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Tank Monitor and Control System (TMACS) Revision 11.1 Acceptance Test Report

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TANK MONITOR AND CONTROL SYSTEM (TMACS) ACCEPTANCE TEST REPORT

Prepared By
Ronald R. Wandling
Lockheed Martin Services Inc.

For

Lockheed Martin Hanford
For
US Department of Energy
Richland Operations Office
Richland, Washington

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1. INTRODUCTION

1.1 PURPOSE

The purpose of this document is to describe tests performed to validate Revision 11.1 of the TMACS Monitor and Control System (TMACS) and verify that the software functions as intended by design.

1.2 SCOPE

This document is intended to test the software portion of TMACS. The tests will be performed on the development system. The software to be tested is the TMACS knowledge bases (KB) and the I/O driver/services. The development system will not be talking to field equipment; instead, the field equipment is simulated using emulators or multiplexers in the lab.

1.3 SUPPORTING DOCUMENTS

- "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, Current Revision.
- "TMACS Data File Formats, Release 11.0," Lockheed Martin Services, Inc. External Letter, RGG-SDI-99-001.

1.4 SERVICE REQUESTS

The following are the services requests incorporated into the TMACS software for this release.

SR #	Abbreviated Description
6	Do Not Allow Duplicate Readings From TMACS To Be Inserted Into SACS
52	Add "Point Processing" And "Alarm Processing" Features To Panalarm Sensors
86	Add SACS Level Sensors For Each Tank That Has A ENRAF
112	Add Feature To Record Hourly G2 Performance Data .
156	Remove Sensors Associated With The Temperature And Pressure Transmitter On Tank C-106 Riser 7
159	Modify The Source Of BX-106 Enraf Level To Be From A CIU Instead Of An Acromag

SR #	Abbreviated Description
160	Sensor Configuration Changes For Tanks TX-102 And TX-104
165	Eliminate Multiple Instances Of SYM-AN101-TI-RO4A-36
175	Correct AN105 SHMS Input Channels To Be 9,10,11
179	Correct Auto Restart Of Acromag Drivers When Connection Is Lost.
417	Set Default Reference Termomcouple Limits
422	Correct Start-Up Error Msg Problem.
424	Add SACS Surface Level To All Monitored Tanks
426	Add Disabled Sensors To SENSOR CONFIGURATION Report
428	Correct Errors With AY And AZ Annotation Array.
474	Add ENRAF To Tank T110
573	Correct Configuration Of C106 ENRAF To Point To Riser 1
721	Rename Serial Ports From COM To DIGI
747	Move ENRAFS in Tanks A101, A103 and A106 to AW CIU
750	Lengthen Acromag Timeout From 180 Ms To 500 Ms For Acromag Connected To The Supermux
789	Set The Alarm Limits For TMACS Sensor Not Visibile To The Opeator
774	Label SHMS Cabinets Where Multiple SHMS On Tank
812	Add Cabability For Operators To Display The Data Graphed On The Single Sensor Trends
814	Add Capability For Operator To Get A Reading Now
820	Apply SQL Service Pack 5
825	Eliminate The SACS_Level Readings From The SST And DST Files
831	Create A Report The Displays Sensors That Have Not Received A Reading Within The Last 24 Hrs
832	Create A Problem Sensor Report. (Quality Status = Unknown)
833	Change Instrument Limits For Sy101 Enraf To Match Field Conditions
834	Correct Path/File Name Variable Used To Save Knowledge Base Upon Successful Completion Of Engineer Control Of Alarm Limits
837	Correct Problem Of Sst And Dst File Not Created When Changing To Daylight Savings Time.
839	Shorten The Delay Time For Starting Up I/O Drivers
840	Correct Problem Of At Start-Up Where Files Are Moved To Wrong Directory Of TFS9
841	Configure Enraf Of Tanks Ap-101 Thru Ap108, S-104, Sx-107, Sx-108 And Sx-110 Thru Sx-115
843	Configure Enrafs For Tanks S-101, S-105, S-108, S-109 And C-104
845	Create A Suspect I/O Station Report
846	Add Ability To Retrieve A Sensor Reading Upon Request
853	Re-span SX-106 ENRAF
854	Add ENRAF Annulus Leak Detectors for Tanks SY101, SY102, and SY103

SR #	Abbreviated Description
855	Add ENRAF Level Detectors for Tanks SX106 and SY102

2. RESPONSIBILITIES

Each organization participating in the conduct of this ATP will designate personnel to assume the responsibilities and duties as defined herein for their respective roles. Prior to the performance of this ATP these designees shall sign the ATP Participation Sheet.

2.1 TEST DIRECTOR

- Provides concurrence that the ATP may commence.
- Act as liaison between the test performance group and the test witnesses.
- Shall perform the test as described in this document.
- Record exceptions and test steps that are not performed on the ATP Exception Record sheets. Add additional Exception Record sheets as needed.
- Shall obtain final approval signatures and distribute copies of the ATP.
- Stop any test that, in the judgment of the Test Director, may cause damage to the system until the test procedure has been revised.

2.2 TEST PERFORMANCE GROUP

- Shall provide qualified personnel, tools and equipment required to perform test.

2.3 TEST WITNESS AND APPROVAL PERSONNEL

- Shall observe the testing and data recording to verify that their group's requirements are met.

If any representative of the witness and approval personnel objects to the results obtained during the acceptance test, he shall notify the Test Director. Any such notice, if not resolved directly to the representative's satisfaction, shall be recorded as an exception.

2.4 TEST RECORDER

- Get signatures on the Recorder's copy of the Acceptance Test Procedure Participation sheet prior to testing.
- Observe tests and record test data (if any).
- Initial every test step on the Recorder's copy as it is completed, next to the step number or table, when provided.
- Record exceptions and test steps, which are not performed on the Exception Sheet.
- Notify the Test Director of an exception at time the exception is made.
- Transfer Recorder's copy of the completed ATP with the final test results and signatures to the Test Director for Final Approval signatures and disposition.

2.5 FINAL APPROVAL

- Approval personnel shall indicate, by their signature on the ATP Acceptance Record Sheet that the ATP result's are accepted. Any questions or objections shall be referred to the Test Director for resolution.

If the approval personnel find an exception to the test that is of sufficiently small magnitude, a test approval may be given. In this case, a list of such exceptions shall be entered in the exception page as "Test Approved with Exceptions," signed and dated. **This signature shall indicate that the exceptions are of such a nature that a rerun of the ATP is not necessary to demonstrate that the exceptions have been adequately resolved.**

2.6 OCCUPATIONAL SAFETY AND HEALTH

- Individuals shall perform their assigned tasks in a safe manner to protect themselves and others from undue hazards and to prevent damage to property and environment.

3. TEST PROCEDURE CHANGE CONTROL

Acceptance testing shall be conducted in accordance with the steps and requirements specified in this procedure. In the event minor changes are required to successfully complete the Acceptance Test Procedure the change shall be noted as an exception and testing continued, only if the change will not effect the test acceptance criteria. The exception shall be incorporated into this document in accordance with HNF-PRO-440, "Engineering Document Change Control, Requirements."

4. PREREQUISITES

This section describes the prerequisites required to perform this ATP. The section contains general prerequisites that apply to this test procedure as well as specific prerequisites for individual test procedures.

4.1 GENERAL

The following are the prerequisites for running any of the test sections described in this procedure.

1. The Test Director should bring up G2[1] with the TMACS_Main.KB and log in using the mode "t2-user" prior to running the formal test.

2. The Test Director should bring up a G2® telewindows2 session and log in using the mode "t2-user" prior to running the formal test.

3. The Test Director should verify that following bridges/services are started as services on WindowsNT™.

Common Name	Executable	Service Name
Acromag[3] I/O driver	Acromag_driver.exe	AcromagDriver 22200 AcromagDriver 22201 AcromagDriver 22202 AcromagDriver 22203 AcromagDriver 22204 AcromagDriver 22205
Alarm Printer driver	Tmacs_printer_driver.exe	TMACSPrtDriver 22300
Enraf® I/O driver	Enraf_driver.exe	EnrafDriver 22206
Panalarm[4] I/O driver	Panalm_driver.exe	PanalmDriver 22207
Westronic[5] I/O driver	Westronic.driver	WestronicDriver 22212
G2® ODBC Bridge		G2® ODBC Bridge

4. The Test Director shall have available the latest version of the following reference materials:

   - "TMACS I/O Termination Point Listing", (WHC-SD-WM-TI-594, current revision), document written by Instrument & Control (I&C). The electronic version is available at \\AP014\TMACS.

[1]G2 is a registered trademark of the Gensym Corporation.
[2]Telewindows is a registered trademark of the Gensym Corporation.
[3]Acromag is a trademark of Acromag Incorporated, Wixom, Michigan.
[4]Panalarm is a registered trademark of Ametek, Inc.
[5]Westronics is a registered trademark of Westronics, Inc.

- "Riser Configuration Document for Single-Shell Waste Tanks", (SD-RE-TI-053, Rev. 8).

- Double-Shell Underground Waste Storage Tanks - Riser Survey", (SD-RE-TI-093, Rev. 1).

5. The serial multiplexers or emulators for the Acromag™, Enraf®, Panalarm,® and Westronic® devices are available. At least one serial multiplexer (or emulator) is attached to the test computer and that the appropriate driver can function through the appropriate serial port.

4.2 GRAPHICS

No additional prerequisites are needed.

4.3 TRENDING

To give a proper display of trending it is strongly advised that 1 or more days of history files be copied from production to the system to be tested (*give enough time for the files to be processed)* and run into the development TMACS.

4.4 REPORTS

No additional prerequisites are needed.

4.5 EXTERNAL INTERFACES

No additional prerequisites are needed.

4.6 POINT PROCESSING

1. This test requires the system to be in a state in which no other alarm activity is generated externally. The Test Director may need to disable the collection of sensor readings from the lab equipment and clear alarm messages generated by the system start up.

2. The individual Test Cases are built using tank "Test-201", which contains one discrete and one continuous sensor. The current values for these sensors are entered programmatically; the tests assume that the following parameters have been set for sensor Continuous-200001. Verify that the sensor has the parameters in Table 1.

Table 1. Parameters for Sensor Continuous-200001

Parameter	Value
High Instrument Limit	22

High Alarm Limit	15
Low Alarm Limit	10
Low Instrument Limit	4
Delta Band	0.0
Alarm Deadband	0.9
Rate of Change	1.2
ROC Limit	2.2

3. Verify that the discrete sensor, Discrete-200001, has the values for the parameters listed in Table 2.

Table 2. Parameters for Sensor Discrete-200001

State 0 = Normal	Color = Green	Annotation = OPEN
State 1 = Alarm	Color = Yellow	Annotation = CLOSING
State 2 = Alarm	Color = Red	Annotation = CLOSED
State 3 = Normal	Color = Green	Annotation = OPENING
High Instrument Limit > 3	Low Instrument Limit < 0	

4. To set up the tests in this section the Test Director must:

   - Load the testing knowledge base (KB)
   - Bring up the Point Processing Functional Tests workspace
   - Enter the test document revision number (i.e. 11.0).

5. The functional tests will be run individually in the test cases. The tester must be logged in to G2® in "administrator" mode.

4.7 PERFORMANCE

1. This purpose of this test section is to bench mark the production software using the development computer. The tests will be performed on the computer with the minimum TMACS processes running. The development computer will be running the following software during the test:

   - WindowsNT™ and related system programs that will be running in production

   - G2® with the production TMACS knowledge bases. There should be no data recovery operations in place during the test!!!

   - All driver services that would be running in production. None of these services should be receiving data from the field, lab, or emulators.

2. To set up the tests in this section the Test Director must:

- Acknowledge all the alarms from the startup process
- Load the testing knowledge base (KB)
- Hide all the workspaces until only the G2® background bricks appear
- Bring up the Point Processing Performance Tests workspace
- Enter the test document revision number (i.e. 11.0).

4.8 LOGGING

The Test Director may want to start and have the TMACS system running overnight to create the automated data files for this test.

4.9 SERVICE REQUESTS

5. ACCEPTANCE CRITERIA

5.1 GENERAL

The system shall provide multiple security levels that are password protected.

5.2 GRAPHICS

The acceptance criteria for graphics is:

- Provide real-time display of numeric values of sensors
- Communicate with a minimum of 2 graphics CRTs
- Provide "PRINT" facility for graphic window displays.

5.3 TRENDING

The acceptance criteria trending is:

- Provide real-time trend graphs, with the following selected time intervals: 1 hour, 7 days.

5.4 REPORTS

The acceptance criteria is:

- Provide a list of active sensors that have not recorded a reading for the current day.
- Provide a list of sensors that are recording readings that are unreliable. (Status unknown)
- Provide a list of io-stations that are not reporting.

5.5 EXTERNAL INTERFACES

The system shall be capable of providing sensor information to the Surveillance Analysis Computer System (SACS) for sensors configured in both SACS and TMACS.

The acceptance criteria sensor conversion is:

- The system shall convert the data read by the field equipment in a user readable format.

5.6 POINT PROCESSING

The acceptance criteria trending is:

- Provide real-time alarming on high and low level for any analog point
- Provide alarm deadband filtering for analog points
- Display the following alarm colors: red for highest priority, requiring immediate action; yellow for an abnormal condition requiring attention but not an immediate hazard; white for status indication; green for normal condition
- Provide alarm summary display with date, time, tag, description, alarm status with color-coding (green for normal). Remove message from display upon acknowledgement and reset/return to normal
- Display tanks and sensors with unacknowledged alarms as blinking
- Provide operator alarm acknowledgement. Acknowledgement action shall cease blinking of alarmed item
- Provide logging of alarms, return to normal, and alarm acknowledgements, to printer and to disk
- Provide alarming when error codes are returned from data acquisition system.

5.7 PERFORMANCE

The acceptance criteria trending is:

- The TMACS G2® program shall process input from 50 points per second while using less than 80% of the CPU time.

5.8 LOGGING

The acceptance criteria trending is:

- The system shall have the capability to log any sensor value

- A sensor logging shall include the time stamp and the sensor's value.

5.9 SERVICE REQUESTS

The acceptance criteria for the service request (SR) are contained in the description of the SR. The test director will have available a copy of the service request for viewing.

6. TEST PROCEDURES

6.1 GENERAL

6.1.1 Startup

Note: The Test Director prior to witness testing may have completed this test.

7-1-99
Started test at 8:35am

Step	Perform	Verify	Initial
1.	Start TMACS On the TMACS screen, type Control-Y Edit the 'User' to be t2-user Edit the 'Password' to be the password for t2-user Edit the 'G2® user mode' to be t2-user	Verify the TMACS starts up (approximately ten minutes) and verify the following: • A message is displayed indicating what days worth of data is being recovered. • A status bar is displayed indicating what percentage of the days readings have been read into memory.	MJL

6.1.2 Security (Telewindows® and Central Console)

Step	Action	Verify	Initial
1.	On the TMACS screen, type Control-Y.	Verify that the user mode selection workspace appears on the screen with "t2-user" in the name field.	MJL
2.	Edit the 'G2® user mode' to be something other than t2-user or shut down. (i.e. "administrator".) Click on the END button in the user mode selection workspace.	Verify that TMACS does not enter selected mode.	MJL
3.	Edit the 'G2® user mode' to be "t2-user" and click on the END button.	Verify that the user mode selection workspace disappears from the screen (indicating a successful login).	MJL

6.2 GRAPHICS

This section is performed after the system has been started and the clock is functional. This test should be performed on both the main console and Telewindows®.

6.2.1 T2-User Abilities within TMACS

6.2.1.1 Central Console or Telewindows®

Step	Action	Verify	Initial
		Main Display	
1.	Click on the Show Main Display button on the Control Panel.	Verify that the following workspaces appear on the screen: • Control Panel. • Monitored Systems • Most Recent Alarm. • Hanford Tank Farm Facilities *Note: Working window (may appear if Data Recovery is still running)*	MSD
2.	Attempt to move several objects chosen at random on the workspace by doing a click-and-drag.	Verify that they do not move.	MSD
3.	Click anywhere in the empty space on each workspace.	Verify that no menus appear.	MSD
		Tank Status Display	
4.	Click on the tank icon for any active tank.	Verify that the Tank Status workspace appears.	MSD
5.	Click on the Shrink Window button on the Tank Status workspace.	Verify that the workspace size is reduced.	MSD
6.	Move by dragging the Tank Status Window.	Verify that the workspace moves; verify that no part of the workspace can be moved off-screen.	MSD
7.	Attempt to move several objects chosen at random on the Tank Status workspace by doing a click-and-drag.	Verify that none of the objects move.	MSD
		Sensor Trend Display	
8.	Click on icon for any sensor. *Note: Reading and Label are not part of sensor icon.*	Verify that the trend workspace for that sensor appears.	MSD

Step	Action	Verify	Initial
9.	Click at random at several places on the trend workspace.	Verify that no menu appears.	
10.	Attempt to move several objects chosen at random on the trend workspace.	Verify that none move.	
11.	Click on the Hide Workspace button on the trend workspace.	Verify that the workspace disappears.	
		Control Panel	
12.	Move Tank Status over a portion of the Control Panel workspace. Click on the background of the Control Panel workspace.	Verify that doing so brings the Control Panel to the top.	
13.	Click on the Hide Window button on the Tank Status workspace.	Verify that the workspace disappears.	
		Monitored Systems	
14.	Click on any button on the MONITORED SYSTEMS workspace.	Verify that the monitored system chosen workspace appears.	
15.	Click at random at several places on the workspace.	Verify that no menu appears.	
16.	Attempt to move several objects chosen at random on the workspace.	Verify that none move.	
17.	Click on the Hide Window button on the workspace.	Verify that the workspace disappears.	

6.2.1.2 Central Console Only

Step	Action	Verify	Initial
1.	Click on the Show Main Display button on the Control Panel.	Verify that the following workspaces appear on the screen: • Control Panel. • Monitored Systems • Most Recent Alarm. • Hanford Tank Farm Facilities *Note: Working window may appear if Data Recovery is still running.*	
2.	Click on the tank icon for any active tank.	Verify that the Tank Status workspace appears.	

Step	Action	Verify	Initial
		User Selectable Trends	
3.	Click on a TREND GRAPH button (located at the bottom of the Tank Workspace).	Verify that a User Configurable Trend Graph workspace appears.	
4.	Click at random at several places on the Trend Graph workspace.	Verify that no menu appears.	
5.	Attempt to move several objects chosen at random on the Trend Graph workspace	Verify that no objects move.	
6.	Click on the Hide Window button on the Trend Graph workspace.	Verify that the workspace disappears.	
7.	Click on the Hide Window button on the Tank Status workspace.	Verify that the workspace disappears.	
		Current Alarms	
8.	Click on the CURRENT ALARMS button on the Control Panel.	Verify that the Current Alarms workspace appears.	
9.	Click at random at several places on the Current Alarms workspace.	Verify that no menu appears.	
10.	Attempt to move several objects chosen at random on the Current Alarms workspace.	Verify that none move.	
11.	Click on the Hide Window button on the Current Alarms workspace.	Verify that the workspace disappears.	

6.2.2 Control Panel

6.2.2.1 Operation of the SHOW MAIN DISPLAY button

Step	Perform	Expected Result	Initial
1.	Click on any enabled Tank Icon in the Hanford Tank Farm Facilities. (The icon will not be gray.) *If the Tank Status Window is not already shrunk then click it's Shrink Window button*	Verify that a Tank Status workspace appears for the selected tank and that the Control Panel is visible.	

Step	Perform	Expected Result	Initial
	(an ▼ as a symbol).		
2.	Click on the Show Main Display button on the Control Panel.	Verify that the Tank Status workspace disappears. Verify that the following workspaces appear on the screen: • Hanford Tank Farm Facilities • Control Panel • Most Recent Alarm (may be partially covered by the Hanford Tank Farm Facilities workspace) • Monitored Systems *Note: Working window may appear if Data Recovery is still running.*	MSD
3.	Examine the TMACS display.	Verify that the Control Panel workspace is located in the upper right-hand corner.	MSD
		Verify that the following objects appear in the workspace in order, top to bottom: • Label "Control Panel" • SHOW MAIN DISPLAY button • CURRENT ALARMS button (Not available to Telewindows® sessions) • Number of Current Alarms digital display • HIDE SENSOR TRENDS button • REPORT MENU button • A date and time display	MSD
		Verify that MONITORED SYSTEMS workspace is displayed on the middle right-hand side of the screen and is displaying the following: • AY/AZ Exhauster • C-106 Sluicing • K-Basins	MSD
		Verify that the Most Recent Alarm workspace is in the lower right-hand corner and that the GOTO button appears at the top center of the workspace.	MSD
		Verify that the Number of Current Alarms digital display is located at the top right of the Most Recent Alarm workspace.	MSD
		Verify that the Hanford Tank Farm Facilities workspace occupies the left portion of the screen.	MSD
		Verify that a brown background appears behind	

Step	Perform	Expected Result	Initial
		these workspaces and that no other workspaces are visible.	MJD

6.2.2.2 Operation of CURRENT ALARMS Button and Screen

Note: The CURRENT ALARMS button is not available in a Telewindows® session.

