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Title/Desc:

TANK MONITOR & CONTROL SYSTEM SENSOR ACCEPTANCE
TEST PROCEDURE

COMPLETE

ENGINEERING CHANGE NOTICE

Page 1 of 21. ECN **No 623517**Proj.
ECN

2. ECN Category (mark one)		Supplemental ☐	Change ECN ☐	Supersedeure ☐
Cancel/Void ☐		Direct Revision ☒	Temporary ☐	Discovery ☐
3. Originator's Name, Organization, MSIN, and Telephone No. C. C. Scaief III ISI-74770 S2-02 376-0491				4. Date 09-21-95
5. Project Title/No./Work Order No. N3027 (Release Charge to N3024)		6. Bldg./Sys./Fac. No. 241-G		7. Impact Level NA
8. Document Number Affected (include rev. and sheet no.) WHC-SD-WM-ATP-023, REV 6-A		9. Related ECN No(s). None		10. Related PO No. None
11a. Modification Work ☐ Yes (fill out Blk. 11b) ☒ No (NA Blks. 11b, 11c, 11d)	11b. Work Package Doc. No. NA	11c. Complete Installation Work Cog. Engineer Signature & Date		11d. Complete Restoration (Temp. ECN only) Cog. Engineer Signature & Date
12. Description of Change The document is being revised to add a data sheet and testing instructions for testing the Enraf level gauges via the Communications Interface Unit (CIU) and to make minor changes such as organization titles. The text is also being updated to reflect changes in the TMACS system.				
13a. Justification (mark one)		Criteria Change ☒	Environmental ☐	Facilitate Const. ☐
Design Error/Omission ☐		Design Improvement ☐	As-Found ☐	Const. Error/Omission ☐
13b. Justification Details This input type was previously not connected to TMACS.				
14. Distribution (include name, MSIN, and no. of copies) See distribution sheet			RELEASE STAMP OFFICIAL RELEASE BY WHC DATE SEP 22 1995 Sta. 4	

ENGINEERING CHANGE NOTICE

Page 2 of 2

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

623517

15. Design Verification Required

☐ Yes
☒ No

16. Cost Impact

ENGINEERING

CONSTRUCTION

 Additional ☐ \$
 Savings ☐ \$

 Additional ☐ \$
 Savings ☐ \$

17. Schedule Impact (days)

 Improvement ☐
 Delay ☐

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.

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
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	☐
Procurement Spec.	☐	Operating Instruction	☐	Computer Software	☐
Vendor Information	☐	Operating Procedure	☐	Electric Circuit Schedule	☐
OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAR/SAR	☐	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
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

None

20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog./Project Engineer CC Scaief III	<i>C.C. Scaief</i> 9-22-95	PE	
Cog./Project Engr. Mgr. TL Moore	<i>J.L. Moore</i> 9/22/95	QA	
QA		Safety	
Safety		Design	
Security		Other	
Proj. Prog./Dept.			
Def. React. Div.			
Chem. Proc. Div.			
Def. Wst. Mgmt. Div.			
Adv. React. Dev. Div.			
Proj. Dept.			
Environ. Div.			
IRM Dept.			
Facility Rep. (Ops.)			
Other			

DEPARTMENT OF ENERGY

ADDITIONAL

RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-ATP-023, REV 7

Document Title: Tank Monitor and Control System Sensor Acceptance Test Procedure

Release Date: 9/22/95

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 Broz

9/22/95

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SUPPORTING DOCUMENT

1. Total Pages 23

2. Title

Tank Monitor and Control System Sensor Acceptance
Test Procedure

3. Number

WHC-SD-WM-ATP-023

4. Rev No.

7

5. Key Words

TMACS, Temperature, ATP, Current, Sensor

6. Author

Name: C. C. Scaief III

C.C. Scaief III 9-22-95
Signature

Organization/Charge Code 746770/N3027

7. Abstract

This Acceptance Test Procedure is to verify the correct reading of points connected to the Tank Monitor and Control System (TMACS).

