

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 196862

Proj. ECN

2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary Standby <input type="checkbox"/> Supersedure <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	3. Originator's Name, Organization, MSIN, and Telephone No. DG Spurling, IRM/ISS/C&WMSS, R1-01, 3-2969		4. Date 5/31/94
	5. Project Title/No./Work Order No. TMACS/N46G1	6. Bldg./Sys./Fac. No. 2750E/TMACS/200E	7. Impact Level Approval Designer Q
	8. Document Numbers Changed by this ECN (includes sheet no. and rev.) WHC-SD-WM-TRP-105, Rev 5 4 WHC-SD-WM-TRP-106, Rev 5 4 WHC-SD-WM-TRP-107, Rev 5 4 WHC-SD-WM-TRP-108, Rev 5 4 WHC-SD-WM-TRP-109, Rev 5 4 WHC-SD-WM-TRP-111, Rev 5 4 WHC-SD-WM-TRP-112, Rev 5 4 WHC-SD-WM-TRP-113, Rev 5 4 WHC-SD-WM-TRP-114, Rev 5 4		9. Related ECN No(s). ECN 196863 EDT 159986 EDT 600611

11a. Modification Work <input type="checkbox"/> Yes (fill out Blk. 11b) <input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	11b. Work Package No. N46G1 N/A	11c. Modification Work Complete <i>David Evans</i> N/A 8/24/94 Cog. Engineer Signature & Date	11d. Restored to Original Condition (Temp. or Standby ECN only) N/A Cog. Engineer Signature & Date
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12. Description of Change
 Several Tank Farm Surveillance System (TFSS) Change Requests were incorporated into TMACS Software Release 4.0. The major software functions added in this release are initial implementation of Liquid Level monitoring and "Panalarm" alarm processing.

The results of this software test are documented in each Test Report, and summarized in Test Procedure 10 (WHC-SD-WM-TRP-113).

13a. Justification (mark one) As-Found <input type="checkbox"/>	Criteria Change <input checked="" type="checkbox"/>	Design Improvement <input type="checkbox"/>	Environmental <input type="checkbox"/>
Facilitate Const. <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>	Design Error/Omission <input type="checkbox"/>	

13b. Justification Details
 TMACS software development and release guidelines are governed under WHC-IP-0842, Section 12.2, Tank Farm Surveillance System Configuration Control Board, and WHC-SD-WM-CSCM-019, TMACS Software Configuration Management Plan

14. Distribution (include name, MSIN, and no. of copies) See Distribution Sheet	RELEASE STAMP OFFICIAL RELEASE BY WHC DATE AUG 25 1994 STA 4
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15. Design Verification Required <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	16. Cost Impact <table style="width: 100%;"> <tr> <th style="text-align: center;">ENGINEERING</th> <th style="text-align: center;">CONSTRUCTION</th> </tr> <tr> <td>Additional <input type="checkbox"/> \$</td> <td>Additional <input type="checkbox"/> \$</td> </tr> <tr> <td>Savings <input type="checkbox"/> \$</td> <td>Savings <input type="checkbox"/> \$</td> </tr> </table>	ENGINEERING	CONSTRUCTION	Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	17. Schedule Impact (days) Improvement <input type="checkbox"/> Delay <input type="checkbox"/>
ENGINEERING	CONSTRUCTION							
Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$							
Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$							

