

ENGINEERING CHANGE NOTICE

1. ECN 196862

Page 1 of 2

Proj.  
ECN

2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> 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
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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 David Evans N/A 10/94 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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1. ECN (use no. from pg. 1)

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<b>15. Design Verification Required</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>16. Cost Impact</b> <table style="width: 100%;"> <tr> <td style="text-align: center;"><b>ENGINEERING</b></td> <td style="text-align: center;"><b>CONSTRUCTION</b></td> </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>	<b>ENGINEERING</b>	<b>CONSTRUCTION</b>	Additional <input type="checkbox"/> \$	Additional <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	Savings <input type="checkbox"/> \$	<b>17. Schedule Impact (days)</b> Improvement <input type="checkbox"/> Delay <input type="checkbox"/>
<b>ENGINEERING</b>	<b>CONSTRUCTION</b>							
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"/>		<input type="checkbox"/>
Environmental Report	<input type="checkbox"/>	Inspection Plan	<input type="checkbox"/>		<input type="checkbox"/>
Environmental Permit	<input type="checkbox"/>	Inventory Adjustment Request	<input type="checkbox"/>		<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
<b>OPERATIONS AND ENGINEERING</b>		<b>ARCHITECT-ENGINEER</b>	
Cog Engineer [DA Barnes] <i>David Barnes</i>	<u>6/6/94</u>	PE	_____
Cog. Mgr. [JS Schofield] <i>John Schofield</i>	<u>6/1/94</u>	QA	_____
QA [JA Warren] <i>J.A. Warren</i>	<u>6/7/94</u>	Safety	_____
Safety	<u>N/A</u>	Design	_____
Security	<u>N/A</u>	Environ.	_____
Environ.	<u>N/A</u>	Other	_____
Projects/Programs	<u>N/A</u>		_____
Tank Waste Remediation System	<u>N/A</u>		_____
Facilities Operations [R Nix] <i>R. Nix</i>	<u>6/16/94</u>	DEPARTMENT OF ENERGY	<u>N/A</u>
Restoration & Remediation	<u>N/A</u>	Signature or Letter No.	_____
Operations & Support Services	<u>N/A</u>		_____
IRM/ISS/C&MSS [RB Bass] <i>RB Bass</i>	<u>6/6/94</u>	ADDITIONAL	<u>N/A</u>
IRM/ISS/C&MSS [DG Spurling] <i>Dave Spurling</i>	<u>6/6/93</u>		_____
Other	<u>N/A</u>		_____
	<u>N/A</u>		_____

**RELEASE AUTHORIZATION**

**Document Number:** WHC-SD-WM-TRP-107, REV 5

**Document Title:** TMACS TEST PROCEDURE TP003: GRAPHICS

**Release Date:** 8/25/94

\* \* \* \* \*

**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 Broz

(Signature)

8/25/94

(Date)

SUPPORTING DOCUMENT

1. Total Pages 23

2. Title

TMACS Test Procedure TP003: Graphics

3. Number

WHC-SD-WM-TRP-107

4. Rev No.

5

5. Key Words

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6. Author

Name: P. K. Scanlan

*P. K. Scanlan*  
Signature

Organization/Charge Code 62610/N46G1

**APPROVED FOR  
PUBLIC RELEASE**

*RMB 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 Graphics functions.

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10. RELEASE STAMP

OFFICIAL RELEASE   
BY WHC  
DATE AUG 25 1994  
STA 4

9. Impact Level Q

**MASTER**

*Q*

**RECORD OF REVISION**

(1) Document Number

WHC-SD-WM-TRP-107

Page 1

(2) Title

Tank Monitor And Control System (TMACS) Software Project, Release 4.0  
Test Procedure TP003, Graphics

**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 <b>RS</b>	Software Release 4.0 Release Testing Released under ECN 196862, 5/31/94	<i>Shames 6/6/94</i>	<i>[Signature]</i>	<i>6/6/94</i>

TANK MONITOR AND CONTROL SYSTEM  
(TMACS) SOFTWARE PROJECT

TEST PROCEDURE TP003:

TMACS GRAPHICS

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Dave Spurling Dave Spurling 5/26/94  
DG Spurling TMACS Project Manager signature Date

RB Bass 5/31/94  
RB Bass IRM Manager signature Date

**1.0 TEST ITEMS**

This Test Procedure addresses the graphics requirements of the TMACS. The features to be tested are the data display graphics and the graphic elements that provide for operator control and selection of displays.