8. RELEASE STAMP

OFFICIAL RELEASE
BY WHC

DATE SEP 22 1995

Sta. 4

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1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of this Acceptance Test Procedure (ATP) is to verify the correct reading of sensor elements connected to the Tank Monitor and Control System (TMACS). This ATP is intended to be used for testing all inputs and outputs (I/O) as they are connected to the system. The TMACS operation was verified by the original ATP (WHC 1991a). It is intended that this ATP will be used each time sensors are added to the system. As a result, the data sheets have been designed to be generic.

1.2 SYSTEM DESCRIPTION

The TMACS has been designed in response to recommendations from the Defense Nuclear Facilities Safety Board primarily for improved monitoring of waste tank temperatures. The system has been designed with the capability to monitor other types of sensor input as well.

The TMACS is shown in block diagram form on Drawing H-2-81761. Figure 1 is a simplified block diagram illustrating the various major components of the system. Most analog inputs as well as some discrete signals are read by local signal conditioning processors (Acromag 4000 Series) mounted at or near the sensors. These units communicate via a shared cable using a serial RS-485 format. This is linked to a Workstation in 2750E, Room B-105 via a modem on a dedicated telephone line. Expansion is accommodated by adding additional local signal conditioners on the existing RS-485 cable or by adding another modem to a different local area. The Acromag provides signal conditioning, linearization as required, and conversion to engineering units for each sensor input. Each Acromag 4000 can accept up to 16 analog inputs and 16 discrete inputs. In addition, each unit reads two temperature sensors located on the termination blocks. These sensors are used for reference junction compensation when reading thermocouples.

Some Enraf level gauges are read via an analog signal by the Acromag I/O processors, however, most new connections will be via the Enraf Communications Interface Unit (CIU) which reads the gauge using digital communication. The CIU communicates with the main TMACS computer via telephone modem in a similar fashion as the Acromag.

In the future, other discrete (on-off) signals will be read via the Panalarm annunciators which will also communicate with the TMACS computer via telephone modem. These devices are all illustrated in Figure 1.

The Workstation at 2750 executes commercial software for data acquisition and control. The software is called G2 and is licensed by GenSym, Inc. The software provides an operator interface via the CRT on the Workstation. The features include alarm processing, trend displays, custom graphic displays, logging to the printer, logging to the disk, and reporting to the printer.

FIGURE 1: TMACS BLOCK DIAGRAM

TYPICAL TANK FARM

2.0 RESPONSIBILITIES

Several organizations will participate in conducting this ATP. The following is a list of the testing responsibilities and the organizations involved:

Test Coordinator

The Test Coordinator shall be the person responsible for the installation of the new equipment or his/her designee. The Test Coordinator will schedule the testing and then notify all participants. The Test Coordinator is responsible for directing the testing, recording the test data, and ensuring that all required equipment and materials are provided. In addition, prior to the start of the ATP, the Test Coordinator will determine the sensors to be tested and record the following information on the data sheet(s) when applicable:

- Tank Number, Riser Number, Selector Switch (upper or lower)
- Acromag Input Number or Sensor Number
- Sensor Type, ie. level, TC, PRT, P/I, pressure, etc.
- Temperature Selector Switch Position
- Current to Engineering Units Conversion Formula
- Allowable Deviation Error
- TMACS Tag Name
- Terminal Box Number

The Test Coordinator is responsible for collecting the completed data sheets and obtaining the final approval signatures. If there are no test exceptions, "no exceptions" shall be written on the exception page and then signed and dated (Section 6.0). The coordinator will ensure that copies of all data sheets, exceptions, and final approvals are sent to CC Scaief III of Instrument Systems Integration for permanent record keeping.

Test Performers

The Test Performers will conduct the tests as described in the test instructions (Section 4). The following organizations may be involved in the performance of the tests:

- o Tank Farm Operations - will operate the TMACS as required by the test procedure.
- o Instrument Systems Integration - will assist in the test as required.
- o Technical Applications Resources - will assist Operations as required when getting data from TMACS at 2750E.
- o Kaiser Engineers Hanford Construction Forces or Plant Forces - will conduct the field testing as directed by the Test Coordinator.