Step	Perform	Expected Result	Initial
1.	Click on the CURRENT ALARMS button on the Control Panel..	Verify that the Current Alarms workspace appears on the left-hand side of the screen and contains the following: • HIDE WINDOW (with an x as a symbol) • SHRINK WINDOW (*an ▼ as a symbol*) • EXPAND WINDOW (*an ▲ as a symbol*) • CURRENT-ALARMS title box • UP ONE ALARM • UP ONE PAGE • REFRESH ALARMS • DOWN ONE PAGE • DOWN ONE ALARM • GO TO TOP of LIST • GO TO END of LIST • ACKNOWLEDGE ALL WHITE ALARMS • ACKNOWLEDGE ALL BLUE MESSAGES	MJD
Operation of the **SHRINK WINDOW** button			
2.	Note: If the Current Alarms workspace is already shrunk then expand first. Click on the SHRINK WINDOW button.	Verify the Current Alarms workspace: • Decreases in size • Moves to the left-hand side of the screen • Has space to show 10 alarms. (*Only 9 alarms will be visible if the first alarm in the list is visible.)*	MJD
Operation of the **EXPAND WINDOW** button			
3.	Click on the EXPAND WINDOW button.	Verify the Current Alarms workspace: • Increases in size • Moves to the left-hand side of the screen • Has space to show 6 alarms. (*Only 5 alarms will be visible if the first alarm in the list is visible.)*	MJD
Operation of the **GO TO END of LIST WINDOW** button			
4.	Click on the GO TO END	Verify the last page of current alarms is	

Step	Perform	Expected Result	Initial
	of LIST button	displayed	MSD
	Operation of the **UP ONE PAGE** button		
5.	Click on the UP ONE PAGE button.	Verify the previous page of the current alarms is displayed.	MSD
	Operation of the **GO TO TOP of LIST** button		
6.	Click on the GO TO TOP of LIST.	Verify the first page of current alarms is displayed.	MSD
	Operation of the **DOWN ONE PAGE** button		
7.	Click on the DOWN ONE PAGE button.	Verify the next page of current alarms is displayed.	MSD
	Operation of the **UP ONE ALARM** button		
8.	Click on the UP ONE ALARM button.	Verify that the alarm list is moved up one alarm.	MSD
	Operation of the **DOWN ONE ALARM** button		
9.	Click on the DOWN ONE ALARM button.	Verify that the alarm list is moved down one alarm.	MSD
	Operation of the **REFRESH ALARMS** button		
10.	Click on the REFRESH ALARMS button.	Verify the alarm display is updated.	MSD
	Operation of the **ALL WHITE ALARMS** button		
11.	Click on the Acknowledge ALL WHITE ALARMS button. *(Note: May have to generate white alarms first)*	Verify the white alarms disappear from the alarm list and that the Number of Current Alarms is updated appropriately.	MSD
	Operation of the **ALL BLUE MESSAGES** button		
12.	Click on the Acknowledge ALL BLUE MESSAGES button. *(Note: May have to generate blue alarms first)*	Verify the blue messages disappear from the alarm list.	MSD
	Operation of the **HIDE WINDOW** button		
13.	Click on the HIDE WINDOW button	Verify that the workspace disappears	MSD

6.2.2.3 Operation of the HIDE SENSOR TRENDS button

Step	Perform	Expected Result	Initial
1.	Click on an enabled Tank Icon on the Hanford Tank Farm Facilities workspace. (The icon will not be gray.)	Verify that the Tank Status workspace for this tank appears.	MSD

Step	Perform	Expected Result	Initial
2.	Click on several sensor trend icons selected at random.	Verify that Sensor Trend workspaces for the selected sensors appear.	MJD
3.	Lift the Control Panel to the top by clicking in the blank background on the Control Panel workspace. Click on the HIDE SENSOR TRENDS button on the Control Panel.	Verify that the Tank Status workspace and any Sensor Trend workspaces are hidden.	MJD

6.2.2.4 Operation of the REPORTS button

Step	Perform	Expected Result	Initial
1.	Click on the REPORT MENU button on the Control Panel.	Verify that the Report Menu workspace is displayed with a list of report buttons that includes the following: • Suspect Sensor Report • Suspect IO-Station Report • Unknown Sensor Report	MJD
2.	Select a report at random. Click on the Title of the report.	Verify the Help workspace for the chosen report is displayed.	MJD
3.	Click on the hide button.	Verify the workspace disappears.	MJD
4.	Select a report at random Click on the button for the chosen report.	Verify the chosen report's workspace is displayed. *(Note: The verification of the report is performed elsewhere in this document.)*	MJD
5.	Click on the hide button.	Verify the workspace disappears.	MJD
6.	Click on the hide button on Report Menu workspace.	Verify the workspace disappears.	MJD

6.2.3 Hanford Tank Farm Facility

6.2.3.1 Operation of a TANK ICON button

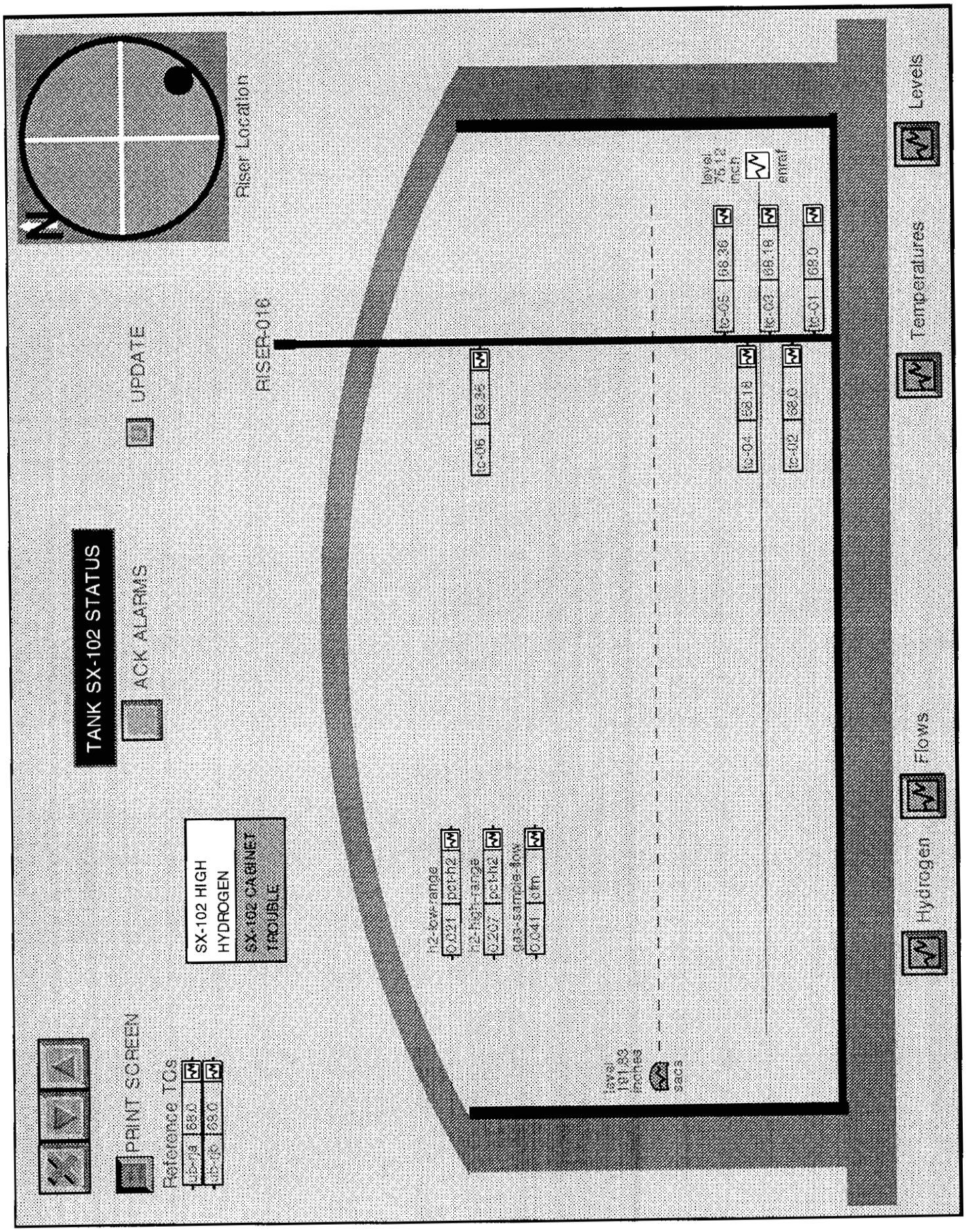
Step	Perform	Expected Result	Initial
1.	Click any enabled Tank Icon in the Hanford Tank Farm Facilities. *(The icon will not be gray.)*	Verify that the Tank Status workspace appears on the screen and contains the following: • TITLE (correctly identifying the tank) • HIDE WINDOW button (x as a symbol) • SHRINK WINDOW button (an▼ as a symbol) • EXPAND WINDOW button (an ▲ as a symbol) • ACK ALARMS button	
		• UPDATE button (if available, not all tanks have discrete sensors). • Riser Location Drawing (Refer to the appropriate Tank Riser Configuration Documents for correct location) • Print Screen button • Riser Identifier(s) (displayed over the riser(s)) • Sensor Icons (i.e. thermocouple, level) • User Selectable Trend button(s).	
		Thermocouple Operation	
2.	Use the document "TMACS I/O Termination Point Listing" (Tag list) as a reference. Choose a thermocouple for the tank.	Verify the following: • The thermocouple is positioned on the tank display in a way that approximates the physical location in the tank. • Sensor label and current value are displayed next to the thermocouple icon • Sensor icon is overlaid with the sensor alarm status color	

Step	Perform	Expected Result	Initial
		Operation of Tank Level Indication	
3.	Use the document "TMACS I/O Termination Point Listing" (Tag list) as a reference. Choose a surface level sensor for the tank.	Verify the following: • The surface level icon(s) is positioned proportionally to the maximum tank height and at the current level displayed by the reading. • Sensor label and current value are displayed next to the surface level icon. *The label should identifying the source of this reading. (ENRAF® or SACS)* • Sensor icon is overlaid with the sensor alarm status color	
		Operation of Print button Not available in a Telewindows® session	
4.	Click on the PRINT SCREEN button.	Verify that the tank workspace prints.	
		Operation of Shrink Window button	
5.	Click on the SHRINK WINDOW button (*an ▼ as a symbol*).	Verify that the workspace shrinks.	
6.	Drag the Tank Status workspace to the upper right hand corner.	Verify that the Tank Status workspace stops at the edge of the screen when dragged to the top or to the right.	
		Operation of Expand Window button	
7.	Click on the EXPAND WINDOW button (*an ▲ as a symbol*).	Verify that the workspace enlarges.	
		Operation of the HIDE button	
8.	Click on the HIDE WINDOW.	Verify that the workspace is hidden.	
Note: Operation of the Acknowledge Alarm button is performed in section 6.6.7 (Miscellaneous Alarm Tests)			
Note: Operation of the Trends is performed in section 6.3 (Trending).			

6.2.4 Operation Of The HTFF Print Button

Note: The CURRENT ALARMS button is not available in a Telewindows® session.

Step	Perform	Expected Result	Initial
1.	Click on the PRINT SCREEN button in the lower right hand corner of workspace. *(May have to*	Verify that the workspace is printed.	


TANK SX-102 STATUS
ACK ALARMS
UPDATE
PRINT SCREEN
Riser Location
RISER-016
SX-102 HIGH HYDROGEN
SX-102 CABINET TROUBLE
Reference TCs
Levels
Temperatures
Flows
Hydrogen

Step 6.2.3.1 #4

Step	Perform	Expected Result	Initial
	click on HTTF workspace to see button)		MJS

6.2.5 Monitored Systems

6.2.5.1 Operation Of The Monitored System Button

Step	Perform	Expected Result	Initial
1.	Click on the any system displayed on the MONITORED SYSTEMS workspace.	Verify that a workspace is displayed representing the monitored system.	MJS
2.	Click on the sensor objects.	Verify that no graphic workspaces or menu boxes are displayed.	MJS
3.	For alarm panels, click on any graphic "borders".	Verify that no graphic workspaces or menu boxes are displayed.	MJS
Operation of Shrink Window button			
	Click on the SHRINK WINDOW button (*an ▼ as a symbol*).	Verify that the workspace shrinks.	MJS
	Drag the workspace to the upper right hand corner.	Verify that the workspace stops at the edge of the screen when dragged to the top or to the right.	MJS
Operation of Expand Window button			
	Click on the EXPAND WINDOW button (*an ▲ as a symbol*).	Verify that the workspace enlarges.	MJS
Operation of the HIDE button			
	Click on the HIDE WINDOW.	Verify that the workspace is hidden.	MJS

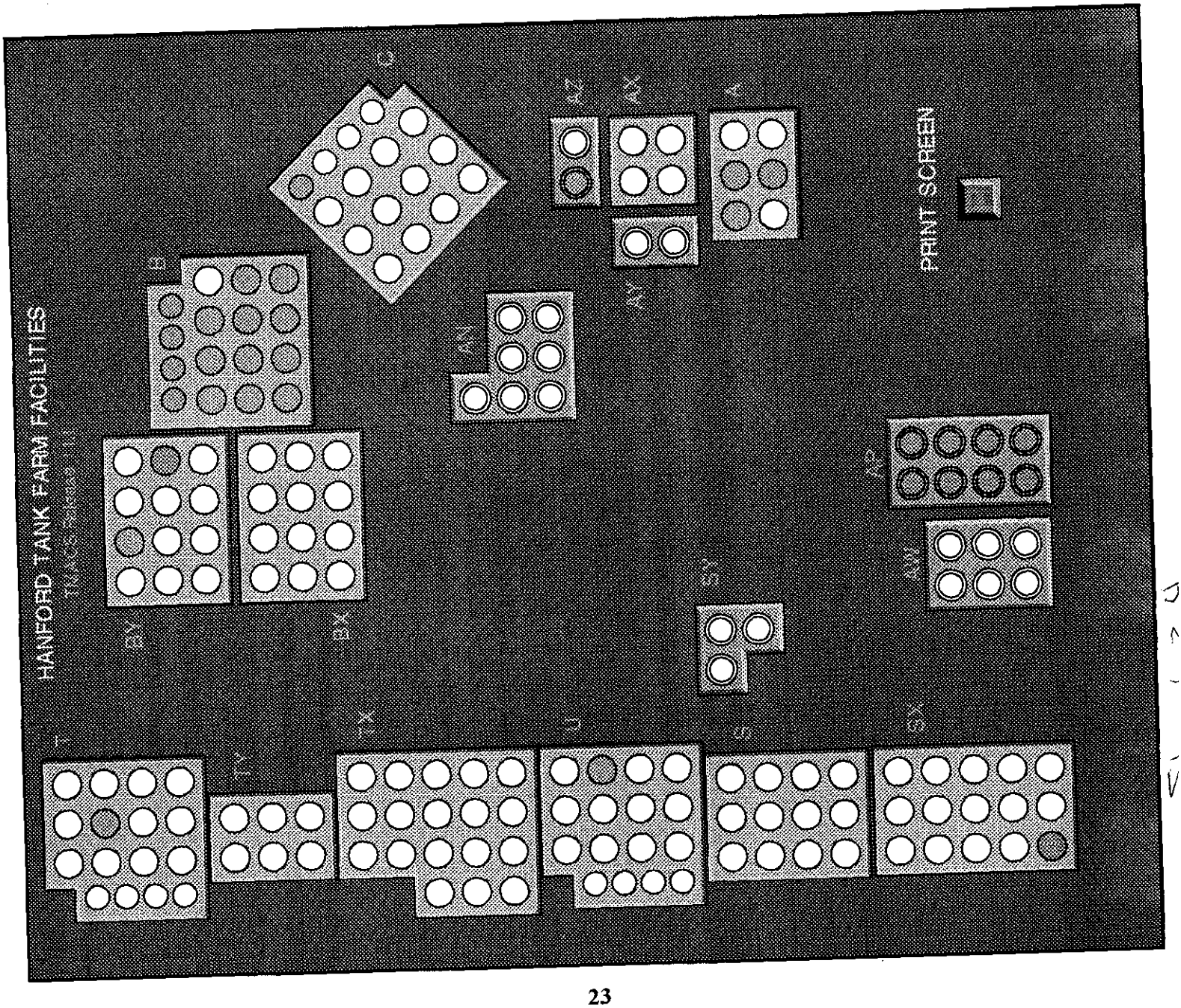
6.3 TRENDING

This section describes the test cases for both the individual and user selectable trends.

Have the Test Director verify that the TMACS is running in Development Mode of operation and is generating variable sensor data. Note: G2® will only display trend data that varies over time.

6.3.1 Operation of Individual Sensor Trends

This section describes the test cases for the individual selectable trends.


HANFORD TANK FARM FACILITIES
PRINT SCREEN
B
C
AZ
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A
AY
AW
BY
BX
AP
AM
BZ
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TY
TX
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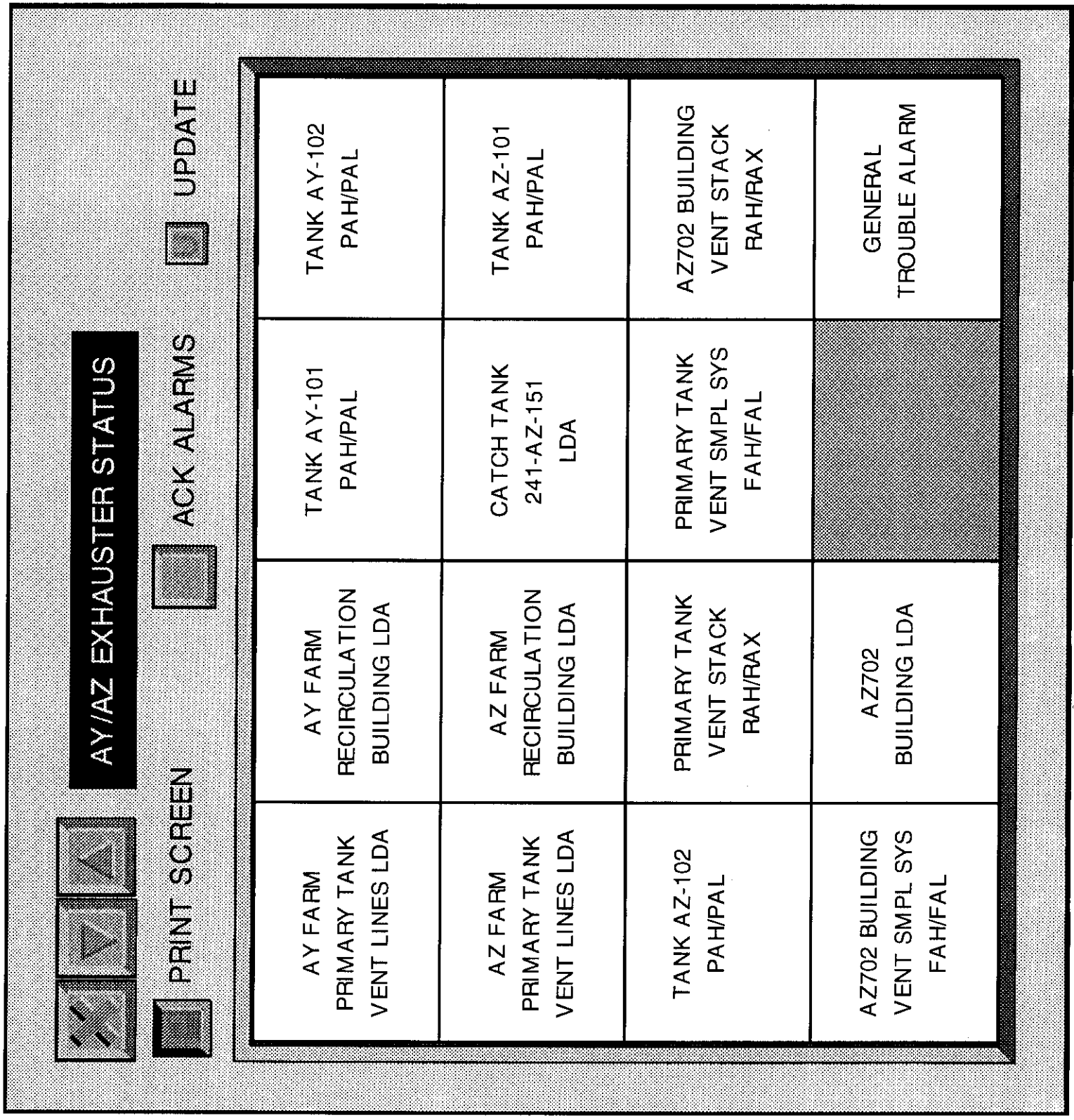


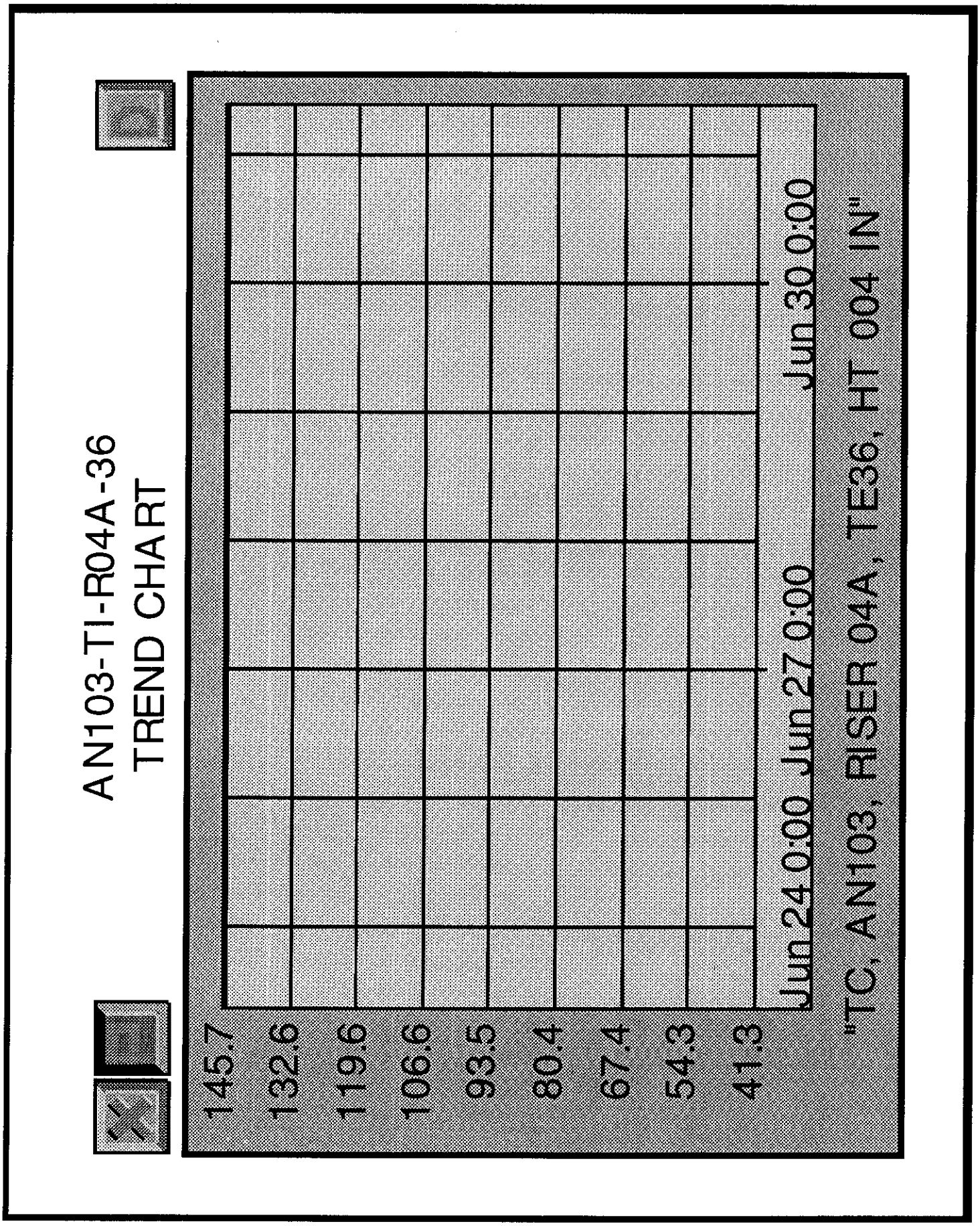
Printed for Section 6.2.5.1 | Not actual screen shot

6.3.1.1 Operation of Trend Chart

Step	Perform	Expected Result	Initial
1.	Click any enabled Tank Icon in the Hanford Tank Farm Facilities. *(The icon will not be gray.)* Click on the portion of any sensor icon that looks like a little chart.	Verify that a Sensor Trend workspace for the sensor chosen and contains the following. • Chart • HIDE WINDOW *(X)* button • DETAIL *(D)* button. • PRINT *(P)* button	MSD
2.	Examine theChart.	Verify the following: • The values line color is black. • Lines for the low and high alarm limits appear at roughly one-tenth (1/10) and nine tenths (9/10) of the distance on the vertical axis. *Note: Only if trend is within limits.* • Alarm limit bands match the alarm color (Yellow or Red). • The trend title (above) and label (below) agree with the sensor tag name and descriptor. • The time scale of the horizontal time axis is 7 days and that some dates are shown.	MSD
3.	Click on the Print button.	Verify the Sensor Trend workspace is printed.	MSD
4.	Click on the HIDE WINDOW button.	Verify that the workspace is hidden.	MSD

6.3.1.2 Operation of Sensor Details

Step	Perform	Expected Result	Initial
1.	Select a continuous sensor that has polling enabled at random. Display the individual sensor trend chart for the chosen sensor.	Verify the trend chart is displayed and the tag name is displayed above the trend chart	MSD
2.	Click on the Details (**D**) button.	Verify the Sensor Details workspace for the chosen sensor is displayed with the following information: • **Hide** *(X)* button • **Print** (P) button	


AN103-TI-R04A-36
TREND CHART
145.7
132.6
119.6
106.6
93.5
80.4
67.4
54.3
41.3
Jun 24 0:00
Jun 27 0:00
Jun 30 0:00
"TC, AN103, RISER 04A, TE36, HT 004 IN"

