Test Procedure for a Turbine LAN Control Card

DOCUMENT REVISION STATUS: Determined by the last entry in the "REV" and "DATE" column

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial test for this model. Combine all previous test used on the standard SLCC cards into this one specific for our Mark V Turbine Control. See previous test LOU-GED-DS200SLCC	C. Wade	1/16/2014
B	Added comment in step 6.1 about changing display out on all revitalization jobs and leaving SLCC and SDCC cards connected.	J. Barton	3/28/2014
C	Added pictures to section 8, showing displays that have been installed correctly and incorrectly.	C. Wade	9/17/2014

PREPARED BY	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL
C. Wade	J. Barton		*Charlie Wade*
DATE 1/16/2014	**DATE** 3/28/2014	**DATE**	**DATE** 1/16/2014

1. SCOPE

1.1 This is a functional testing procedure for a Turbine LAN Control Card.

2. STANDARDS OF QUALITY

2.1 Refer to the current revision of the IPC-A-610 standard for workmanship standards.

3. APPLICABLE DOCUMENTS

3.1 The following document(s) shall form part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue shall apply.
    3.1.1 Check board's electronic folder for more information
    3.1.2 Reference: GEH-6005 sections 8-4

4. ENGINEERING REQUIREMENTS

4.1 Equipment Cleaning
    4.1.1 Equipment should be clean and free of debris prior to applying power unless performing an initial check. Refer to site specific SRA's for cleaning guidelines.
4.2 Equipment Inspection
    4.2.1 Equipment should be visually inspected for any defects prior to applying power. This inspection should include the following as a minimum:
        4.2.1.1 Wires - broken, cracked, or loosely connected
        4.2.1.2 Terminal strips / connectors - broken or cracked
        4.2.1.3 Components - visually damaged
        4.2.1.4 Capacitors - bloated or leaking
        4.2.1.5 Solder joints - damaged or cold
        4.2.1.6 Circuit board - burned or de-laminated
        4.2.1.7 Printed wire runs / Traces - burned or damaged

5. EQUIPMENT REQUIRED

5.1 The following equipment is required to perform the process requirements. Equipment may be substituted provided that all accuracy's and test ratios are equivalent or better.

Qty	Reference #	Description
1		Fluke 87 DMM (or Equivalent)
1	H033759	IOS
1	H033758	DC2000
1	H190115	HMI Computer for Mark V Turbine
1	H190117	Mark V Turbine System

6. Modifications/Upgrades

6.1 **All MCS revitalization jobs must have their displays replaced.**

    336A5117P1   31B03E   1 piece (See section 8 for picture examples)

6.2 **For shipment purposes, when a SLCC is tested with its corresponding SDCC card, they can be left connected together. Both cards must be packaged correctly. This is for the revitalization program.**

7. Testing Process

7.1 SLCC Test

7.1.1 Verify the E-stop button is pushed in and the red DC2000 power light is off.

7.1.2 Remove the shop LCC card from the drive and replace it with the UUT.

7.1.3 Remove the keypad/display face plate from the UUT.

7.1.4 Set the UUT jumpers as follows.

    7.1.4.1 J14 1-2, J15 1-2, J16 1-2, J17 1-2, J18 1-2, & J19 1-2

7.1.5 Install firmware version DS200SLCCF1AEC into UUT sockets U6 and U7.

7.1.6 Connect the ARCPL, 2PL, 10PL and 3PL cables from the drive to the corresponding connectors of the UUT.

7.1.7 Re-attach the keypad/display face plate to the UUT.

7.1.8 Pull the E-stop button out and verify the red DC2000 power light comes on.

7.1.9 Verify the IOS (Fixture # H033759) is powered up and the word ARCNET appears in it's TEST TYPE display. If this is incorrect, load the ARCNET.H09 file into the IOS.