Test Witness

Quality Control (QC) will supply a Test Witness to observe the test and assure overall compliance with the test procedure. The recommended location for the QC Test Witness is in the 2750E Control Room. The QC Test Witness will also

indicate concurrence of the observed results and recorded data by signing the test data sheet.

Any Test Witness may decline to witness all or any part of the ATP by providing a written statement to the Test Coordinator.

Final Approval Parties

After completion of all tests, the Final Approval Parties indicate their approval by signing the appropriate space on the final approval page (Section 7.0). Representatives from the following organizations constitute the Final Approval Parties:

Tank Farm Operations
Instrument Systems Integration
Technical Applications Resources

The final approval signature signifies that any test exceptions have been resolved to the approver's satisfaction. Alternately, it indicates that any exceptions are minor in nature and do not warrant a change in the procedure or the equipment.

3.0 EQUIPMENT REQUIRED

The testing may require test performance personnel in the tank farm, the instrument building and in the Control Room in 2750E. The TMACS Operator and a representative from Technical Applications Resources may be located in the Control Room at 2750E. The test witnesses may elect to be at either of these locations.

The following equipment may be required in the field:

- o Master copy of the ATP test sheets and pencil or pen
- o Portable hand-held radio(s) or cellular phone
- o Portable digital thermometer for thermocouples

The portable digital thermometer for thermocouples should be an Omega OMNI-CAL 8A or a unit with the following minimum specifications:

- * Measure temperature for thermocouple Types J, K, and E
- * Digital readout in degrees F
- * Range: 32 to 200 degrees F
- * Resolution: ± 0.1 degree F
- * Accuracy: ± 2.0 degrees F

The specified accuracy includes reference junction compensation, linearization, and analog-to-digital conversion. It does not

include errors associated with extension leads, connectors, the selector switch, or the thermocouple conformity.

o Portable Digital Thermometer for PRTs

The portable digital thermometer for PRTs should be an Omega Model 860, a Tegam Model 868, or a unit with the following minimum specifications:

- * Measure temperature for three terminal PRTs
- * Digital readout in degrees F
- * Range: 32 to 200 degrees F
- * Resolution: ± 0.1 degree F
- * Accuracy: ± 1.0 degree F

The specified accuracy includes compensation, linearization, and analog-to-digital conversion. It does not include errors associated with extension leads, connectors, the selector switch, or the PRT conformity.

o Portable digital multimeter for measuring current

The portable digital multimeter should have following minimum specifications:

CURRENT OUTPUTS GENERAL	ENRAF LEVEL GAUGES
Range: 0 to 20 ma	Range: 0 to 20 ma
Resolution: ± 10 ua	Resolution: ± 10 ua
Max Error: ± 100 ua	Max Error: ± 10 ua

The equipment required at 2750E consists of temporary data sheets, pen or pencil, and a hand-held portable radio (if a cellular phone is not used in the field).

4.0 TEST INSTRUCTIONS

Caution must be exercised when using portable radios or cellular phones. The readings from portable instruments can be affected if the phones or radios are in use while taking readings. The test coordinator should also be aware that the TMACS computer updates the field readings on a periodic basis. The scanning periods range from 10 seconds to 10 minutes with most points being scanned at one and 10 minute intervals. Faster scanning rates may be temporarily employed by request to Technical Applications Resources. This may be necessary for accurate comparison of readings.

The master copy of the data sheet will be retained by the Test Coordinator. A temporary data sheet will be used by the parties in the Control Room. Upon

completion of the test, the Test Coordinator will transfer the TMACS readings to the master data sheet and the Test Witnesses will sign the master. Specific instructions for each data sheet are provided below.

4.1 TEMPERATURE SENSORS

For each temperature probe, measure the temperature of each sensor (element) using the portable electronic thermometer via the selector switch and temperature sensor connector provided either on the side of the TMACS enclosure or on some alternate enclosure. Record the values on the data sheet in degrees F. At approximately the same time, record the temperature values read by TMACS. Follow the steps below for each of the tanks.