Step 6.3.1.1 #

Step	Perform	Expected Result		Initial
		• **Update** *(U)* button And depending on the sensor type one of the following sensor information groups.		MDS
		Temperature Sensor		
		Current Reading Last Good Reading Units High Alarm Limit Low Alarm Limit Deadband Point Processing ROC Processing Station Status Polling Freq. Index Validity Interval Expiration Time Formula Expression Formula Parameter	Last Update Method Type Upper Instrument Limit Lower Instrument Limit Delta Alarm Processing Logging Raw Value Polling. Freq. Sec.	MDS
		SACS LEVEL Sensor		
		Current Reading Last Good Reading Units High Alarm Limit Low Alarm Limit Deadband Point Processing ROC Processing Suspect Status Sensor Type Name Slvl_dttm	Last Update Method Upper Instrument Limit Lower Instrument Limit Delta Alarm Processing Logging	MDS
		ENRAF LEVEL Sensor		
		Current Reading Last Good Reading Units High Alarm Limit Low Alarm Limit Deadband Point Processing ROC Processing Station Status Polling Freq. Index Displacer Postion Level Status Alarm Status	Last Update Method Upper Instrument Limit Lower Instrument Limit Delta Alarm Processing Logging Raw Value Polling. Freq. Sec. Waste Level Level Status Mode Alarm Status Mode	

Step	Perform	Expected Result		Initial
		Validity Interval Expiration Time Formula Expression Formula Parameter		MSD
		Other Sensors		
		Current Reading Last Good Reading Units High Alarm Limit Low Alarm Limit Deadband Point Processing ROC Processing Station Status Polling Freq. Index Validity Interval Expiration Time Formula Expression Formula Parameter	Last Update Method Upper Instrument Limit Lower Instument Limit Delta Alarm Processing Logging Raw Value Polling. Freq. Sec.	MSD
3.	Click the **Update** button. Wait for the workspace to be updated *(approximately 5 seconds).* *Note: Not Valid for SACS_LEVEL Sensors at this time.*	Verify the following: • The date and time displayed in the **Readout Last Good Reading At** is updated. • Reading displayed in the **Current Reading** is updated. • RPC is displayed in the readout labeled **Last Update Method** *Note: The readout labeled Last Update Method will change to poll when next poll is taken.* *Note: An alarm could be generated if the reading for the sensor is an alarm range.* *Note: the current Reading may or may not change depending if the value being read has changed.*		MSD
4.	Wait until the next time the sensor is polled. *Note: Not Valid for SACS_LEVEL Sensors at this time.*	Verify the following: • The date and time displayed in the **Readout Last Good Reading At** is updated. • Reading displayed in the **Current Reading** is updated. • POLL is displayed in the readout labeled **Last Update Method** *Note: An alarm could be generated if the reading for*		MSD

Step	Perform	Expected Result	Initial
		the sensor is an alarm range. *Note: the current Reading may or may not change depending if the value being read has changed.*	
5.	Using the emulator change the value that is read for the sensor. Press the **Update** button. Wait for the workspace to be updated *(approximately 5 seconds).*	Verify the following: • The date and time displayed in the **Readout Last Good Reading At** is updated. • Reading displayed in the **Current Reading** is updated to the value issued by the emulator. • RPC is displayed in the readout labeled **Last Update Method** *Note: The readout labeled Last Update Method will change to poll when next poll is taken.* *Note: An alarm could be generated if the reading for the sensor is an alarm range.*	
6.	Wait until the next time the sensor is polled.	Verify the following: • The date and time displayed in the **Readout Last Good Reading At** is updated. • Reading displayed in the **Current Reading** is updated. • POLL is displayed in the readout labeled **Last Update Method**	
7.	Click on the Print button.	Verify the Sensor Details workspace is printed.	
8.	Click on the Hide button	Verify the Sensor Details workspace disappears.	
9.	Select a continuous sensor at random that has point processing disabled. Display the sensor details for the chosen sensor.	Verify the **Update** button (*labeled U in the upper right corner of the workspace*) is not displayed.	

6.3.1.3 Operation of Sensor History

Step	Perform	Expected Result	Initial
1.	Select a continuous sensor at random that has history.	Verify the trend chart is displayed and the tag name is displayed above the trend chart	

AN103-LI-R02A-01
SENSOR DETAILS

Current Reading	101.0
Last Update Method	poll
Last Good Reading At	1 Jul 99 9:49:34 a.m.
Units	inches
High Alarm Limit	349.19
Upper Instrument Limit	500.0
Low Alarm Limit	342.19
Lower Instrument Limit	0.0
Deadband	0.1
Delta	0.01
Point Processing	true
Alarm Processing	true
ROC Processing	false
Logging	true
Station Status	1
Raw Value	101.0
Polling Freq. Index	1
Polling Freq. Sec.	10
Displacer Position	101.0
Waste Level	101.0
Level Status	-
Level Status Mode	measuring
Alarm Status	-
Alarm Status Mode	none
Validity Interval	"2 hours"
Expiration Time	1 Jul 99 11:49:53 a.m.
Formula Expression	"None"
Formula Parameter	"the waste_level of ENRAF-STA-00-00-003"

Section 6.3.1.2 Step #7

Step	Perform	Expected Result	Initial
	Display the individual sensor trend chart for the chosen sensor.		
2.	Click on the trend chart.	Verify the History Table is displayed with the following: • Hide *(X)* button • Print *(P)* button • Sensor tag name at top of workspace • Table displaying the data (Point (PT), Value and the Date/Time value was taken) for the sensor over the displayed time period or 1000 points which ever comes first. • High Button (*High value for selected time period*) • Low Button (*Low value for selected time period*) • Point (*Used to go directly to a specific point*) Button • Top of Table button (|◄) • Previous page button (◄) • Next page button (►) • End of table button (►|)	MSD
3.	Click on the High button	Verify the position of the table displayed contains the sensor point with the highest value.	MSD
4.	Click on the Low button	Verify the position of the table displayed contains the sensor point with the lowest value.	MSD
5.	Chose a sensor point at random. Enter this point in the text box associated with the Point button. Click on the Point button.	Verify the position of the table displayed contains the sensor point chosen.	MSD
6.	Click on the top of table button (|◄).	Verify that the portion of the table displayed is the first page in the table.	MSD
7.	Click on the end of table button (►|).	Verify the portion of the table displayed is the last page in the table.	MSD
8.	Click the previous page button (◄)	Verify the portion of the table displayed is the previous page.	MSD
9.	Click the next page button (►)	Verify the portion of the table displayed is the next page.	MSD
10.	Click on the Print button.	Verify the Sensor History workspace is printed.	MSD

AN103-LI-R02A-01
HISTORY TABLE

High

Low

Point

15

PT	VALUE	DATE / TIME
26	300.0	7/1/1999 9:39:14
27	300.0	7/1/1999 9:38:25
28	300.0	7/1/1999 9:37:15
29	300.0	7/1/1999 9:36:52
30	300.0	7/1/1999 9:33:27

Section 6.3.1.3 step #10

AN103-LI-R02A-01
HISTORY DETAILS

Total Point Count	52

Time Interval Point Count	52

High Point Number	52
High Value	300.0
High Date/Time	1 Jul 99 9:33:27 a.m.

Low Point Number	45
Low Value	100.0
Low Date/Time	1 Jul 99 9:49:01 a.m.

SELECT TIME INTERVAL:

- ○ 1 hour
- ○ 8 hours
- ◉ 24 hours
- ○ 7 days
- ○ 31 days

Section 6.3.1.3 Step # 11

Step	Perform	Expected Result	Initial

11.	Click on the table.	Verify the history details workspace is displayed with the following information:
		
		• Total Point Count (*signifies the total number of points in history)*
		• Time Interval Point Count *(signifies the number of points display in history table and trend chart for the selected time period)*
		• High Point Number
		• High Value
		• High Date/Time
		• Low Point Number
		• Low Value
		• Low Date/Time
		• Select Time Interval
		  • 1 hour
		  • 8 hours
		  • 24 hours
		  • 7 days
		  • 31 days	

12.	Select a time interval at random.	Verify the following workspaces are updated: • Individual Sensor Trend Chart • History Table • History Details	
13.	Click on the Print button.	Verify the History Details workspace is printed.	
14.	Click on the Hide button for the Individual Sensor Trend workspace.	Verify the following workspaces disappear: • Individual Sensor Trend Chart • History Table • History Details	

6.3.2 Operation of User Selectable trends

This section describes the test cases for the individual selectable trends.

Note: User selectable sensor trends cannot be performed in a Telewindows® session.

Step	Perform	Expected Result	Initial

Step	Perform	Expected Result	Initial
1.	Click any enabled Tank Icon in the Hanford Tank Farm Facilities. *(The icon will not be gray.)* Click on a USER SELECTABLE TRENDS button. *(located at the bottom of the Tank Status workspace.)*	Verify that the USER SELECTABLE TRENDS workspace appears and contains the following. • Title (identifying what Tank trend is associated with) • Trend graph or chart. • HIDE WINDOW button (with an x as a symbol) • SHRINK WINDOW button (an ▼ as a symbol) • EXPAND WINDOW button (an ▲ as a symbol) • PRINT SCREEN button • UPDATE GRAPH button (below the graph). • SELECT TIME INTERVAL OPTIONS • 1 hour • 8 hours • 24 hours • 7 days • 31 days. • List of sensors associated with user selectable trend with the following • Check box (indicates if sensor is displayed on graph/chart) • Sensor symbol (identifies sensor on graph/chart) • Current, Low, and High readings (based on the SELECT TIME INTERVAL chosen.) • Sensor Reading Description containing the following information • Type of readings (i.e. temperature) • Time period of readings (based on the SELECT TIME INTERVAL chosen) • Units of readings (i.e. Degrees Fahrenheit) • Date and Time	MCD
2.	Click on the UPDATE GRAPH button	Verify the Graph/Chart has the following: • The current value for each sensor on the trend graph approximates the current value on the digital display. • The values line matches the symbol for each sensor. • Trend graph label *(below the x-axis of the graph)* reads:	

Step	Perform	Expected Result	Initial
		"TANK **xx-yyy** SELECTED SENSORS INDICATED BY X" Where "**xx-yyy**" represents the name of the tank. • The time scale of the horizontal time axis is based on the SELECT TIME INTERVAL chosen.	MSD
		Operation of Sensor Check Box	
3.	Click on the box of any sensor that contains an X.	Verify that the X is removed from the box.	MSD
4.	Click on the UPDATE GRAPH button below the graph.	Verify the trend graph displays only lines for the sensors that are checked.	MSD
5.	Click on the box of any sensor that does not contain an X.	Verify that the X is displayed in the box.	MSD
6.	Click on the UPDATE GRAPH button below the graph.	Verify the trend graph displays only lines for the sensors that are checked.	MSD
		Operation of Sensor Time Interval Options *Note: May want to repeat using different time intervals.*	
7.	Click any "SELECT TIME INTERVAL" option.	Verify the following: • A black dot appears in the circle of the time interval selected. • The Sensor Reading Description is modified according to the SELECT TIME INTERVAL chosen. (Note: Trend graph is not updated automatically)	MSD
8.	Click on the UPDATE GRAPH button below the graph.	Verify the horizontal time scale of the trend graph is reset to the SELECT TIME INTERVAL chosen.	MSD
		Operation of Shrink Window button	
9.	Click on the SHRINK WINDOW button (*an ▼ as a symbol*).	Verify that the workspace shrinks.	MSD
10.	Drag the workspace to the upper right hand corner.	Verify that the workspace stops at the edge of the screen when dragged to the top or to the right.	MSD
		Operation of Expand Window button	
11.	Click on the EXPAND WINDOW button (*an ▲ as a symbol*).	Verify that the workspace enlarges.	MSD
		Operation of Print button **Not available in a Telewindows® session**	

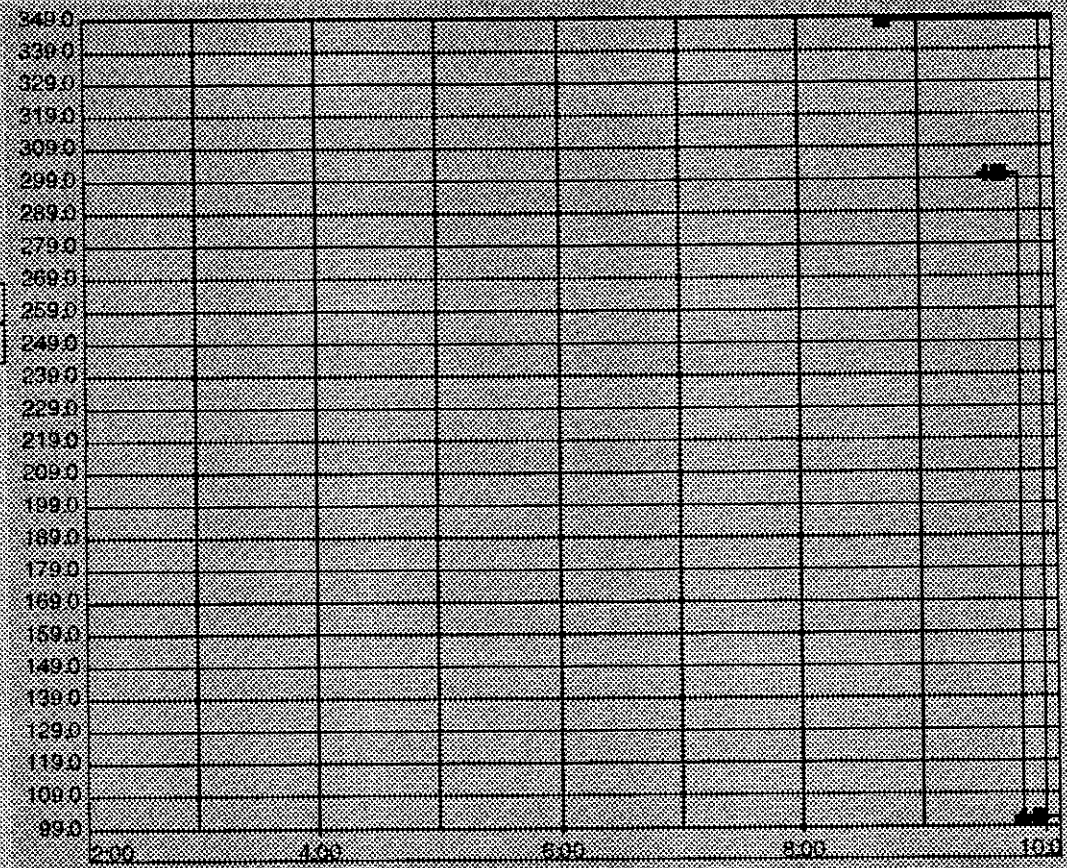
TANK AN-103

PRINT SCREEN

SURFACE LEVEL READINGS OVER THE LAST 8 HOURS

INCHES from the Bottom of the tank

☒ SACS ■	CURRENT	348.0	LOW	348.0	HIGH	348.0
☒ ENRAF +	CURRENT	101.0	LOW	100.0	HIGH	300.0



1 Jul 99 10:07:24 a.m.

UPDATE GRAPH

SELECT: SENSORS AND TIME INTERVAL, THEN CLICK ON 'UPDATE GRAPH' BUTTON.

SELECT TIME INTERVAL:

- ○ 1 hour
- ◉ 8 hours
- ○ 24 hours
- ○ 7 days
- ○ 31 days

Section 6.3.2 Step # 12

Step	Perform	Expected Result	Initial
12.	Click on the PRINT SCREEN button.	Verify that the User Selectable Trend workspace prints.	
		Operation of the HIDE button	
13.	Click on the HIDE WINDOW.	Verify that the workspace is hidden.	

6.4 REPORTS

6.4.1 Suspect Sensor Report

Prior to performing this test case set up sensors that have not reported a value within the current day. *(Note: Emulator is required to get the quality status of sensors equal to good. Also need a large amount of sensors to display continuous/discrete and SACS level sensors)*

Step	Perform	Expected Result	Initial
1.	Select the **Suspect Sensor Report** button from the Reports Menu workspace.	Verify the Suspect Sensor Report is displayed with the following information: • **Hide** (X) Button • **Minimize** button (▼) • **Maximize** button (▲) • **Print** button (P) • **Date of Report** • **Number of Suspect Sensors** • **Sensor Insert Count** *(Signifies the number of sensors displayed in report table.)* • **Table Processing Status** *(i.e. Done)* • **Include Continuous** check box *(default is checked)* • **Include Discrete** check box *(default is unchecked)* • **Include SACS Levels** check box *(default is unchecked)* • **Sort** Report check box. (Sorted by TAG NAME; default is unchecked) • **Update** button • **Abort Report** button • **Top of Table** button (|◄) • **Previous** page button (◄) • **Next** page button (►) • **End of Table** button (►|) • Report table containing the following columns:	

Step	Perform	Expected Result	Initial
		• NO *(Signifies the line/row number)* • TAG_NAME • LAST-GOOD-READING • IO-STATION	
2.	Click the **Update** button	Verify the following: • Report Table is updated • Date of Report is updated. • Sensor Insert Count is equal to the number of sensor in the table. • Number of Sensor is equal to the Sensor Insert Count. *Note the Table Processing Status will change from Done to Active back to Done.*	
3.	Click each combination of the following check boxes. • Include Continuous • Include Discrete • Include SACS Levels Click the **Update** button.	Verify the following: • The appropriate check box (s) is checked. • Report Table is updated with the appropriate data • Date of Report is updated. • Sensor Insert Count is equal to the number of sensor in the table. • Number of Sensor is equal to the Sensor Insert Count. *Note the Table Processing Status will change from Done to Active back to Done.*	
4.	Click the Sort check box so the box is checked. Click the **Update** button.	Verify the following: • Sort check box is checked. • Report Table is updated and the data is sorted by TAG_NAME. • Date of Report is updated • Sensor Insert Count is equal to the number of sensor in the table. • Number of Sensor is equal to the Sensor Insert Count. *Note the Table Processing Status will change from Done to Active back to Done.*	
5.	Click the Sort check box so the box is unchecked.	Verify the following: • Sort check box is unchecked.	

Step	Perform	Expected Result	Initial
	Click the **Update** button.	• Report Table is updated *(Note the data may or may not be sorted depending on how the data was read in)*. • Date of Report is updated • Sensor Insert Count is equal to the number of sensor in the table. • Number of Sensor is equal to the Sensor Insert Count. *Note the Table Processing Status will change from Done to Active back to Done*	MSD
6.	Click the **Update** button immediately followed by the **Abort Report** button.	Verify the following: • Date of Report is updated • Sensor Insert Count is equal to the number of sensor in the table. • Number of Sensor is not equal to the Sensor Insert Count. • Table Processing Status changes to Abort *Note the Table Processing Status will change from Done to Active to Abort*	MSD
7.	Click on the Title block of the report table.	Verify the help workspace for this report is displayed.	MSD
8.	Click the Maximize button.	Verify the workspace is maximized.	MSD
9.	Click the Minimize button	Verify the workspace is minimized	MSD
10.	Click on the **Top of report** button (|◄).	Verify that the portion of the report displayed is the first page in the report. *(Note: Report may fit on one page and therefore no change is seen.)*	MSD
11.	Click on the **End of report** button (►|).	Verify the portion of the report displayed is the last page in the report. *(Note: Report may fit on one page and therefore no change is seen.)*	MSD
12.	Click the **Previous** page button (◄)	Verify the portion of the report displayed is the previous page. *(Note: Report may fit on one page and therefore no change is seen.)*	MSD
13.	Click the **Next** page button (►).	Verify the portion of the report displayed is the next page. *(Note: Report may fit on one page and therefore no change is seen.)*	MSD
14.	Click on the **Print** button (P). *(Note: Not functional on the remote stations at this time.)*	Verify the portion of the workspace displayed is printed to the printer.	MSD
15.	Click on the **Hide** button (X).	Verify the report workspace is hidden.	MSD

1 Jul 99 10:26:17 a.m.

Number of Suspect Sensors	500
Sensor Insert Count	203
Table Processing Status	ABORT

- [x] Include Continuous
- [x] Include Discrete
- [x] Include SACS Levels
- [ ] Sort Report

Update | Abort Report

SUSPECT SENSOR REPORT

NO.	TAG NAME	LAST-GOOD-READING	IO-STATION
51	AW101-LI-R004-01	30 Jun 99 11:59:30 p.m.	ENRAF-STA-06-01-01-
52	AW102-LI-R020-01	30 Jun 99 11:59:30 p.m.	ENRAF-STA-06-01-01-
53	AW103-LI-R004-01	30 Jun 99 11:59:30 p.m.	ENRAF-STA-06-01-01-
54	AW104-LI-R004-01	30 Jun 99 11:59:30 p.m.	ENRAF-STA-06-01-01-
55	AW105-LI-R004-01	30 Jun 99 11:59:30 p.m.	ENRAF-STA-06-01-01-
56	AW106-LI-R004-01	30 Jun 99 11:59:30 p.m.	ENRAF-STA-06-01-01-
57	AN101-TI-STRU-54	30 Jun 99 11:59:30 p.m.	ANA-STA-01-051
58	AN101-TI-STRU-60	30 Jun 99 11:59:30 p.m.	ANA-STA-01-051
59	AN101-TI-STRU-03	30 Jun 99 11:59:30 p.m.	ANA-STA-01-051
60	AN101-TI-STRU-10	30 Jun 99 11:59:30 p.m.	ANA-STA-01-051
61	AN101-TI-STRU-20	30 Jun 99 11:59:30 p.m.	ANA-STA-01-051
62	AN101-TI-STRU-74	30 Jun 99 11:59:30 p.m.	ANA-STA-01-051
63	AN101-TI-STRU-77	30 Jun 99 11:59:30 p.m.	ANA-STA-01-051
64	AN101-TI-STRU-80	30 Jun 99 11:59:30 p.m.	ANA-STA-01-051
65	AN101-TI-STRU-83	30 Jun 99 11:59:30 p.m.	ANA-STA-01-051
66	AN104-TI-STRU-54	30 Jun 99 11:59:30 p.m.	ANA-STA-01-057
67	AN104-TI-STRU-60	30 Jun 99 11:59:30 p.m.	ANA-STA-01-057
68	AN104-TI-STRU-03	30 Jun 99 11:59:30 p.m.	ANA-STA-01-057
69	AN104-TI-STRU-10	30 Jun 99 11:59:30 p.m.	ANA-STA-01-057
70	AN104-TI-STRU-21	30 Jun 99 11:59:30 p.m.	ANA-STA-01-057
71	AN104-TI-STRU-74	30 Jun 99 11:59:30 p.m.	ANA-STA-01-057
72	AN104-TI-STRU-77	30 Jun 99 11:59:30 p.m.	ANA-STA-01-057
73	AN104-TI-STRU-80	30 Jun 99 11:59:30 p.m.	ANA-STA-01-057
74	AN104-TI-STRU-83	30 Jun 99 11:59:30 p.m.	ANA-STA-01-057
75	AN102-TI-STRU-54	30 Jun 99 11:59:30 p.m.	ANA-STA-01-053

Section 6.4.1 Step # 14

6.4.2 Suspect IO-Station Report

Prior to performing this test case set up IO stations that are not reporting.