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**2.0 ACCEPTANCE CRITERIA AND REQUIREMENTS**

The following acceptance criteria are from Section 3.0 of the TMACS Software Upgrade Project: Acceptance Criteria:

- Provide real-time display of numeric values of sensors. See Test Step 45.
- Communicate with a minimum of 2 graphics CRTs. See Test Case 5.2.
- Provide "PRINT" facility for graphic window displays. See Test Case 5.1.16.



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The following Change Requests were added in previous software releases:

- 92-059 Add a confirmation "Pop Up" window for the color Print Screen.  
See Test Case 5.1.16
- 92-060 Add riser numbers to the Tank Status windows. See Test Step 42.
- 92-062 Position the TC sensor's readouts relative to their offsets on the Tank Status windows. See Test Step 44.
- 92-063 Modify the Riser Locator displays on the Tank Status windows to reflect the correct riser position in the tank. See Test Step 37.
- 92-064 Re-position the riser on the BY-105 Tank Status window to reflect its correct position. See Test Step 37.
- 92-066 Add independent control capability of a window's display on the main and Telewindows terminals. See Test Case 5.2.4
- 92-068 Lock out the "Print Screen" Function from the Telewindows terminal as an interim fix to the Print Screen problem.  
See Test Case 5.2.3
- 93-048 Remove min/max sliders from "Select TCs to Trend" window.  
Sections testing for these items were deleted.
- 93-071 Remove redundant Sensor Group Trend graphs. See Test Step 46.

The following Change Requests were added in this software release:

- 94-007 Add description of sensor to individual sensor trend plots.  
See Test Steps 49 - 54.
- 94-021 Change labels and text on the trend selectable plots.  
See Test Steps 55 - 80.
- 94-005 Addition of liquid level indication to tanks.  
See Test Steps 93 - 104.

This Test Procedure also tests certain non-deliverable items (outside the scope of the acceptance criteria). Other non-deliverable items are tested in the remaining Test Cases.

### 3.0 TESTER INFORMATION

The TMACS system is an application built using the G2 Real-Time Expert System. The instructions for using the mouse, mouse buttons, and keyboard are given below.

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The majority of user control of the system involves pointing at objects on the computer screen using the `POINTER`. The pointer is an arrow that is pointing to the upper left of the screen. When a user moves the mouse, the pointer moves on the screen.

The G2 system treats all three mouse buttons as if they were a single button. Whenever the use of a mouse button is required the user is free to use any of the three buttons.

The following terms are used to describe actions performed with the mouse:

- To `CLICK` on an object, first move your mouse so that the screen pointer rests on the object. Then, press the mouse button and release immediately without moving the mouse.
- To `DRAG` an object with the mouse, first move the mouse so that the screen pointer rests on the object. Then, press the mouse button and move the mouse without releasing the button. The object moves along with the screen pointer as you move the mouse. Release the button when the object is in the desired place. To drag a window in TMACS place the mouse in a blank area around the margin of the window and drag. (Note: the drag function is not provided for all windows).
- To `POINT` to a push-button or object, move the pointer to the appropriate place on the screen.
- To `MOVE` the pointer, slide the mouse with no buttons pressed.

There are two keyboard commands that are used in TMACS. When several windows are displayed at once, a window can be lifted to the top of the screen by pointing to it with the mouse and typing `Control-T`. (Hold down the "Control" key while typing the letter T). If the screen becomes unreadable or objects overwrite each other the screen can be redrawn by typing `Control-C`. (Hold down the "Control" key while typing the letter C).