4.1.1 Thermocouple Sensors

1. Connect the portable thermometer to the appropriate Temperature Sensor jack on the side of the TBX. Set the thermometer for the TC type, if required. Set the function selector on the thermometer for measure.
2. Using the selector switch on the TBX, select the points one at a time according to the data sheet for that tank and riser.
3. Read the value on the portable thermometer and record on the data sheet to the nearest 0.1 degree F.
4. Upon completion of the measurements at the tank, notify the TMACS Operator by radio so that the TMACS values can be read and recorded.
5. At 2750E, display the temperature values and record the temperatures on the data sheet.
6. Compare each reading by radio communication. If any reading is not within the specified tolerance, read it a second time both in the field and on TMACS. If it is still not within the specified tolerance, record it as an exception.

4.1.2 Thermocouple Sensor Verification

For thermocouple sensors, verify that the two readings agree to within 9 degrees F. This value is taken from WHC-SD-WM-TI-483 (WHC 1991b) by simple summation of the errors in Table 3.0 of the referenced document and repeated below:

<u>Source of Error</u>	<u>+/- °F</u>
Terminal point conformity (A/D conv.)	0.9
Reference junction non-uniformity	0.9
Reference junction sensor	0.9
Sensor Linearization	0.9
Extension wire and termination	0.9
Total	<hr/> 4.5

It is expected that most readings will be much closer than this since, on the average, errors combine as the root mean square. However, the worst case error for each measurement is about ± 4.5 degrees F or a maximum difference between two readings of 9 degrees F. The errors above are not random with respect to time (short term) and therefore taking an average of several readings will not reduce the difference.

4.1.3 Platinum Resistive Thermometer (PRT) Sensors

1. Notify the TMACS Operator at 2750E by radio so that the TMACS values can be read and recorded. It is important that the TMACS readings be taken before plugging into the jacks as this will disconnect the PRT from the Acromag input and cause erroneous readings for a short period of time.
2. Connect the portable thermometer to the appropriate Temperature Sensor jack on the side of the TBX. Set the thermometer for the PRT type, as required. Set the thermometer for the appropriate matching alpha for the PRT. Set the function selector on the thermometer for measure.
3. Using the jack set on the TBX, connect the thermometer test lead plug to each point, one at a time, according to the data sheet for that tank and riser.
4. Read the value on the portable thermometer and record on the data sheet to the nearest 0.1 degree F.
5. Compare each reading by radio communication. If any reading is not within the specified tolerance, read it a second time both in the field and on TMACS. If it is still not within the specified tolerance, record it as an exception.
6. After the local readings are complete, verify that the TMACS readings have returned to normal (this may require waiting for the next TMACS update to be completed).

4.1.4 Platinum Resistance Thermometer Verification

For PRT sensors, verify that the two readings agree to within 5 degrees F. This value is derived by a simple summation of the probable errors:

<u>Source of Error</u>	<u>+/- °F</u>
Terminal point conformity (A/D conv.)	0.9
Sensor Linearization	1.5
Extension wire and termination	0.1
Total	<u>2.5</u>

It is expected that most readings will be much closer than this since, on the average, errors combine as the root mean square. However, the worst case error for each measurement is about ± 2.5 degrees F or a maximum difference between two readings of 5 degrees F. The errors above are not random with respect to time (short term) and therefore taking an average of several readings will not reduce the difference.

4.2 PRESSURE TO CURRENT SENSORS

For each Pressure to Current (P/I) sensor, observe the corresponding pressure reading on the appropriate pressure indicator in the instrument building. Record the values on the data sheet in INWG (inches of water). At approximately the same time, record the pressure values read by TMACS. Compare each reading by radio communication. Compute the % Difference by subtracting the TMACS reading from the manual reading, multiply the difference by 100, then divide the product by the pressure indicator's Full Scale (FS) range. If any reading is not within the allowable deviation error (data sheet) read it a second time both in the instrument building and on TMACS. If it is still not within the specified tolerance, record it as an exception.