Step	Perform	Expected Result	Initial

1.	Select the **Suspect I/O – Station Report** button from the Reports Menu workspace.	Verify the Suspect IO-Station Report is displayed with the following information:
		
		• **Hide** (X) Button
		• **Minimize** button (▼)
		• **Maximize** button (▲)
		• **Print** button (P)
		• **Date of Report**
		• **Number of Suspect Stations**
		• **Station Insert Count** *(Signifies the number of stations displayed in report table.)*
		• **Table Processing Status** *(i.e. Done)*
		• **Sort** Report Check box. *(Sorted by IO-STATION)*
		• **Update** button
		• **Abort** Report button
		• **Top of Table** button (|◄)
		• **Previous** page button (◄)
		• **Next** page button (►)
		• **End of Table** button (►|)
		• Report table containing the following columns:
		  • NO *(Signifies the line/row number)*
		  • IO-STATION
		  • EXPIRATION TIME
		  • POLLING-FREQ
			MED

2.	Click the **Update** button	Verify the following: • Report Table is updated • Date of Report is updated. • Station Insert Count is equal to the number of station in the table. • Number of Stations is equal to the Station Insert Count. *Note the Table Processing Status will change from Done to Active back to Done*	MED
3.	Click the Sort check box so it is checked.	Verify the following:	

Step	Perform	Expected Result	Initial
	Click the **Update** button.	• Sort check box is checked. • Report Table is updated and the data is sorted by IO-STATION. • Date of Report is updated • Station Insert Count is equal to the number of station in the table. • Number of Station is equal to the Station Insert Count. *Note the Table Processing Status will change from Done to Active back to Done*	
4.	Click the Sort check box so it is unchecked. Click the **Update** button.	Verify the following: • Sort check box is unchecked. • Report Table is updated *(Note the data may or maynot be sorted depending on how the data was read in).* • Date of Report is updated • Station Insert Count is equal to the number of stations in the table. • Number of Stations is equal to the Station Insert Count. *Note the Table Processing Status will change from Done to Active back to Done*	
5.	Click the **Update** button immediately followed by the **Abort** Report.	Verify the following: • Date of Report is updated • Table Processing Status changes to Abort • Station Insert Count is equal to the number of station in the table. • Number of Sensor is not equal to the Sensor Insert Count. *Note the Table Processing Status will change from Done to Active to Abort*	
6.	Click on the Title block of the report table.	Verify the help workspace for this report is displayed.	
7.	Click the Maximize button.	Verify the workspace is maximized.	
8.	Click the Minimize button	Verify the workspace is minimized	
9.	Click on the **Top of report** button (|◄).	Verify that the portion of the report displayed is the first page in the report. *(Note: Report may fit on one page and therefore no change is seen.)*	
10.	Click on the **End of report**	Verify the portion of the report displayed is the	

Step	Perform	Expected Result	Initial
	button (▶|).	last page in the report. *(Note: Report may fit on one page and therefore no change is seen.)*	MJD
11.	Click the **Previous** page button (◀)	Verify the portion of the report displayed is the previous page. *(Note: Report may fit on one page and therefore no change is seen.)*	MJD
12.	Click the **Next** page button(▶).	Verify the portion of the report displayed is the next page. *(Note: Report may fit on one page and therefore no change is seen.)*	MJD
13.	Click on the **Print** button (P). *(Note: Not functional on the remote stations at this time.)*	Verify the portion of the workspace displayed is printed to the printer.	MJD

14.	Click on a row in the table.	Verify the Suspect IO-Station Detail Report is displayed with the following information:
		
		• **Hide** (X) Button
		• **Minimize** button (▼)
		• **Maximize** button (▲)
		• **Print** button (P)
		• **Date of Report**
		• **Number of Suspect Sensors**
		• **Sensor Insert Count** *(Signifies the number of sensors displayed in report table that are associated with the selected station.)*
		• **Table Processing Status** *(i.e. Done)*
		• **Sort** Report Check box. *(Sorted by IO-STATION)*
		• **Update** button
		• **Abort** Report button
		• **Top of Table** button (|◀)
		• **Previous** page button (◀)
		• **Next** page button (▶)
		• **End of Table** button (▶|)
		• Report table containing the following columns:
		  • NO *(Signifies the line/row number)*
		  • TAG NAME
		  • LAST-GOOD-READING
		  • IO-STATION
		  •
		Note: The Top of Table, Previous page, Next Page and End of Table are included for future use. There currently is no station that has more than 25 (Table Size) sensors connected to it.
			MJD

1 Jul 99 11:04:38 a.m.

Number of Suspect Stations	42
Station Insert Count	42
Table Processing Status	DONE

Sort Report

Update Abort Report

SUSPECT IO-STATION REPORT

NO.	IO-STATION	EXPIRATION TIME	POLLING-FREQ
1	DIG-STA-03-02-046	1 Jul 99 8:43:10 a.m.	0
2	DIG-STA-05-005	1 Jul 99 8:43:10 a.m.	0
3	DIG-STA-05-NA-003	1 Jul 99 8:43:10 a.m.	0
4	DIG-STA-05-NA-006	1 Jul 99 8:43:10 a.m.	0
5	ENRAF-STA-00-00-002	1 Jul 99 10:40:16 a.m.	0
6	ENRAF-STA-00-00-006	1 Jul 99 10:40:16 a.m.	0
7	ENRAF-STA-00-00-007	1 Jul 99 10:40:16 a.m.	0
8	ENRAF-STA-06-00-00-32	1 Jul 99 10:40:18 a.m.	0
9	ENRAF-STA-03-03-033	1 Jul 99 10:40:31 a.m.	0
10	ENRAF-STA-03-03-040	1 Jul 99 10:40:32 a.m.	0
11	ENRAF-STA-06-03-03-41	1 Jul 99 10:40:32 a.m.	0
12	ENRAF-STA-06-03-03-32	1 Jul 99 10:40:32 a.m.	0
13	ENRAF-STA-06-04-04-31	1 Jul 99 10:40:33 a.m.	0
14	ENRAF-STA-06-04-04-34	1 Jul 99 10:40:33 a.m.	0
15	ENRAF-STA-06-04-04-35	1 Jul 99 10:40:33 a.m.	0
16	ENRAF-STA-06-04-04-38	1 Jul 99 10:40:33 a.m.	0
17	ENRAF-STA-06-04-04-39	1 Jul 99 10:40:33 a.m.	0
18	ENRAF-STA-06-04-04-40	1 Jul 99 10:40:34 a.m.	0
19	ENRAF-STA-06-04-04-68	1 Jul 99 10:40:35 a.m.	0
20	ENRAF-STA-06-04-04-61	1 Jul 99 10:40:35 a.m.	0
21	ENRAF-STA-06-04-04-62	1 Jul 99 10:40:35 a.m.	0
22	ENRAF-STA-06-04-04-63	1 Jul 99 10:40:35 a.m.	0
23	ENRAF-STA-06-04-04-64	1 Jul 99 10:40:36 a.m.	0
24	ENRAF-STA-06-04-04-65	1 Jul 99 10:40:36 a.m.	0
25	ENRAF-STA-06-04-04-66	1 Jul 99 10:40:36 a.m.	0

Section 6.4.N Step #13

Step	Perform	Expected Result	Initial
15.	Click the **Update** button	Verify the following: • Report Table is updated • Date of Report is updated. • Sensor Insert Count is equal to the number of sensors in the table. • Number of Sensors is equal to the Sensor Insert Count. *Note the Table Processing Status will change from Done to Active back to Done*	MSD
16.	Click the Sort check box so it is checked. Click the **Update** button.	Verify the following: • Sort check box is checked. • Report Table is updated and the data is sorted by TAG_NAME. • Date of Report is updated • Sensor Insert Count is equal to the number of sensor in the table. • Number of Sensor is equal to the Sensor Insert Count. *Note the Table Processing Status will change from Done to Active back to Done*	MSD
17.	Click the Sort check box so it is unchecked. Click the **Update** button.	Verify the following: • Sort check box is unchecked. • Report Table is updated *(Note the data may or may not be sorted depending on how the data was read in).* • Date of Report is updated • Sensor Insert Count is equal to the number of stations in the table. • Number of Sensor is equal to the Station Insert Count. *Note the Table Processing Status will change from Done to Active back to Done*	MSD
18.	Click the **Update** button immediately followed by the **Abort** Report.	Verify the following: • Date of Report is updated • Table Processing Status changes to Abort • Station Insert Count is equal to the number of station in the table. • Number of Sensor is not equal to the Sensor	

Step	Perform	Expected Result	Initial
		Insert Count. *Note the Table Processing Status will change from Done to Active to Abort*	MJS
19.	Click the Maximize button.	Verify the workspace is maximized.	MJS
20.	Click the Minimize button	Verify the workspace is minimized	MJS
21.	Click on the **Print** button (P). *(Note: Not functional on the remote stations at this time.)*	Verify the portion of the workspace displayed is printed to the printer.	MJS
22.	Click on the **Hide** (X) **button** on the Suspect IO-Station Detail Report workspace.	Verify the report workspace is hidden.	MJS
23.	Click on the **Hide** (X) **button** on the Suspect IO-Station Report workspace.	Verify the report workspace is hidden.	MJS

6.4.3 Unknown Sensor Report

Prior to performing this test case set the quality status of a few sensors to unknown.

Step	Perform	Expected Result	Initial
24.	Select the **Unknown Sensor Report** button from the Reports Menu workspace.	Verify the Unknown Sensor Report is displayed with the following information: • **Hide** (X) Button • **Minimize** button (▼) • **Maximize** button (▲) • **Print** button (P) • **Date of Report** • **Number of Unknown Sensors** • **Sensor Insert Count** *(Signifies the number of sensors displayed in report table.)* • **Table Processing Status** *(i.e. Done)* • **Sort** Report Check box. *(Sorted by TAG NAME)* • **Update** button • **Abort Report** button • **Top of Table** button (|◄) • **Previous** page button (◄) • **Next** page button (►) • **End of Table** button (►|)	

1 Jul 99 11:10:09 a.m.

Number of Suspect Sensors	4
Sensor Insert Count	2
Table Processing Status	ABORT

Sort Report

Update | Abort Report

SUSPECT IO-STATION DETAIL REPORT

NO.	TAG NAME	LAST-GOOD-READING	IO-STATION
1	S109-NSH-R016-055	1 Jul 99 8:40:14 a.m.	DIG-STA-05-NA-006
2	S109-NXS-R016-063	1 Jul 99 8:40:14 a.m.	DIG-STA-05-NA-006

Section 6.4.2 Step # 2

Step	Perform	Expected Result	Initial

		• Report table containing the following columns:
		  • NO *(Signifies the line/row number)*
		  • TAG_NAME
		  • LAST-GOOD-READING
			MSD

25.	Click the **Update** button	Verify the following: • Report Table is updated • Date of Report is updated.	MSD
26.	Click the Sort check box so it is checked. Click the **Update** button.	Verify the following: • Sort check box is checked. • Report Table is updated and the data is sorted by TAG_NAME. • Date of Report is updated • Sensor Insert Count is equal to the number of sensor in the table. • Number of Sensor is equal to the Sensor Insert Count. *Note the Table Processing Status will change from Done to Active back to Done*	MSD
27.	Click the Sort check box so it is unchecked. Click the **Update** button.	Verify the following: • Sort check box is unchecked. • Report Table is updated *(Note the data may or maynot be sorted depending on how the data was read in)*. • Date of Report is updated • Sensor Insert Count is equal to the number of sensor in the table. • Number of Sensor is equal to the Sensor Insert Count. *Note the Table Processing Status will change from Done to Active back to Done*	MSD
28.	Click the **Update** button immediately followed by the **Abort** Report.	Verify the following: • Date of Report is updated • Table Processing Status changes to Abort • Sensor Insert Count is equal to the number of sensor in the table. • Number of Sensor is not equal to the Sensor Insert Count.	

Step	Perform	Expected Result	Initial
		Note the Table Processing Status will change from Done to Active to Abort	MTD
29.	Click on the Title block of the report table.	Verify the help workspace for this report is displayed.	MTD
30.	Click the Maximize button.	Verify the workspace is maximized.	MTD
31.	Click the Minimize button	Verify the workspace is minimized	MTD
32.	Click on the **Top of report** button (|◄).	Verify that the portion of the report displayed is the first page in the report. *(Note: Report may fit on one page and therefore no change is seen.)*	MTD
33.	Click on the **End of report** button (►|).	Verify the portion of the report displayed is the last page in the report. *(Note: Report may fit on one page and therefore no change is seen.)*	MTD
34.	Click the **Previous** page button (◄)	Verify the portion of the report displayed is the previous page. *(Note: Report may fit on one page and therefore no change is seen.)*	MTD
35.	Click the **Next** page button(►).	Verify the portion of the report displayed is the next page. *(Note: Report may fit on one page and therefore no change is seen.)*	MTD
36.	Click on the **Print** button (P). *(Note: Not functional on the remote stations at this time.)*	Verify the portion of the workspace displayed is printed to the printer.	MTD
37.	Click on the **Hide** button (X).	Verify the report workspace is hidden.	MTD

6.5 EXTERNAL INTERFACES

6.5.1 Acromag™

The tests in this section require the use of an Acromag™ emulator. The test should be run on the development machine.

1 Jul 99 11:56:51 a.m.

Number of Unknown Sensors	1841
Sensor Insert Count	337
Table Processing Status	ABORT

☐ Sort Report

Update | Abort Report

UNKNOWN SENSOR REPORT

NO.	TAG NAME	LAST-GOOD-READING
26	TX118-LI-R004-01A	30 Jun 99 11:59:30 p.m.
27	S112-LI-R003-01	30 Jun 99 11:59:30 p.m.
28	S102-LI-R002-01	30 Jun 99 11:59:30 p.m.
29	SX101-LI-R004-01	30 Jun 99 11:59:30 p.m.
30	SX109-LI-R002-01	30 Jun 99 11:59:30 p.m.
31	SX105-LI-R004-01	30 Jun 99 11:59:30 p.m.
32	SX104-LI-R004-01	30 Jun 99 11:59:30 p.m.
33	SX106-LI-R003-01	30 Jun 99 4:43:00 p.m.
34	SX102-LI-R004-01	30 Jun 99 11:59:30 p.m.
35	SX103-LI-R003-01	30 Jun 99 11:59:30 p.m.
36	AZ101-LI-R22A-01	30 Jun 99 11:59:30 p.m.
37	AY102-LI-R22A-01	30 Jun 99 11:59:30 p.m.
38	AY101-LI-R22A-01	30 Jun 99 11:59:30 p.m.
39	AX104-LI-R09B-01	24 Jun 99 8:38:26 a.m.
40	AX103-LI-R09C-01	24 Jun 99 8:38:26 a.m.
41	A103-LI-R006-01	24 Jun 99 8:38:26 a.m.
42	A101-LI-R006-01	24 Jun 99 8:38:26 a.m.
43	A106-LI-R006-01	24 Jun 99 8:38:26 a.m.
44	AX101-LI-R08C-01	24 Jun 99 8:38:26 a.m.
45	AX102-LI-R09B-01	24 Jun 99 8:38:26 a.m.
46	TX104-LI-R008-01A	30 Jun 99 11:59:30 p.m.
47	TX108-LI-R008-01A	30 Jun 99 11:59:30 p.m.
48	TX112-LI-R001-01A	30 Jun 99 11:59:30 p.m.
49	BX110-LI-R002-01A	30 Jun 99 11:59:30 p.m.
50	BX111-LI-R002-01A	30 Jun 99 11:59:30 p.m.

Section 6.4.3 Step # 36

6.5.1.1 Conversion of Acromag™ Temperature Output to Engineering Units

Step	Perform	Expected Result	Initial
1.	From the tag list, choose an Acromag™ temperature sensor at random. Display the Sensor Details for the chosen sensor. Press the Update button then use the Formula expression and Raw Value to calculate the current reading for the sensor.	Write the value here 606.92	MSD
2.	Compare the Current Reading with the reading in Step 2.	Verify that the readings are the same.	MSD
3.	Display the history details for this sensor.	Verify that the value is displayed and matches the value recorded in Step 2. *(Note: It is possible for the value to be displayed more than once in the history details if it crosses a limit boundary.)*	MSD

6.5.1.2 Conversion of Acromag™ 4 to 20 ma Output to Engineering Units

Step	Perform	Expected Result	Initial
1.	From the tag list, choose an Acromag™ non-temperature sensor at random, e.g., pressure, flow, surface level, ... Display the Sensor Details for the chosen sensor. Press the Update button then use the Formula expression and Raw Value to calculate the current reading for the sensor.	Write the value here -18.11	MSD
2.	Compare the Current Reading with the reading in Step 2.	Verify that the readings are the same.	MSD

Step	Perform	Expected Result	Initial
3.	Display the history details for this sensor.	Verify that the value is displayed and matches the value recorded in Step 2. *(Note: It is possible for the value to be displayed more than once in the history details if it crosses a limit boundary.)*	

6.5.1.3 Conversion of Acromag™ Digital Data to Discrete States

The Acromag™ emulator does not directly support digital input for the Acromag™. A digital value of 0 may be simulated with a temperature value of 32.0 F. A digital 1 is simulated with a temperature of 32.18 F. Any other value will be an unknown state.

Step	Perform	Expected Result	Initial
1.	Using the tag list, choose an enabled Acromag™ digital sensor at random. Use the emulator to simulate a value of digital 0 for this sensor. *After an appropriate delay for the TMACS to poll the emulator for this sensor.*	Verify that the sensor is in alarm.	
2.	Use the emulator to simulate a value of digital 1 for this sensor. *After an appropriate delay for the TMACS to poll the emulator for this sensor.*	Verify that the sensor is reset.	

6.5.2 Enraf®

The tests in this section require the use of an Enraf® emulator. The test should be run on the development machine.

6.5.2.1 Conversion of Enraf® CIU Output to Engineering Units

Step	Perform	Expected Result	Initial

Step	Perform	Expected Result	Initial
1.	From the tag list, choose an Enraf® CIU sensor at random. Display the Sensor Details for the chosen sensor. Press the Update button then use the Formula expression and Raw Value to calculate the current reading for the sensor.	Write the value here 75.12	
2.	Compare the Current Reading with the reading in Step 2.	Verify that the readings are the same.	
3.	Display the history details for this sensor.	Verify that the value is displayed and matches the value recorded in Step 2. *(Note: It is possible for the value to be displayed more than once in the history details if it crosses a limit boundary.)*	

6.5.3 Westronics®

The tests in this section require the use of a Westronics® emulator. The test should be run on the development machine.

6.5.3.1 Conversion of Westronics® Temperature Output to Engineering Units

Step	Perform	Expected Result	Initial
1.	From the tag list, choose a Westronics® temperature sensor at random. Display the Sensor Details for the chosen sensor. Press the Update button then use the Formula expression and Raw Value to calculate the current reading for the sensor.	Write the value here 135.0	
2.	Compare the Current Reading with the reading in Step 2.	Verify that the readings are the same.	

Step	Perform	Expected Result	Initial
3.	Display the history details for this sensor.	Verify that the value is displayed and matches the value recorded in Step 2. *(Note: It is possible for the value to be displayed more than once in the history details if it crosses a limit boundary.)*	NCS

6.5.4 Panalarm®

The tests in this section require the use of a Panalarm® emulator. The test should be run on the development machine.

6.5.4.1 Conversion of Panalarm® Output to Digital Data to Discrete States

Step	Perform	Expected Result	Initial
1.	Using the tag list, choose a Panalarm® sensor at random. Use the emulator to simulate a value of digital 1 for this sensor. *After an appropriate delay for the TMACS to poll the emulator for this sensor.*	Verify that the sensor is in alarm.	NCS
2.	Use the emulator to simulate a value of digital 0 for this sensor. *After an appropriate delay for the TMACS to poll the emulator for this sensor.*	Verify that the sensor is reset.	NCS
3.	Return to the main screen.		NCS

6.5.5 SACS

TMACS retrieves surface level data from SACS whenever TMACS starts and at 2000 every evening thereafter. The "last SACS reading" will be the last reading taken and marked good (the quality status was set to "G") before TMACS retrieves that data.

Step	Perform	Expected Result	Initial
1.	Select a surface-level sensor has been configured for polling from SACS.	Record the sensor and tank names. Sensor TX-106-LEVEL-SACS Tank TX-106	NCS
2.	On the Hanford Tank Farm Facilities workspace, click on the tank icon for the	Verify that the Sensor Trend workspace appears.	

Step	Perform	Expected Result	Initial
	selected tank. Click on the surface-level icon.		MSD
3.	Click on the detail button. (Upper right-hand corner of the Sensor Trend workspace.)	Verify that the details about the surface-level sensor appear. Record the: Current Reading 13467 Last Good Reading 6-30-99 11:59:30 Sensor Type Name Auto Enrol slvl_dttm 1999-02-07 23:58:1000	MSD
4.	Close the Sensor Trend workspace.		MSD
5.	Obtain the last SACS database reading for the selected tank. *(Note: This will be on the UDO server most likely.)* This may be obtained from the system administrator using the following code: lp_LastSLVLReading '[Tank Name]' select * from TMACS_LASTSLVLREADING	Verify that the values obtained in this step match the values recorded in Step 3.	MSD

6.6 POINT PROCESSING

6.6.1 Continuous Sensor (Non Rate of Change) Automated Functional Test

This procedure automatically tests the state changes for a continuous sensor.

Step	Perform	Expected Result	Initial
1.	On the POINT PROCESSING FUNCTIONAL TEST workspace click on the **Point Processing for Continuous Point – All Function excepts Rate of**	Verify the CONTINUOUS FUNCTIONAL TEST (*Except ROC*) workspace appears.	MSD

Result - #1 select * from TMACS_LASTS ...

NSTRUCTR_ID	SLVL_QTY	SUSP_DATA_STAT_CODE	SNSR_TYPE_NAME	SLVL_DTTM
TX106	134.07	G	Auto ENRAF	Feb 7 1999 11:58PM

(1 row(s) affected)

Section 6.5.5 (Not requested on test)

Step	Perform	Expected Result	Initial
	Change button		
2.	On the CONTINUOUS FUNCTIONAL TEST (*Except ROC*) workspace: • Set the Step Mode to "Off." • Set Print Results to "Last" Activate the "Run Point Processing" button.	Verify that the process continues to completion	
3.	Examine the results	Verify no errors are reported.	
4.	Print the final workspace.	Keep printout for project files.	

6.6.2 Continuous Sensor (Rate of Change) Automated Functional Test

Step	Perform	Expected Result	Initial
1.	On the POINT PROCESSING FUNCTIONAL TEST workspace click on the **Point Processing for Continuous Point –Rate of Change** button.	Verify the CONTINUOUS FUNCTIONAL TEST (*With ROC*) workspace appears.	
2.	On the ROC FUNCTIONAL TEST workspace: Set the Step Mode to "Off." Set Print Results to "Last" Activate the "Run Point Processing" button.	Verify that the process continues to completion.	
3.	Examine the workspace.	Verify no errors are reported.	
4.	Print the final workspace.	Keep printout for project files.	

6.6.3 Discrete Sensor Automated Functional Test

This procedure automatically tests the state changes of a discrete sensor.

Step	Perform	Expected Result	Initial
1.	On the POINT PROCESSING FUNCTIONAL TEST workspace click on the **Point Processing for Discrete Points – All**	Verify the DISCRETE FUNCTIONAL TEST workspace appears.	

