ☒ Delay ☐	
ENGINEERING		CONSTRUCTION																	
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Savings	☐ \$	Savings	☐ \$																
18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.																			
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Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐														
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐														
Criticality Specification	☐	Calibration Procedure	☐	Test Procedures/Specification	☐														
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☐														
Equipment Spec.	☐	Maintenance Procedure	☐	ASME Coded Item	☐														
Const. Spec.	☐	Engineering Procedure	☐	Human Factor Consideration	☐														
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Radiation Work Permit	☐	Essential Material Specification	☐	Purchase Requisition	☐														
Environmental Impact Statement	☐	Fac. Proc. Samp. Schedule	☐	NONE	☒														
Environmental Report	☐	Inspection Plan	☐		☐														
Environmental Permit	☐	Inventory Adjustment Request	☐		☐														
19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.																			
Document Number/Revision		Document Number/Revision		Document Number/Revision															
N/A																			
20. Approvals																			
Signature		Date		Signature															
OPERATIONS AND ENGINEERING				ARCHITECT-ENGINEER															
Cog Engineer D.C. LARSEN <i>D.C. Larsen</i>		11/20/94		PE															
Cog. Mgr. G.T. BEAR <i>G.T. Bear</i>		11-30-94		QA															
QA <i>M.L. McElroy</i>		12-1-94		Safety															
Safety				Design															
Security				Environ.															
Environ.				Other PEER REVIEW															
Projects/Programs																			
Tank Waste Remediation System																			
Facilities Operations				DEPARTMENT OF ENERGY															
Restoration & Remediation				Signature or Letter No.															
Operations & Support Services																			
IRM				ADDITIONAL															
Other																			

RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-ATR-069, REV 1

Document Title: ACCEPTANCE TEST REPORT FOR TANK BOTTOM THERMOCOUPLES
ON TANK 241-SY-101

Release Date: 12/19/94

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

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara M. Broz

December 19, 1994

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SUPPORTING DOCUMENT		1. Total Pages 31
2. Title ACCEPTANCE TEST REPORT FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101		3. Number WHC-SD-WM-ATR-069
5. Key Words DATA ACQUISITION AND CONTROL(DACS), 101-SY, UPGRADE APPROVED FOR PUBLIC RELEASE <i>KMB 12/19/94</i>		4. Rev No. 1 6. Author Name: AC ZUEHLKE Signature Organization/Charge Code 7CH30/N2B31
7. Abstract This Test Report documents testing performed per WHC-SD-WM-ATP-069, Rev.2.		
8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed. PATENT STATUS - This document copy, since it is transmitted in advance of patent clearance, is made available in confidence solely for use in performance of work under contracts with the U.S. Department of Energy. This document is not to be published nor its contents otherwise disseminated or used for purposes other than specified above before patent approval for such release or use has been secured, upon request, from the Patent Counsel, U.S. Department of Energy Field Office, Richland, WA. 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, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use 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 or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.		10. RELEASE STAMP <div style="border: 1px solid black; padding: 10px; text-align: center;"> OFFICIAL RELEASE (2) BY WHC DATE DEC 20 1994 <i>He #4</i> </div>
9. Impact Level P		

Page 1 of 1

ACCEPTANCE TEST REPORT FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101

A-7320-005 (08/91) WEF168

**ACCEPTANCE TEST REPORT FOR TANK
BOTTOM THERMOCOUPLES ON TANK
241-SY-101**

**WHC-SD-WM-ATR-069
REVISION 1**

DECEMBER 1994

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ATR FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101

TABLE OF CONTENTS

SUMMARY OF WHC-SD-WM-ATP-069, REV. 2, "ACCEPTANCE TEST PROCEDURE FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101"	3
ECNs ISSUED AS CHANGES TO WHC-SD-WM-ATP-069, REV. 2	4
ACCEPTANCE TEST PROCEDURE FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101, Rev. 2	5

ATR FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101

SUMMARY OF WHC-SD-WM-ATP-069, REV. 2, "ACCEPTANCE TEST PROCEDURE FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101"

Testing commenced on 11/01/94 and was completed on 11/10/94.