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 <input type="checkbox"/>	Seismic/Stress Analysis <input type="checkbox"/>	Tank Calibration Manual <input type="checkbox"/>
Functional Design Criteria <input type="checkbox"/>	Stress/Design Report <input type="checkbox"/>	Health Physics Procedure <input type="checkbox"/>
Operating Specification <input type="checkbox"/>	Interface Control Drawing <input type="checkbox"/>	Spares Multiple Unit Listing <input type="checkbox"/>
Criticality Specification <input type="checkbox"/>	Calibration Procedure <input type="checkbox"/>	Test Procedures/Specification <input type="checkbox"/>
Conceptual Design Report <input type="checkbox"/>	Installation Procedure <input type="checkbox"/>	Component Index <input type="checkbox"/>
Equipment Spec. <input type="checkbox"/>	Maintenance Procedure <input type="checkbox"/>	ASME Coded Item <input type="checkbox"/>
Const. Spec. <input type="checkbox"/>	Engineering Procedure <input type="checkbox"/>	Human Factor Consideration <input type="checkbox"/>
Procurement Spec. <input type="checkbox"/>	Operating Instruction <input type="checkbox"/>	Computer Software <input checked="" type="checkbox"/>
Vendor Information <input type="checkbox"/>	Operating Procedure <input type="checkbox"/>	Electric Circuit Schedule <input type="checkbox"/>
OM Manual <input type="checkbox"/>	Operational Safety Requirement <input type="checkbox"/>	ICRS Procedure <input type="checkbox"/>
FSAR/SAR <input type="checkbox"/>	IEFD Drawing <input type="checkbox"/>	Process Control Manual/Plan <input type="checkbox"/>
Safety Equipment List <input type="checkbox"/>	Cell Arrangement Drawing <input type="checkbox"/>	Process Flow Chart <input type="checkbox"/>
Radiation Work Permit <input type="checkbox"/>	Essential Material Specification <input type="checkbox"/>	Purchase Requisition <input type="checkbox"/>
Environmental Impact Statement <input type="checkbox"/>	Fac. Proc. Samp. Schedule <input type="checkbox"/>	
Environmental Report <input type="checkbox"/>	Inspection Plan <input type="checkbox"/>	
Environmental Permit <input type="checkbox"/>	Inventory Adjustment Request <input type="checkbox"/>	

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
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20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog Engineer [DA Barnes] <i>David Barnes</i>	6/6/94	PE	_____
Cog. Mgr. [JS Schofield] <i>John Schofield</i>	6/15/94	QA	_____
QA [JA Warren] <i>J.A. Warren</i>	6/7/94	Safety	_____
Safety	N/A	Design	_____
Security	N/A	Environ.	_____
Environ.	N/A	Other	_____
Projects/Programs	N/A		_____
Tank Waste Remediation System	N/A		_____
Facilities Operations [R Nixon] <i>R. Nixon</i>	8/16/94	DEPARTMENT OF ENERGY <i>N/A</i>	_____
Restoration & Remediation	N/A	Signature or Letter No.	_____
Operations & Support Services	N/A		_____
IRM/ISS/C&WMSS [RB Bass] <i>RB Bass</i>	6/6/94	ADDITIONAL <i>N/A</i>	_____
IRM/ISS/C&WMSS [DG Spurling] <i>Dave Spurling</i>	6/6/93		_____
Other	N/A		_____
	N/A		_____

RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-TRP-114, REV 5

Document Title: TMACS TEST PROCEDURE TP010: INTEGRATION SUMMARY

Release Date: 8/25/94

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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

(Signature)

8/25/94

(Date)

SUPPORTING DOCUMENT

1. Total Pages 9

2. Title
 TMACS-Test Procedure TP010: Integration Summary

3. Number
 WHC-SD-WM-TRP-114

4. Rev No.
 5

5. Key Words
 Software, Test Procedure, Tank Monitor and Control System, TMACS Software Project

6. Author
 Name: D. G. Spurling

Signature *D. G. Spurling*

Organization/Charge Code 62610/N46G1

APPROVED FOR PUBLIC RELEASE

AMB 8/25/94

7. Abstract

The TMACS Software Project Test Procedures translate the project's acceptance criteria into test steps. Software releases are certified when the affected Test Procedures are successfully performed and the customers authorize installation of these changes.

This Test Procedure tests the TMACS Integration Summary.