#### 4.0 PRE-TEST INSPECTION AND SETUP REQUIREMENTS

This Test Procedure uses the software developed for production use. This should be running when the formal test begins, and can be identified in three parts as `"/home/G2/TMACS/prod/TMACS_Release_x_x.KB"` (where `x_x` refers to the current revision number, with only one file in the directory matching the template), `"/home/G2/BRIDGE/acromag_brg"` (which is the Acromag driver), `"/home/G2/BRIDGE/panalm_brg"` (which is the Panalarm driver) and `"/home/G2/BRIDGE/printer_brg"` (which is the Alarm Printer driver). The TMACS Software Engineer participating in the test shall demonstrate this.

The following reference materials will be needed prior to test execution:

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- "TMACS I/O Termination Point Listing", (WHC-SD-WM-TI-594, Rev. 0), document written by Instrument & Control (I&C), used on TMACS to determine thermocouple depths in each tank.
- "Riser Configuration Document for Single-Shell Waste Tanks", (SD-RE-TI-053, Rev. 8) -- used to verify the location of each riser on its associated single-shell tank.
- "Double-Shell Underground Waste Storage Tanks - Riser Survey", (SD-RE-TI-093, Rev. 1) -- used to verify the location of each riser on its associated double-shell tank.

See the References section for further details.

The Test Administrator should bring up TMACS in T2-User mode prior to starting this test. A Telewindows session is also needed to perform this test. For the Print Screen test, note that the main G2 window (not the telewindow) must be on the designated 'master' workstation (tfs17 or tfs12).

5.0 TEST STEPS WITH EXPECTED RESULTS

STEP	DESCRIPTION	VERIFY
<b>5.1 TEST OF THE "MASTER" TMACS WORKSTATION</b>		
<b>5.1.1 Operation of the SHOW MAIN DISPLAY button</b>		
1	Click on any enabled Tank Icon in the Hanford Tank Farm Facilities. Verify that a Tank Status window appears for the selected tank. Record selected tank here: <u>A2101</u> .	JAF
2	Click on the Shrink Window button (the down arrow) on the Tank Status Window to make the Control Panel visible.	JAF
3	Click on the Show Main Display button on the Control Panel and verify that the Tank Status window disappears.	JAF
4	Verify that the following windows appear on the screen:  Control Panel. Most Recent Alarm. Hanford Tank Farm Facilities. (WORKING may appear if Data Recovery is still running.)	JAF
<b>5.1.2 Format of the Main Display</b>		
5	Verify that the Control Panel window is located in the upper right-hand corner.	JAF
6	Verify that the SHOW MAIN DISPLAY button is at the top of the Control Panel window.	JAF
7	Verify that the CURRENT ALARMS button is below the SHOW MAIN DISPLAY button in the Control Panel window.	JAF
8	Verify that the Number of Current Alarms digital display is below the CURRENT ALARMS button in the Control Panel window.	JAF
9	Verify that the REPORTS button is below the Number of Current Alarms display in the Control Panel window.	JAF
10	Verify that the HIDE SENSOR TRENDS button is below the REPORTS button in the Control Panel window.	JAF
11	Verify that the PRINT SCREEN button is below the HIDE SENSOR TRENDS button in the Control Panel window.	JAF
12	Verify that the PANALARM DIRECTORY button is below the PRINT SCREEN button in the Control Panel window.	JAF

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STEP	DESCRIPTION	VERIFY
13	Verify that a date and time display appears below the PANALARM DIRECTORY button.	JMF
14	Verify that the Most Recent Alarm window is in the lower right-hand corner.	JMF
15	Verify that the GOTO button appears at the top left of the Most Recent Alarm window.	JMF
16	Verify that the Number of Current Alarms digital display is located at the top right of the Most Recent Alarm window.	JMF
17	Verify that the Hanford Tank Farm Facilities window occupies the left portion of the screen.	JMF
18	Verify that a brown background appears behind these windows and that no other windows are visible.	JMF

5.1.3 Operation of the CURRENT ALARMS button

19	Click on the CURRENT ALARMS button and verify that the Current Alarms window appears on the left-hand side of the screen.	JMF
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5.1.4 Format of the Current Alarms window