7.1.10 Set the FDBP-69 speed control on the control panel to 10 or higher.

7.1.11 Verify that the JOG pushbutton, flashing on the IOS, corresponds with the Drive# you are testing. This means the Drive is communicating with the IOS (in ARCNET mode) and no faults have occurred.

7.1.12 Press and hold the JOG #_ pushbutton on the IOS. Verify the motor ramps to a set speed as indicated by the SPEED # _ display on the OIS. Release the JOG #_ pushbutton to stop the drive

7.1.13 Load the DLAN.H10 file into the IOS to switch over to DLAN communications.

7.1.14 Verify the word DLAN appears in the TEST TYPE display of the IOS.

7.1.15 Verify that the JOG pushbutton, flashing on the IOS, corresponds with the Drive# you are testing. This means the Drive is communicating with the IOS and no faults have occurred.

7.1.16 Press and hold the JOG #_ pushbutton on the IOS. Verify the motor ramps to a set speed as indicated by the SPEED # _ display on the OIS. Release the JOG #_ pushbutton to stop the drive

7.1.17 Press the IN 1-8 pushbutton on the control panel to verify the yellow panel lamps go out and the red panel lamps come on.

7.2 Keypad – Display Test

7.2.1 Execute Test 13 for checking the keypad and display digits as follows:

7.2.2 Watch the LCC display and use the keypad to enter ([set], [drv], [7], [7], [Enter], [Reset], [Reset], [Test], [1], [3], [Enter].

7.2.3 The message "Passed Board Test" will appear momentarily on the display.

7.2.4 The UUT will then go into the keypad-display test.

7.2.5 Verify all segments of the display are good by watching the alternating test pattern.

7.2.6 Press each key on the keypad to verify the proper message appears in the LCC display.

7.2.7 For Example: Pressing the upper left key (Run) will cause "Key 1 Pressed" to appear in the display. Pressing the lower right key (Reset) will cause "Key 20 Pressed" to appear.

7.2.8 Exception: To test the Shift key hold it down while pressing any other key. This will cause "Key 14 Pressed" to appear in the display.

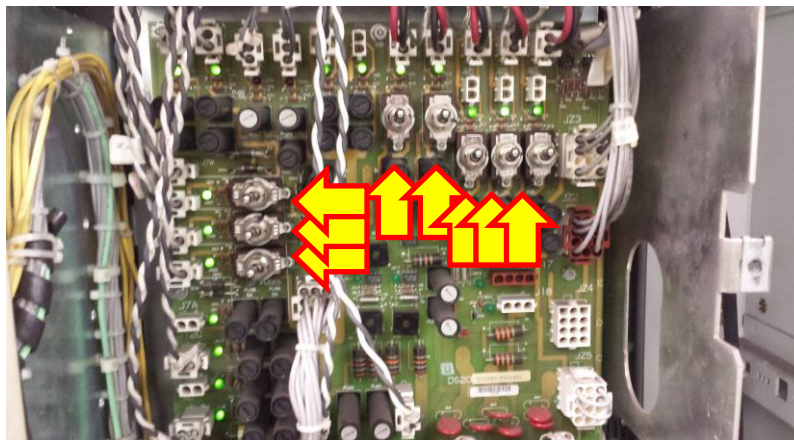**7.2.9** Press the Reset button on the control panel to exit the keypad-display test.

7.2.10 ***DC2000 Drive Test Complete***

7.3 Functional Test Mark V Turbine Control (Communicating to Mark V System)

7.3.1 Removal of existing SDCC/SLCC card.

**7.3.1.1** Installing the replacement DS200SDCC/SLCC into Mark V Turbine System

7.3.1.2 Remove Power to Respective Core:

7.3.1.3 Before attempting to remove the SDCC/SLCC verify that the power has been removed from the related core in the panel via the TCPD. (If it is a dead PS this may have been overlooked and power to core MAY STILL BE PRESENT!)