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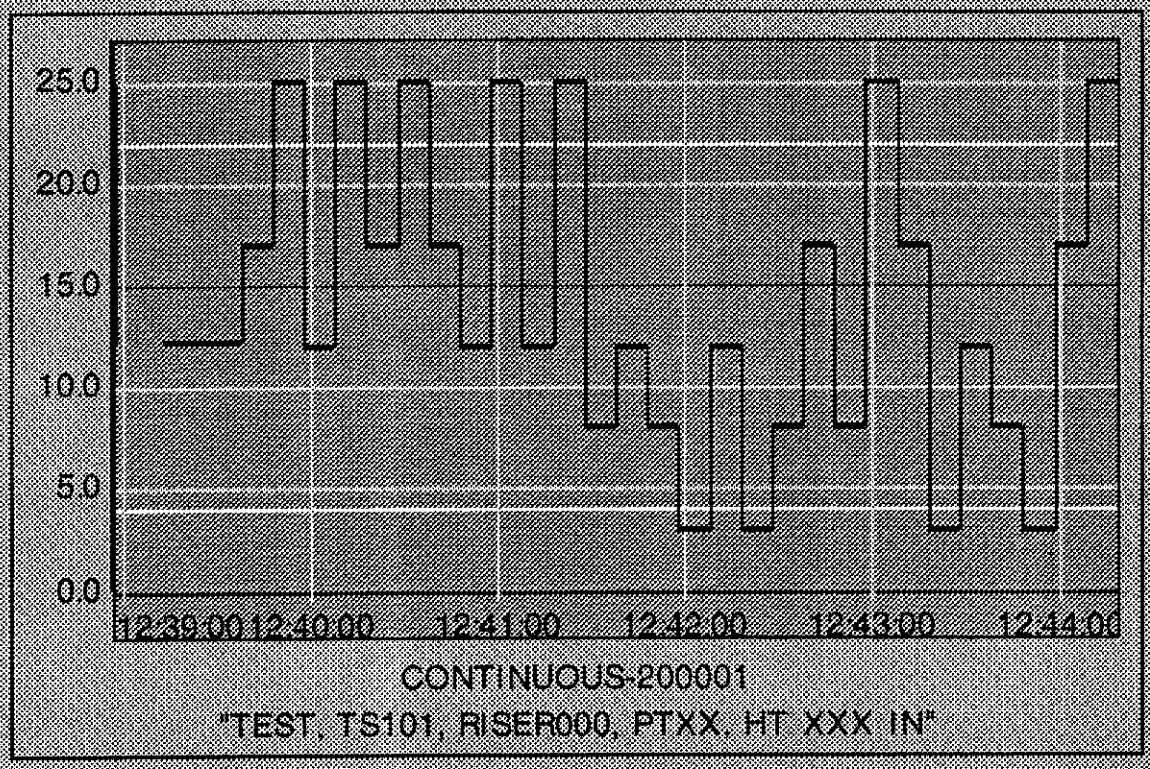
for the original page.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15.0
10.0
5.0
0.0
12:39:00
12:40:00
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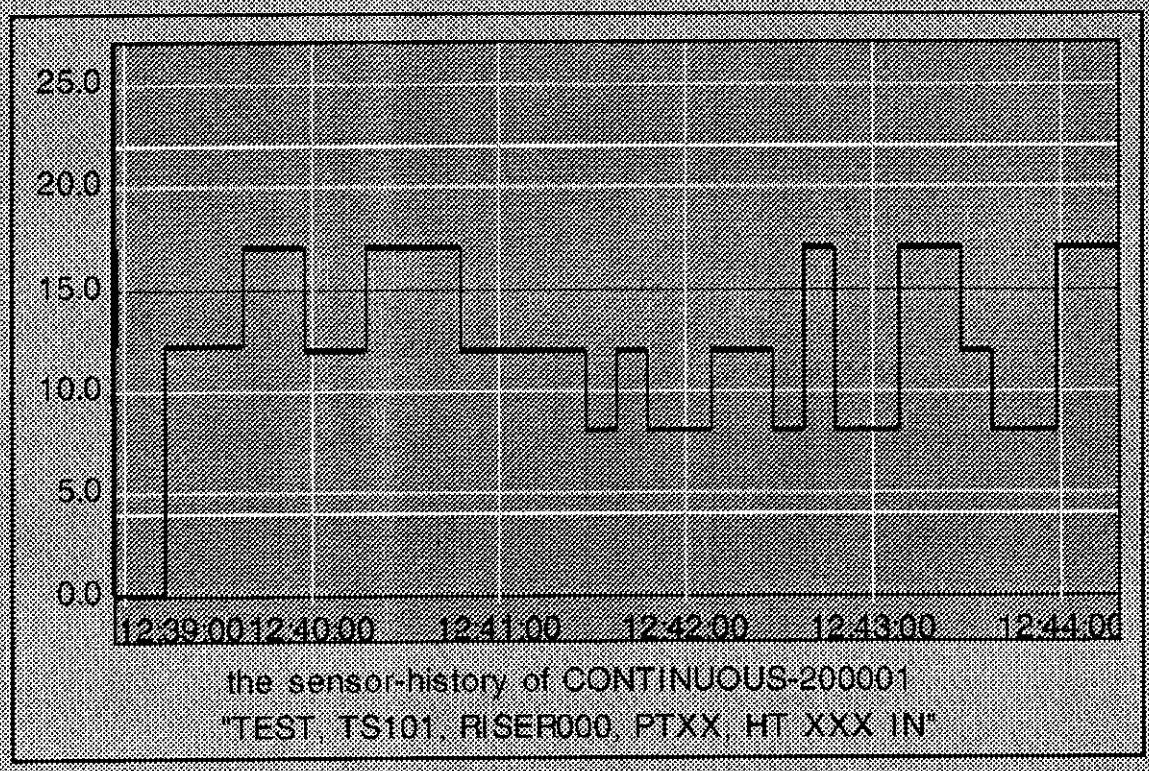
12:42:00
12:43:00
12:44:00
CONTINUOUS-200001
"TEST, TS101, RISER000, PTXX, HT XXX IN"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5.0
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12:39:00
12:40:00
12:41:00
12:42:00
12:43:00
12:44:00
the sensor-history of CONTINUOUS-200001
"TEST, TS101, RISER000, PTXX, HT XXX IN"

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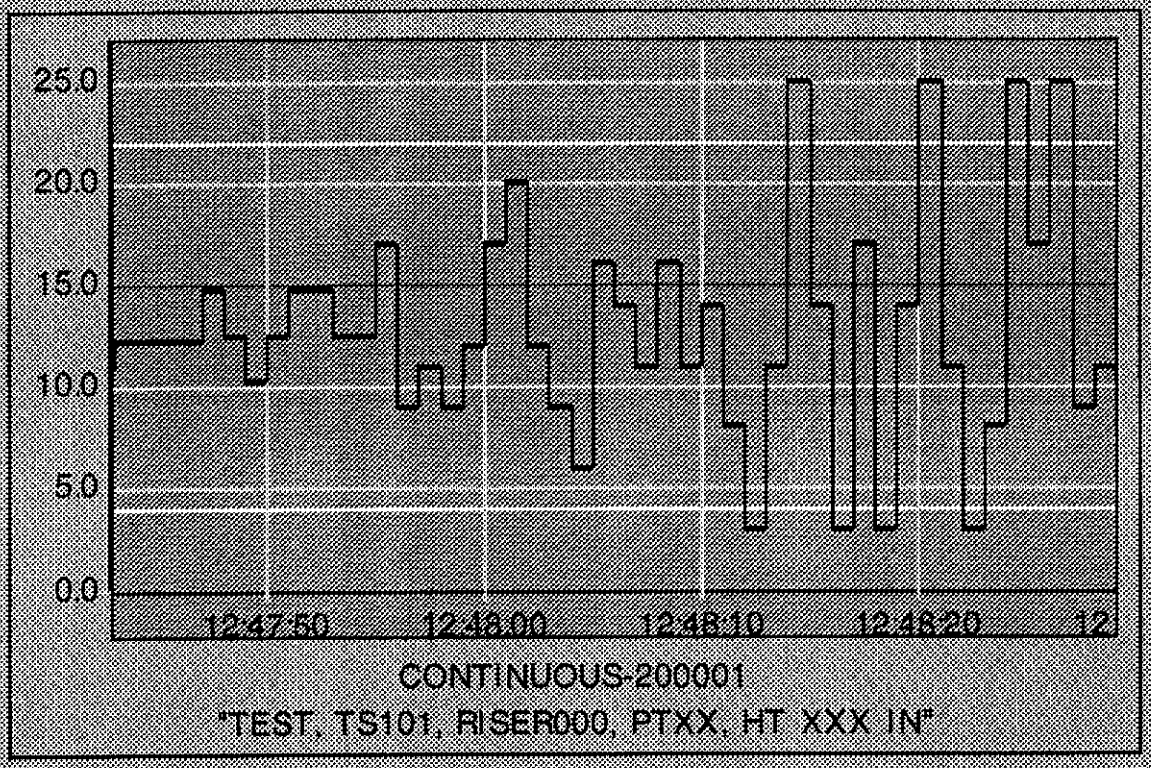
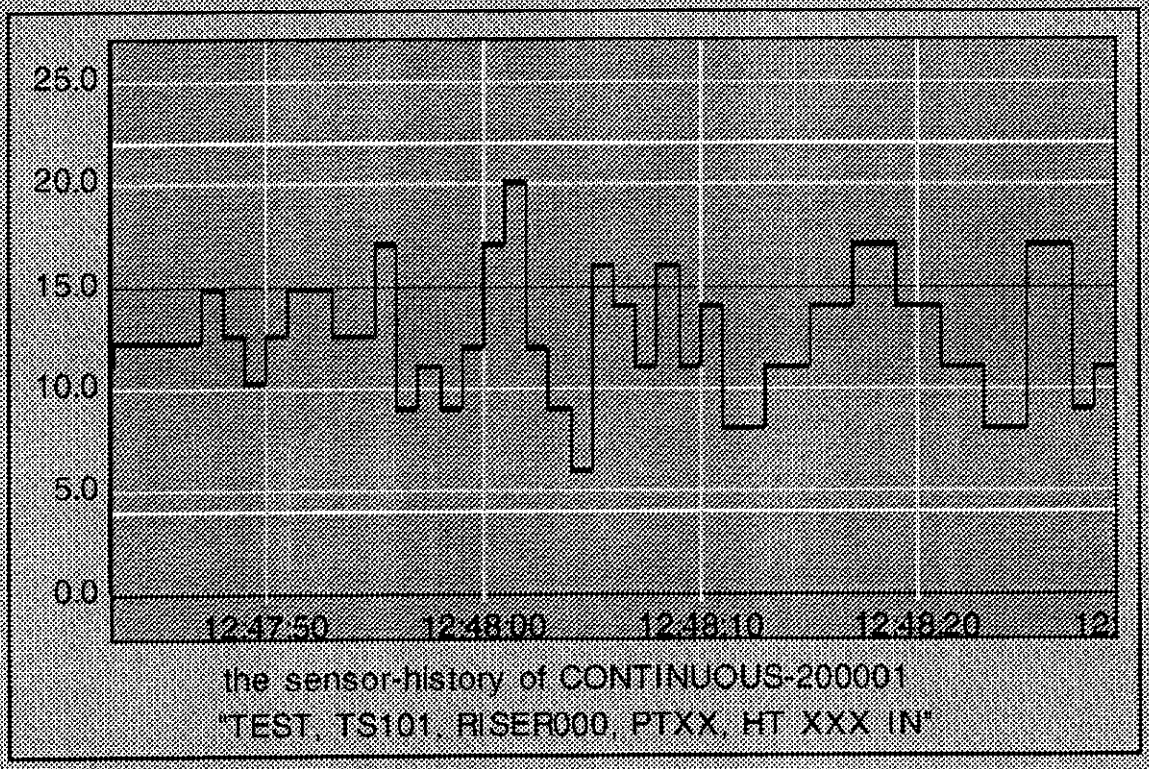




Section 5.9 Step # J

Step	Perform	Expected Result	Initial
	Functions button		
2.	On the Discrete Functional Test workspace: Set the Step Mode to "Off." Set Print Results to "Last" Activate the " Run Point Processing " button.	Verify that the process continues to completion.	MJD
3.	Examine the workspace.	Verify no errors are reported.	MJD
4.	Print the final workspace.	Keep printout for project files.	MJD

6.6.4 Operation of MOST RECENT ALARM and CURRENT ALARMS

Prior to running this test the administrator should do the following:

1. Acknowledge all alarms so Current Alarm count goes to zero. Note: if this is not done, then note the number of current alarms.

2. Verify the following workspaces are visible:

   - DISCRETE FUNCTIONAL TEST
   - MOST RECENT ALARM
   - CONTROL-PANEL
   - CURRENT ALARM

Step	Perform	Expected Result	Initial
1.	On the Discrete Functional Test Workspace Set the Step Mode in ON. Activate the RUN POINT PROCESSING button. Examine the Current Alarm box.	Note the number of current alarms 286	MJD
2.	Enter **4** in Dip-switch type-in box on the **Discrete Functional Test Workspace.**	Verify the following: • A white message for the discrete alarm is generated in the MOST RECENT ALARM workspace. • Sensor Icon Blinking = false • Tank Icon Blinking = false • No Current Alarms = 1 more than Step 1 on the following workspaces: 1. CURRENT ALARMS 2. CONTROL PANEL 3. MOST RECENT ALARM	MJD

DISCRETE-PT-PROC-TEST 10 of 10

Step Number	10	Verify
Seq-Test Time Stamp	1 Jul 99 12:38:01 p.m.	
Latest Reading	0	
Last-Good-Reading-At	*1 Jul 99 12:50:49 p.m.*	
Sensor History	0	N.A.
Quality Status	GOOD	N.A.
Alarm State	NORMAL	N.A.
Annotation	OPEN	N.A.
Alarm State Changed At	1 Jul 99 12:50:49 p.m.	N.A.
Icon Blinking --?	true	N.A.
Display Color	GREEN	N.A.
Blink-Off Color	GRAY	N.A.
Alarm-Aux Color	TRANSPARENT	N.A.
Background Color	MEDIUM-AQUAMARINE	N.A.
Icon Blinking --?	*true*	
Display Color	GREEN	
Blink-Off Color	GRAY	
Occurred-At	1 Jul 99 12:50:47 p.m.	N.A.
Display Color	WHITE	N.A.
Alarm Number	3	N.A.
	Number of Records	0

Instrument high limit > 3
normal = 0 or 3
alarm = 1 or 2
instrument low limit < 0

Verify Results (Min time - 5) ○ ON ◉ OFF

Print Results is (Min time -120) ○ ON ○ OFF ◉ LAST

Test-Step Time-Interval 1

Note: When in the "Step Mode", wait a minimum of the "Test-Step *Time-Interval*" between steps

For multi-step test Click Below:

RUN POINT PROCESSING

Step

Step Mode ○ ON ◉ OFF

1	2	3	4	5
0	3	2	3	4
6	7	8	9	10
2	1	4	-1	

For single-step test
Enter: dip-switch setting 0

The Label of Discrete-Output

Print Screen

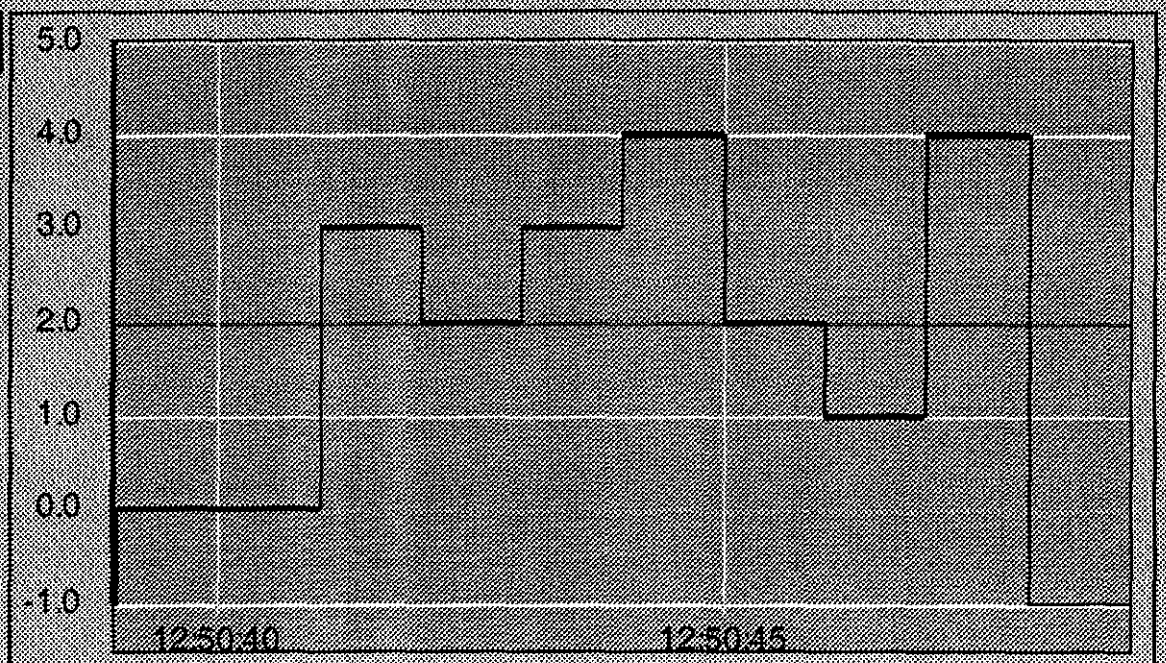
Print Sensor Log

Delete Msgs

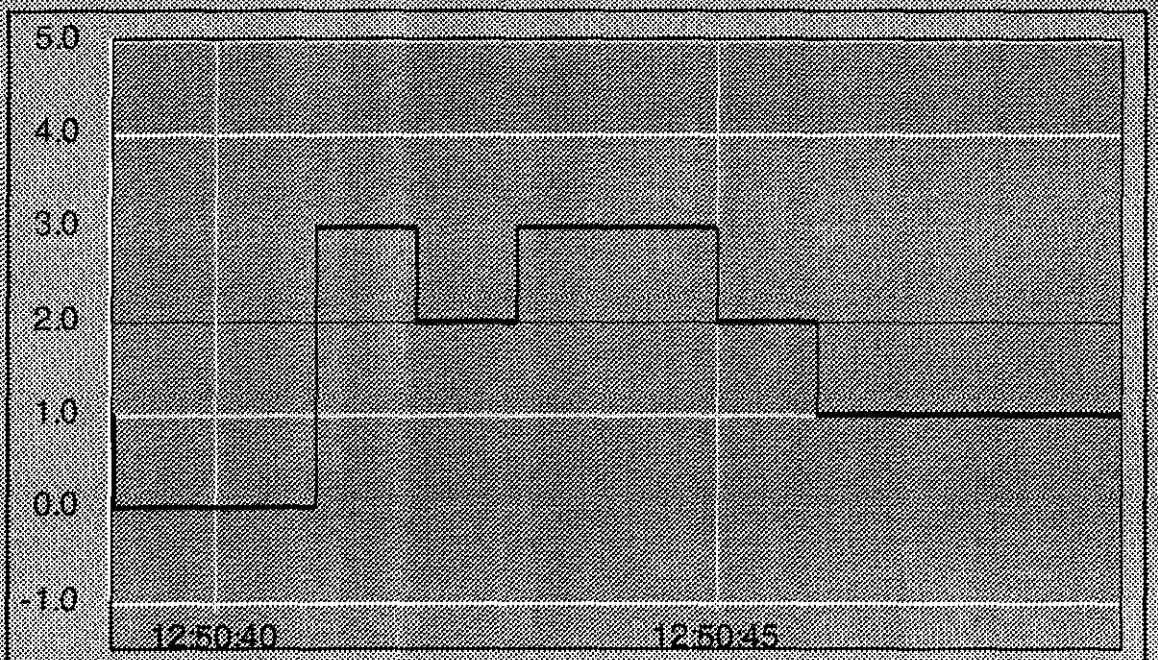
Reposition Items

Print Alarm Log

Section 6.6.3 Step # 7



DISCRETE-200001
"TEST, TS101, RISER000, PTXX, HT XXX IN"



the sensor-history of DISCRETE-200001
"TEST, TS101, RISER000, PTXX, HT XXX IN"

Step	Perform	Expected Result	Initial
3.	Enter -1 in Dip-switch type-in box on the **Discrete Functional Test Workspace.**	Verify the following: • Sensor Icon Blinking = false • Tank Icon Blinking = false • No Current Alarms = 1 more than Step 1 on the following workspaces: 1. CURRENT ALARMS 2. CONTROL PANEL 3. MOST RECENT ALARM	MSD
4.	Enter 2 in Dip-switch type-in box on the **Discrete Functional Test Workspace.**	Verify the following: • A discrete alarm message is generated in the MOST RECENT ALARM workspace. • Sensor Icon Blinking = true • Tank Icon Blinking = true • No. Current Alarms = 2 more than in Step 1 on the following workspaces: 1. CURRENT ALARMS 2. CONTROL PANEL 3. MOST RECENT ALARM	MSD
5.	On the Most Recent Alarm workspace activate the GOTO button	Verify the following: • TANK TEST-201 STATUS workspace is brought to the top of the screen. • The sensor is in alarm.	MSD
6.	Enter 0 in Dip-switch type-in box on the **Discrete Functional Test Workspace.**	Verify the following: • Discrete alarm message is reset. • No. Current Alarms = 2 more than Step 1 on the following workspaces: 1. CURRENT ALARMS 2. CONTROL PANEL 3. MOST RECENT ALARM	MSD
7.	Acknowledge alarm message in MOST RECENT ALARM Window by clicking on it.	Verify the following: • Alarm Message disappears. • Sensor Icon Blinking = false • Tank Icon Blinking = false • No. Current Alarms = 1 more than Step 1 on the following workspaces: 1. CURRENT ALARMS 2. CONTROL PANEL 3. MOST RECENT ALARM	MSD
8.	Acknowledge the White alarm message	Verify the following: • Alarm Message disappears • Sensor Icon Blinking = false • Tank Icon Blinking = false • No. Current Alarms = the same as in Step 1 on the following workspaces:	

Step	Perform	Expected Result	Initial
		1. CURRENT ALARMS 2. CONTROL PANEL 3. MOST RECENT ALARM	MJS

6.6.5 Operation of Sensor Delta Band and Alarm Deadband

This test will verify that the operation of the sensor band and the alarm deadband for continuous sensors.

Prior to running this test the administrator should do the following:

1. Verify that the Rate of Change processing is disabled for Sensor Continuous-200001.

2. Verify that the parameters for Sensor Continuous-200001 are set to match the parameters in Table 1. (See Prerequisites)

3. Verify that the following workspaces are visible.

   - CONTINUOUS FUNCTIONAL TEST
   - MOST RECENT ALARM

Step	Action	Verify the Alarm Condition is:	Initial
1.	On the Continuous Functional Test Workspace • Set the Step Mode in ON. • Activate the RUN POINT PROCESSING button. • Enter **14.8** in milli-amps type-in box	NORMAL	MJS
2.	Enter **14.4** in milli-amps type-in box	NORMAL	MJS
3.	Enter **14.3** in milli-amps type-in box	NORMAL	MJS
4.	Enter **14.8** in milli-amps type-in box	NORMAL	MJS
5.	Enter **15.2** in milli-amps type-in box	ALARM-HIGH	MJS
6.	Enter **15.3** in milli-amps type-in box	ALARM-HIGH	MJS
7.	Enter **14.9** in milli-amps type-in box	ALARM-HIGH	MJS
8.	Enter **14.6** in milli-amps type-in box	ALARM-HIGH	MJS
9.	Enter **14.0** in milli-amps type-in box	NORMAL	MJS
10.	Enter **13.5** in milli-amps type-in box	NORMAL	MJS
11.	Enter **15.0** in milli-amps type-in box	ALARM-HIGH	MJS
12.	Enter **10.6** in milli-amps type-in box	NORMAL	MJS
13.	Enter **15.0** in milli-amps type-in box	ALARM-HIGH	MJS
14.	Enter **9.9** in milli-amps type-in box	ALARM-LOW	MJS
15.	Enter **10.2** in milli-amps type-in box	ALARM-LOW	MJS

Step	Action	Verify the Alarm Condition is:	Initial
16.	Enter **10.5** in milli-amps type-in box	ALARM-LOW	MJD
17.	Enter **11.0** in milli-amps type-in box	NORMAL	MJD
18.	Enter **11.5** in milli-amps type-in box	NORMAL	MJD

6.6.6 Operation of Enable/Disable Procedures

Verify that the following workspaces are visible.