20	Verify that the HIDE WINDOW button (with an x as a symbol) appears at the top left of the window.	JMF
21	Verify that the SHRINK WINDOW button (with a down arrow as a symbol) appears to the right of the HIDE WINDOW button at the top left of the window.	JMF
22	Verify that the EXPAND WINDOW button (with an up arrow as a symbol) appears to the right of the SHRINK WINDOW button at the top left of the window.	JMF
23	Verify that the CURRENT-ALARMS title box is displayed directly below the HIDE, SHRINK, and EXPAND windows.	JMF
24	Verify that the Number of Current Alarms digital display is located below the CURRENT-ALARMS title box.	JMF
25	Verify that the UP ONE ALARM button is located below the Number of Current Alarms display.	JMF
26	Verify that the UP ONE PAGE button is located below the UP ONE ALARM button.	JMF

STEP	DESCRIPTION	VERIFY
27	Verify that the SHOW ALARMS button is located below the UP ONE PAGE button.	JLF
28	Verify that the DOWN ONE PAGE button is located below the SHOW ALARMS button.	JLF
29	Verify that the DOWN ONE ALARM button is located below the DOWN ONE PAGE button.	JLF
5.1.5 Operation of the SHRINK WINDOW button		
30	Click on the SHRINK WINDOW button in the Current Alarms window and verify that the Current Alarms window is reduced in size and is on the left-hand side of the screen.	JLF
5.1.6 Operation of the EXPAND WINDOW button		
31	Click on the EXPAND WINDOW button in the Current Alarms window and verify that the Current Alarms window is increased in size and is on the left-hand side of the screen.	JLF
5.1.7 Operation of the HIDE WINDOW button		
32	Click on the HIDE WINDOW button in the Current Alarms window and verify that the Current Alarms window disappears from the screen.	JLF
5.1.8 Operation of a TANK ICON button		
33	Click on the Tank Icon for any tank that is enabled. Verify that the Tank Status window for that tank appears.	5/1/93 JLF
5.1.9 Format of the Tank Status window		
34	Click on the EXPAND WINDOW button on the Tank Status window and verify that a tank diagram appears in the center of the window.	JLF
35	Verify that the window is labeled with a text block correctly identifying the tank and centered above the tank diagram.	JLF
36	Verify that the ACK ALARMS button appears below the text block and above the tank diagram.	JLF

STEP	DESCRIPTION	VERIFY
37	Verify that the riser location drawing appears in the upper right-hand corner of the window with the correct placement of the riser on the tank and the riser location drawing. Refer to the appropriate Tank Riser Configuration Document (i.e., either single-shell or double-shell).	JAF
38	Verify that the Hide Window button (with an X as a symbol) appears at the top left of the window.	JAF
39	Verify that the Shrink Window button (with a down arrow as a symbol) appears to the right of the Hide Window button at the top left of the window.	JAF
40	Verify that the Expand Window button (with an up arrow as a symbol) appears to the right of the Shrink Window button at the top left of the window.	JAF
41	Verify that the Print Screen button appears below the Hide Window button.	JAF
42	Verify that the riser number text is displayed over the riser graphic object.	JAF
43	Verify that the reference thermocouple displays appear to the left of the tank. (On several tanks there are no reference TCs).	JAF
44	Verify that the correct thermocouples for the tank appear on the tank diagram, and are positioned in a way that approximates their physical location in the tank. (Use the document, "TMACS I/O Termination Point Listing", to verify the thermocouples for the tank).	JAF
45	Verify that the current values are displayed on top of the thermocouple icons.	JAF
46	Verify that the TEMPERATURE TRENDS button appears in the window below the tank diagram. (On some tanks buttons will also appear for the LEVEL TRENDS, IN-TANK TCs, STRUCTURAL TCs, and REFERENCE TCs).	JAF
5.1.10 Operation of the SENSOR TREND button.		
47	Repeat steps 48 - 53 for all sensors on this tank. Use the document, "TMACS I/O Termination Point Listing", to verify correct sensors, descriptions, and sensor numbers.	JAF