7.3.1.4 Locate the respective Core power switch on the TCPD and turn off power to the P core

7.3.1.5 After verifying the POWER has been removed via the TCPD. Remove the KEYPAD from the SLCC by releasing the 2 retaining clips at the top of the KEYPAD and the 2 at the bottom.
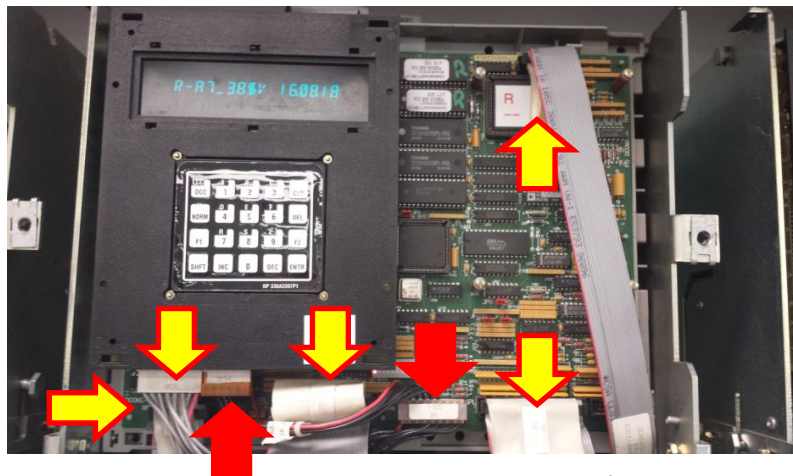
7.3.1.6 Remove the POWER INPUT Connectors to the SDCC/SLCC FIRST! (Indicated by the RED ARROW's above)

7.3.1.7 Disconnect remaining: Connectors, and Ribbon Cables. There is one ribbon cable that is connected to both the SDCC and the SLCC that is ALSO connected to other card's located behind the SLCC/SDCC card tray. It is necessary to disconnect the ribbon cable from the OTHER cards indicated by YELLOW arrows. (see below)
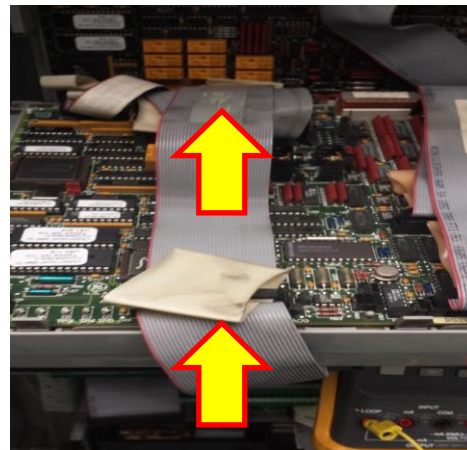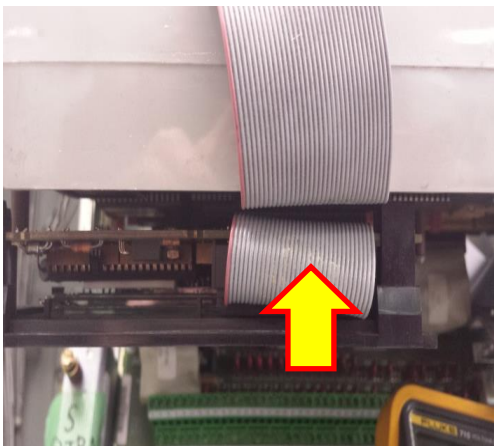
7.3.1.8 Remove the SDCC/SLCC and the single ribbon cable attached to the SLCC/SDCC by releasing the 6 retaining clips on the card tray, 3 located on the physical top of the card and 3 on the bottom.