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10. RELEASE STAMP

OFFICIAL RELEASE
 BY WHC
 DATE AUG 25 1994
 STA 4

9. Impact Level Q

MASTER 875

RECORD OF REVISION

(1) Document Number

WHC-SD-WM-TRP-114

Page 1

(2) Title

Tank Monitor And Control System (TMACS) Software Project, Release 4.0
Test Procedure TP010, Integration Summary

CHANGE CONTROL RECORD

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release		
		(5) Cog. Engr.	(6) Cog. Mgr.	Date
0	(7) Software Release 0.0 Release Testing Released under EDT 159986, 10/15/92			
1	Software Release 1.0 Release Testing Released under ECN 196866, 1/31/93			
2	Software Release 1.1 Release Testing Released under ECN 196865, 4/30/93			
3	Software Release 2.0 Release Testing Released under ECN 196864, 10/1/93			
4	Software Release 3.0 Release Testing Released under ECN 196863, 1/15/94			
5 RS	Software Release 4.0 Release Testing Released under ECN 196862, 5/31/94	<i>[Handwritten Signature]</i>	<i>[Handwritten Signature]</i>	<i>[Handwritten Date]</i>

**TANK MONITORING AND CONTROL SYSTEM
(TMACS) SOFTWARE PROJECT**

**TEST PROCEDURE TP010:
INTEGRATION SUMMARY**

**David G. Spurling
IRM Chemical & Waste Management
Software Support**

Table of Contents:

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May 31, 1994

TP010 Rev. 5

1.0 TEST ITEMS

This Test Procedure verifies that Test Procedures TP001 through TP009 (WHC-SD-WM-TRP-105 through WHC-SD-WM-TRP-113) and TP011 through TP012 (WHC-SD-WM-TRP-201 through WHC-SD-WM-TRP-202) of the TMACS Software Release 4.0 have been successfully completed. This release supersedes the previous release, and is performed according to WHC-SD-WM-CSCM-019, "TMACS Software Configuration Management Plan".

The following Test Procedures are provided for in WHC-SD-WM-TP-148, "Tank Monitor And Control System (TMACS) Software Upgrade Test Plan":

- TP001: Alarm Management (WHC-SD-WM-TRP-105)
- TP002: Trending (WHC-SD-WM-TRP-106)
- TP003: Graphics (WHC-SD-WM-TRP-107)
- TP004: Reporting (WHC-SD-WM-TRP-108)
- TP005: Event Logging (WHC-SD-WM-TRP-109)
- TP006: Performance (WHC-SD-WM-TRP-110)
- TP007: System Admin/Security (WHC-SD-WM-TRP-111)
- TP008: SACS Interface (WHC-SD-WM-TRP-112)
- TP009: Acromag Driver (WHC-SD-WM-TRP-113)
- TP010: Integration Summary (WHC-SD-WM-TRP-114)

The Test Plan is currently being revised to rename Test Case documents as Test Procedures, from recommendations from WHC Software QA, and to add the following Test Procedures added in this release:

- TP011: TMACS Panalarm Interface (WHC-SD-WM-TRP-201)
- TP012: Panalarm Software Bridge (WHC-SD-WM-TRP-202)

2.0 ACCEPTANCE CRITERIA AND REQUIREMENTS

The original Acceptance Criteria for the TMACS Software Upgrade Project were agreed to by the customer and the cognizant engineer on 6/30/92. They are compiled from WHC-SD-WM-SFR-006, "Tank Monitor And Control System (TMACS) System Functional Requirements", and are attached to WHC-SD-WM-TP-148, "Tank Monitor And Control System (TMACS) Software Upgrade Test Plan", Appendix G.

Changes to the TMACS software have been added and are specified in subsequent Test Procedures, and are being incorporated into WHC-SD-WM-SFR-006. The entire suite of Test Procedures was rerun for this release, with the exception of Test Procedure 6 (performance testing), which will be run at a later date.

The acceptance criteria for this Test Procedure are to verify that all of the Test Procedures are complete, and consequently, that the delivered system is complete. This will be verified by visual review of each of the Test Procedure Acceptance Sheets.