STEP	DESCRIPTION	VERIFY
48	Click on the trend icon on the right of any sensor display (the trend icon looks like a little graph) and verify that a Sensor Trend window appears displaying a trend graph of the values of the sensor over time.	37, 38, 39, 40, 41 43, 44, 45, 46, 47, 49, 50, 51, 52, 53, 5 92, 95, 104, 107, 1 115, 116, 117, 118, 119 JAF
5.1.11 Format of the Sensor Trend window.		
49	Verify that a graph appears in the Sensor Trend window.	JAF
50	Verify that text appears above the trend graph that identifies the tank and the sensor type (eg. TC or TI for thermo-couple sensors) and number. (Some sensors also have the riser identified.)	JAF
51	Verify that the description for the sensor from the "TMACS I/O Termination Point Listing" appears below the graph.	JAF
52	Verify that a HIDE WINDOW button (with an x as a symbol) appears at the upper left of the window.	JAF
53	Verify that a digital readout of the current date and time appears below the trend graph on the right.	JAF
54	Click on the SHRINK WINDOW button on the Tank Status window. Lift the Control Panel to the top by clicking in the blank background on the Control Panel window. Click on the HIDE SENSOR TRENDS button and then click on the EXPAND WINDOW button to restore the Tank Status window.	JAF
5.1.12 Operation of the TEMPERATURE TRENDS button		
55	Verify that a TEMPERATURE TRENDS button is visible. If not, use the mouse to move other windows to make the TEMPERATURE TRENDS button visible.	JAF
56	Click on the TEMPERATURE TRENDS button and verify that the TEMPERATURE TRENDS window appears.	JAF
5.1.13 Format of the TEMPERATURE TRENDS window		
57	Verify that the trend graph for the tank appears at the upper right of the window.	JAF



STEP	DESCRIPTION	VERIFY
58	Verify that the trend graph label (below the x-axis of the graph) reads "TANK xx-yyy SELECTED SENSORS INDICATED BY X", where "xx-yyy" represents the name of the tank.	JMF
59	Verify that a text box with the name of the tank appears at the top center of the window to the left of the trend graph.	JMF
60	Verify that a digital display of the current date and time is displayed below the trend graph on the right.	JMF
61	Verify that a group of buttons appears below the trend graph with the label, "SELECT TIME INTERVAL".	JMF
62	Verify that buttons with the following labels appear below the "SELECT TIME INTERVAL" label: 1 hour 8 hours 24 hours 7 days 31 days.	JMF
63	Verify that the HIDE WINDOW button (with an x as a symbol) appears at the top left of the window.	JMF
64	Verify that the SHRINK WINDOW button (with a down arrow as a symbol) appears to the right of the HIDE WINDOW button at the top left of the window.	JMF
65	Verify that the EXPAND WINDOW button (with an up arrow as a symbol) appears to the right of the SHRINK WINDOW button at the top left of the window.	JMF
66	Verify that the PRINT SCREEN button appears below the HIDE WINDOW button.	JMF
67	Verify that the UPDATE GRAPH button appears below the graph.	JMF
68	Verify that the instructions for selection appear to the right of the UPDATE GRAPH button as follows: "SELECT: SENSORS AND TIME INTERVAL THEN CLICK ON UPDATE GRAPH BUTTON."	JMF
69	Verify that the top line of text above the group of digital readouts is "TEMPERATURE READINGS OVER".	JMF