The completed procedure consists of 1 Acceptance Test Section, Section 6.1.

There were no ECNs issued to Revision 2 of the test procedure.

One Test Exception was written as the test was performed. A damaged terminal strip on a Modicon module in the field prevented the testing of the thermocouple on channel 13 of the Data Logger. The terminal strip was replaced, and the channel was successfully tested. The Test Exception was then closed.

The remainder of this Acceptance Test Report (ATR) consists of pages from the ATP which describe the tests that were conducted and attest to the results that were obtained. The page numbers for the ATR appear in the lower left corner of the page. The page numbers of the original Revision 2 the ATP are left for reference.

ATR FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101

ECNs ISSUED AS CHANGES TO WHC-SD-WM-ATP-069, REV. 2

ECN #

ISSUE DATE

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		Date 10/18/94
Project Title/Work Order ACCEPTANCE TEST PROCEDURE FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101, WHC-SD-WM-ATP-069, REV 2		EDT No. N/A
		ECN No. 608863

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
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Central Files (2)	L8-04	X			
GT BEAR	R1-51	X			
JL DEICHMAN	H4-19				X
GL DUNFORD	R1-51				X
LE EFFERDING	H0-33	X			
JM GRAY	S7-54	X			
CE HANSON	H5-09				X
R JOHNSON	H5-09	X			
GD JOHNSON	R2-78				X
NW KIRCH	R2-11				X
JJ KLOS	T4-07	X			
LS KROGSRUD	R3-08	X			
JW LENTSCH	S7-15	X			
ML MCELROY	S1-57	X			
DR NUNAMAKER	T4-07	X			
FE PANISKO	P8-34				X
MA PAYNE	S7-14				X
RW REED	R1-51	X			
SH RIFAAY	S6-12				X
MH SHANNON	H4-61				X
RG SOBOCINSKI	H5-09	X			
OSTI (2)	L8-07	x			

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Page 1 of 41. ECN 608863Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedeure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. A. C. Zuehlke / R1-51 / 373-1779		4. Date 10/18/94
	5. Project Title/No./Work Order No. HYDROGEN MITIGATION	6. Bldg./Sys./Fac. No. N/A	7. Impact Level SQ
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-ATP-069, Rev. <u>2</u>	9. Related ECN No(s). N/A	10. Related PO No. N/A
11a. Modification Work [] Yes (fill out Blk. 11b) [X] No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. N/A	11c. Modification Work Complete N/A _____ Cog. Engineer Signature & Date	11d. Restored to Original Condition (Temp. or Standby ECN only) N/A _____ Cog. Engineer Signature & Date

12. Description of Change

This change incorporates an entire procedure revision to provide testing for re-installation of the TBSTC Data Logger in the 101-SY tank farm.

13a. Justification (mark one)	Criteria Change []	Design Improvement [X]	Environmental []
As-Found []	Facilitate Const. []	Const. Error/Omission []	Design Error/Omission []

13b. Justification Details

The Data Logger will provide tank bottom thermocouple data to a greater accuracy than the DACS readouts can provide. After installation, the Data Logger needs to be tested to ensure that the installation is correct and that the equipment is responding correctly. The Data Logger will provide data during upcoming mixer pump excavation runs.