4.3 SENSORS WITH LOCAL DISPLAY AND CURRENT OUTPUT

Some sensors and instruments have a local display with sufficient accuracy and resolution to be used for verification of the TMACS reading. If the local sensor uses different engineering units than the TMACS readout, convert the local reading to the proper engineering units and record on the data sheet. For example, some readouts may be in percent of scale, °C instead of °F, or other engineering units. For each sensor, place a current meter electrically in series with the current loop and measure the current flow. Record the values on the data sheet. The current meter must have an accuracy and resolution consistent with the allowable deviation. At approximately the same time, record the corresponding values read by TMACS in Engineering Units. Compare each reading by radio communication. If any reading is not within the allowable deviation error (data sheet), read the current meter and TMACS a second time. If it is still not within the specified tolerance, record it as an exception.

4.4 BLIND SENSORS WITH CURRENT OUTPUT

This test is used when a sensor or instrument has no local display or when the local display has insufficient accuracy and resolution for use in verification. For each sensor, place a current meter electrically in series with the current loop and measure the current flow. Record the values on the data sheet. At approximately the same time, record the corresponding values read by TMACS in Engineering Units. Using the "CURRENT TO ENGINEERING UNITS FORMULA" convert the measured current value to the corresponding Engineering Unit value and record the value on the data sheet. Compare each reading by radio communication. If any reading is not within the allowable deviation error, read the current meter and TMACS a second time. If it is still not within the specified tolerance, record it as an exception.

4.5 ENRAF LEVEL GAUGES USING ANALOG OUTPUT

For each level gauge, read the level on the local display and record the value on the data sheet. Place a current meter electrically in series with the current loop and measure the current flow. Note the required accuracy in Section 3.0. Record the values on the data sheet. At approximately the same time, record the corresponding value read by TMACS. All readings are in inches with the number of decimal places indicated on the data sheet. Determine the difference in readings and compare to the allowable deviation. If the difference is not within the allowable deviation error (data sheet) read the Enraf and TMACS a second time. If it is still not within the

specified tolerance, record it as an exception. Whenever the allowable deviation is exceeded, the current reading can be used to determine whether the Enraf or the Acromag input module is out of calibration.

4.6 ENRAF LEVEL GAUGES VIA CIU

For each level gauge, read the level on the local display and record the value on the data sheet. At approximately the same time, record the corresponding value read by TMACS at 2750E. All readings are in inches with the number of decimal places indicated on the data sheet. Determine the difference in readings and compare to the allowable deviation. If the difference is not within the allowable deviation error (data sheet) read the Enraf and TMACS a second time. If it is still not within the specified tolerance, record it as an exception.

Using the CIU, the TMACS reading should be exactly the same as the gauge. However, since the level will vary a few hundredths of an inch over time, the readings may differ slightly due to the difference in time between the local reading and the CIU reading.

4.7 DISCRETE INPUTS

For each discrete input record the field state (on, off, hi, low, etc.) in the data sheet column labeled "FIELD STATE 1". Read the TMACS state as indicated on the Operator's console in 2750E and record in the data sheet column labeled "TMACS STATE 1". Verify that the two recorded states are consistent. Change the state of the field signal. This may require shorting contacts or opening the connection. Record the resulting TMACS state on the data sheet and verify that it is changed from STATE 1. If the TMACS and field states 1 do not agree or if the TMACS state does not change when the field signal is changed, record it as an exception.

4.8 PULSE INPUTS

The pulse inputs are totaled by the Acromag unit and the counts are converted to engineering units by the software at 2750E. It is necessary to read the totalizer and then pulse the input a number of times. The totalizer is then reread and the total is verified in engineering units. Perform the following steps.

1. Read the TMACS totalizer for the tag at 2750E and record the value in the column titled "START TOTAL" in the data sheet.
2. Pulse the input a number of times and record the number in the column titled "NUMBER OF PULSES".
3. Multiply the "NUMBER OF PULSES" column by "ENG UNITS PER PULSE" column and add to the "START TOTAL" column. Record the result in "EXPECTED END TOTAL" column.
4. Ensure that enough time has passed for the Acromag to be scanned and then reread the TMACS totalizer at 2750E. Record the value in the "ACTUAL END TOTAL" column and verify that it agrees with the "EXPECTED END TOTAL" column.