- Continuous Function Test
- Tank Test-201
- Enable/Disable Point Processing
- Most Recent Alarm
- Discrete-200001 Sensor

Step	Perform	Expected Result	Initial
1.	On the Continuous Functional Test workspace enter **17** in the "milliamps" type-in box.	Verify the following: • Alarm message is displayed • Number of Current Alarms increases by one.	MJD
2.	Position the enable/disable pointer over the Continuous-200001 sensor and activate the button "Toggle Point".	Verify that the following conditions occur: • Blue message is displayed: "The POINT-PROCESSING of CONTINUOUS-200001 has been DISABLED", with the timestamp of this change. • Previous alarm message disappears and the total "Number of Current Alarms" remains the same. • Point processing attribute of sensor changes to false. • Sensor turns gray. • Tank color is the same as the DISCRETE-200001 sensor color.	MJD
3.	With the enable/disable pointer still over the Continuous-200001 sensor, activate the button "Toggle Point".	Verify that the following conditions occur: • Blue message is displayed: "The POINT-PROCESSING of CONTINUOUS-200001 has been ENABLED", with the timestamp of this change. • "Number of Current Alarms" remains the same. • Point processing attribute of sensor changes to true. • Sensor turns white. • Tank color white or the color of the DISCRETE-200001 sensor alarm color (if	MJD

Step	Perform	Expected Result	Initial
		not green).	
4.	Select a tank on the HTFF workspace that has a good mix of sensor types. Enter the chosen tank in the type-in box labeled "Tank on which to enable / disable point processing". Without moving the enable/disable pointer activate the button "Toggle Point".	Verify that the following conditions occur: • Blue message is displayed: "The POINT-PROCESSING of [the nearest sensor to the pointer—frequently the level sensor] has been DISABLED", with the timestamp of this change; • Point processing attribute of sensor changes to false; • Sensor turns gray; • Tank color is the same as the highest priority sensor alarm	
5.	Activate the button "Toggle Point" again.	Verify that the following conditions occur: • Blue message is displayed: "The POINT-PROCESSING of [the nearest sensor to the pointer] has been ENABLED", with the timestamp of this change; • Point processing attribute of sensor changes to true; • Sensor turns white; • Tank icon turns white or the color of the highest priority sensor alarm.	
6.	Activate the button "All points in tank off".	Verify that the following conditions occur: • Blue messages are displayed: "The POINT-PROCESSING of [each sensor monitoring this tank] has been DISABLED" with the time of this change; • Point processing attribute of sensors changes to false; • Sensors turn gray; • All sensor alarms associated with this tank are cleared; • Tank color turns gray.	
7.	Activate the button "All points in tank on".	Verify that the following conditions occur: • Blue messages are displayed: "The POINT-PROCESSING of [each sensor monitoring this tank] has been ENABLED" with the time of this change; • Point processing attribute of sensors changes to true;	

Step	Perform	Expected Result	Initial
		• Sensors turn white; • Tank turns white.	MJD
8.	On the Current Alarms workspace click on the Clear All Blue Messages button.	Verify the Blue Messages disappear from the Current Alarms list.	MJD
9.	Hide the following workspaces: • Tank (selected in test) • Enable/Disable Point Processing • Discrete-200001 Sensor	Verify the workspaces are hidden.	MJD

6.6.7 Miscellaneous Alarm Tests

The purpose of this test is to verify the relationships between the sensor icons, tank icon, Current Alarms Workspace and the annuciator.

Prior to running this test the administrator should do the following:

1. *Make sure the following workspaces visible.*

   - Functional Test Selection Workspace (Only to see the TANK-ICON-TEST-201 icon)
   - Continuous Functional Test Workspace. Also perform following:
     1. Set Step Mode On
     2. Activate the Run Point Processing button
   - Discrete Functional Test Workspace. Also perform following:
     1. Set Step Mode On
     2. Activate the Run Point Processing button
   - TANK TEST-201 workspace.
   - MOST RECENT ALARM workspace
   - Discrete-200001 Sensor

2. Make sure the enunciator is enabled. This is done by the following:

   - Bring up the TMACS-LIB workspace and its subworkspace labeled STARTUP-WS and Activate the "TOGGLE-AUDIBLE" button and verify that the display of the alarm-audible symbol changes from false to true.

Step	Perform	Expected Result	Initial
1.	Enter **1** in Dip-switch type-in box on the **Discrete Functional Test**	**Beep** Beep = true	RAD

Step	Perform	Expected Result	Initial
	Workspace. Enter a <u>11</u> in Milli-amp type-in box on the **Continuous Functional Test Workspace** *Note: May have to click on the Run Point Process button on both the Discrete and Continuous Function Test Workspaces.*	**Most Recent Alarm** • Message Status = Closing • Display Color = Yellow • Text Color = Red **Discrete Functional Test Workspace** **Discrete - 2001** • Discrete Icon Blinking = true • Display Color = YELLOW • Blink-off Color = GRAY • Alarm Aux Color = YELLOW **Tank Icon Test-201** • Icon Blinking = true • Display Color = YELLOW • Blink-off Color = GRAY **Latest Alarm Message** • Display Color = Yellow **Continuous Functional Test Workspace** **Continuous -2001** • Cont. Icon Blinking = false • Display Color = GREEN • Blink-off Color = (N/A - skip) • Alarm Aux Color = TRANSPARENT **Tank Icon Test-201** • Icon Blinking = true • Display Color = YELLOW • Blink-off Color = GRAY **Latest Alarm Message** • Display Color = Yellow	MLTS
2.	Activate **ACK ALARMS** Button on Tank Test 201 status	**Beep** Beep = false	

Step	Perform	Expected Result	Initial
		Most Recent Alarm • Message Status = Acknowledged • Display Color = Yellow • Text Color = Black **Discrete Functional Test Workspace** **Discrete - 2001** • Discrete Icon Blinking = false • Display Color = YELLOW • Blink-off Color = (N/A - skip) • Alarm Aux Color = YELLOW **Tank Icon Test-201** • Icon Blinking = false • Display Color = YELLOW • Blink-off Color = (N/A - skip) **Latest Alarm Message** • Display Color = Yellow **Continuous Functional Test Workspace** **Continuous -2001** • Cont. Icon Blinking = false • Display Color = GREEN • Blink-off Color = (N/A - skip) • Alarm Aux Color = TRANSPARENT **Tank Icon Test-201** • Icon Blinking = false • Display Color = YELLOW • Blink-off Color = (N/A - skip) **Latest Alarm Message** • Display Color = Yellow	MSD
3.	Enter <u>0</u> in Dip-switch type-in box on the **Discrete Functional Test Workspace.**	Beep Beep = false	MSD

Step	Perform	Expected Result	Initial
		Most Recent Alarm • Message Status = Alarm Disappears **Discrete Functional Test Workspace** **Discrete - 2001** • Discrete Icon Blinking = false • Display Color = GREEN • Blink-off Color = (N/A - skip) • Alarm Aux Color = TRANSPARENT **Tank Icon Test-201** • Icon Blinking = false • Display Color = GREEN • Blink-off Color = (N/A - skip) **Latest Alarm Message** • Display Color = YELLOW **Continuous Functional Test Workspace** **Continuous -2001** • Cont. Icon Blinking = false • Display Color = GREEN • Blink-off Color = (N/A - skip) • Alarm Aux Color = TRANSPARENT **Tank Icon Test-201** • Icon Blinking = false • Display Color = GREEN • Blink-off Color = (N/A - skip) **Latest Alarm Message** • Display Color = YELLOW	MRD
4.	Enter a 17 in Milli-amp type-in box on the **Continuous Functional Test Workspace**	Beep Beep = true **Most Recent Alarm** • Message Status = ALARM HIGH • Display Color = RED	

Step	Perform	Expected Result	Initial
		• Text Color = YELLOW **Discrete Functional Test Workspace** **Discrete – 2001** • Discrete Icon Blinking = false • Display Color = GREEN • Blink-off Color = (N/A - skip) • Alarm Aux Color = TRANSPARENT **Tank Icon Test-201** • Icon Blinking = true • Display Color = RED • Blink-off Color = GRAY **Latest Alarm Message** • Display Color = YELLOW **Continuous Functional Test Workspace** **Continuous -2001** • Cont. Icon Blinking = true • Display Color = RED • Blink-off Color = GRAY • Alarm Aux Color = RED **Tank Icon Test-201** • Icon Blinking = true • Display Color = RED • Blink-off Color = GRAY **Latest Alarm Message** • Display Color = RED	MJA
5.	Enter 1 in Dip-switch type-in box on the **Discrete Functional Test Workspace.**	Beep Beep = true **Most Recent Alarm** • Message Status = CLOSING • Display Color = YELLOW	

Step	Perform	Expected Result	Initial
		• Text Color = RED **Discrete Functional Test Workspace** **Discrete - 2001** • Discrete Icon Blinking = true • Display Color = YELLOW • Blink-off Color = GRAY • Alarm Aux Color = YELLOW **Tank Icon Test-201** • Icon Blinking = true • Display Color = RED • Blink-off Color = GRAY **Latest Alarm Message** • Display Color = YELLOW **Continuous Functional Test Workspace** **Continuous -2001** • Cont. Icon Blinking = true • Display Color = RED • Blink-off Color = GRAY • Alarm Aux Color = RED **Tank Icon Test-201** • Icon Blinking = true • Display Color = RED • Blink-off Color = GRAY **Latest Alarm Message** • Display Color = RED	MJD
6.	Enter a <u>25</u> in Milli-amp type-in box on the **Continuous Functional Test Workspace**	Beep Beep = true **Most Recent Alarm** • Message Status = Reading Out Of Range • Display Color = WHITE	

Step	Perform	Expected Result	Initial
		• Text Color = BLACK **Discrete Functional Test Workspace** **Discrete – 2001** • Discrete Icon Blinking = true • Display Color = YELLOW • Blink-off Color = GRAY • Alarm Aux Color = YELLOW **Tank Icon Test-201** • Icon Blinking = true • Display Color = YELLOW • Blink-off Color = WHITE **Latest Alarm Message** • Display Color = YELLOW **Continuous Functional Test Workspace** **Continuous – 2001** • Cont. Icon Blinking = true • Display Color = WHITE • Blink-off Color = RED • Alarm Aux Color = RED **Tank Icon Test-201** • Icon Blinking = true • Display Color = YELLOW • Blink-off Color = WHITE **Latest Alarm Message** • Display Color = WHITE	MJD
7.	Enter <u>3</u> in Dip-switch type-in box on the **Discrete Functional Test Workspace.**	Beep Beep = true **MOST RECENT ALARM** • Message Status = Reading Out Of Range	

Step	Perform	Expected Result	Initial
		• Display Color = WHITE • Text Color = BLACK **CURRENT ALARM SCREEN** • Message Status = Discrete 200001 Resets • Display Color = GREEN • Text Color = BLACK **Discrete Functional Test Workspace** **Discrete – 2001** • Discrete Icon Blinking = true • Display Color = GREEN • Blink-off Color = GRAY • Alarm Aux Color = TRANSPARENT **Tank Icon Test-201** • Icon Blinking = true • Display Color = WHITE • Blink-off Color = RED **Latest Alarm Message** • Display Color = WHITE **Continuous Functional Test Workspace** **Continuous – 2001** • Cont. Icon Blinking = true • Display Color = WHITE • Blink-off Color = RED • Alarm Aux Color = RED **Tank Icon Test-201** • Icon Blinking = true • Display Color = WHITE • Blink-off Color = RED **Latest Alarm Message** • Display Color = WHITE	MJD

Step	Perform	Expected Result	Initial
8.	Acknowledge alarm messages and hide the Point Processing Functional Test workspaces.	Verify the following: beep is silenced Point Processing Functional Test workspaces are hidden.	

6.7 LOGGING

6.7.1 Current

The data files in this section are created upon system startup and then around midnight are closed and moved to the history directory and another file with the current date is created.

6.7.1.1 Alarm Logging

Step	Perform	Expected Result	Initial
1.	Examine the almhst_YYYY_MM_DD_HHmm.dat. Where YYYY = the year MM = the month DD = the day HH = the hour mm = the minute *To examine the files it may be necessary to stop G2®. The directory is located at f:\BackedUp\TMACSData\Current.*	Verify the following: • High/low alarm conditions and resets recorded • Format match the description given in the LMSI External Letter, RGG-SDI-99-001, *TMACS Data File Formats, Release 11.0.*	
2.	Examine the equip_fail_YYYY_MM_DD_HHmm.dat. Where YYYY = the year MM = the month DD = the day HH = the hour mm = the minute *To examine the files it may be necessary to stop G2®. The directory is located at f:\BackedUp\TMACSData\Current.*	Verify the following • Loss of communication messages are recorded • Format match the description given in the LMSI External Letter, RGG-SDI-99-001, *TMACS Data File Formats, Release 11.0.*	

6.7.1.2 Discrete Sensor Data Logging

Step	Perform	Expected Result	Initial
1.	Examine the discrete_sensor_history_YYYY_MMDD.ascii. Where YYYY – is the year created MM – is the month created DD – is the day created *To examine the file it may be necessary to stop G2®. The directory is located at f:\BackedUp\TMACSData\Current.*	Verify the following: • Reading messages are being recorded properly. • Format match the description given in the LMSI External Letter, RGG-SDI-99-001, *TMACS Data File Formats, Release 11.0.*	

6.7.1.3 Continuous Sensor Data Logging

Continuous sensor history is recorded in the continuous_sensor_history_YYYY_MMDD.ascii file where

YYYY – is the year that the file was created.
MM – is the month that the file was created.
DD – is the day that the file was created.

To examine the file it may be necessary to stop G2®. The directory is:

- f:\BackedUp\TMACSData\Current.

Step	Perform	Expected Result	Initial
1.	Examine the continuous_sensor_history _YYYY_MMDD.ascii. Where YYYY – is the year created MM – is the month created DD – is the day created *To examine the file it may be necessary to stop G2®. The directory is located at f:\BackedUp\TMACSData\Current.*	Verify the following: • Reading messages are being recorded properly. • Format match the description given in the LMSI External Letter, RGG-SDI-99-001, *TMACS Data File Formats, Release 11.0.*	

6.7.2 Nightly File Creations

Eight files are created nightly by TMACS (*rdbms files are created around 4:00 AM, all others created around 12:00 AM)*

Step	Perform	Verify	Initial
1.	Let the system run over night. (*Note: Test Director may opt to change the system clock to simulate overnight. This requires time periods around midnight and 4 AM)* Check the location f:\BackedUp\TMACSData\History to determine if the files have been created.	Verify that the following flat files are created: • almhst_yyyy_mmdd_mmss.dat • continuous_sensor_history yyyy_mmdd.ascii • discrete_sensor_history_yyyy_mmdd.ascii • equip_fail_yyyy_mmdd_mmss.dat • perf_data_yyyy_mmdd.dat • test_tank_history_yyyy_mmdd.ascii • dst_data_yyyy_mmdd_mmss.rdbms • sst_data_yyyy_mmdd_mmss.rdbms where: yyyy = the year mm = the month dd = the day hh = the hour mm = the minute Verify that the fields in the files match the description given in the LMSI External Letter, RGG-SDI-99-001, *TMACS Data File Formats, Release 11.0.*	

6.8 PERFORMACE

6.8.1 CPU Use Vs Number of Continuous Points/Sec Performance Test

Step	Perform	Expected Result	Initial
1.	On the Point Processing Performance Test workspace click on the "**CPU Use Versus Number of Continuous Points/Sec**" button.	Verify the correct workspace is shown.	
2.	Click on the "Start Performance Test" button. After the **Test Running** box turns to FALSE examine the results. (*The test will take about **20 minutes** to run*)	Verify the test runs and that the %CPU/pt/sec values are less than 0.94 for all values of points/second.	
3.	Click on the "Print" button.	Verify that the workspace prints. Attach the printout to this test procedure.	
4.	Hide the Performance Test workspace(s)	Verify the workspace(s) is hidden.	

CPU Use Versus Number of Continuous Points/Sec

Yellow/Brown Print

START PERFORMANCE TEST "Test Running" **** Averaging time (minutes) 10 Black / White

No. of Cont. Points/sec		Average (10 Min.)	Minimum (10 Min.)	Maximum (10 Min.)	Std Dev (10 Min.)
BKGD	BKGD	0.003	6.469e-29	0.15	5.52e2%
I/O & Rule	% CPU	0.102	2.995e-4	3.949	3.71e2%
5	% CPU	2.342	2.306	2.614	2.21%
10	% CPU	4.725	4.692	4.852	0.78%
20	% CPU	8.551	8.335	8.602	0.45%
30	% CPU	11.736	11.658	11.996	0.54%
40	% CPU	16.44	16.35	19.726	2.00%
50	% CPU	19.601	19.47	19.848	0.41%
Memory MB	91.882		Pts/sec	%cpu/pt/sec	
Delta	0.0		5	0.448	
Pt. Proc.	true		10	0.462	
Alarm Proc.	true		20	0.422	
ROC Proc.	true		30	0.388	
Log Proc.	true		40	0.408	
			50	0.390	
Started:	20:1 4/3	Completed:	22:19 4/3	Elapsed:	138 of 98

Clock was set to 4/3/99 to test daylight savings time issues (SR #837) Section 6.9.30.
Test was run on 7-1-99. WSD

Section 6.8.1 Step #2

6.8.2 CPU Use Vs Number of Discrete Points/Sec Performance Test

Step	Perform	Expected Result	Initial
1.	On the Point Processing Performance Test workspace click on the "**CPU Use Versus Number of Discrete Points/Sec**" button.	Verify the correct Performance Test workspace is shown.	MSD
2.	Click on the "Start Performance Test" button. After the **Test Running** box turns to FALSE examine the results. (*The test will take about **20 minutes** to run*)	Verify that the test runs and that the %CPU/pt/sec values are less than 0.82 for all values of points/second.	MSD
3.	Click on the "Print" button.	Verify that the workspace prints. Attach the printout to this test procedure.	MSD
4.	Hide the Performance Test workspace(s)	Verify the workspace(s) is hidden.	MSD

6.8.3 CPU Use Vs Pt-Processing Function for Continuous Points Performance Test

Step	Perform	Expected Result	Initial
1.	On the Point Processing Performance Test workspace click on the Click on the "**CPU Use Versus Point-Processing Function for Continuous Points**" button.	Verify the correct Performance Test workspace is shown.	MSD
2.	Click on the "Start Performance Test" button. After the **Test Running** box turns to FALSE examine the results. (*The test will take about **20 minutes** to run*)	Verify that the test runs and that for each Point Processing Breakdown that the following criteria are met. Update Pt. the %CPU per points/sec < 0.23 Delta Check the %CPU per points/sec < 0.15 Alarm Check the %CPU per points/sec < 0.07 ROC Check the %CPU per points/sec < 0.12 Log to Disk the %CPU per points/sec < 0.57	MSD
3.	Click on the "Print" button.	Verify that the workspace prints. Attach the printout to this test procedure.	MSD
4.	Hide the Performance Test workspace	Verify the workspace is hidden.	MSD

CPU Use Versus Number of Discrete Points/Sec

Yellow/Brown Print

START PERFORMANCE TEST "Test Running" **** Averaging time (minutes) 10 Black / White

No. of Dscrt.		Average (10 Min.)	Minimum (10 Min.)	Maximum (10 Min.)	Std Dev (10 Min.)
BKGD	BKGD	0.005	1.205e-28	0.278	5.53e2%
I/O & Rule	% CPU	0.03	2.995e-4	0.293	1.60e2%
5	% CPU	1.586	1.501	1.742	3.58%
10	% CPU	3.143	3.13	3.279	0.83%
20	% CPU	4.745	4.692	5.003	1.09%
30	% CPU	7.858	7.824	7.984	0.48%
40	% CPU	10.902	10.668	11.0	0.50%
50	% CPU	0.012	5.228e-17	0.382	3.79e2%
Memory MB	92.172		Pts/sec	%cpu/pt/sec	
Delta	N.A.		5	0.311	
Pt. Proc.	true		10	0.311	
Alarm Proc.	true		20	0.236	
ROC Proc.	N.A		30	0.261	
Log Proc.	true		40	0.272	
			50	0.000	
Started:	22:21 4/3	Completed:	1:8 4/4	Elapsed:	168 of 98

Test was run on 7-1-99. Clock was set to 4/3/99 to test daylight savings time (SR #837) Section 6.9.30. MJD

Section 6.9.2 Sep #2

CPU Use Versus Point-Processing Function for Continuous Points

No. of Pts/sec to Process 50 Yellow/Brown Print

Averaging time (minutes) 10 Black / White

START PERFORMANCE TEST "Test Running" ****

Pt. Proc. Function		Average (10 Min.)	Minimum (10 Min.)	Maximum (10 Min.)	Std Dev (10 Min.)
All Funcs	% CPU	19.576	19.47	19.843	0.38%
w/o Logging	% CPU	13.267	13.233	13.425	0.29%
w/o ROC	% CPU	11.685	11.658	11.834	0.25%
w/o Alarm	% CPU	10.276	10.108	13.546	4.31%
< Delta	% CPU	7.457	7.241	7.679	1.22%
w/o Pt Proc	% CPU	2.331	2.306	2.46	1.52%
w/o Rule	% CPU	0.814	0.738	1.067	9.36%
BKGD	% CPU	0.091	5.228e-17	3.363	3.84e2%
	Memory	92.173	92.097	92.179	0.02%

Summary Breakdown	%cpu		Pt. Proc. Breakdown	%cpu/pt/sec	
Pt Proc	17.24	88.1%	Update Pt.	0.10	29.7%
Rule Proc	1.52	7.7%	Delta Check	0.06	16.3%
I/O Proc	0.72	3.7%	Alarm Chk	0.03	8.2%
Bkgd	0.09	0.5%	ROC Check	0.03	9.2%
			Log to Disk	0.13	36.6%
Total:	19.58	100.0%	Total:	0.34	100.0%
Pts/sec:	50	# Cont Pts:	2238	# Dscrt Pts:	116
Started:	23:40 4/3	Completed:	1:37 4/4	Elapsed:	117 of 97

Test was run on 7-1-99. Clock was set to 4/3/99 to test daylight savings time (SR #837) Section 6.9.30. NOS

Section 6.9.30 Step 2

6.8.4 CPU Use Vs Point-Processing Function for Discrete Points Performance Test

Step	Perform	Expected Result	Initial
1.	On the Point Processing Performance Test workspace click on the Click on the "**CPU Use Versus Point-Processing Function for Discrete Points**" button.	Verify the correct Performance Test workspace is shown.	MSD
2.	Click on the "Start Performance Test" button. After the **Test Running** box turns to FALSE examine the results. (*The test will take about **20 minutes** to run*)	Verify that the test runs and that for each Point Processing Breakdown that the following criteria are met. for Update Pt. the %CPU per points/sec < 0.28 for Alarm Check the %CPU per points/sec < 0.07 for Log to Disk the %CPU per points/sec < 0.57	MSD
3.	Click on the "Print" button.	Verify that the workspace prints. Attach the printout to this test procedure.	MSD
4.	Hide the Performance Test workspace	Verify the workspace is hidden.	MSD

6.9 SERVICE REQUESTS

6.9.1 SR 6 – Do Not Allow Duplicate Readings From TMACS To Be Inserted Into SACS

Step	Perform	Expected Result	Initial
1.	Run a MS-SQL query to determine how many TMACS (Surface and Temperature) readings were inserted into the SACS systems for the previous night.	Write down the number of readings Temperature 1471 Surface Level 83	MSD
2.	Move the previous night SACS input files (DST and SST files) from TMACSPROD to the appropriate place on TFS 9. What until the files have	Verify that the reading count is the same.	

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CPU Use Versus Point-Processing Function for Discrete Points

No. of Pts/sec to Process 50

Averaging time (minutes) 10

Yellow/Brown | Print | Black / White

START PERFORMANCE TEST | "Test Running" | ****

Pt. Proc. Function		Average (10 Min.)	Minimum (10 Min.)	Maximum (10 Min.)	Std Dev (10 Min.)
All Funcs	% CPU	12.761	12.506	13.412	1.24%
w/o Logging	% CPU	6.287	6.201	6.443	0.91%
w/o Alarm	% CPU	7.833	7.824	7.846	0.12%
w/o Pt Proc	% CPU	1.114	2.458e-13	10.67	1.42e2%
w/o Rule	% CPU	0.035	2.995e-4	0.373	1.68e2%
BKGD	% CPU	0.01	2.493e-20	0.334	4.04e2%
	Memory	92.514	92.225	93.131	0.42%

Summary Breakdown	%cpu		Pt. Proc. Breakdown	%cpu/pt/sec	
Pt Proc	11.65	91.3%	Update Pt.	0.13	57.7%
Rule Proc	1.08	8.5%	Alarm Chk	-0.03	-13.3%
I/O Proc	0.02	0.2%	Log to Disk	0.13	55.6%
Bkgd	0.01	0.1%			
Total:	12.76	100.0%	Total:	0.23	100.0%
Pts/sec:	50	# Cont Pts:	2208	# Dscrt Pts:	116
Started:	1:39 4/4	Completed:	4:51 4/4	Elapsed:	133 of 73

Section 6.0 T. Step # N

Step	Perform	Expected Result	Initial
	been processed. Re-run the MS Query in step 1		

6.9.2 SR 52 – Add "Point Processing" And "Alarm Processing" Features To Panalarm Sensors

This service request is completed upon successful completion of section 6.5.4.

6.9.3 SR 86 – Add SACS Level Sensors For Each Tank That Has A ENRAF

Step	Perform	Expected Result	Initial
1.	Run an Inspect command that displays the tanks that has an ENRAF level sensor and not a SAC_LEVEL sensor.	Verify no tanks are displayed.	

6.9.4 SR 112 – Add Feature To Record Hourly G2 Performance Data

Step	Perform	Expected Result	Initial
1.	Display the Performance data file. *perf_data_yyyy_mmdd.dat* *where* *Y = year* *M = month* *D = day*	Verify hourly performance data is being recorded.	

6.9.5 SR 156 – Remove Sensors Associated With The Temperature And Pressure Transmitter On Tank C-106 Riser 7

Step	Perform	Expected Result	Initial
1.	Run an Inspect command to display the continuous sensors for Tank C-106.	Verify that the following sensors are not displayed. • C106-TI-R007-01 • C106-TI-U2-RJA • C106-TI-U2-RJB	

```
select  "TPTR" "Type", datepart(dd, TPTR_DTTM) "Day", ABBREVD_NAME, count(*) "R
from TPTR_READING tr, READING_COLCTN_SYSTEM rcs
where TPTR_DTTM > dateadd(dd, -4, getdate() )
  and tr.RCSYS_NO = rcs.RCSYS_NO
group by ABBREVD_NAME, datepart(dd, TPTR_DTTM)

UNION

select  "SLVL", datepart(dd, SLVL_DTTM) "Day", ABBREVD_NAME, count(*) "Readings
from SLVL_READING tr, READING_COLCTN_SYSTEM rcs
where SLVL_DTTM > dateadd(dd, -4, getdate() )
  and tr.RCSYS_NO = rcs.RCSYS_NO
group by ABBREVD_NAME, datepart(dd, SLVL_DTTM)

order by 1,3,2

go

sp_spaceused
```

Section 6.1

Before Files were moved

Type	Day	ABBREVD_NAME	Readings
SLVL	1	MANUAL	85
SLVL	27	MANUAL	10
SLVL	28	MANUAL	108
SLVL	29	MANUAL	107
SLVL	30	MANUAL	96
SLVL	1	TMACS	83
SLVL	28	TMACS	83
SLVL	29	TMACS	83
SLVL	30	TMACS	83
TPTR	28	MANUAL	140
TPTR	1	TMACS	1471
TPTR	28	TMACS	1471
TPTR	29	TMACS	1471
TPTR	30	TMACS	1471

(14 row(s) affected)

database_name	database_size	unallocated space
SACS	3100.00 MB	1640.15 MB

reserved	data	index_size	unused
1494884 KB	1045834 KB	447268 KB	1782 KB

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After Files were moved

Result - #1 select "TPTR" "Type", da ...

Type	Day	ABBREVD_NAME	Readings
SLVL	1	MANUAL	85
SLVL	27	MANUAL	10
SLVL	28	MANUAL	108
SLVL	29	MANUAL	107
SLVL	30	MANUAL	96
SLVL	1	TMACS	83
SLVL	28	TMACS	83
SLVL	29	TMACS	83
SLVL	30	TMACS	83
TPTR	28	MANUAL	140
TPTR	1	TMACS	1471
TPTR	28	TMACS	1471
TPTR	29	TMACS	1471
TPTR	30	TMACS	1471

(14 row(s) affected)

database_name	database_size	unallocated space
SACS	3100.00 MB	1637.92 MB

reserved	data	index_size	unused
1497172 KB	1048116 KB	447270 KB	1786 KB

Section 6.9.1

Hide

Rerun

Edit

display a table of the table-header of every tank TNK such that there exists an io-point-level-enraf P1 such that (the workspace of TNK is the same object as the workspace of P1) and not (there exists an io-point-level-sacs P2 such that (the workspace of TNK is the same object as the workspace of P2))

Search took 1 second. 0 items were found.

Filter	every tank TNK such that there exists an io-point-level-enraf P1 such that (the workspace of TNK is the same object as the workspace of P1) and not (there exists an io-point-level-sacs P2 such that (the workspace of TNK is the same object as the workspace of P2))
Items to examine	159
Items examined so far	159
Number of items found	0

Section 9.3

Step	Perform	Expected Result	Initial
		• C106-PDI-R7-1306A • C106-PDI-R7-1306B	MJD

6.9.6 SR 159 – Modify The Source Of BX-106 Enraf Level To Be From A CIU Instead Of An Acromag

Step	Perform	Expected Result	Initial
1.	Displayed the sensor details for BX-106 Enraf.	Verify the following: • Tag Name is BX106-LI-R008-01A • Data source is an ENRAF CIU	MJD

6.9.7 SR 160 – Sensor Configuration Changes For Tanks TX-102 And TX-104

Step	Perform	Expected Result	Initial
1.	Display the tank workspace for Tank TX-102.	Verify that the thermocouple sensor for TC-01 is displayed on the workspace in the appropriate position.	MJD
2.	Display the tank workspace for Tank TX-104.	Verify that the thermocouple sensor for TC-01 is displayed on the workspace in the appropriate position.	MJD
3.	Display the sensor details for sensor TX113-TI-R008-13	Verify the data source for the sensor is from ANA-STA-04-039.	MJD

6.9.8 SR 165 – Eliminate Multiple Instances Of SYM-AN101-TI-RO4A-36

Step	Perform	Expected Result	Initial
1.	Run an Inspect command that displays the number of instances of an object labeled SYM-AN101-TI-R04A-36.	Verify there is only one.	MJD

6.9.9 SR 175 – Correct AN105 SHMS Input Channels To Be 9,10,11

Step	Perform	Expected Result	Initial
1.	Displayed the sensor details for the following Tank AN105 SHMS sensors:	Verify that the sensors are configured for Acromag Station ANA-STA-01-04-069 on the following channels: • AN105-NI-VTP-154K – Channel 9	

Hide

display a table of the tag-name of every io-point P such that the text of the tank of P ="c-106"

Rerun

Edit

Search took 1 second. 20 items were found.	
Filter	every io-point P such that the text of the tank of P ="c-106"
Items to examine	2301
Items examined so far	2301
Number of items found	20

Tag name
"C106-LI-R001-02"
"C106-LI-R001-01"
"C106-PDI-R1-1306C"
"C106-TI-U1-RJA"
"C106-TI-U1-RJB"
"C106-TI-R008-01"
"C106-TI-R008-02"
"C106-TI-R008-03"
"C106-TI-R008-04"
"C106-TI-R008-05"
"C106-TI-R008-06"
"C106-TI-R014-01"
"C106-TI-R014-02"
"C106-TI-R014-03"
"C106-TI-R014-04"
"C106-TI-R014-05"
"C106-TI-R014-06"
"C106-TI-R014-08"
"C106-LEVEL-SACS"
"C106-HS-1362-01"

Section 6.9.5

BX106-LI-R008-01A
SENSOR DETAILS

Current Reading	75.12
Last Update Method	poll
Last Good Reading At	30 Jun 99 11:59:30 p.m.
Units	inch
High Alarm Limit	20.8
Upper Instrument Limit	500.0
Low Alarm Limit	14.8
Lower Instrument Limit	0.0
Deadband	0.1
Delta	0.01
Point Processing	true
Alarm Processing	true
ROC Processing	false
Logging	true
Station Status	0.0
Raw Value	-32767.0
Polling Freq. Index	4
Polling Freq. Sec.	3600
Displacer Position	-32767.0
Waste Level	-32767.0
Level Status	b
Level Status Mode	unknown
Alarm Status	-
Alarm Status Mode	unknown
Validity Interval	"2 hours"
Expiration Time	1 Jul 99 5:27:29 p.m.
Formula Expression	"None"

Formula Parameter	"the waste_level of ENRAF-STA-06-03-03-06"

Section 6.0.9

TX113-TI-R008-13
SENSOR DETAILS

Current Reading	0.0	Last Update Method	rpc
Last Good Reading At	10 Jun 99 6:34:14 a.m.		
Units	f	Type	j-tc
High Alarm Limit	195.0	Upper Instrument Limit	400.0
Low Alarm Limit	50.0	Lower Instrument Limit	30.0
Deadband	2.0	Delta	0.5
Point Processing	true	Alarm Processing	true
ROC Processing	false	Logging	true
Station Status	0	Raw Value	-32768
Polling Freq. Index	4	Polling Freq. Sec.	600
Validity Interval	"20 minutes"		
Expiration Time	1 Jul 99 4:21:18 p.m.		
Formula Expression	"temp-convert (x) = 0.18 * x + 32.0"		
Formula Parameter	"temp-convert(the CH12 of ANA-STA-04-039)"		

Data Sheet # 5 of 9

Step	Perform	Expected Result	Initial
	• AN105-NI-VTP-154K • AN105-NI-VTP-155K • AN105-NI-VTP-157K	• AN105-NI-VTP-155K – Channel 10 • AN105-NI-VTP-157K – Channel 11	

6.9.10 SR 179 – Correct Auto Restart Of Acromag Drivers When Connection Is Lost

Step	Perform	Expected Result	Initial
1.	Stop the one or more of the Acromag services.	Verify the TMACS system automatically restarts the service.	

6.9.11 SR 417 – Set Default Reference Termomcouple Limits

Step	Perform	Expected Result	Initial
1.	Run an Inspect command that displays the reference couple thermocouples that do not meet the following criteria: • Alarm Low Limit = –20 F • Alarm High Limit = 150 F • Low Instrument Limit = 16.6 F	Verify there are no reference thermocouples that do not meet the criteria.	

6.9.12 SR 422 – Correct Start-Up Error Msg Problem

This service request is completed upon successful completion of section 6.1.1 "Startup".

6.9.13 SR 424 – Add SACS Surface Level To All Monitored Tanks

Step	Perform	Expected Result	Initial
1.	Run an Inspect command that displays the monitored tanks that do not have a SACS surface level configured.	Verify that there are no tanks displayed.	

6.9.14 SR 426 – Add Disabled Sensors To SENSOR CONFIGURATION Report

Step	Perform	Expected Result	Initial
1.	Run the SENSOR PARAMETER	Verify that the sensors are displayed on the report.	

AN105-NI-VTP-154K
SENSOR DETAILS

Current Reading	0.0	Last Update Method	rpc
Last Good Reading At	10 Jun 99 4:18:17 p.m.		
Units	pct-h2		
High Alarm Limit	0.75	Upper Instrument Limit	1.1
Low Alarm Limit	-2.0	Lower Instrument Limit	-0.1
Deadband	0.05	Delta	0.005
Point Processing	false	Alarm Processing	true
ROC Processing	false	Logging	true
Station Status	0	Raw Value	-32768
Polling Freq. Index	3	Polling Freq. Sec.	60
Validity Interval	"20 minutes"		
Expiration Time	1 Jul 99 4:32:17 p.m.		
Formula Expression	"HydPct-LOW-convert (x) = 0.0001 * x"		
Formula Parameter	"hydpct-low-convert (the CH09 of ANA-STA-01-069)"		

Section 9.9.5

AN105-NI-VTP-155K
SENSOR DETAILS

Current Reading	0.0	Last Update Method	rpc
Last Good Reading At	10 Jun 99 4:18:17 p.m.		
Units	pct-h2		
High Alarm Limit	0.75	Upper Instrument Limit	11.0
Low Alarm Limit	-2.0	Lower Instrument Limit	-1.0
Deadband	0.05	Delta	0.015
Point Processing	false	Alarm Processing	true
ROC Processing	false	Logging	true
Station Status	0	Raw Value	-32768
Polling Freq. Index	3	Polling Freq. Sec.	60
Validity Interval	"20 minutes"		
Expiration Time	1 Jul 99 4:32:17 p.m.		
Formula Expression	"HydPct-HIGH-convert (x) = 0.001 * x "		
Formula Parameter	"hydpct-high-convert (the CH10 of ANA-STA-01-069)"		

Section 6.5.5

AN105-FI-VTP-157K
SENSOR DETAILS

Current Reading	0.0	Last Update Method	rpc
Last Good Reading At	10 Jun 99 4:18:17 p.m.		
Units	cfm		
High Alarm Limit	2.5	Upper Instrument Limit	2.2
Low Alarm Limit	0.4	Lower Instrument Limit	-0.2
Deadband	0.05	Delta	0.015
Point Processing	false	Alarm Processing	true
ROC Processing	false	Logging	true
Station Status	0	Raw Value	-32768
Polling Freq. Index	3	Polling Freq. Sec.	60
Validity Interval	"20 minutes"		
Expiration Time	1 Jul 99 4:32:17 p.m.		
Formula Expression	"GASSF-convert (x) = 0.0002 * x "		
Formula Parameter	"gassf-convert (the CH11 of ANA-STA-01-069)"		

Section 6.0

Hide

Rerun

Edit

display a table of the table-header, high-limit, and low-limit of every alarm-limits-table T such that there exists an item P superior to T such that (P is an io-point-ref-tc-sensor) and not (the low-limit of T = -20.0 and the high-limit of T = 150.0)

Search took 0 seconds. 0 items were found.

Filter	every alarm-limits-table T such that there exists an item P superior to T such that (P is an io-point-ref-tc-sensor) and not (the low-limit of T = -20.0 and the high-limit of T = 150.0)
Items to examine	2187
Items examined so far	2187
Number of items found	0

Sect. 10.9.11

Hide

Rerun

Edit

display a table of the table-header, upper-instrument-limit , and lower-instrument-limit of every io-point-instrument-limits-table T such that there exists an item P superior to T such that (P is an io-point-ref-tc-sensor) and not (the lower-instrument-limit of T = -16.6)

Search took 0 seconds. 0 items were found.

Filter	every io-point-instrument-limits-table T such that there exists an item P superior to T such that (P is an io-point-ref-tc-sensor) and not (the lower-instrument-limit of T = -16.6)
Items to examine	2187
Items examined so far	2187
Number of items found	0

Section 6.9.11

Hide

Rerun

Edit

display a table of the table-header of every tank TNK such that there exists an io-point P1 that is monitoring TNK and not (such that there exists an io-point-level-sacs P2 such that (the workspace of TNK is the same object as the workspace of P2)) and not (such that TNK is a monitored-system)

Search took 0 seconds. 0 items were found.

Filter	every tank TNK such that there exists an io-point P1 that is monitoring TNK and not (such that there exists an io-point-level-sacs P2 such that (the workspace of TNK is the same object as the workspace of P2)) and not (such that TNK is a monitored-system)
Items to examine	159
Items examined so far	159
Number of items found	0

Section 6.9.13

Step	Perform	Expected Result	Initial
	CONFIGURATION report. Select a few disabled sensors at random.	SX-112-LI-R02-01 AP-103-LI-R002-01	MSD

6.9.15 SR 428 – Correct errors with AY and AZ Annotation Arrays

Step	Perform	Expected Result	Initial
1.			
2.	Display the Annotation Arrays for AY /AZ Exhauster discrete sensors.	Verify the arrays are configured correctly and do not have an initialization value of 9999.	MSD

6.9.16 SR 474 – Add ENRAF To Tank T110

Step	Perform	Expected Result	Initial
1.	Display tank T110 workspace	Verify there is an ENRAF sensor configured.	MSD

6.9.17 SR 573 – Correct Configuration Of C106 ENRAF To Point To Riser 1

Step	Perform	Expected Result	Initial
1.	Display the sensor details for ENARF in tank C106.	Verify the tag name is C106-LI-R001-01.	MSD

6.9.18 SR 721 – Rename Serial Ports From COM To DIGI

Step	Perform	Expected Result	Initial
1.	Display the serial port names associated with the Digi multi port I/O box.	Verify the name convention is DIGI_X where X is the number of the port on the Digi multi port I/O box.	MSD

6.9.19 SR 747 – Move ENRAFS in Tanks A101, A103 and A106 to AW CIU

Step	Perform	Expected Result	Initial
1.	Display the sensor details for Tank A101.	Verify the sensor is report through the following: ENRAF-STA-06-01-01-61	MSD

Hide

Rerun

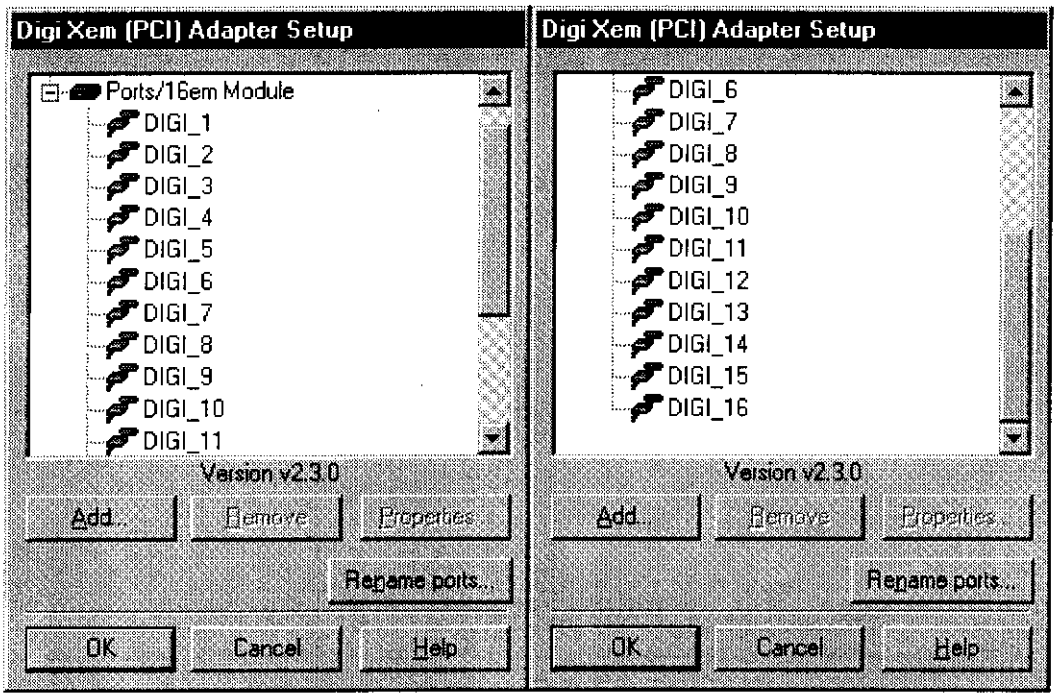
Edit

display a table of the table-header, array-length, and initial-values of every symbol-array Y such that there exists an item I superior to Y such that (I is a discrete-io-point and the subworkspace of AY-AZ-EXHAUSTER-TANK is the same object as the workspace of I and the annotation-array of I is the same object as Y)

Search took 0 seconds. 15 items were found.	
Filter	every symbol-array Y such that there exists an item I superior to Y such that (I is a discrete-io-point and the subworkspace of AY-AZ-EXHAUSTER-TANK is the same object as the workspace of I and the annotation-array of I is the same object as Y)
Items to examine	344
Items examined so far	344
Number of items found	15

Table header	Array length	Initial values
a symbol-array, the annotation array of AY-LDA-AZ702-MCS-1	2	alarm, normal
a symbol-array, the annotation array of AY-LDA-AZ702-MCS-2	2	alarm, normal
a symbol-array, the annotation array of AY101-PAH-L-AZ702-MCS-3	2	alarm, normal
a symbol-array, the annotation array of AY102-PAH-L-AZ702-MCS-4	2	alarm, normal
a symbol-array, the annotation array of AZ-LDA-AZ702-MCS-5	2	alarm, normal
a symbol-array, the annotation array of AZ-LDA-AZ702-MCS-6	2	alarm, normal
a symbol-array, the annotation array of AZ151-LDA-AZ702-MCS-7	2	alarm, normal
a symbol-array, the annotation array of AZ101-PAH-L-AZ702-MCS-8	2	alarm, normal
a symbol-array, the annotation array of AZ102-PAH-L-AZ702-MCS-9	2	alarm, normal
a symbol-array, the annotation array of AY-Z-FAH-L-VENT-AZ702-MCS-10	2	alarm, normal
a symbol-array, the annotation array of AY-Z-RAH-X-SMPL-AZ702-MCS-11	2	alarm, normal
a symbol-array, the annotation array of AZ702-RAH-X-VENT-MCS-12	2	alarm, normal
a symbol-array, the annotation array of AZ702-FAH-L-SMPL-MCS-13	2	alarm, normal
a symbol-array, the annotation array of AZ702-LDA-BLDG-MCS-14	2	alarm, normal
a symbol-array, the annotation array of AZ702-GENERAL-TROUBLE-ALARM	2	alarm, normal

Section 6.0.15



Section 6.9.18

Step	Perform	Expected Result	Initial
2.	Display the sensor details for Tank A103.	Verify the sensor is report through the following: ENRAF-STA-06-01-01-62	MSD
3.	Display the sensor details for Tank A106.	Verify the sensor is report through the following: ENRAF-STA-06-01-01-63	MSD

6.9.20 SR 750 – Lengthen Acromag Timeout From 180 Ms To 500 Ms For Acromag Connected To The Supermux

Step	Perform	Expected Result	Initial
1.	Display the remote processing initialization string for Acromag drivers/services that communicate through the SuperMux. (*Acromag driver/services 3-5*)	Verify that the timeout value is to 500 milliseconds.	MSD

6.9.21 SR 774 – Label SHMS Cabinets Where Multiple SHMS On Tank Workspace

Step	Perform	Expected Result	Initial
1.	Run an Inspect command to display the tank workspaces that contain multiple SHMS cabinets. Display the tank workspace for each tank listed.	Verify the cabinets are labeled properly.	MSD

6.9.22 SR 789 – Set The Alarm Limits For TMACS Sensor Not Visibile To The Opeator

Step	Perform	Expected Result	Initial
1.	Run an Inspect command that displays the high and low alarm limits from sensors not visible to the TMACS operators.	Verify that the limits are set as follows: • Low Limit -32767 • High Limit 32767	MSD

A101-LI-R006-01
SENSOR DETAILS

Current Reading	75.12
Last Update Method	poll
Last Good Reading At	24 Jun 99 8:38:26 a.m.
Units	inch
High Alarm Limit	349.4
Upper Instrument Limit	500.0
Low Alarm Limit	341.4
Lower Instrument Limit	0.0
Deadband	0.1
Delta	0.01
Point Processing	true
Alarm Processing	true
ROC Processing	false
Logging	true
Station Status	0.0
Raw Value	-32767.0
Polling Freq. Index	4
Polling Freq. Sec.	3600
Displacer Position	-32767.0
Waste Level	-32767.0
Level Status	b
Level Status Mode	unknown
Alarm Status	-
Alarm Status Mode	unknown
Validity Interval	"2 hours"
Expiration Time	1 Jul 99 6:54:02 p.m.
Formula Expression	"None"

Formula Parameter	"the waste_level of ENRAF-STA-06-01-01-61"

Section 9.0.15 Step #1

A103-LI-R006-01
SENSOR DETAILS

Current Reading	75.12
Last Update Method	poll
Last Good Reading At	24 Jun 99 8:38:26 a.m.
Units	inch
High Alarm Limit	137.44
Upper Instrument Limit	500.0
Low Alarm Limit	129.44
Lower Instrument Limit	0.0
Deadband	0.1
Delta	0.01
Point Processing	true
Alarm Processing	true
ROC Processing	false
Logging	true
Station Status	0.0
Raw Value	-32767.0
Polling Freq. Index	4
Polling Freq. Sec.	3600
Displacer Position	-32767.0
Waste Level	-32767.0
Level Status	b
Level Status Mode	unknown
Alarm Status	-
Alarm Status Mode	unknown
Validity Interval	"2 hours"
Expiration Time	1 Jul 99 6:54:01 p.m.
Formula Expression	"None"

Formula Parameter	"the waste_level of ENRAF-STA-06-01-01-62"

Section 6.9.19 Step #2

A106-LI-R006-01
SENSOR DETAILS

Current Reading	75.12
Last Update Method	poll
Last Good Reading At	24 Jun 99 8:38:26 a.m.
Units	inch
High Alarm Limit	32.5
Upper Instrument Limit	500.0
Low Alarm Limit	24.5
Lower Instrument Limit	0.0
Deadband	0.1
Delta	0.01
Point Processing	true
Alarm Processing	true
ROC Processing	false
Logging	true
Station Status	0.0
Raw Value	-32767.0
Polling Freq. Index	4
Polling Freq. Sec.	3600
Displacer Position	-32767.0
Waste Level	-32767.0
Level Status	b
Level Status Mode	unknown
Alarm Status	-
Alarm Status Mode	unknown
Validity Interval	"2 hours"
Expiration Time	1 Jul 99 6:54:00 p.m.
Formula Expression	"None"

Formula Parameter	"the waste_level of ENRAF-STA-06-01-01-63"

Section 6.5.19 Step #3

Hide

display a table of the names and remote-process-initialization-string of every gsi-interface containing "500"

Rerun

Edit

Search took 0 seconds. 3 items were found.

Filter	every gsi-interface containing "500"
Items to examine	14
Items examined so far	14
Number of items found	3

Names	Remote process initialization string
ACROMAG-03	"-d digi_4 -h 1 -s 9600 -j 0 -p n -r 1 -z 0 -w 10 -b 8 -t n -q n -a Y -n 500 -v 1[1], 10[20], 60[60], 600[600] -x Y"
ACROMAG-04	"-d digi_5 -h 1 -s 9600 -j 0 -p n -r 1 -z 0 -w 10 -b 8 -t n -q n -a Y -n 500 -v 1[1], 10[20], 60[60], 600[600] -x N"
ACROMAG-05	"-d digi_6 -h 1 -s 9600 -j 0 -p n -r 1 -z 0 -w 10 -b 8 -t n -q n -a Y -n 500 -v 1[1], 10[20], 60[60], 600[600] -x N"

Section 6.9.20

Hide

Rerun

Edit

display a table of the table-header of every tank TNK such that there exists an io-point-flow-sample P1 such that (the workspace of P1 is the same object as the workspace of TNK) and there exists an io-point-flow-sample P2 such that (the workspace of P2 is the same object as the workspace of TNK and P2 is not the same object as P1)

Search took 0 seconds. 3 items were found.	
Filter	every tank TNK such that there exists an io-point-flow-sample P1 such that (the workspace of P1 is the same object as the workspace of TNK) and there exists an io-point-flow-sample P2 such that (the workspace of P2 is the same object as the workspace of TNK and P2 is not the same object as P1)
Items to examine	159
Items examined so far	159
Number of items found	3

Table header
AN-105, a double-shell-tank
SY-101, a double-shell-tank
AW-101, a double-shell-tank

Section 6.5.1

6.9.23 SR 812 – Add Cabability For Operators To Display The Data Graphed On The Single Sensor Trends

This service request is completed upon successful completion of section 6.3.1.3 Operation of Sensor History.

6.9.24 SR 820– Apply SQL Service Pack 5

Step	Perform	Expected Result	Initial
1.	On the servers TMACSPROD and TMACSDEV run the following MS SQL Query : Select @@Version	Verify that the version number 6.50.416 is displayed.	

6.9.25 SR 825 – Eliminate The SACS _Level Readings From The SST And DST Files

Step	Perform	Expected Result	Initial
2.	Display a Single Shell daily file. File can be found in the directory F:\Backedup\TMACSData\History with the file name of • sst_data_yyyy_mmdd_mmss.rdbms where: yyyy = the year mm = the month dd = the day hh = the hour mm = the minute	Verify the SACS_LEVEL sensors are not included.	
3.	Display a Double Shell daily file. File can be found in the directory F:\Backedup\TMACSData\History with the file name	Verify the SACS_LEVEL sensors are not included.	

```
/*-----------------------------
select @@Version
-----------------------------*/
```

TMACSPROD

```
Microsoft SQL Server  6.50 - 6.50.416 (Intel X86)
Jan 23 1999 14:10:24
Copyright (c) 1988-1997 Microsoft Corporation

(1 row(s) affected)
```

Sept 29, 2000

```
/*-----------------------------
select @@Version
-----------------------------*/
```

IMACSDEV

```
Microsoft SQL Server  6.50 - 6.50.416 (Intel X86)
Jan 23 1999 14:10:24
Copyright (c) 1988-1997 Microsoft Corporation

(1 row(s) affected)
```

Section 9.5.1

Step	Perform	Expected Result	Initial
	of • dst_data_yyyy_mmdd_mmss.rdbms where: yyyy = the year mm = the month dd = the day hh = the hour mm = the minute		

6.9.26 SR 831 – Create A Report The Displays Sensors That Have Not Received A Reading Within The Last 24 Hrs

This service request is completed upon successful completion of section 6.4.1 Suspect Sensor Report.

6.9.27 SR 832 – Create A Unknown Sensor Report. (Quality Status = Unknown)

This service request is completed upon successful completion of section 6.4.3 Unknown Sensor Report.

6.9.28 SR 833 – Change Instrument Limits For Sy101 Enraf To Match Field Conditions

Step	Perform	Expected Result	Initial
1.	Display the sensor details for sensor	Verify that the instruments limits for the sensor are as follows: • Instrument Low - 369 • Instrument High - 471	

6.9.29 SR 834 – Correct Path/File Name Variable Used To Save Knowledge Base Upon Successful Completion Of Engineer Control Of Alarm Limits

Step	Perform	Expected Result	Initial
1.	Display the procedure SURVEILLANCE-UPDATE-ALARM-LIMITS.	Verify that there is a call to save the knowledge base to disk is as follows: ERROR = call g2-save-module("[g2-kbs-dir]\htff.kb",true,false, the symbol htff, false); *Note: Look for Print Updating KB*	

Exploring - Y:\BackedUp\TMACSData\Current

File Edit View Go Favorites Tools Help

Back Forward Up Cut Copy Paste Undo Delete Properties Views

Address Y:\BackedUp\TMACSData\Current

All Folders

- TMACSData
  - CentralMicroAlarms
  - Rawdata
  - Recycler
  - TMACS_Print_Trash
- (R:)
- Common on 'Ad07' (S:)
- H0042660 on 'Ds010' (U:)
- Build on 'udo' (W:)
- C$ on 'Tmacsprod' (X:)
- F$ on 'Tmacsprod' (Y:)
  - BackedUp
    - KBs
    - SQL Disk Dump Devi
    - TMACSData
      - Config
      - Current
      - History
      - Log
      - Trash
    - CentralMicroAlarms

Name	Size	Type	Modified
almhst_1999_0726_0000.dat	19KB	DAT File	7/26/99 9:15 AM
continuous_sensor_history_1999_0726.ascii	1,855KB	ASCII File	7/26/99 9:50 AM
continuous_sensor_history_test_1999_0415.a...	4,143KB	ASCII File	4/15/99 11:42 AM
continuous_shutdown_history_1999_0726.ascii	186KB	ASCII File	7/26/99 9:51 AM
discrete_sensor_history_1999_0726.ascii	23KB	ASCII File	7/26/99 8:22 AM
discrete_shutdown_history_1999_0726.ascii	8KB	ASCII File	7/26/99 9:51 AM
equip_fail_1999_0726_0000.dat	580KB	DAT File	7/26/99 9:50 AM
perf_data_1999_0413.dat	2KB	DAT File	4/13/99 11:30 PM
perf_data_1999_0726.dat	1KB	DAT File	7/26/99 9:06 AM
test_tank_history_1999_0726.ascii	0KB	ASCII File	7/26/99 12:00 AM

10 object(s) | 6.65MB (Disk free space: 10.1GB) | Local intranet zone

7-26-99 Before Installation

Section 6.9.32

almhst_1999_0726_0000.dat
equip_fail_1999_0726_0000.dat

7-26-99

Other Instrument
Other files listed are not created each day but concatenated to existing files.
Section 6.9.32

6.9.30 SR 837 – Correct Problem Of SST And DST File Not Created When Changing To Daylight Savings Time

Step	Perform	Expected Result	Initial
1.	Prior to starting TMACS set the date and time to at least 30 minutes before 2:00 AM on the date of spring daylight saving time (i.e. 4/4/1999). Wait for approximately 3-4 hours (until after 4 AM daylight savings time)	Verify that new SST and DST were created in the directory: F:\Backedup\TMACSData\History	

6.9.31 SR 839 – Shorten The Delay Time For Starting Up I/O Drivers

Step	Perform	Expected Result	Initial
1.	Run an inspect command to display the delay time for starting up the I/O Drivers (*Services*)	Verify the delay time is set to less than 5 seconds.	
2.	Select a driver/service at random. Stop the service.	Verify the service is restarted automatically by TMACS.	

6.9.32 SR 840 – Correct Problem Of At Start-Up Where Files Are Moved To Wrong Directory Of Tfs9

Completed on 7-26-99 at Production Installation

The service request can only be verified on the production system and will be tested at installation time and if any anomalies will be document on the Operational Test Procedure.

6.9.33 SR 841 – Configure Enraf Of Tanks AP-101 Thru AP-108, S-104, Sx-107, Sx-108 And Sx-110 Thru Sx-115

7-26-99

Step	Perform	Expected Result	Initial
1.	Display Tank AP-101 workspace.	Verify the ENRAF for this tank is displayed.	
2.	Display the sensor details for the ENRAF sensor	Verify the following: • data source is from an ENRAF CIU • sensor tag name is AP101-LI-R002-01	

Step	Perform	Expected Result	Initial
3.	Repeat steps 1 and 2 for Tank AP-102	Verify the following: • data source is from an ENRAF CIU • sensor tag name is AP102-LI-R002-01	
4.	Repeat steps 1 and 2 for Tank AP-103	Verify the following: • data source is from an ENRAF CIU • sensor tag name is AP103-LI-R002-01	
5.	Repeat steps 1 and 2 for Tank AP-104	Verify the following: • data source is from an ENRAF CIU • sensor tag name is AP104-LI-R002-01	
6.	Repeat steps 1 and 2 for Tank AP-105	Verify the following: • data source is from an ENRAF CIU • sensor tag name is AP105-LI-R002-01	
7.	Repeat steps 1 and 2 for Tank AP-106	Verify the following: • data source is from an ENRAF CIU • sensor tag name is AP106-LI-R002-01	
8.	Repeat steps 1 and 2 for Tank AP-107	Verify the following: • data source is from an ENRAF CIU • sensor tag name is AP107-LI-R002-01	
9.	Repeat steps 1 and 2 for Tank AP-108	Verify the following: • data source is from an ENRAF CIU • sensor tag name is AP108-LI-R002-01	
10.	Repeat steps 1 and 2 for Tank S-104	Verify the following: • data source is from an ENRAF CIU • sensor tag name is S104-LI-R005-01	
11.	Repeat steps 1 and 2 for Tank SX-107	Verify the following: • data source is from an ENRAF CIU • sensor tag name is SX107-LI-R002-01	
12.	Repeat steps 1 and 2 for Tank SX-108	Verify the following: • data source is from an ENRAF CIU • sensor tag name is SX108-LI-R002-01	
13.	Repeat steps 1 and 2 for Tank SX-110	Verify the following: • data source is from an ENRAF CIU • sensor tag name is SX110-LI-R002-01	
14.	Repeat steps 1 and 2 for Tank SX-111	Verify the following: • data source is from an ENRAF CIU • sensor tag name is SX111-LI-R002-01	
15.	Repeat steps 1 and 2 for Tank SX-112	Verify the following: • data source is from an ENRAF CIU • sensor tag name is SX112-LI-R002-01	
16.	Repeat steps 1 and 2 for Tank SX-113	Verify the following: • data source is from an ENRAF CIU • sensor tag name is SX113-LI-R002-01	
17.	Repeat steps 1 and 2 for	Verify the following:	

Step	Perform	Expected Result	Initial
	Tank SX-114	• data source is from an ENRAF CIU • sensor tag name is SX114-LI-R002-01	
18.	Repeat steps 1 and 2 for Tank SX-115	Verify the following: • data source is from an ENRAF CIU • sensor tag name is SX115-LI-R002-01	

6.9.34 SR 843 – Configure Enrafs For Tanks S-101, S-105, S-108, S-109 And C-104

Step	Perform	Expected Result	Initial
1.	Display Tank S-101 workspace.	Verify the ENRAF for this tank is displayed.	
2.	Display the sensor details for the ENRAF sensor	Verify the following: • data source is from an ENRAF CIU • sensor tag name is S101-LI-R003-01	
3.	Repeat steps 1 and 2 for Tank S-105	Verify the following: • data source is from an ENRAF CIU • sensor tag name is S105-LI-R003-01	
4.	Repeat steps 1 and 2 for Tank S-108	Verify the following: • data source is from an ENRAF CIU • sensor tag name is S108-LI-R003-01	
5.	Repeat steps 1 and 2 for Tank S-109	Verify the following: • data source is from an ENRAF CIU • sensor tag name is S109-LI-R003-01	
6.	Repeat steps 1 and 2 for Tank C-104	Verify the following: • data source is from an ENRAF CIU • sensor tag name is C104-LI-R008-01	

6.9.35 SR 845 – Create A Suspect I/O Station Report

This service request is completed upon successful completion of section 6.4.2 Suspect IO-Station Report.

6.9.36 SR 846 – Add Ability To Retrieve A Sensor Reading Upon Request

This service request is completed upon successful completion of section 6.3.1.2 Operation of Sensor Details.

6.9.37 SR 853 – Respan SX-106 ENRAF

Step	Perform	Expected Result	Initial
1.	Displayed the sensor detail	Verify the following:	

Step	Perform	Expected Result	Initial
	for the following ENRAF sensor in Tank SX106	• Tag Name is SX106-LI-R003-01 • Formula Expression is SurLev – convert-100(x) = (0.01 * x) • Formula Parameter = surlev_convert – 100 (the CH16 of ANA-STA-05-~~05~~-015) + 72.0 • Instrument Low Limit = 71.0 • Instrument High Limit = 173.0	

6.9.38 SR 854 – Add ENRAF Annulus Leak Detectors for Tanks SY101, SY102, and SY103

Step	Perform	Expected Result	Initial
1.	Display Tank SY-101 workspace.	Verify the following ENRAF leak detectors for this tank is displayed. SY101-LDI-R09D-01 SY101-LDI-R09A-01 SY101-LDI-R10B-01	
2.	Display the sensor details for each sensor	Verify the following: • data source is from an ENRAF CIU • sensor tag name is correct	
3.	Display Tank SY-102 workspace.	Verify the following ENRAF leak detectors for this tank is displayed. SY102-LDI-R09C-01 SY102-LDI-R09D-01 SY102-LDI-R10A-01	
4.	Display the sensor details for each sensor	Verify the following: • data source is from an ENRAF CIU • sensor tag name is correct	
5.	Display Tank SY-103 workspace.	Verify the following ENRAF leak detectors for this tank is displayed. SY103-LDI-R09C-01 SY103-LDI-R09D-01 SY103-LDI-R10A-01	
6.	Display the sensor	Verify the following:	

Step	Perform	Expected Result	Initial
	details for each sensor	• data source is from an ENRAF CIU • sensor tag name is correct	

6.9.39 SR 855 – Add ENRAF Level Detectors for Tanks SX106 and SY102

Step	Perform	Expected Result	Initial
1.	Display Tank SX-106 workspace.	Verify the following ENRAF level detector for this tank is displayed. SX106-LI-R003-01	
2.	Display the sensor details for the ENRAF sensor	Verify the following: • data source is from an ENRAF CIU • sensor tag name is correct	
3.	Display Tank SY-102 workspace.	Verify the following ENRAF level detector for this tank is displayed. SY102-LI-R02A-01	
4.	Display the sensor details for the ENRAF sensor	Verify the following: • data source is from an ENRAF CIU • sensor tag name is correct	

6.10 TMACS SHUTDOWN

6.10.1 Telewindows® Session

Step	Action	Verify	Initial
1.	On the TMACS screen, type Control-Y.	Verify that the user mode selection workspace appears on the screen.	
2.	Edit the 'G2® user mode' to be "shutdown" and click on the END.	Verify that a warning message appears indicating that this function is not available. Verify the 'G2® user mode' has reverted back to "t2-user".	

6.10.2 Central Console

Step	Action	Verify	Initial
1.	On the TMACS screen, type Control-Y.	Verify that the user mode selection workspace appears on the screen.	MJS
2.	Edit the 'G2® user mode' to be "shutdown" and click on the END.	Verify that G2® terminates.	MJS
3.	As part of the shutdown process TMACS creates the following files in the directory F:\BackedUp\TMACS\Data\Current: • Continuous_Shutdown_History_ YYYY_MMDD.ascii. • Discrete_Shutdown_History_ YYYY_MMDD.ascii. Where: YYYY – is the year that the file was created. MM – is the month that the file was created. DD – is the day that the file was created.	Verify that the files were created and the format match the description given in the LMSI External Letter, RGG-SDI-99-001, *TMACS Data File Formats, Release 11.0.*	MJS

7. EXCEPTION SHEETS

The following page is an example of the form used to describe exceptions found during the running of this Acceptance Test Procedure. If exceptions are found, copies of this sheet should be completed and included in the Acceptance Test Report.

Acceptance Test Procedure
Exception Record

Exception No.	Step No.	Date
Originator/Organization		
Description:		
Resolution:		
Resolution Date:		

Title/Organization	Signature	Date
Test Director		
Cognizant Engineer		
QA		
ESH		
Safety		

8. PARTICIPATION RECORD SHEET

The following page is the form used to record the participants involved in the running of this Acceptance Test Procedure. This sheet should be completed and included in the Acceptance Test Report.

Acceptance Test Procedure
Participation Record

Ronald R. Wandling 7/1/99
TEST DIRECTOR

TEST PERFORMANCE GROUP

Steven C Cartwell 7/1/99

TEST WITNESS

Melissa 7-1-99

9. ACCEPTANCE RECORD SHEET

The following page is the form used record the participants involved in the running of this Acceptance Test Procedure. This sheet should be completed and included in the Acceptance Test Report.

Acceptance Test Procedure
Acceptance Record

CERTIFICATION OF SATISFACTORY EXECUTION

All of the test cases for this test procedure have been tested and all exceptions for this test procedure have been resolved.

Test Director	7/6/99
Cognizant Engineer	7-2-99
Quality Assurance	7-6-99
Safety	7/6/99
Environmental Health	7/6/99

Acceptance Test Procedure
Exception Record

Exception No.	Step No.	Date
1	6.5	7-1-99

Originator/Organization
Melissa Holm Process Engineering

Description:

In sections:

6.5.1.1
6.5.1.2
6.5.2.1
6.5.3.1

Step 2 states that the reading should be compared to the reading in Step 2. Step 1 actually contains the reading needed for comparison. The test will be changed to read Step 1.

Resolution:

Each section will be changed to read Step 1 instead of Step 2.

Incorporate in ECN 654987

Resolution Date:

Title/Organization	Signature	Date
Test Director	Ronald R. Sandberg	7/6/99
Cognizant Engineer	[illegible]	7-2-99
QA	J.S. SPARKS [illegible]	7-6-99.
ESH	[illegible]	7/6/99
Safety	Amy E. Herg	7/6/99

Acceptance Test Procedure
Exception Record

Exception No.	Step No.	Date
2	6.6.6	7-1-99

Originator/Organization
Melissa Holm Process Engineering

Description:

Step 3 states that the tank color will be white or the color of the discrete sensor (200001). The tank will actually be white or the color of the continuous sensor (200001) that was enabled in this step.

Resolution:

Change discrete to continuous in Step 3.

Incorporate in ECN 654987

Resolution Date:

Title/Organization	Signature	Date
Test Director	Ronald R. Wyndham	7/6/99
Cognizant Engineer	Melissa Holm	7-2-99
QA	J.S. SPARKS	7-6-99
ESH	[illegible]	7/6/99
Safety	L.E. Harris	7/6/99

Acceptance Test Procedure
Exception Record

Exception No.	Step No.	Date
3	6.7.2	7-1-99

Originator/Organization
Melissa Holm Process Engineering

Description:
The test_tank_history-yyyy-mmdd.ascii file contains no data. This file was developed for a special process test case that no longer collects data. Step 1 includes a comparison of this file to the format stated in LMSI External Letter, RGG-SDI-99-001, "TMACS Data File Formats, Release 11.0." The file is no longer needed.

Resolution:
Delete the reference to file test_tank_history-yyyymmdd.ascii in Step 1.

Incorporate in ECN 654987

Resolution Date:

Title/Organization	Signature	Date
Test Director	Ronald W Sandberg	7/6/99
Cognizant Engineer	Melissa Holm	7-2-99
QA	J.S. SPARKS J.D. Sparks	7-6-99
ESH	[illegible]	7/6/99
Safety	L.E. Hong	7/6/99

Acceptance Test Procedure
Exception Record

Exception No.	Step No.	Date
4	6.9.37	7-1-99

Originator/Organization
Melissa Holm Process Engineering

Description:

In section 6.9.37, SR853, Respan SX-106 ENRAF, the station was typed in correctly in the test. The ~~to~~ states the station is:

ANA-STA-05-05-015

The station identifier is:

ANA-STA-05-015.

Resolution:

The station identifier will be corrected.

Incorporate in ECN 654987.

Resolution Date:

Title/Organization	Signature	Date
Test Director	Ronald R. Vandehey	7/6/99
Cognizant Engineer	Melissa Holm	7-2-99
QA	W.S. SPARKS	7-6-99
ESH	[illegible]	7/6/99
Safety	L.E. Thomas	7/6/99

DISTRIBUTION SHEET

To	From	Page 1 of 1
Distribution	Process Control	Date 11/19/99
Project Title/Work Order		EDT No. 628392
Tank Monitor and Control System (TMACS) Revision 11.1 Acceptance Test Report		ECN No. N/A

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
D. A. Barnes	R2-12	X			
J. G. Field	R2-12	X			
M. J. Holm	R2-12	X			
R. R. Wandling	R1-01	X			