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2.1 Summary of Test Changes from TMACS Release 3.0

- TP001: Test alarm processing on liquid levels.
- TP002: Test liquid level trending, correction of initial history values, changed labels, text on trend selectable plots.
- TP003: Verify description changes to individual sensor trend plots; verify label/text changes on trend selectable plots; verify proper liquid level display on test tank (C-106).
- TP004: (none)
- TP005: (none)
- TP006: (Test deferred until SPARC-10 workstations are installed.)
- TP007: (none)
- TP008: Initial level monitoring for C-106 comes from SACS database query. Test the software interface to perform this polling.
- TP009: Test and verify that Acromag driver software and new Panalarm driver software do not conflict with one another.
- TP011: New test procedure: verify that Panalarm display can be properly referenced from associated tanks and farms; verify alarm summary display for each farm on the top-level Hanford Tank Farm Facilities window; provide alarm summary display for all Panalarm cabinets via the "Control Panel"; verify that alarm display color scheme conforms to red/yellow/white/green color standards, with group alarms displaying the highest priority alarm color and with blinking signifying unacknowledged alarms; verify log by exception; verify immediate time stamping, high priority alarm processing, quality status checking of each alarm signal.
- TP012: New test procedure: test proper initialization and command string passing between software driver and Panalarm unit; verify proper monitoring of alarms and resets within 3 seconds of state change on test unit; test communications checksum and reject errors - testing of checksum/reject errors deferred until Panalarm simulator is available.

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2.2 Summary of Test Exceptions and Resolutions

- TP001: Steps 139, 144 - Audible alarms have been silenced for equipment alarms, due to an emergency change request from Tank Farm Operations that wasn't included in this procedure.
Resolution: Silencing the audible is the current requirement for equipment alarms. This will be changed in the next release of the Test Procedure.
- TP002:1) Step 7 - Clicking on sensor display icons for tank C-106 brought up G2 menu boxes instead of the trend windows.
Resolution: User restrictions for all tank sensor icons were corrected to only bring up the trend windows.
- 2) Step 35 - Extra vertical plot lines occur in trend graph
Resolution: This is a problem on the development system and should not occur on the production side. Production version initializes these plots. Once initialized (manually) on the development system, this problem went away. The test step was rerun without observing these vertical plot lines.
- TP003: Step 48 - Trend graph for test tank could not be created.
Resolution: User restrictions attribute for the tank status windows were not correctly assigned. User restrictions were globally assigned to all tank status windows and retested.
- TP004:1) Step 10 - While the format of this report is correct, the data itself has been changed by the delta-band processing logic. This adversely affects the way SACS generates its own reports.
Resolution: SACS Software Engineers have agreed to change their database loading software to accept the reading only if the quality status is GOOD, and load the time of the readings from the "Date/Time Reading Written To File" report field. It is understood that this value is good to within the delta-band (+/- 0.5 deg F, or 0.001 inches).
- 2) Steps 14 to 17 - These reports had to be printed manually, on account of the system being shut down earlier in the day (operator training). The current TMACS software links these buttons to the associated reports at midnight, when each report is created.
Resolution: This will be changed in the next release of the software to dynamically create the report filename to print.
- TP005: (none)
- TP006: (Test deferred until SPARC-10 workstations are installed.)

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TP007:1) Step 57 - Attempt to shut down entire system from Slave workstation only brought software down to the TMACS user login, and not the unix.boot prompt.
Resolution: This problem was not introduced by this software release, but by the existing unix command file. It will be handled as a problem report and given high priority.

2) Step 10 - Attempt to display point history in special format exhausted system memory resources and shut down system. Two sensor histories were verified from T and C farms. The third point, from BX farm had more history data, which overflowed system memory.
Resolution: This test step will be revised and pre-tested before the next release.

TP008: (none)

TP009: (none)

TP011: Step 19 - Alarm annunciation on the Panalarm directory window failed due to improper object associations.
Resolution: changes made in initialization script to activate Panalarm Directory Window prior to invoking Init Relations procedure.

TP012:1) Steps 8, 9 - Panalarm emulator software has not been written to generate Checksum errors. This feature is not testable.
Resolution: WHC I&C is planning on providing the emulation software in the near future.