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Safety <i>L.S. Kroger</i>	<i>10/24/94</i>	Safety																																																															
Security		Design																																																															
Environ.		Environ.																																																															
Projects/Programs		Other PEER REVIEW <i>Gregory</i>	<i>10-25-94</i>																																																														
Tank Waste Remediation System																																																																	
Facilities Operations <i>D.C. Larsen</i>	<i>10/25/94</i>	DEPARTMENT OF ENERGY																																																															
Restoration & Remediation		Signature or Letter No.																																																															
Operations & Support Services																																																																	
IRM		ADDITIONAL																																																															
Other																																																																	

WASTE TANKS ADMINISTRATION	Manual	WHC-YAWP-0842
UNREVIEWED SAFETY QUESTIONS	Section	15.9, REV 1
	Page	15 of 25
	Effective Date	September 3, 1993

APPENDIX B

Unreviewed Safety Question Forms

Figure B-1. Unreviewed Safety Question - Changes Screening Form. (1 Sheet)

REFERENCE ITEM #: ECN 608863

TITLE: ACCEPTANCE TEST PROCEDURE FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101.

AUTHORIZATION BASIS:

The authorization basis for the screening will be the "Hanford Site Tank Farm Facilities Interim Safety Basis, WHC-SD-WM-ISB-001, Rev.0", referred to as the ISB. In particular Section 3.4, Double-Shell Tank Hazards and Safety Bases for Material Degradation & Threats to Structural Integrity.

Does the referenced item:

- A. Make PROPOSED CHANGES to the facility or procedures which differ from conditions described in the AUTHORIZATION BASIS documentation?
N/A____ NO XX Yes/Maybe____

Basis: The installation of the Data Logger will not change the probability of containment barrier breach or failure due to heat loading in tank 101-SY, high temperatures, or material degradation due to thermal loading. The installation of the data logger will be tank non-obtrusive. The addition of the data logger will provide more accurate tank bottom thermocouple data.

- B. Make PROPOSED CHANGES that represent conditions that have not been analyzed in the AUTHORIZATION BASIS?
N/A____ NO XX Yes/Maybe____

Basis: Same as basis in Section A above.

- C. Describe tests or experiments which differ from those described in the AUTHORIZATION BASIS documentation?
N/A____ NO XX Yes/Maybe____

Basis: Although this change supports Sludge Excavation Testing by more accurately monitoring the tank bottom temperatures, this modification only enhances existing equipment.

- D. Is a change in a TSR, OSR, or compliance plan to OSR involved?
N/A____ NO XX Yes/Maybe____

Basis: Same as basis in Section A above.

WASTE TANKS ADMINISTRATION

Manual
Section

WHC-YAWP-0842

UNREVIEWED SAFETY QUESTIONS

Page
Effective Date

15.9, REV 1
16 of 25
September 3, 1993

USQE #1 Greg J Gauck
Print Name

USQE #2 KD HEIN
Print Name

Greg J Gauck 10-19-94
Signature Date

KD Hein 11/10/94
Signature Date

RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-ATP-069, REV 0

Document Title: ATP FOR TANK BOTTOM THERMOCOUPLES ON TANK 214-SY-101

Release Date: 10/25/94

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

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara M. Broz

October 25, 1994

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SUPPORTING DOCUMENT		1. Total Pages
2. Title ATP FOR TANK BOTTOM THERMOCOUPLES ON TANK 241-SY-101	3. Number WHC-SD-WM-ATP-069	4. Rev No. 2
5. Key Words DATA ACQUISITION AND CONTROL(DACS), 101-SY, PHASE B, THERMOCOUPLES APPROVED FOR PUBLIC RELEASE <i>KMB 10/25/94</i>	6. Author Name: AC ZUEHLKE <i>[Signature]</i> Signature Organization/Charge Code 7CH30/N2B31	
7. Abstract This ECN incorporates a complete procedure revision for testing the re-installation of a temporary Data Logger which is to be installed in support of upcoming mixer pump excavation runs.		
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9. Impact Level <i>SR</i>		