5.0 TEST DATA SHEETS

The test data sheets are on the following pages.

TEMPERATURE SENSOR VERIFICATION DATA SHEET

Reference: Section 4.1

Tank Number: _____ Riser Number: _____ Sel. Sw: _____

Sensor Type: _____ Terminal Box: _____

Digital Thermometer Make and Model Number: _____

Standards Code Number: _____ Calibration Expiration: _____

SEL SWITCH OR JACK POSITION	TEMP. SENSOR NUMBER	TMACS TAG	MANUAL READING (°F)	TMACS READING (°F)	DIFFERENCE (MANUAL - TMACS) (°F)

Test Witnesses:

Test Coordinator _____ Date _____

Quality Control _____ Date _____

PRESSURE TO CURRENT SENSOR VERIFICATION DATA SHEET

Reference: Section 4.2

Tank Farm: _____ Instrument Building: _____

Sensor Type: _____

TANK	PRESSURE SENSOR NUMBER	TMACS TAG	MANUAL GAUGE READING (INWG)	TMACS READING (INWG)	% DIFFERENCE {((MANUAL - TMACS) * 100)/FS}

Test Witnesses:

Test Coordinator_____
Date_____
Quality Control_____
Date

SENSORS WITH LOCAL DISPLAY AND CURRENT OUTPUT VERIFICATION DATA SHEET

Reference: Section 4.3

Tank Farm: _____ Digital Current Meter Make and Model Number: _____

Standards Code Number: _____ Calibration Expiration: _____

TANK	ACROMAG INPUT NUMBER	TMACS TAG	CURRENT LOOP READING (MA)	CURRENT TO ENGINEERING UNITS FORMULA	LOCAL READING (ENG. UNITS)	TMACS READING (ENG. UNITS)	DIFFERENCE (TMACS READING - LOCAL READING) (ENG. UNITS)	ALLOW- ABLE DEV ERROR (ENG UNITS)

Test Witnesses:

Test Coordinator

Date

Quality Control

Date

BLIND SENSORS WITH CURRENT OUTPUT VERIFICATION DATA SHEET

Reference: Section 4.4

Tank Farm: _____ Digital Current Meter Make and Model Number: _____

Standards Code Number: _____ Calibration Expiration: _____

TANK	ACROMAG INPUT NUMBER	TMACS TAG	CURRENT LOOP READING (MA)	CURRENT TO ENGINEER UNITS FORMULA	CALCULATED MEASURED READING (ENG. UNITS)	TMACS READING (ENG. UNITS)	DIFFERENCE {TMACS READING - CAL. MEASURED} (ENG. UNITS)	ALLOW- ABLE DEV ERROR (ENG UNITS)

Test Witnesses:

Test Coordinator _____

Date _____

Quality Control _____

Date _____

Reference: Section 4.6

[illegible]

Test Witnesses:

Test Coordinator

Date _____

Quality Control

Date _____

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PULSE INPUTS

Reference: Section 4.8

TMACS TAG	START TOTAL (ENG UNITS)	NUMBER OF PULSES	ENG UNITS PER PULSE	EXPECTED END TOTAL	ACTUAL END TOTAL (ENG UNITS)

Test Witnesses:

Test Coordinator

Date

Quality Control

Date

6.0 EXCEPTIONS TO ACCEPTANCE TEST

EXCEPTION NUMBER	DESCRIPTION	ACTION

Test Coordinator Date

7.0 FINAL TESTING APPROVAL

Instrument Systems Integration

Date

Technical Applications Resources

Date

Tank Farm Operations

Date

8.0 REFERENCES

WHC, 1991a, *Continuous Temperature Monitoring System Phase 1 Acceptance Test Procedure*, WHC-SD-WM-ATP-020, Westinghouse Hanford Company, Richland, Washington.

WHC, 1991b, *Temperature Measurement Error Analysis*, WHC-SD-WM-TI-483, Westinghouse Hanford Company, Richland, Washington.