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STEP	DESCRIPTION	VERIFY
70	Verify that the third line of text above the group of digital readouts is "(Degrees Fahrenheit)".	JMF
71	Click on the button labeled "1 hour". Verify that the second line of text above the group of digital readouts now reads "THE LAST 1 HOUR".	JMF
72	Click on the button labeled "8 hours". Verify that the second line of text above the group of digital readouts now reads "THE LAST 8 HOURS".	JMF
73	Click on the button labeled "24 hours". Verify that the second line of text above the group of digital readouts now reads "THE LAST 24 HOURS".	JMF
74	Click on the button labeled "7 days". Verify that the second line of text above the group of digital readouts now reads "THE LAST 7 DAYS".	JMF
75	Click on the button labeled "31 days". Verify that the second line of text above the group of digital readouts now reads "THE LAST 31 DAYS".	JMF
76	Verify that a check box, sensor name, and plot symbol appear for each thermocouple and reference thermocouple on the tank. Refer to the document, "TMACS I/O Termination Point Listing", for a list of the TCs and reference TCs for each tank.	JMF
77	Verify that a digital display labeled "CURRENT" appears for each thermocouple and each reference thermocouple on the tank.	JMF
78	Verify that a digital display labeled "LOW" appears for each thermocouple and each reference thermocouple on the tank.	JMF
79	Verify that a digital display labeled "HIGH" appears for each thermocouple and each reference thermocouple on the tank.	JMF
80	Click on the HIDE WINDOW (with an X as a symbol) button on the Temperature Trends window. Click on the HIDE WINDOW (with an X as a symbol) button on the Tank Status window.	JMF
81	Repeat steps 33 - 80 for each tank new to this release (a list should be supplied by the test administrator).	As new

STEP	DESCRIPTION	VERIFY
5.1.15 Operation of the HIDE SENSOR TRENDS button		
82	Click on the SHOW MAIN DISPLAY button on the Control Panel at the upper right of the screen.	JMF
83	Click on the Tank Icon for any of the TMACS tanks and verify that the Tank Status window for that tank appears.	JMF
84	Click on the SHRINK WINDOW button (with a down arrow as a symbol).	JMF
85	Drag the Tank Status window to the upper right hand corner and verify that the Tank Status window stops at the edge of the screen when dragged to the top or to the right.	JMF
86	Click on the EXPAND WINDOW button (with an up arrow as a symbol).	JMF
87	Click on the shaded box overlaying the digital display for two different TCs and verify that the Sensor Trend windows appear for both TCs.	JMF
88	Point to the blank background at the top of the Tank Status window and click on it. Verify that the Tank Status window comes to the top and the Sensor Trend windows are not visible.	JMF
89	Click on the HIDE WINDOW button on the Tank Status window and verify that the Tank Status window disappears.	JMF
5.1.15 Operation of the Hide Sensor Trends button		
90	Click on the HIDE SENSOR TRENDS button on the Control Panel and verify that the two Sensor Trend windows called up in step 87 disappear.	JMF
5.1.16 Operation of the PRINT SCREEN button		
91	Click on the PRINT SCREEN button on the Control Panel window. Verify that a confirmation window appears, requiring the operator to confirm this print request by clicking on the "CONTINUE" button.	JMF

STEP	DESCRIPTION	VERIFY
92	Click on the "CONTINUE" button, initiating the print request. Verify that a hardcopy of the MASTER screen is printed on the printer located in room B-110.	PASS
5.1.17 Operation of Tank Level Indication		
93	Select a tank that is configured in TMACS with level indication. (Have the test administrator run Inspect with the command "display a table of the names and tank of every level-sensor" to find out which tanks have level indication).  Record the sensor and tank names.  Sensor <u>C-106-LEVEL-SENSOR</u> Tank <u>C-106.</u>	PASS
94	Have the test administrator display the workspace TESTING-WKSPACES. Click on the TEST-LEVEL-INDICATOR button. Click on the HIDE WORKSPACE button on TESTING-WKSPACES.	JAF PASS
95	On the TEST-LEVEL-INDICATOR window, enter the name of the sensor in the type-in box labeled LEVEL-SENSOR-TO-TEST.	JAF PASS
96	Click on the button labeled "Setup level test". (Audible alarms will be inhibited during the rest of this test, alarms are tested in a separate test.)	JAF PASS
97	Have the test administrator run Inspect with the command "display a table of the names and vertical-offset of every tc-sensor S such that S is monitoring x-yyy". Where "x-yyy" is the name of the selected tank, for example C-106.	JAF PASS
98	For each tc-sensor in the table generated by Inspect repeat steps 99 - 100.	PASS
99	Enter the vertical offset value of the sensor in the type-in box labeled "SURFACE LEVEL" on the TEST-LEVEL-INDICATOR window.	PASS
100	Verify that the level indicator moves to the level of the sensor on the Tank Status Window.	PASS