**ACCEPTANCE TEST PROCEDURE FOR
TANK BOTTOM THERMOCOUPLES ON
TANK 241-SY-101**

**WHC-SD-WM-ATP-069
REVISION 2**

OCTOBER 1994

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

TABLE OF CONTENTS

1.0	PURPOSE/SCOPE	3
2.0	REFERENCES	3
3.0	RESPONSIBILITIES	4
4.0	DESCRIPTION OF THE SYSTEM	5
5.0	TEST CONDITIONS AND EQUIPMENT REQUIRED	6
6.0	ACCEPTANCE TEST	8
6.1	Instrumentation End-To-End Checks (Tank Bottom and Side Thermocouples) . .	8
7.0	TEST DATA SHEETS	12
8.0	ATTACHMENTS	14
	Attachment 1: Exception List	15
	Attachment 2: Measurement and Test Equipment Record Sheet	16
	Attachment 3: Final Procedure Acceptance Sheet	17

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

1.0 PURPOSE/SCOPE

The proper monitoring of the 241-SY-101 Tank Bottom and Side Thermocouples (TBSTC) by the Data Acquisition and Control System (DACS) will be tested to establish continued operability of the system.

During this test, an end-to-end verification of all of the sensor circuits associated with the TBSTCs, which provide signals both to the DACS computer system and an installed temporary Data Logger, shall be performed by injecting a signal at the appropriate field terminal and verifying the circuit completely through the system to the computers in the DACS trailer and the computer monitor used to display the output of the Data Logger. Each injected signal will be adjusted for appropriate "near zero", "mid range" and "near full scale" values for the sensor being tested.

The TBSTC screen, which provides for operator interface with the TBSTCs, will be utilized to monitor testing at the DACS computers.

Testing per this procedure shall be conducted after the installation of the temporary Data Logger for the TBSTCs is complete.

The temporary Data Logger will be installed to monitor the temperature readings of 13 of the 26 Tank Bottom Thermocouples in support of SY-101 excavation testing.

2.0 REFERENCES

- 2.1 ECN 198514(L)
- 2.2 WHC-CM-4-3, Industrial Safety Manual, Vols 1-3
- 2.3 WHC-CM-4-10, Radiation Protection Manual
- 2.4 WHC-CM-4-15, Radiation Work Requirements and Permits Manual, Vol 2
- 2.5 WHC-CM-4-40, Industrial Hygiene Manual
- 2.6 WHC-CM-6-1, Standard Engineering Practices, EP-5.8, "Engineering Document Contents"
- 2.7 WHC-CM-6-1, Appendix M, "Acceptance Test Procedures and Reports"
- 2.8 WHC-IP-0263-TF, Westinghouse Hanford Company Building Emergency Plan, Appendix G, "S-Farm Complex"
- 2.9 WHC-SD-WM-HSP-002, Tank Farm Health and Safety Plan
- 2.10 WHC-SD-WM-MA-014, "Mitigation Test Management"

DOCUMENT NO.	REVISION	PAGE NO.
WHC-SD-WM-ATP-069	2	3 OF 17

3.0 RESPONSIBILITIES

The following personnel will be required for the performance of this procedure:

- Test Manager: The individual assigned direct responsibility for the performance, preparation, and adequacy of the test.
- Test Director: The engineer assigned shift responsibility for performance of the test..
- Test Engineer: The engineer assigned to assist and relieve the Test Director during the performance of the test.
- Field Engineer: A Test Engineering Technician, Test Engineer or Test Director assigned to direct/verify testing activities outside of the DACS trailer.

Only personnel designated by the Mitigation Testing Program Test Manager are allowed to direct testing per this procedure, and perform operating and control functions using the DACS computer system.

One engineer acting as either a Test Engineer or as a Test Director is required to be present in the DACS trailer during testing. One engineer acting as a Field Engineer and one or more Instrument Technicians and/or Electricians are required to inject test signals from outside of the DACS trailer.

If, during testing, any indicated parameter, control function, or screen display is not correct or appears to be malfunctioning, then the engineer conducting this test shall make a determination as to the feasibility of continuing testing. In most cases, since actual mixer pump motor operation will not occur during this test, there will be no safety impact to continuing the test and completing corrective actions later. A record of all noted deficiencies will be kept on Attachment 1, "Exception List".