2) Steps 10, 11 - Command Reject Errors, same as steps 8,9.
Resolution: See 8, 9 above.

2.3 Test Report

TMACS testing was performed May 26 - June 6, 1994. Participating in the test were WHC Surveillance & Data Acquisition (cognizant engineering) Tank Farm Operations (system user), IRM Verification & Validation (software QA), and the TMACS development team.

A meeting was held on June 6, 1994 after testing was complete. The Test Procedures were reviewed by the test team and accepted for installation by the TMACS cognizant engineer. Test Exceptions were identified and either corrected or deferred to later revisions (see Section 2.2). Capability to communicate with the new Panalarm devices was verified using the Series 90 unit in 2750E/B-104, however, connection to the 271-A and 271-CR Panalarm stations will be isolated from the other software functions and deferred until field installation and testing are ready to begin. This will be handled either as a normal system

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administration activity or as a separate software patch, depending on the complexity of this task.

TMACS Software Release 4.0 was installed on the production workstations on June 6, 1994.

3.0 TESTER INFORMATION

This Test Procedure serves as a validation review, and requires only a minimum of test personnel. One representative from the Software Verification & Validation (V&V) group is expected to serve as Witness. The Project Manager is also the Software Engineer responsible for this Test Procedure.

4.0 PRE-TEST INSPECTION AND SETUP REQUIREMENTS

This test cannot be performed until TMACS Test Procedures TP001 through TP009 and TP011 through TP012 have been completed and resolved. Test Procedure 6 is being waived at this time.

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5.0 TEST STEPS WITH EXPECTED RESULTS

STEP	DESCRIPTION	VERIFY
5.1	Verify the TP001 Acceptance Sheet has been signed off.	UB
5.2	Verify the TP002 Acceptance Sheet has been signed off.	UB
5.3	Verify the TP003 Acceptance Sheet has been signed off.	UB
5.4	Verify the TP004 Acceptance Sheet has been signed off.	UB
5.5	Verify the TP005 Acceptance Sheet has been signed off.	UB
5.6	TP006 has been waived for this software release.	N/A
5.7	Verify the TP007 Acceptance Sheet has been signed off.	UB
5.8	Verify the TP008 Acceptance Sheet has been signed off.	UB
5.9	Verify the TP009 Acceptance Sheet has been signed off.	UB
5.10	Verify the TP011 Acceptance Sheet has been signed off.	UB
5.11	Verify the TP012 Acceptance Sheet has been signed off.	UB

<i>David Barnes</i>	UB	6/6/94
Witness / Organization	Initials	Date
<i>Dave Spurling</i>	DA	6/6/94
DG Spurling, TMACS Software Project Manager	Initials	Date

6.0 REFERENCES

- WHC-SD-WM-TRP-105, Rev 5 TP001: Alarm Management
- WHC-SD-WM-TRP-106, Rev 5 TP002: Trending
- WHC-SD-WM-TRP-107, Rev 5 TP003: Graphics
- WHC-SD-WM-TRP-108, Rev 4 TP004: Reporting
- WHC-SD-WM-TRP-109, Rev 4 TP005: Event Logging
- WHC-SD-WM-TRP-110, Rev 0 TP006: Performance (not released)
- WHC-SD-WM-TRP-111, Rev 5 TP007: System Admin/Security
- WHC-SD-WM-TRP-112, Rev 5 TP008: SACS Interface
- WHC-SD-WM-TRP-113, Rev 4 TP009: Acromag Driver
- WHC-SD-WM-TRP-201, Rev 0 TP011: TMACS Panalarm Interface
- WHC-SD-WM-TRP-202, Rev 0 TP012: Panalarm Software Bridge

- WHC-SD-WM-TP-148, Rev 0 TMACS Software Test Plan
- WHC-SD-WM-CSCM-019, Rev 0 TMACS Software Configuration Management Plan
- WHC-SD-WM-SFR-006, Rev 0 TMACS System Functional Requirements