99b Make step 99 into 99a.  
 add 99b as follows:  
 "Click on the "update history" button in the test-level-indicator-window" PASS

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STEP	DESCRIPTION	VERIFY
101	Enter a zero in the type-in box labeled "SURFACE LEVEL" on the TEST-LEVEL-INDICATOR window. <i>&amp; CLICK ON UPDATE HISTORY</i> Verify that the level indicator goes to the bottom of the tank on the Tank Status Window.	<i>RARR</i>
102	Enter a number greater than 1000 in the type-in box labeled "SURFACE LEVEL" on the TEST-LEVEL-INDICATOR window. <i>&amp; CLICK ON UPDATE HISTORY</i> Verify that the level indicator goes to the top of the tank on the Tank Status Window.	<i>RARR</i>
103	Enter a negative number in the type-in box labeled "SURFACE LEVEL" on the TEST-LEVEL-INDICATOR window <i>(&amp; CLICK ON UPDATE HISTORY)</i> Verify that the level indicator goes to the bottom of the tank on the Tank Status Window.	<i>RARR</i>
104	Click on the button "Restore level sensor after test" on the TEST-LEVEL-INDICATOR window.	<i>RARR</i>

5.2 TEST OF THE "SLAVE" TMACS WORKSTATION

5.2.1 Operation of the moveable window features

105	Click on the SHOW MAIN DISPLAY button on the Control Panel at the upper right of the screen of the <u>Telewindows</u> session.	<i>RARR</i>
106	Click on the Tank Icon for any of the TMACS tanks and verify that the Tank Status window for that tank appears.	<i>RARR</i>
107	Click on the SHRINK WINDOW button (with a down arrow as a symbol). Drag the Tank Status window to the upper right hand corner. Verify that the Tank Status window stops at the edge of the screen when dragged to the top or to the right.	<i>RARR</i>
108	Click on the EXPAND WINDOW button (with an up arrow as a symbol). Click on the shaded box overlaying the digital display for two different TCs. Verify that the Sensor Trend windows appear for both TCs.	<i>RARR</i>
109	Click on the shaded box overlaying the digital display for two different TCs and verify that the Sensor Trend windows appear for both TCs.	<i>RARR</i>
110	Point to the blank background at the top of the Tank Status window and click. Verify that the Tank Status window comes to the top and the Sensor Trend windows are not visible.	<i>RARR</i>

STEP	DESCRIPTION	VERIFY
111	Click on the HIDE WINDOW button on the Tank Status window and verify that the Tank Status window disappears.	<i>ALAN</i>
5.2.2 Operation of the HIDE SENSOR TRENDS button		
112	Click on the HIDE SENSOR TRENDS button on the Control Panel and verify that the two Sensor Trend windows called up in step 108 disappear.	<i>ALAN</i>
5.2.3 Operation of the PRINT SCREEN button		
113	Click on the PRINT SCREEN button on the Control Panel window. Verify that a message window appears, notifying the operator that a printout can not be generated from the Slave TMACS workstation.	<i>ALAN</i>
114	Verify that a hardcopy of the screen is not printed on the printer located in room B-110.	<i>ALAN</i>
5.2.4 Independent Display of the Slave Workstation		
115	Return to the Master TMACS workstation. Verify that no windows are displayed on the screen as a result of the test steps executed in Test Case 5.2.	<i>ALAN</i>

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**REFERENCES:**

*"Double-Shell Underground Waste Storage Tanks - Riser Survey"*, SD-RE-TI-093, Rev. 1, December 2, 1986.

*"Riser Configuration Document for Single-Shell Waste Tanks"*, SD-RE-TI-053, Rev. 8, August 22, 1991.

*"TMACS I/O Termination Point Listing"*, WHC-SD-WM-TI-594, Rev. 0, October 19, 1993.

**ATTACHMENTS:**

Acceptance Sheet  
Exception Sheets  
Data/Verification Sheet  
Test Log

### ACCEPTANCE SHEET

TEST PROCEDURE NUMBER: TP003

DATE: 5/30/94

ORGANIZATION NAME: Chem + Waste Mgmt SW Spt.