At the completion of all testing, approval of all data collected and DACS system performance shall be documented on Attachment 3, "Final Procedure Acceptance Sheet".

All changes to this procedure shall be implemented by direct ECN and shall receive the approval signatures appropriate to the approval designation of the change.

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

4.0 DESCRIPTION OF THE SYSTEM

The DACS, which is housed in a trailer located just outside of the north fence at the SY tank farm, receives input signals from a variety of sensors located in and around the SY-101 tank. These sensors provide information such as:

- Tank vapor space and ventilation system H₂ concentration
- Tank waste temperature
- Tank pressure
- Waste density
- Operating pump parameters such as speed, flow, rotational position, discharge pressure, and internal temperature
- Strain (for major equipment)
- Waste level

The output of these sensors is conditioned and transmitted to the DACS computers where these signals are displayed, recorded, and monitored for out-of-specification conditions.

This procedure will test the signals to be transmitted from the Tank Bottom and Side Thermocouples, through the Modicon Field I/O to the DACS, and from the Tank Bottom and Side Thermocouples to the monitor for the Data Logger in the DACS trailer.

The Data Logger will receive input signals from Tank Bottom and Side Thermocouples with the following DACS tag numbers:

• TBSTC13	• TBSTC14	• TBSTC15
• TBSTC16	• TBSTC17	• TBSTC18
• TBSTC19	• TBSTC20	• TBSTC21
• TBSTC22	• TBSTC23	• TBSTC24
• TBSTC25		

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

5.0 TEST CONDITIONS AND EQUIPMENT REQUIRED

5.1 The provisions of the following manuals apply to all work performed under this procedure:

- WHC-CM-1-6, WHC Radiological Control Manual
- WHC-CM-4-3, Industrial Safety Manual, Vols 1-3
- WHC-CM-4-15, Radiation Work Requirements and Permits Manual, Vol 2
- WHC-CM-4-40, Industrial Hygiene Manual
- WHC-SD-WM-HSP-002, Tank Farm Health and Safety Plan

5.2 Jumpers and Lifted Leads

In this procedure, there are several occasions when leads are lifted and landed at various terminals. Some of these leads will be energized. Hand and eye protection shall be worn, and insulated tools shall be used, when working on energized circuits (<50 Vac). The circuits must be energized during testing to provide accurate readouts during testing.

5.3 Unexpected Alarms

If unexpected, non-DACS, tank farm equipment alarms or abnormal indications are received during testing, then 101-SY testing evolutions shall be immediately suspended and actions, as prescribed in approved Tank Farms Alarm Response and Emergency Procedures, shall be taken by Tank Farms Operations personnel to place the equipment/farm in a safe, stable condition. When the reason for the unexpected condition is understood and resolved, then 101-SY testing activities may be resumed after permission to do so is received from the responsible West Area Shift Manager (WASM) and the Test Manager.

5.4 Prior to initiation of testing, the following items shall be verified:

5.4.1 Prior to the Data Logger readout testing, the Data Logger shall have been installed and been released for testing.

Verified by: A. G. [Signature] 11-1-94
(Test Director) Date

5.5 Prior to initiation of testing, the following equipment shall be available for use:

5.5.1 Insulated hand tools normally required for accessing equipment cabinets and terminal boards.

5.5.2 Omega CL-24, Thermocouple Calibrator, capable of generating a 0.397 to 3.819 mV DC (50 °F to 200 °F) signal, required for providing input signals for sensor channels to be tested

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

- 5.5.3 Voltmeter; Range: 0.00 - 10.00 Vdc, 0.00 - 240.00 Vac
- 5.5.4 Anti-contamination clothing and other personnel safety equipment required for access to the SY tank farm, and to perform work on energized equipment
- 5.5.5 Radios (2 minimum) or other means of communications, for communicating between the DACS trailer and the SY tank farm
- 5.6 Calibration and use information for all Measuring and Test Equipment (M & TE) used during the performance of this procedure shall be recorded on Attachment 2, Measurement and Test Equipment Record Sheet.

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

6.0 ACCEPTANCE TEST

6.1 Instrumentation End-To-End Checks (Tank Bottom and Side Thermocouples)

NOTE: The steps in the following section assume that no other conflicting activities are taking place in the Control Area of the DACS trailer in conjunction with the testing to be performed, and that the computers and monitors at Stations #5, #6, and #7 are available to support this test section.

6.1.1 If any discrepancy is noted during testing, then record a description of the condition in Attachment 1.

6.1.1.1 For each discrepancy recorded, enter an identifying number in the "EXCEPTION NUMBER" Column of Attachment 1.

6.1.1.2 Reproduce Attachment 1 as needed, and attach the additional pages to this procedure, to record all discrepancies noted during testing.

6.1.2 At Station #5, display the "ALARM/EVENT SUMMARY" screen.

NOTES:

Steps for testing instruments in this section are written generically. Steps shall be repeated as necessary until required testing is complete.

Instruments shall be tested one at a time, until all have been tested.

Test personnel shall familiarize themselves with the requirements for injecting test signals.

The initial state of the system shall be established prior to disconnecting any field I/O. This will serve as the "BEFORE" reading for each sensor.

The readouts from the Data Logger shall be recorded on the Data Sheets at the same time as the readouts from the TBSTC screen are recorded.

6.1.3 At Station #6, display the "TBSTC" screen.

6.1.4 Establish communications between field personnel in the SY tank farm and the Test Engineer in the DACS trailer.

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

- 6.1.5 Refer to Section 7.0, TEST DATA SHEETS, and record "BEFORE" values in the "B:" block of the "DACS READING" Column, for all channels to be tested.
- 6.1.6 If testing in this section requires more than one shift to complete, then perform Steps 6.1.23 through 6.1.25 at the end of each shift.

NOTES:

The Test Engineer at the DACS console shall direct the performance of the activities in this section.

Thermocouple checks in this section may be performed in any order, by following the appropriate steps to conduct the test.

Field personnel shall input test signals using an Omega CL-24 or equivalent as the input source.

Data Sheet blocks for recording required Data Logger readings are denoted by "DL:".

- 6.1.7 If necessary to complete testing, disable the ABORT coils associated with any 101-SY instruments that are sending erratic signals, are out-of-service, or are inoperable, at Station #1.
- 6.1.8 Refer to the "DACS Tag" Column of the Data Sheet and locate the tag number of the sensor to be tested.

WARNING

Hand and eye protection shall be worn, and insulated tools shall be used, when working on or near energized electrical circuits.

- 6.1.9 Direct field personnel to lift the leads for the sensor to be tested.
- 6.1.10 At Station #6, locate the DACS tag number for the sensor being tested.
- 6.1.11 Direct field personnel to connect the thermocouple calibrator to the appropriate channel for the sensor to be tested.

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

NOTE: Acceptable limits for each thermocouple readout at the DACS and for the Data Logger are +/- 4% of injected value, (52.8 - 57.2 °F for 55 °F input; 120 - 130 °F for 125 °F input; 187.2 - 202.8 °F for 195 °F input). If observed readout is not within acceptable limits, then a test exception for each thermocouple readout that is out of tolerance shall be written.

- 6.1.12 Direct field personnel to set the output of the thermocouple calibrator to the value listed in the "F:" block in the "LOW END READING" Column, on the respective Data Sheet.
- 6.1.13 Observe the value displayed at Station #6 for the sensor being tested, and record the reading in the "D:" block of the "LOW END READING" Column.
- 6.1.14 Record the Data Logger reading for that thermocouple in the "DL:" block of the "LOW END READING" Column of the respective Data Sheet.
- 6.1.15 Direct field personnel to increase the output of the thermocouple calibrator to the value listed in the "F:" block in the "MID RANGE READING" Column of the respective Data Sheet.
- 6.1.16 Observe the value displayed at Station #6 for the sensor being tested, and record the reading in the "D:" block in the "MID RANGE READING" Column of the respective Data Sheet.
- 6.1.17 Record the Data Logger reading for that thermocouple in the "DL:" block of the "MID RANGE READING" Column of the respective Data Sheet.
- 6.1.18 Direct field personnel to increase the output of the thermocouple calibrator to the value listed in the "F:" block in the "HIGH END READING" Column of the respective Data Sheet.
- 6.1.19 Observe the value displayed at Station #6 for the sensor being tested, and record the reading in the "D:" block in the "HIGH END READING" Column of the respective Data Sheet.
- 6.1.20 Record the Data Logger reading for that thermocouple in the "DL:" block of the "HIGH END READING" Column of the respective Data Sheet.
- 6.1.21 Direct field personnel to disconnect the thermocouple calibrator and re-connect the lifted leads.
- 6.1.22 Repeat Steps 6.1.8 through 6.1.21 until all 13 thermocouples listed on the Data Sheets have been tested or testing is being suspended for the day, then goto Step 6.1.23.
- 6.1.23 Restore the field I/O to the operational state.

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

6.1.24 After the field I/O has been restored to an operational state, record Post-Testing ("AFTER") values in the "A:" block of the "DACS READING" Column for sensors for which testing is complete.

6.1.25 Initial all Data Sheets for sensors that have been tested.

Testing as directed by this procedure section has been completed, and discrepancies, if any, have been listed on Attachment 1, Exception List.

Test Engineer: Erin J. Louch Date: 11-10-94
11-10-94

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

7.0 TEST DATA SHEETS

DACS TAG	FIELD TAG NUMBER	DESCRIPTION	SCALE / RANGE	TERM. STRIP	DACS READING	LOW END READING	MID RANGE READING	HIGH END READING	INITIALS
TBSTC13	TE-101 Pr 13	TANK BOTTOM THERMOCOUPLE	50-200 °F	+13 & -13	B: 103 A: 105	F: 55 °F D: 55 DL: 55.11	F: 125 °F D: 125 DL: 125.09	F: 195 °F D: 195.09 DL: 195.09	<i>[Signature]</i>
TBSTC14	TE-101 Pr 14	TANK BOTTOM THERMOCOUPLE	50-200 °F	+14 & -14	B: 100 A: 100	F: 55 °F D: 56 DL: 55.53	F: 125 °F D: 125 DL: 125.30	F: 195 °F D: 195 DL: 195.22	<i>[Signature]</i>
TBSTC15	TE-101 Pr 15	TANK BOTTOM THERMOCOUPLE	50-200 °F	+15 & -15	B: 103 A: 103	F: 55 °F D: 56 DL: 55.27	F: 125 °F D: 126 DL: 125.17	F: 195 °F D: 196 DL: 195.48	<i>[Signature]</i>
TBSTC16	TE-101 Pr 16	TANK BOTTOM THERMOCOUPLE	50-200 °F	+16 & -16	B: 101 A: 101	F: 55 °F D: 54 DL: 54.98	F: 125 °F D: 124 DL: 125.05	F: 195 °F D: 194 DL: 195.17	<i>[Signature]</i>
TBSTC17	TE-101 Pr 17	TANK BOTTOM THERMOCOUPLE	50-200 °F	+17 & -17	B: 98 A: 98	F: 55 °F D: 54 DL: 55.19	F: 125 °F D: 124 DL: 125.16	F: 195 °F D: 194 DL: 195.17	<i>[Signature]</i>
TBSTC18	TE-101 Pr 18	TANK BOTTOM THERMOCOUPLE	50-200 °F	+18 & -18	B: 102 A: 102	F: 55 °F D: 55 DL: 55.18	F: 125 °F D: 125 DL: 125.22	F: 195 °F D: 195 DL: 195.40	<i>[Signature]</i>

DATA SHEET

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

DACS TAG	FIELD TAG NUMBER	DESCRIPTION	SCALE / RANGE	TERM. STRIP	DACS READING	LOW END READING	MID RANGE READING	HIGH END READING	INITIALS
TBSTC19	TE-101 Pr 19	TANK BOTTOM THERMOCOUPLE	50-200 °F	+19 & - 19	B: 101 A: 101	F: 55 °F D: 55 DL: 55.29	F: 125 °F D: 125 DL: 125.19	F: 195 °F D: 194 DL: 195.01	A
TBSTC20	TE-101- Pr 20	TANK BOTTOM THERMOCOUPLE	50-200 °F	+20 & - 20	B: 101 A: 101	F: 55 °F D: 54 DL: 54.84	F: 125 °F D: 124 DL: 124.84	F: 195 °F D: 195 DL: 194.91	A
TBSTC21	TE-101 Pr 21	TANK BOTTOM THERMOCOUPLE	50-200 °F	+21 & - 21	B: 101 A: 102	F: 55 °F D: 55 DL: 54.47	F: 125 °F D: 125 DL: 124.45	F: 195 °F D: 195 DL: 194.41	A
TBSTC22	TE-101 Pr 22	TANK BOTTOM THERMOCOUPLE	50-200 °F	+22 & - 22	B: 102 A: 103	F: 55 °F D: 54 DL: 54.34	F: 125 °F D: 124 DL: 124.33	F: 195 °F D: 194 DL: 194.34	A
TBSTC23	TE-101 Pr 23	TANK BOTTOM THERMOCOUPLE	50-200 °F	+23 & - 23	B: 100 A: 100	F: 55 °F D: 55 DL: 54.51	F: 125 °F D: 124 DL: 124.38	F: 195 °F D: 194 DL: 194.36	A
TBSTC24	TE-101 Pr 24	TANK BOTTOM THERMOCOUPLE	50-200 °F	+24 & - 24	B: 80 A: 80	F: 55 °F D: 55 DL: 54.43	F: 125 °F D: 125 DL: 124.47	F: 195 °F D: 195 DL: 194.53	A
TBSTC25	TE-101 Pr 25	TANK BOTTOM THERMOCOUPLE	50-200 °F	+25 & - 25	B: 102 A: 102	F: 55 °F D: 55 DL: 54.34	F: 125 °F D: 125 DL: 124.34	F: 195 °F D: 195 DL: 194.33	A

DATA SHEET

8.0 ATTACHMENTS

Attachment 1: Exception List

Attachment 2: Measurement and Test Equipment Record Sheet

Attachment 3: Final Procedure Acceptance Sheet

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

[illegible]

Attachment 1: Exception List

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

[illegible]

Attachment 2: Measurement and Test Equipment Record Sheet

ATP FOR TANK BOTTOM THERMOCOUPLES ON 241-SY-101

Completion of this procedure has demonstrated that:

- The Data Acquisition and Control System (DACS) continues to provide satisfactory monitoring of the Tank Bottom and Side Thermocouples after installation of the temporary Data Logger.
- Each Tank Bottom and Side Thermocouple sensor associated with the temporary Data Logger has been individually verified, from the field terminal strip, to provide proper indication at the DACS computer control console and the monitor for the Data Logger.
- A record of all noted deficiencies was kept on Attachment 1, Exception List, and all recorded exceptions have been resolved and the resolutions approved.

Approved by:

D. C. Larsen
D. C. Larsen, Test Manager

11/14/94
Date

R. W. Reed
R. W. Reed, Test Engineering

11-14-94
Date

J. W. Lentsch
J. W. Lentsch, Program Manager

11-14-94
Date

Attachment 3: Final Procedure Acceptance Sheet