7.3.1.9 Disassemble the SDCC/SLCC assembly by removing the 4 screws at each corner of the SLCC.

7.3.2   Setup of new SDCC card (If applicable)

7.3.2.1 Place OLD and NEW SDCC side by side. Locate EPROM Puller sent with Revitalization Kit labeled TOOL KIT. Remove the 4 EPROM's, one at a time from the OLD SDCC and carefully reinsert them into the NEW SDCC.
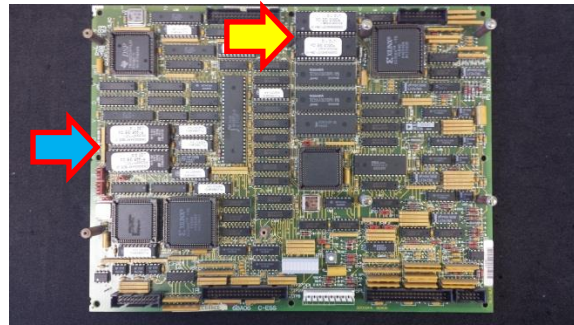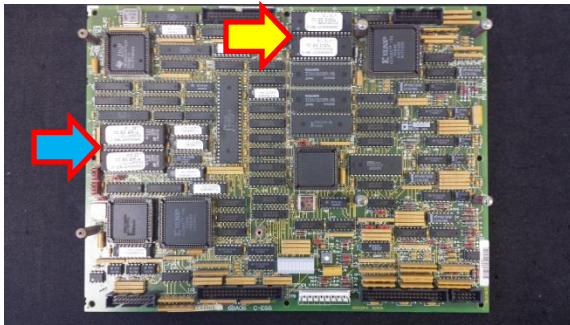
7.3.2.2 Verify the EPROM PIN 1 is correctly orientated with in PIN 1 of the socket. Easily identified by EPROM's orientation notch. (Indicated by YELLOW arrow).

7.3.2.3 Verify all EPROMS on SLCC-(2) and SDCC-4; be sure EPROM pins are not bent under the EPROM or over the socket.
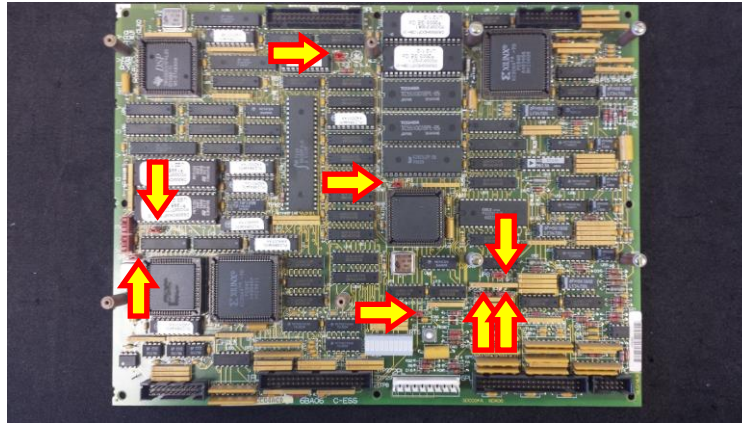
7.3.2.4 Set jumpers to match the OLD SDCC. (Indicated by YELLOW arrow above).

7.3.3 Setup of new SLCC card.

7.3.3.1 Place OLD and NEW SLCC are side by side. Remove the 2 EPROM's, one at a time from the OLD SDCC and carefully reinsert them into the NEW SLCC.

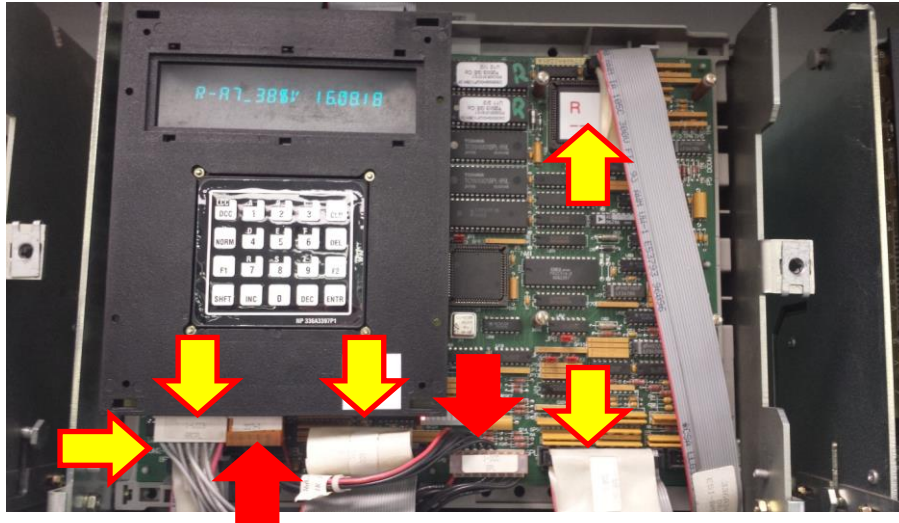**7.3.3.2** Compare ALL jumpers from the OLD SLCC to the NEW SLCC.

7.3.3.3 Reassemble BOTH the SDCC and SLCC with the removed screws.

7.3.3.4 Note: Install the ribbon cable removed with the SDCC/SLCC on to the SDCC first and then attach the SLCC to the SDCC, see blue arrow for location.
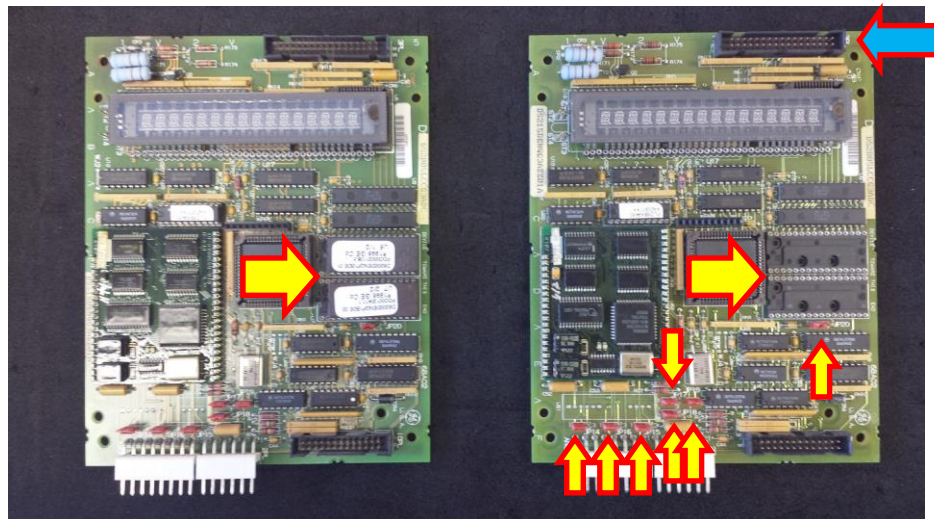
7.3.4 Installation of the new SDCC/SLCC assembly

7.3.4.1 Install the SDCC/SLCC by securing it with the 6 retaining clips on the card tray, 3 located on the physical top of the card and 3 on the physical bottom.

7.3.4.2 Connect remaining cables; Chassis Ground and Ribbon Cables including the one that disconnected from the boards in trays behind the SDCC/SLCC. (see below)
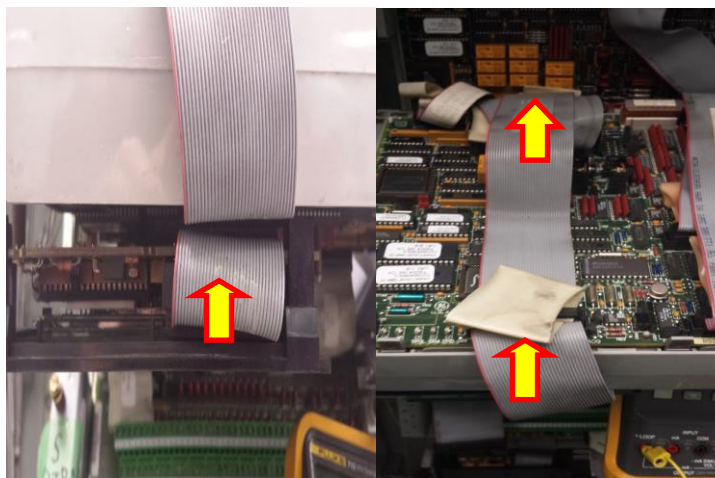
7.3.4.3 Install KEYPAD

7.3.4.4 Recheck ALL connectors to verify none are misaligned (off one pin), partially connected or orientated 180 degrees of what it should be. Close card tray.

7.3.4.5 Restore power to core via the TCPD

7.3.4.6 Verify that the core boots and condition is at least A4 via the SLCC display.

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7.3.4.7 Set up SDCC/SLCC to which core it will be configured. (i.e. R, S or T) by using KEYPAD.

7.3.4.8 Press LCC/DCC

    7.3.4.8.1 ---- 186 MONITOR ---- should display on SLCC

    7.3.4.8.2 Press INC

    7.3.4.8.3 Press ENTER

7.3.4.9 HOLD the SHIFT key down as you select which core the SDCC/SLCC will be assigned; R, S or T by pressing the associated key on the KEYPAD, (Above is example of "D" core).

    7.3.4.9.1 Press ENTER

    7.3.4.9.2 ---- OK FINE---- should display on the SLCC display for a short period.

    7.3.4.9.3 Reboot/Reset this core, by pressing the manual reset button above the 2PLconnector.

7.3.4.10 On the Desktop of the GAS HMI computer.

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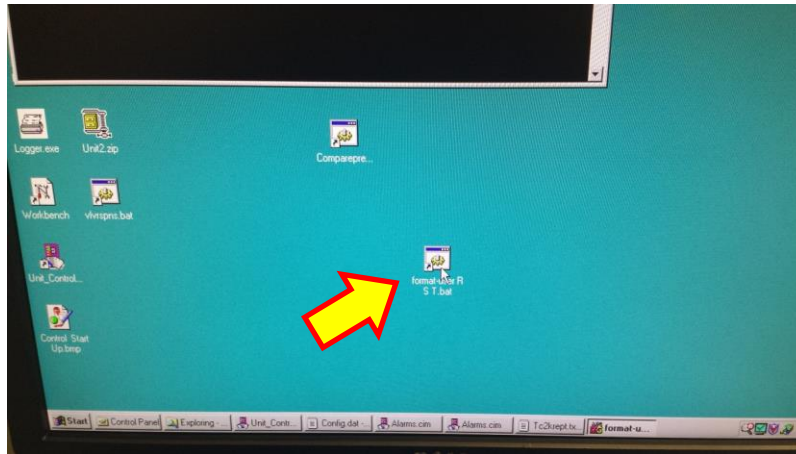
7.3.4.11   Double click in the icon shortcut "format-user R S T.bat".

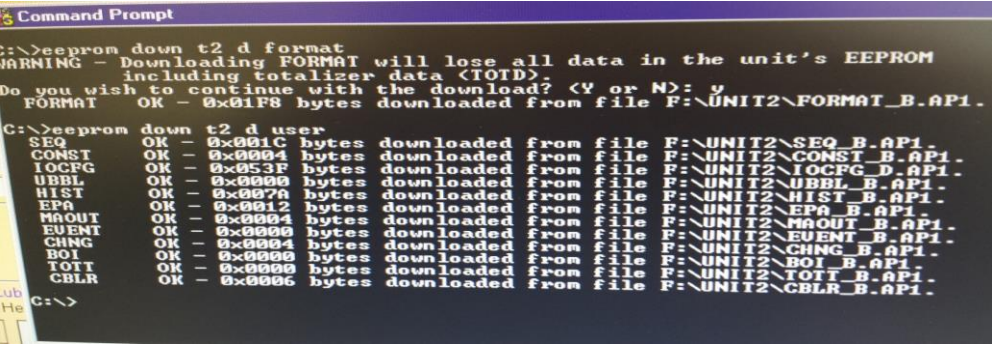**7.3.4.12**   It will open a Command Prompt window, see next page.
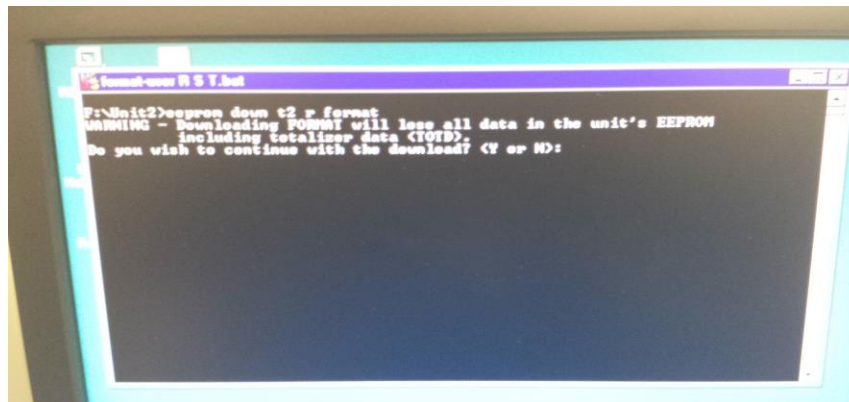
7.3.4.13   Type "Y" and press enter to format the "R" core.
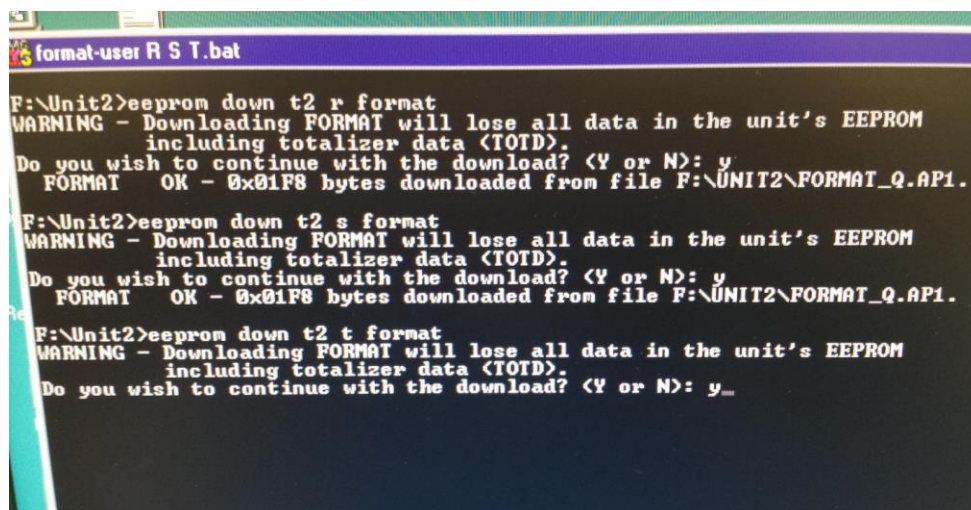
7.3.4.14   Type "Y" and press enter to format the "S" core.

7.3.4.15 Type "Y" and press enter to format the "T" core.

7.3.4.16 The program will continue on its own and install ALL the "USER" files needed for the R/S/T cores and close by itself if successful.

7.3.4.16.1 Example below of the USER files downloaded to cores.

7.3.4.17 Reboot ALL R/S/T cores (by pressing manual reset button just above 2PL on all SDCCs) and verify they ALL come up to A7 status.


7.3.5 Burn-in Time.

7.3.5.1 Burn-in time for Mark V cards normal repair

7.3.5.2 DS200SDCCG4A/G5A and DS200SLCCG3A - 1 hour minimum in Mark V rack.

7.3.5.3 Burn-in time for Mark V cards Revitalization Program

7.3.5.4 DS200SDCCG4A/G5A and DS200SLCCG3A - 3 hour minimum in Mark V rack.

*7.4* ******TEST COMPLETE ******

8. Notes

8.1 ECNDS200SLCCG3AGH - The AFG card is functionally equivalent to the AGH unit. Salem obsoleted the card due to the display, but we have plenty of the displays for support.

8.2 ECNDS200SLCCG3AHH - The AFG card is functionally equivalent to the AHH unit. 68A9824P1 is obsolete, GE Salem NPI designed replacement part IS205DLANH1A to duplicate the function of obsolete part.

8.3 Picture of properly installed display. Note condition of pins, they must be uniform, bent similarly, no apparent damaged. Examples of good and bad installed displays.
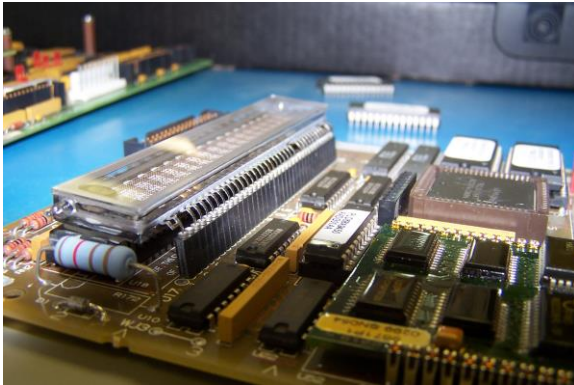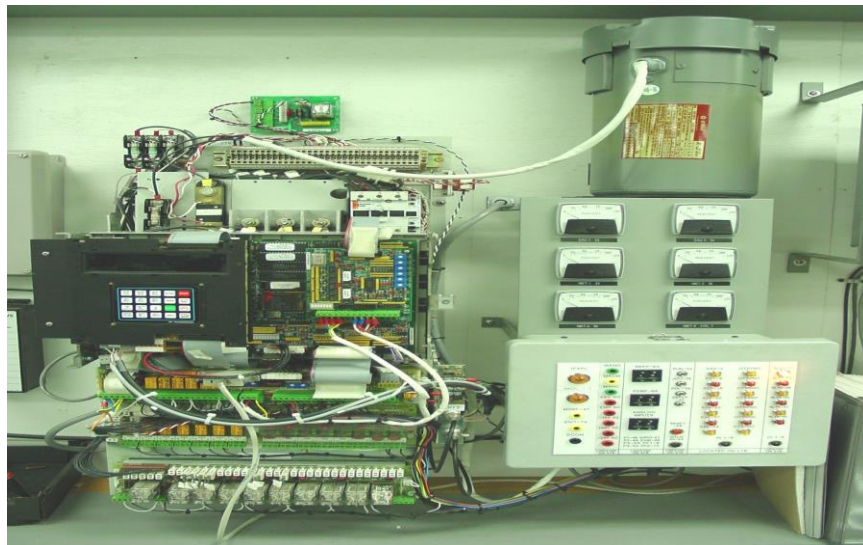
Good   Bad
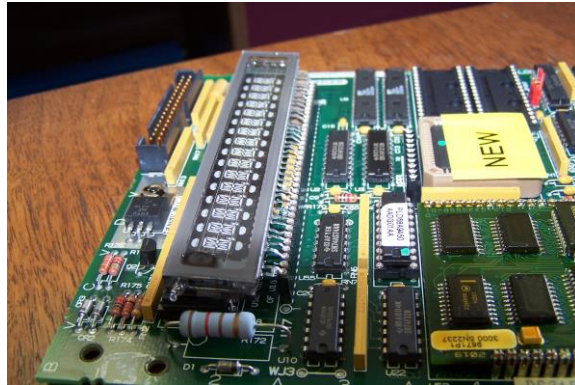
9. Attachments

9.1 None at this time.

Test Fixture