ORG#: 62610

**EXCEPTION SHEETS FOR THIS TEST PROCEDURE:**

TESTER	WITNESS	STEP	DATE	RESOLVED
<u>PKS</u>	<u>PKS</u> <u>P</u>	<u>48</u>	<u>5/26/94</u>	<u>5/30/94</u>

**COMMENTS:**

All of the test steps of this test procedure have been tested and exception sheets for this test procedure have been resolved.

**APPROVAL:**

<u>Patrick K Scanlan</u> TMACS Software Test Procedure Tester	<u>5/30/94</u> Date
<u>Ray A. West</u> TMACS Software Test Procedure Witness	<u>5-30-94</u> Date
<u>Patrick K Scanlan</u> PK Scanlan, TMACS Test Procedure Software Engineer	<u>5/30/94</u> Date
<u>Dave Spurling</u> DG Spurling, TMACS Software Project Manager	<u>5/30/94</u> Date
<u>C. P. Scaief</u> CC Scaief, TMACS Program Engineer	<u>6-7-94</u> Date



### EXCEPTION SHEET

TEST PROCEDURE NUMBER: TP003      STEP#: 48      DATE: 5/26/94

**DESCRIPTION:**

Trend graph could not be created  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

RESOLUTION:      DATE RESOLVED: 5/26/94

User-restriction attribute for the Tank Status Windows workspaces were not correctly assigned, user-restriction were globally assigned to all Tank Status Windows, and retested.  
\_\_\_\_\_  
\_\_\_\_\_

**APPROVAL:**

<u>Ed Bourgeois</u> TMACS Software Test Procedure Tester	<u>5/26/94</u> Date
<u>John Frost</u> TMACS Software Test Procedure Witness	<u>JRF 5/26/94</u> Date
<u>PK Scanlan</u> PK Scanlan, TMACS Test Procedure Software Engineer	<u>5/26/94</u> Date
<u>Dave Spurling</u> DG Spurling, TMACS Software Project Manager	<u>5/26/94</u> Date

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### DATA/VERIFICATION SHEET

This Sheet provides a record of Personnel who are involved in testing, data recording, verifying, and evaluating the Test Procedure. This form needs to be completed before a formal test is begun.

**DIRECTIONS:**

Print the name, sign, initial, and date the below lines of the participants.

TEST PROCEDURE NUMBER: TP003

<u>PAT SCANLAN</u>	<u>Patrick Scanlan</u>	<u>PKS</u>	<u>5/30/94</u>
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<u>Ed Bourquinon</u>	<u>Ed Bourquinon</u>	<u>EJB</u>	<u>5/26/94</u>
Tester / Organization		Initials	Date
<u>ROY A. R. KENT</u>	<u>Roy A. R. Kent</u>	<u>RAK</u>	<u>5-30-94</u>

<u>John Fries</u>	<u>[Signature]</u>	<u>JNF</u>	<u>5/26/94</u>
Witness / Organization		Initials	Date

<u>PATRICK K SCANLAN</u>	<u>Patrick K Scanlan</u>	<u>PKS</u>	<u>5/26/94</u>
PK Scanlan, TMACS Test Procedure Software Engineer		Initials	Date

<u>Dave Spurling</u>	<u>[Signature]</u>	<u>DS</u>	<u>5/26/94</u>
DG Spurling, TMACS Software Project Manager		Initials	Date

Name / Organization	Initials	Date
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Name / Organization	Initials	Date
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Name / Organization	Initials	Date
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### TEST LOG

TEST PROCEDURE NUMBER: TP003

Date: 5/30/94

TESTER: Patrick J. Scanlan

WITNESS: Roy A. Kent

#### TEST LOG NOTES:

The test was run over two days, and in setting up for the second day, it was discovered that the tank location had been moved from developer mode, (tank C-106). Re-alignment of the sensors and level indicator was accomplished by running the procedure setup-tank-status-window. To prevent this from happening in the future, one of two things should be done: 1) Execute this procedure always, just after the installation, or 2) Control the tank icon dragging feature to prevent "developer-mode" users from this access.

#### COMMENTS: