

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
4	Printer is turned on but the POWER indicator on the control panel remains off.	a. Check the power cord. Is it firmly connected to the power strip?	Ensure the power cord is plugged into the power strip.
		b. Is the printer power switch turned ON?	Turn the printer power switch to the ON position.
		c. Is the paper fed properly into the feeder?	Verify paper is properly inserted.
	Continuous-feed paper jams.	a. Are the tractor feeders locked?	Lock the tractor feeders, align incoming paper.
		b. Is the paper select lever set to the forward (paper stack) position?	Set the paper select lever to the paper stack position.
		c. Is the paper thickness lever correctly set for the type of paper you are using?	Adjust paper thickness lever to the paper type being used.
		d. Is the top cover installed and closed properly?	Inspect, close top cover.
		e. Is the new paper stack straight?	Align incoming paper stack with printer.
		f. Does the exiting paper have a clear path which does not interfere with the incoming paper?	Do not allow exiting paper to feed into the printer. Route exiting paper away from paper feeder.
		g. Is the incoming paper tangling with the power cord and/or computer cable?	Remove any obstructions from paper stack.
		h. Is paper jammed under the platen?	Remove all jammed paper, inspect for obstructions.
	Paper does not feed.	a. Is your continuous paper set in the tractor feeders correctly?	Insert paper into continuous feed entry.
		b. Is paper select lever in the correct position?	Select stack position for paper feed type.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
4 Cont.	Paper parking does not operate or paper does not advance to the tear-off position.	a. Paper selector is not continuous paper (forward position) to park the paper.	Set the paper select lever to the forward position.
		b. Is tractor in push position?	Set the tractor in the push position. Refer to System Maintenance Manual.
		c. Is the printer off line?	Set the printer to off line.
	Tear-off position is not at the perforation.	a. Is paper size 8 1/2 x 11 inches?	Use only paper recommended for the printer .
		b. Was the manual feed knob turned?	Park and load paper.
	Printhead does not move.	a. Is printer ribbon jammed ?	Replace printer ribbon cartridge.
		b. Has dust or dirt entered printer?	Remove excessive dust and dirt from printhead area.
	Printer does not print at all or print is faint.	a. Is the ribbon properly installed?	Refer to operators manual for instructions on installing printer ribbon.
		b. Is printer ribbon jammed?	Rotate knob on printer cartridge. Knob should turn and the ribbon should move smoothly without binding. If binding occurs or knob does not turn, change printer ribbon cartridge.
		c. Is paper thickness lever adjusted properly ?	Adjust paper thickness lever to match paper being used.
		d. Is printhead worn?	Check printhead for wear, replace if necessary.
			Call maintenance contractor.
5	No audio is heard.	a. Is power indicator illuminated on Audio Amplifier and Sample Playback Synthesizer?	Ensure all power switches are set to on and all fuses are good.
		b. Is Sample Playback Synthesizer volume control knob, Speaker Volume Control knob, Headset and Mic Out knobs and speaker volume control knob turned to full on?	Adjust all control knobs to full on. Adjust Mic out so that no feedback is heard.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
5 Cont.	No audio is heard. Cont.	c. Is speaker power indicator illuminated?	Ensure tank speaker is turned on and both connectors are firmly seated.
		d. Is 3.5 inch Recorded Tank Sound Disk inserted in Playback Synthesizer?	Verify sound disk is current version and inserted properly. Power off Sample Playback Synthesizer, insert sound disk and power on synthesizer. After power up is complete, rotate the DATA knob. In the display, ENGINE, BRAKE, MAIN GUN, etc. will be displayed.
		e. Are all terminations secure on rear of Playback Synthesizer and Audio Amplifier?	Verify all terminations are secure. All cables are labeled.
		f. Is headset connector securely inserted into mating connector?	Verify all cables are connected to the proper termination.
		g. Check AM 1780/VRC Intercom Amplifier for power and set to internal.	Verify AM 1780/VRC connections. Verify loaders cable connector 2W4P6 is connected to Intercom Control Box J801 and connector 2W4P7 is connected to Intercom Amplifier J501. Set Intercom Control Box settings to ALL.
		h. Are all CVC's fully operational and is the switch set to the Mic out setting?	Verify CVC's on known good system.
			Call Maintenance Contractor.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
6	Image Generator will not power on.	a. Is sufficient main power supplied to IOS?	Verify that there are two 20 ampere power services to the IOS. One circuit 110 Vac, the other 220 Vac.
		b. Is main power circuit breaker and I/O control key set to on and push to start depressed?	All power indicators should be illuminated.
		c. Is Image Generator FANS and MAIN circuit breaker set to on?	Set Image Generator power and fan switches to on.
		d. Are Image Generator power cables connected to rear of I/O Control Panel?	Verify Image Generator power cables connections.
			Call maintenance contractor.
	Poor image quality on some or all monitors.	a. Do all views experience same condition?	If all views experience problem, probable cause is video generation circuit cards. Call maintenance contractor. If all TC/DRIVER views are poor, probable cause is VBX circuit card. Same for all GPS views. Call maintenance contractor. If only one or two monitors experience problems, probable cause is something other than the Image Generator. Refer to System Maintenance Manual.
		b. Are operating conditions within specification?	Are operating temperatures within the 40 to 90 degree specification? If not, stop training until temperatures are brought within operating levels. If relative humidity is outside 30 to 90 percent relative humidity, non- condensing, stop training until conditions are brought within operating levels.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
6 Cont.	Poor image quality on some or all monitors. Cont.	c. Is air flow obstructed to Image Generator? ·	Remove front door on Image Generator bay. Remove any obstructions from top of IOS cabinet. Open rear door and verify all five IG cooling fans are operating. Perform preventive maintenance on IG filters. If operating in a high dust/dirt environment, perform preventive maintenance as required.
			Call Maintenance Contractor.
7	<p>NOTE</p> <p>European village will appear in all monitors except the GAS following BIT. The monitors will go blank following an exercise where the crew is killed by the enemy.</p>		
	No image is on CWS monitor.	a. Is the monitor power on?	Verify monitor power connection at rear of monitor, at three plug power cable and to rear of IOS (tank monitor power). Verify I/O Control Panel MODE SELECT SYSTEM switch is set to TRAINING.
		b. Is W10 cable connected to rear of monitor?	Examine both ends of W10 cable. Inspect for bent or broken pins. Examine mating connectors for damaged pins.
		c. Is TC keypad switch set to MENU?	Set TC Keypad switch to MENU. The I/O menu will be displayed. Verify that the video switch A16 indicators A and B change when TC Remote Keypad view select switch is changed from MENU to SIMULATION. Video switch A16 is located on slide out video drawer in the 10s.
		d. Are mirrors aligned so that image can be seen?	Align mirrors so that the entire simulation view (top view) is seen. Only half of the Menu view is seen. Refer to Operators Manual

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
7 Cont.	No image is on CWS monitor	e. Are switch settings on 17 inch Monitor set correctly * <i>MAG monitors only</i>	Set 17 inch monitor switches to the following: USER/PRESET to PRESET. BNC/D-SUB to D-SUB and HIGH IMPEADENCE/75 Ohms to 75 Ohms (located at rear of monitor) * <i>MAG monitors only</i>
		f. Are contrast and brightness controls properly set.	Adjust contrast and brightness controls until image is sceen clearly through site.
		g. Are there sharp bends in the video cables? Is there sufficient slack in the video cabling?	Route cables with sufficient slack. Avoid sharp bends or routing near power lines. Refer to System Maintenance Manual.
			Call maintenance contractor
8	NOTE European village will appear in all monitors except the GAS following BIT. The monitors will go blank following an exercise where the crew is killed by the enemy.		
	No image is seen or image is not clear through sight.	a. Is the monitor power on?	Verify monitor power connection at rear of monitor, at three plug power cable and to rear of IOS (tank monitor power). Verify I/O Control Panel MODE SELECT SYSTEM switch is set to TRAINING.
b. Is W7 cable connected to rear of monitor?		Examine both ends of W7 cable. Inspect for bent or broken pins. Examine mating connectors for damaged pins.	
c. Is Gunner's Primary Sight Optics operational?		Set GPS diopter to "0". Adjust monitor position until view is focused. Fine tune focus with diopter. Verify tank GPS optics are clean and operational.	

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
8 Cont.	No image is seen or image is not clear through sight. Cont.	d. Are Gunner's station switch settings properly set?	Set tank FILTER/CLEAR/SHUTTER switch to CLEAR . Set facade FILTER/CLEAR/SHUTTER switch to CLEAR and tank THERMAL MODE switch to OFF . This will display a daytime view when the exercise is executed.
		e. Are switch settings on 17 inch monitor set correctly? <i>*MAG monitors only</i>	Set 17 inch monitor switches to the following: USER/PRESET to PRESET , BNC/D-SUB to D-SUB and HIGH IMPEDANCE/75 Ohms to 75 Ohms (located at rear of monitor). <i>*MAG monitors only</i>
		f. Are contrast and brightness controls properly set?	Adjust contrast and brightness controls until image is seen clearly through sight.
		g. Is GPS culminating lens installed properly?	Install GPS culminating lens with flat side facing out. Refer to Operators Manual.
		h. Is GPS light shroud obscuring view? Is proper monitor mount used?	Verify monitor is for GPS. A Velcro strip is provided to secure light shroud. Ensure GPS monitor mount is used. Adjust height adjusting legs and picture horizontal and vertical position until view is seen through sight .
		i. Are there sharp bends in the video cables? Is there sufficient slack in the video cabling?	Route cables with sufficient slack. Avoid sharp bends or routing near power lines. Refer to System Maintenance Manual.
			Call maintenance contractor.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
9	<p>NOTE</p> <p>European village will appear in all monitors except the GAS following BIT. To turn on the GAS Monitor, access from the main menu the DIAGNOSTIC pull down window. Select CALIBRATION. Select GAS CAL. Activate GAS monitor by placing head against GAS Brow Pad. Blocking the GAS head sensor activates the GAS monitor. The monitors will go blank following an exercise that the crew is killed by the enemy.</p>		
	<p>No image is seen or image is not clear through sight.</p>	<p>a. Is the monitor power on?</p>	<p>Verify monitor power connection at rear of monitor, at three plug power cable and to rear of IOS (tank monitor power). Verify I/O Control Panel MODE SELECT SYSTEM switch is set to TRAINING.</p>
<p>b. Is W8 cable connected to rear of monitor?</p>		<p>Examine both ends of W8 cable. Inspect for bent or broken pins. Examine mating connectors for damaged pins.</p>	
<p>c. Is Gunner's Auxiliary Sight (GAS) operational?</p>		<p>Adjust GAS diopter so that the GAS reticle is clearly seen. Move the GAS monitor until the view is clearly focused. Set GAS FILTER IN/OUT to OUT. Verify GAS optics are clean and operational.</p>	
<p>d. Is GAS head sensor placed correctly?</p>		<p>Refer to Operators Manual for GAS head sensor placement. Verify that the head sensor is not obstructed when not in use. Adjust head sensor to be activated when head is placed against brow pad (a red LED on rear of sensor will illuminate when the head sensor is activated). The GAS view will be seen in the GPS, GPSE and IOS Gunner's view monitors.</p>	
<p>e. Are switch settings on 17 inch monitor set correctly? *MAG monitors only</p>		<p>Set 17 inch monitor switches to the following: USER/PRESENT to PRESET, BNC/D-SUB to D-SUB and HIGH IMPEDANCE/75 Ohms to 75 Ohms (located at rear of monitor). *MAG monitors only</p>	

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
9 Cont.	No image is seen or image is not clear through sight. Cont.	f. Is GAS video switch activated?	Verify video switch A18 indicators A and B switch when GAS head sensor is activated. The exercise must be running to perform this check.
		g. Are contrast and brightness controls properly set?	Adjust contrast and brightness controls until image is seen clearly through sight.
		h. Is GAS collimator lens installed properly?	Install GAS collimator lens with strap over COAX tube. Position collimator lens over GAS view port. Refer to Operators Manual
		i. Is the AFIST travel lock installed?	Verify the AFIST travel lock is properly installed. Refer to Operators Manual.
		j. Is GAS light shroud obscuring view?	Verify monitor is for GAS. A Velcro strip is provided to secure light shroud. The other end of the light shroud is fastened to the GAS cullimative lens by two screws. Ensure light shroud support stands do not obstruct view.
		k. Is proper monitor mount used? Is GAS Monitor positioned correctly?	Verify GAS monitor mount is used. Adjust height adjusting legs and picture horizontal and vertical position until view is seen through sight.
		l. Is tank positioned into berm correctly?	For all exercises other than the GAS Calibration, the Tank Commander must instruct the Driver to pull into the berm until the main gun is clear. Not pulling into the berm will cause the GAS monitor to remain blank.
		m. Are there sharp bends in the video cables? Is there sufficient slack in the video cabling?	Route cables with sufficient slack. Avoid sharp bends or routing near power lines. Refer to Svstem Maintenance Manual.
		Call Maintenance Contractor.	

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
10	<p>NOTE European village will appear in all monitors except the GAS following BIT. The monitors will go blank following an exercise that the crew is killed by the enemy.</p>		
	No image on Driver's monitor or no image seen by driver.	a. Is the monitor power on?	Verify monitor power connection at rear of monitor, at single plug power cable and to rear of IOS (tank monitor power). Verify I/O Control Panel MODE SELECT SYSTEM switch is set to TRAINING.
		b. Is W9 cable connected to rear of monitor?	Examine both ends of W9 cable. Inspect for bent or broken pins. Examine mating connectors for damaged pins.
		c. Is drivers mirror aligned so that image can be seen?	Align drivers periscope mirror so only the drivers simulation view (bottom view) is seen. Refer to Operators Manual.
		d. Are switch settings on 14 inch monitor set correctly? * MAG monitors only	Set 14 inch monitor USER/PRESET to PRESET. * MAG monitors only
		e. Are contrast and brightness controls properly set?	Adjust contrast and brightness controls until image is clearly seen by the driver.
		f. Is light shroud obscuring view?	Adjust light shroud so that view is not blocked. Position vision block under front of monitor.
		g. Are there sharp bends in the video cables? Is there sufficient slack in the video cabling?	Route cables with sufficient slack. Avoid sharp bends or routing near power lines. Refer to System Maintenance Manual.
		Call Maintenance Contractor.	

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
11	<p align="center">NOTE</p> <p>Crew station controls and indicators only operate during an exercise simulation. Verify individual controls and indicators during Daily Readiness Check or Calibration.</p>		
	TC Crew Station fails BIT during power up.	<p align="center">NOTE</p> <p>The BIT test is an abbreviated test and does not verify all controls and indicators.</p>	
		a. Are all TC terminations (2W1 cable) properly connected?	Power down IOS, check 2W1 cable connectors for proper mating. Verify W4 and W5 connections. Inspect for damaged pins.
		b. Is TC station configured for M1/M1IP or M1A1?	Install M1A1 adapter cable to 2W1P2 connector for M1 AI tanks. Omit this cable for M1 and M1IP tanks.
	One or more TC control or indicator fails DRC or Calibration.	<p align="center">NOTE</p> <p>If training system is setup for the first time, configure simulation for tank type being used. Do this by selecting from MAIN MENU, UTILITIES, TANK TYPE SELECTION. If tank is M1, answer YES to CONFIGURE SIMULATION FOR M1 TANK? If tank is M1A1, answer NO, then answer YES to CONFIGURE SIMULATION FOR M1A1 TANK? This is the only time this is done but it must be done before starting DRC.</p>	
		a. If indicator fails, is light burned out?	Verify indicator is operational by exchanging with a known good light (whenever possible). If indicator still fails, check connector to failed indicator for damaged pins. Check all associated connectors for damaged pins.
b. Is failed switch or control part of the tank or the AFIST system?		If failed component is part of the tank, verify connection to failed switch or control. If cabling is good, verify operation of failed switch or control. If failed component is part of a supplied facade, verify connection to facade. If cabling and connections are good, verify operation of facade.	

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
11 Cont.	One or more TC control or indicator fails DRC or Calibration. Cont.	c. Are pins on the connector to the failed component damaged?	Examine all associated connectors for damaged pins and sockets, example; bent or broken pins or recessed pins or sockets.
			Call maintenance contractor.
12	NOTE The TC remote Keypad is only operational when the operating system is in the TANK COMMANDER (secondary) mode. This is done by first turning the tank commander passkey to on and then turning the I/O passkey to off.		
	TC cannot execute operations from remote keypad.	a. Is operating system in secondary mode?	Fully rotate TC passkey to the 3 o'clock position and the I/O passkey to the 12 o'clock position. From the MAIN MENU, STATUS window, does the CONTROL MODE indicate SECONDARY?
		b. Was secondary mode selected while the main menu is displayed?	Switching control modes should only be done when the MAIN MENU window is displayed.
		c. Are menu bars clearly seen from TC position?	Adjust the mirrors in the CWS periscope so that the top menu bar from the MAIN MENU is clearly seen and the bottom menu bar from the CRITIQUE MENU is clearly seen.
		d. Does operating system respond from TC keypad?	Check connection to TC keypad and to tank interface assembly. The FREEZE/UNFREEZE, TERMINATE, REPLAY and REPEAT keys are only functional during an exercise. The arrow and enter keys only function from the window menu bars. Check Operators Manual for TC keypad operation. If individual keys do not respond, the key may be defective.
	TC cannot execute operations from remote keypad. Cont.	e. Are TC keypad pushbuttons illuminated?	If no keys are illuminated, verify that TRAINING is selected on I/O Control Panel. Check cable connections. If some keys are not illuminated, verify that keys are fully seated. If keys operate but are not illuminated, replace bulbs.
			Call Maintenance Contractor.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
13	<p>NOTE</p> <p>Crew station controls and indicators only operate during an exercise simulation. Verify individual controls and indicators during Daily Readiness Check or Calibration.</p>		
	Gunner's Crew Station fails BIT during power up.	<p>NOTE</p> <p>The BIT test is an abbreviated test and does not verify all controls and indicators.</p>	
		a. Are all Gunner's cables terminations (2W2 and 2W3 cables) properly connected?	Power down IOS, check 2W2 and 2W3 cables connectors for proper mating. Verify W4 and W5 connections. Inspect for damaged pins.
		b. Are all Gunner's crew station facades installed?	Verify facade installation and connection to Gunner's cables.
	One or more Gunner's Crew Station controls or indicators fails DRC or Calibration. One or more Gunner's Crew Station controls or indicators fails DRC or Calibration. Cont.	<p>NOTE</p> <p>If training system is setup for the first time, configure simulation for tank type being used. Do this by selecting from MAIN MENU, UTILITIES, TANK TYPE SELECTION. If tank is M1, answer YES to CONFIGURE SIMULATION FOR M1 TANK? If tank is M1A1, answer NO, then answer YES to CONFIGURE SIMULATION FOR M1A1 TANK? This is the only time this is done but it must be done before starting DRC.</p>	
		a. If indicator fails, is light burned out?	Verify indicator is operational by exchanging with a known good light (whenever possible). If indicator still fails, check connector to failed indicator for damaged pins. Check all associated connectors for damaged pins.
		b. Is failed switch or control part of the tank or the AFIST system?	If failed component is part of the tank, verify connection to failed switch or control. If cabling is good, verify operation of failed switch or control. If failed component is part of a supplied facade, verify connection to facade. If cabling and connections are good, verify operation of facade.
		c. Are pins on the connector to the failed component damaged?	Examine all associated connectors for damaged pins and sockets, example; bent or broken pins or recessed pins or sockets.
			Call Maintenance Contractor.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
<p>NOTE Crew station controls and indicators only operate during an exercise simulation. Verify individual controls and indicators during Daily Readiness Check or Calibration.</p>			
14	GPS FLTR/CLEAR/ SHTR facade fails.	<p>NOTE Only the clear and shutter modes are simulated.</p>	
		a. Is facade installed properly?	On M1 and M1IP tanks, the tank FLTR/CLEAR/SHTR shaft is not long enough to fit into the facade, however on the M1A1 the shaft is longer and the facade must be placed over the shaft. Tighten screws, rotate shaft and check for binding.
		b. Is facade adjusted so that the micro switch is activated when the switch is rotated?	Before installing facade, observe the rear of the facade while rotating the facade shaft. The actuator on the shaft should activate the micro switch without binding. If the shaft binds or does not activate the switch, loosen the retaining nut and adjust the adjustment screw. Check the operation and secure the retaining nut once completed.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
15	NOTE Crew station controls and indicators only operate during an exercise simulation. Verify individual controls and indicators during Daily Readiness Check or Calibration.		
	GAS Reticle Select Switch Facade fails.	a. Is GAS shaft extension aligned properly and are set screws tight?	Refer to Operators Manual for installation procedure for GAS Reticle Select facade. Failure to properly install facade may result in damage to micro switch assembly. Remove facade and examine switch for damage. Verify operation of switch by manually activating the micro switch while the facade is removed. If switch passed DRC, install facade while following Operator Manual's instructions. If facade fails verify connection to cable. Check shaft extension alignment and set screw tightness.
		b. Is GAS shaft extension activating micro switch?	Once installed, rotate GAS reticle select switch. Listen for the activation of the micro switch. A faint click will be heard when the switch is activated. Adjust the facade while the switch is set to SABOT by loosening the two screws and sliding the housing until the micro switch is activated. Secure screws.
		c. Is tank GAS reticle changing from HEAT to SABOT?	Verify that the GAS reticle on the tank changes when the switch is changed from HEAT to SABOT.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
16	NOTE Crew station controls and indicators only operate during an exercise simulation. Verify individual controls and indicators during Daily Readiness Check or Calibration.		
	Gas proximity sensor fails.	a. Sensor will not activate.	Check cable connections. Block sensor and verify red LED lights when activated.
		b. Sensor stays activated.	If sensor will not deactivate, adjust sensor so that the front is not obscured until head is placed against brow pad.
17	NOTE Crew station controls and indicators only operate during an exercise simulation. Verify individual controls and indicators during Daily Readiness Check or Calibration.		
	Loaders Crew Station fails BIT during power up.	NOTE The BIT test is an abbreviated test and does not verify all controls and indicators.	
		a. Are all Loader terminations (2W4 cable) properly connected?	Power down IOS, check 2W4 cable connectors for proper mating. Verify W4 and W5 connections. Inspect for damaged pins.
		b. Are all facades properly installed?	Verify ammo select and breach loaders facades are properly installed.
	One or more Loader control or indicator fails DRC or Calibration.	NOTE If training system is setup for the first time, configure simulation for tank type being used. Do this by selecting from MAIN MENU, UTILITIES, TANK TYPE SELECTION. If tank is M1, answer YES to CONFIGURE SIMULATION FOR M1 TANK? If tank is M1A1, answer NO, then answer YES to CONFIGURE SIMULATION FOR M1A1 TANK? This is the only time this is done but it must be done before starting DRC.	
a. If indicator fails, is light burned out?		Verify indicator is operational by exchanging with a known good light (whenever possible). If indicator still fails, check connector to failed indicator for damaged pins. Check all associated connectors for damaged pins.	

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
17 Cont.	One or more Loader control or indicator fails DRC or Calibration. Cont.	b. Is failed switch or control part of the tank or the AFIST system?	If failed component is part of the tank, verify connection to failed switch or control. If cabling is good, verify operation of failed switch or control. If failed component is part of a supplied facade, verify connection to facade. If cabling and connections are good, verify operation of facade.
		c. Are pins on the connector to the failed component damaged?	Examine all associated connectors for damaged pins and sockets, example; bent or broken pins or recessed pins or sockets.
			Call maintenance contractor.
18	NOTE Crew station controls and indicators only operate during an exercise simulation. Verify individual controls and indicators during Daily Readiness Check or Calibration.		
	Poor audio or no audio from speaker.	NOTE No audio will be heard through the tank speaker until the exercise is started or the audio test from DRC is executed.	
		a. Is speaker power indicator illuminated?	Check power connection on rear of speaker. Verify speaker power switch is set to the on position.
		b. Is speaker volume set low?	Rotate speaker volume control knob to desired volume level. The internal speaker level can also be adjusted on the IOS audio control panel SPEAKER volume control
		c. Low rumble is heard from speaker.	If a low rumble is emitting from the speaker, the speaker is in an oscillation condition. Decrease the volume, bass and treble controls until the oscillation stops. Increase the volume control followed by the treble and bass controls. If oscillation is heard, back off control until the oscillation stops.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
19	NOTE Crew station controls and indicators only operate during an exercise simulation. Verify individual controls and indicators during Daily Readiness Check or Calibration.		
	Driver's Crew Station fails BIT during power up.	NOTE The BIT test is an abbreviated test and does not verify all controls and indicators.	
		a. Are all Driver's terminations (2W5 cable) properly connected?	Power down IOS, check 2W5 cable connectors for proper mating. Verify W4 and W5 connections. Inspect for damaged pins.
		b. Are all facades installed properly?	Verify the installation of the brake and steering facades to the 2W5 cable.
20	NOTE Crew station controls and indicators only operate during an exercise simulation. Verify individual controls and indicators during Daily Readiness Check or Calibration.		
	One or more Driver's control or indicator fails DRC or Calibration.	NOTE If training system is setup for the first time, configure simulation for tank type being used. Do this by selecting from MAIN MENU, UTILITIES, TANK TYPE SELECTION. If tank is M1, answer YES to CONFIGURE SIMULATION FOR M1 TANK? If tank is M1A1, answer NO, then answer YES to CONFIGURE SIMULATION FOR M1A1 TANK? This is the only time this is done but it must be done before starting DRC.	
		a. If indicator fails, is light burned out?	Verify indicator is operational by exchanging with a known good light (whenever possible). If indicator still fails, check connector to failed indicator for damaged pins. Check all associated connectors for damaged pins.
		b. Is failed switch or control part of the tank or the AFIST system?	If failed component is part of the tank, verify connection to failed switch or control. If cabling is good, verify operation of failed switch or control. If failed component is part of a supplied facade, verify connection to facade. If cabling and connections are good, verify operation of facade.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
20 Cont.	One or more Driver's control or indicator fails DRC or Calibration. Cont.	c. Are pins on the connector to the failed component damaged?	Examine all associated connectors for damaged pins and sockets, example: bent or broken pins or recessed pins or sockets.
		d. Brake will not calibrate?	Verify that brake facade is correctly installed. The depressed calibration value will be less than the release value. If this is not true, the facade is installed backwards.
		e. Steering T-bar binds or turn radius is uneven.	Check the tank and facade linkage for binding. The center calibration value should be near zero. This value will change due to play in the steering control. The negative full left value should be close to the positive full right value.
			Call maintenance contractor.
21	Dome lights will not light.	a. Is dome light indicator illuminated on IOS I/O Control Panel?	Verify main power switch, I/O passkey and dome light enable switch are in the on position. The 24 volt and dome light indicators will be illuminated. Verify that no blown fuse indicators are illuminated.
		b. Are all dome light (W6 cable) connections properly connected?	Check connections to tank dome lights and IOS. Inspect for bent, broken or recessed pins.
		c. Is dome light brightness knob rotated to off?	Rotate dome light brightness to full on,
		d. Is dome light burnt out?	Open dome light housing and inspect bulb. Verifv dome light is onerational.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
22	Fuse(s) blow during operation.	<p style="text-align: center;">NOTE</p> <p>There are five power fuses located on the I/O Control panel labeled F1 through F5. F1 through F4 are 5 amp fuses and F5 is a 2 amp fuse. The fuses provide protection to the tank and the AFIST system. An illuminated fuse holder indicates a blown fuse, To prevent damage to the system or tank, only use properly rated fuses.</p> <p style="text-align: center;"> F1- Main power (115 volt) line to the 24 volt power supply. F2 - Pass Key (24 volt output). F3 - Dome light 1 power, Loader's and Drivers. F4 - Dome light 2 power, TC and Gunners. F5- Main power (115 volts) to +5, +12 and -12 volt power supply. </p>	
		<p>a. Fuse blows immediately following main power turn on.</p>	<p>Damaged 24 volt power supply or short circuit on 24 volt line. Cause of failure is probably in the IOS. Verify this by disconnecting W4, W5 and W6 cables from rear of IOS. Replace fuse and turn main power on. If fuse blows, call maintenance contractor. If fuse does not blow, remove power and connect W4 cable. Turn on main power. If fuse does not blow, remove power and connect W5 cable. Repeat for W6 cable. If fuse blows after attaching cable, inspect cable and all associated cables.</p>
		<p>b. Fuse blows following turning passkey to on. .</p>	<p>Turning passkey to on applies power to the dome lights. Turn dome light power switch to off. Replace fuse and turn on main power and passkey. If fuse blows, failure is in IOS, call maintenance contractor. If fuse does not blow, probable cause is dome light circuitry. Inspect dome light cable for damage. Verify dome lights in tank are operational.</p>

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
22 Cont.	Fuse(s) blow during operation. Cont.	c. Fuse blows following depressing push to start;	Depressing push to start applies power to the +5, +12 and -12 volt power supply, IOS cabinet and appended equipment. Probable cause is appended equipment. Set MODE SELECT SYSTEM switch IOS ONLY. Replace fuse and disconnect W4 and W5 cables. Power on IOS. If fuse blows, failure is in IOS. If fuse does not blow, power down and connect W4 and W5 cable. Disconnect all cables except W4 and W5 from tank interface assembly (TIA). Replace fuse and power on system. If fuse blows, failure is in W4 and W5 or TIA. If fuse does not blow, power down system, one by one, attach cables to TIA, repeat power on sequence until failed station is identified . Once failed station is identified, inspect associated cables for damage. Perform diagnostics on tank to verify tank is operating properly.
		d. Fuse blows after activating switch or indicator on tank.	Cause of failure may be the tank switch or indicator. Perform diagnostics on suspect component. If component passes, perform previous step to determine cause of failure.
			Call Maintenance Contractor.

Table 3-4. Troubleshooting Guide (Continued)

ITEM NO.	PROBLEM	CHECK	SOLUTION
23	Depressing Emergency Stop from tank or IOS does not power down station.	NOTE If either Emergency Stop push buttons fail to instantaneously power down the system, stop training until the failure is corrected.	
		a. Is W6 cable connected to rear of IOS?	Inspect W6 cable connections on rear of IOS. Inspect for damaged pins.
		b. Is Emergency Stop facade connected to W6P6 connector?	Verify facade connection to W6 cable.
24	Catastrophic power failure.	a. Turn off all switches. Check power cables at IOS and building support., Check outlet cabling. Reset circuit breakers. Restore external power.	Power up system as normal.
		b. Ensure system responds normally after power up.	Run FID,
			Call Maintenance Contractor.

3.12 INITIATING THE BUILT-IN TEST (BIT).

The system performs an automatic Built-In Test (BIT) upon start-up and can be initiated during system operation when system problems occur. When the BIT detects an equipment fault during the automatic BIT, or when the BIT is initiated by the I/O, the Built-In Test Screen, Figure 3-24, displays with the following data:

- a. PRINTER. Displays the results of the Built-In Test (BIT) for the Printer. The displayed value is PASSED, FAILED, OFF-LINE, or OUT OF PAPER.
- b. MIDI. Displays the results of the BIT for the Musical Instrument Digital Interface (MIDI). The displayed value is PASSED or FAILED.
- c. DIO_BOARD4. Displays the results of the BIT for Digital Input/Output (DIO) Board 4. The displayed value is PASSED or FAILED.

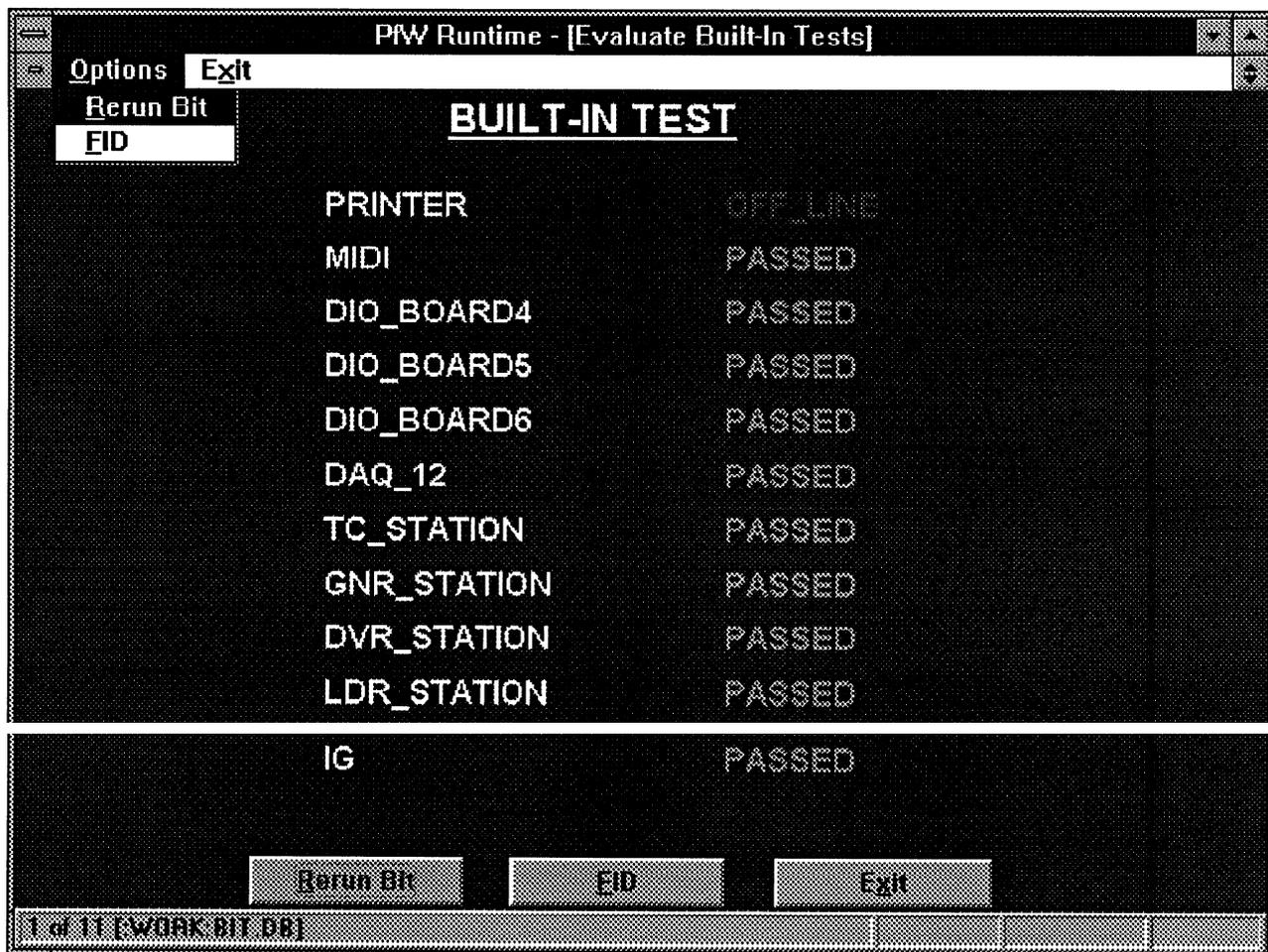


Figure 3-24. Built-In Tests Screen

- d. DIO_BOARDS. Displays the results of the BIT for DIO Board 5. The displayed value is PASSED or FAILED.
- e. DIO_BOARD6. Displays the results of the BIT for DIO Board 6. The displayed value is PASSED or FAILED.
- f. DAQ_12. Displays the results of the BIT for Data Acquisition (DAQ) Board 12. The displayed value is PASSED or FAILED.
- g. TC_STATION. Displays the results of the BIT for the Tank Commander's (TC's) Station. The displayed value is PASSED or FAILED.
- h. GNR_STATION. Displays the results of the BIT for the Gunner Station. The displayed value is PASSED or FAILED.
- i. DVR_STATION. Displays the results of the BIT for the Driver Station. The displayed value is PASSED or FAILED.
- j. LDR_STATION. Displays the results of the BIT for the Loader Station. The displayed value is PASSED or FAILED.
- k. IG. Displays the results of the BIT for the Image Generator (IG). The displayed value is PASSED or FAILED.

The I/O then corrects any problems as follows:

- a. Conduct or direct a physical check of the FAILED item or items.
- b. When the check is complete, at the AFIST Main Screen, select Built-In Tests from the pull-down Diagnostics menu. The system initiates the BIT, then redisplay the Built-In Test Screen.
- c. If the BIT does not indicate a fully operational system, click on the FID button. The FID screen displays. Refer to 3.14 for procedures to run the FID.
- d. If the BIT indicates all items PASSED, click on the Exit button to exit the Built-In Test Screen and return to the AFIST Main Screen.

3.13 INITIATING THE DAILY READINESS CHECK (DRC).

The I/O initiates the DRC at each system start-up to determine the system's readiness for operation. The I/O may exit the DRC or proceed after noting discrepancies.

3.14 INITIATING THE FAULT ISOLATION DIAGNOSTIC (FID).

The FID is an on-screen automated text guide through the established series of troubleshooting procedures found in Table 3-4. It guides the I/O through a series of manually performed checks to isolate faulty operator-replaceable items that are not detected by the DRC or BIT. To conduct the on-screen FID, perform the following:

- a. At the AFIST Main screen, select FID from the Diagnostics pull-down menu. The FID Screen, Figure 3-25, displays with a index of help topics.
- b. Highlight or type the first few letters of a topic that best describes or defines the component with the malfunction and click on the display button The FID screen for that component displays with troubleshooting procedures for the selected component. (Refer to Figure 3-26 for a representative of a FID component screen)
- c. Read through the list of possible component malfunctions. Find the problem description that best describes the problem being experienced.
- d. Perform the manual troubleshooting steps indicated for that malfunction to correct the problem.
- e. Click on the search button to return to the FID index if needed to select another topic.
- f. To search by major component, click on the Contents button.
- g. Double - Click on the Control Bar in the upper- left corner of the screen to exit the FID screen.

NOTE

If desired you can maximize the FID screen by clicking on the up arrow located on the upper right corner of the FID screen.

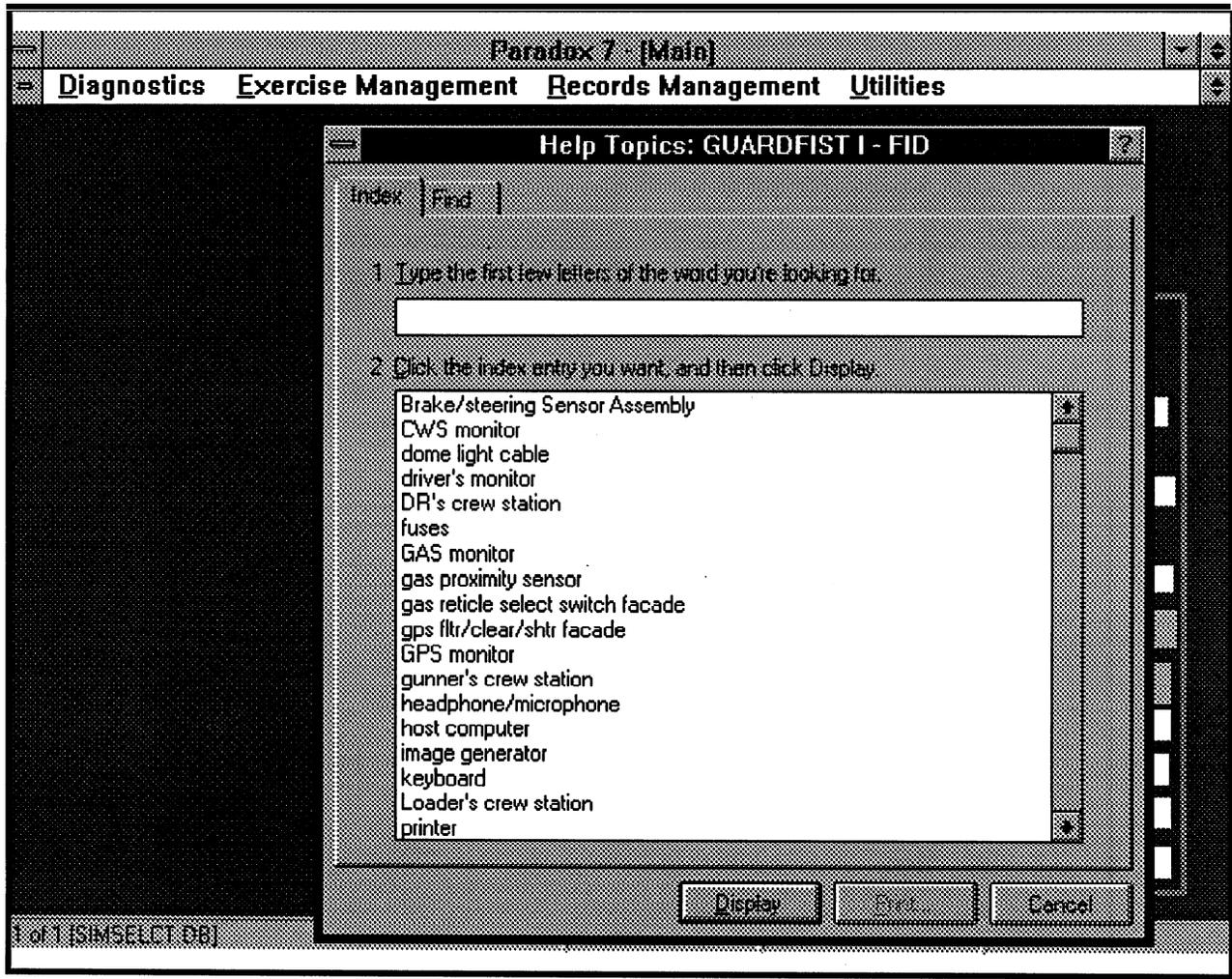


Figure 3-25. FID Screen

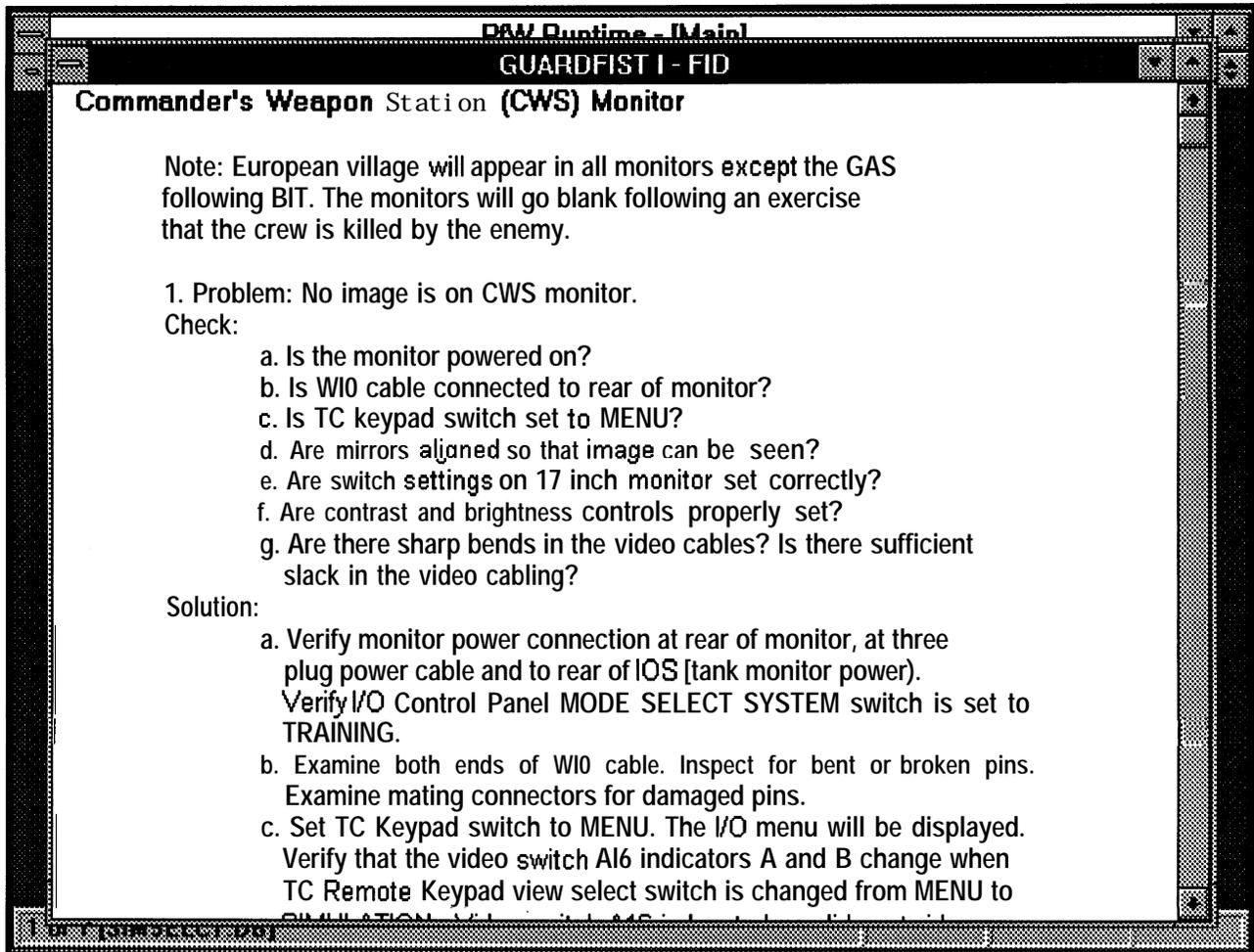


Figure 3-26. Commander's Weapon Station (CWS) Monitor Screen

3.15 RECAL MESSAGE SCREEN

If one of the AFIST analog controls is moved outside of the calibrated movement range, the RECAL Message Screen, Figure 3-27, displays. This screen displays at any time during system operation and specifies which control must be recalibrated for proper system operation. Recalibrate the control as follows:

- a. Click on the OK button to close the RECAL Message Screen.
- b. Return to the AFIST Main Screen.
- c. Access the Calibration function and calibrate the specified control as outlined in 2.9.7.

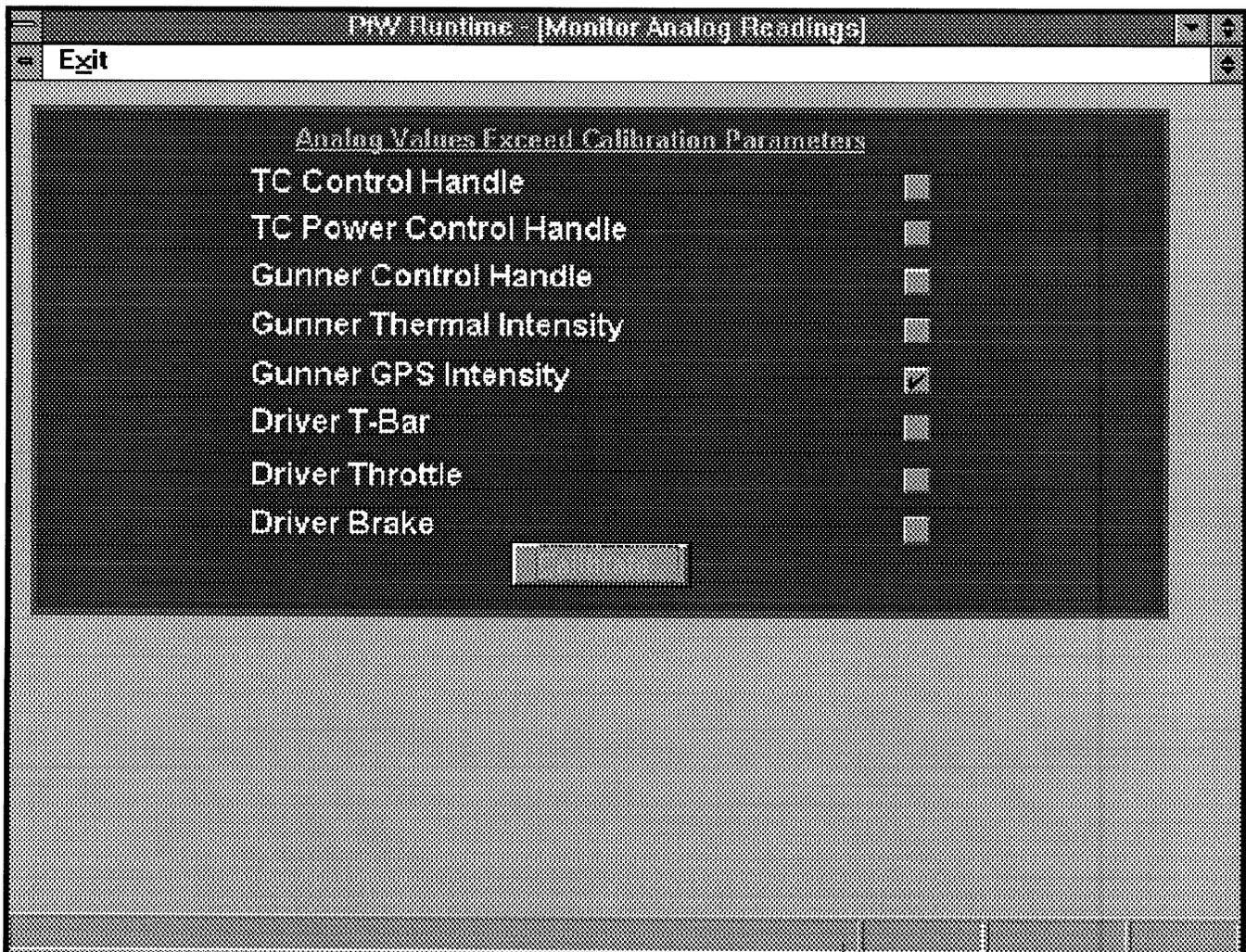


Figure 3-27. RECAL Message Screen

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