g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GEF-CSH1**

Test Procedure for a CSH1 Interface Card

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R. Diercks			Charlie Wade
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1. SCOPE

1.1 This is a functional testing procedure for a CSH1 Interface 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 GEK-71692A

3.1.2 GEK-71740

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 the local documented procedures 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	H188723	GE 1050HL Control w/cart

6. TESTING PROCESS

6.1 Diagnostic Test

6.1.1 Remove the test CSH1 board from Display cabinet to be tested.

6.1.2 Special Mode Switch should be on (UP).

6.1.3 Press “ON”.

6.1.4 “00” or “20” should appear in the message display and “?” in the alphanumeric display.

6.1.5 AUTO LED and Dry RUN LED should be on.

6.1.6 Press “DISPLAY SELECT’ and check to see that all 8 LED turn and off.

6.1.7 Press “MOVE SELECT” and check to see that all 9 LED turns on and off.

6.1.8 Press “TEST’ twice LED should turn on then off.

6.1.9 Press “BLOCK DELETE” twice LED should turn on then off.

6.1.10 Press “OPTION STOP” twice LED should turn on then off.

6.1.11 Press “FEED HOLD BUTTON” twice Lamp and LED should turn on then off.

6.1.12 Press “P4”, “1”, and “ENTER”. This instructs the control to read from the resident diagnostics boards.

6.1.13 A “T” will appear in the alpha display. Enter in 300 press “ENTER”.

6.1.14 Press “FWD”

6.1.15 “I” will appear in alpha display. Enter in “00” (loop test) “ENTER”

6.1.16 “S” will appear in alpha display. Press, “ENTER”.

6.1.17 “V” will appear in alpha display. Press ‘FWD” observe display for correct readout. ***See page 7 for information of testing Display readout.

6.1.18 Run “300” test for @1 hour ** keep checking during test for correct readout.

6.1.19 Stop Test by Pressing “DELETE BLOCK”.

6.1.20 A “T” will appear in the alpha display. Enter in “400” press “ENTER”.

6.1.21 A “C” Enter in “2” (command 2)

6.1.22 Press “FWD”

6.1.23 “I” will appear in alpha display. Enter in “00” (loop test) “ENTER”

6.1.24 “S” will appear in alpha display. Press, “ENTER.

6.1.25 “V” will appear in alpha display. Press ‘FWD” observe display for correct readout. (See Page 8 Exhibit B for explanation of test 400)

6.1.26 Run “400” test for @ 1/2 hour.

6.1.27 Stop Test by Pressing “DELETE BLOCK”.

6.1.28 Press “Control OFF” then “Control ON”

6.1.29 Press “P3” Check MSD DATA should be

LINE NO.	DATA
00	00500054
01	02000000
02	20202020
03	20202020
04	06060808
05	99991500
06	00000000
07	00000000
08	15001500
09	15001500

6.2 **Program Test**

6.2.1 **TURN OFF CONTROL**

6.2.2 Special Mode Switch should be on (down)

6.2.3 **TURN ON CONTROL**

6.2.4 Go to TOOL OFFSETS Press up arrow key in “X” 00.00 “ENTER, “Z” 00.00.

6.2.5 Move DISPLAY SELECT to PROGRAM.

6.2.6 Test Keyboard input: Press each “N” thru “+” But not NUMBERS.

6.2.7 To test numbers Enter “F” (federate) then enter 1-2-3-4-5 then press “DELETE PRGRM” numbers will be deleted.

6.2.8 Enter “F” then 6-7-8-9-0 then press “DELETE PRGRM” numbers will be deleted.

6.2.9 Press “INPUT PRGRM” (L and 0 will be displayed).

6.2.10 PRESS “CLEAR” L and O will be deleted and 48 in Message will be displayed press DISPLAY SELECT to ACTIVE (message will be deleted.

6.2.11 Press DIPLAY SELECT to PROGRAM and load in Part Program.

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0010    G90  X15  Z-5  F100
0020    G04  X5
0030    X-5  Z15
0040    G04  X5
0050    X0  Z0
0060    G04  X5
0070    G25  P1 0010  P2 0060  P3 100
```

0080 M30

6.2.12 TURN Control OFF – ON

6.2.13 Install AXIS CABLES X and Z to AXIS Cart.

6.2.14 TURN ON AXIS CART

6.2.15 TURN CONTROL ON

6.2.16 Press “DISPLAY SELECT” to ACTIVE

6.2.17 Press MOVE SLEECT to mm\MIN-IPM

6.2.18 Tested Motor JOG Press all 4 arrows Right Z, Left Z and Up X, Down X. (JOG LED should light IN PSN LED should turn Off and X or Z motor will move depending on Arrow pressed).

6.2.19 Test Part Program.

6.2.20 Press “AUTO “then Press “CYCLE START”

6.2.21 Program will start running X and Z Axis.

6.2.22 After Program in finished Turn OFF AXIS Cart and Control. Remove CSH1 Board replaced Master Board.

6.3 ***TEST COMPLETE ***

7. NOTES

7.1 None at this time.

8. ATTACHMENTS

DATA CONTROLLER DISPLAY EXERCISER

Identification Number: 0300

Boards Tested: SMI, Control Station (Slot No. 99)

Commands: None

Displays: Standard

Error Numbers: None. Display failures must be detected by the user.

General Comments:

The display exerciser first checks for interference among the control station display positions. It does this by writing a different character (0-D hex) to each digit position. Since hex digits A-D are not BCD digits, a strange display results when these characters are written to BCD display hardware. The 4 right most main-readout positions will therefore not be recognizable digits during this part of the test.

The next part of the test writes digits 0-9 to all readout positions. The operator should verify that each position correctly displays every digit. Finally, the alphanumeric character is exercised. The letters A-Z are shown, one after another, and then these punctuation marks: # / - * ? . Simultaneously, the sign display alternates between '-' and blank, and the decimal point is rotated from 0 through the 7th position.

Recall that holding down Enter halts a test; release Enter and the test resumes. Exploit this feature if the displays are changing too quickly.

DATA CONTROLLER RS-232 EXERCISER

Identification Number: 0400

Boards Tested: SMI, Peripheral Device

Commands:

0 - Output or Write mode outputs a series of characters from '01H' to 'FFH'

1 - Input or Read mode reads 255 characters from a tape starting with the first non-null character received.

2 - Loop back or Mixed mode which makes use of a special dummy RS-232 plug to loop the output character back as the input character

Test

Displays: Standard displays

W - Pseudo-hex representation of the character being output or input.

R - Pseudo-hex representation of the character e: pected and the character received (only if data compare error detected). The received character is shown to the right of the decimal po while the expected character is located to th left of the decimal point.

Error Numbers:

65 - Framing error
66 - Overrun error
67 - Data compare error
74 - Invalid commands

General Comments:

Since the diagnostic cannot detect errors in the Output mode, the Output mode would normally be used t generate tapes for the Input mode. The Input mode expects data to be input in the same sequence as it is generated in the Output mode, i.e., a series of 255 characters from '01H' to 'FFH'. An error is de tected for any input character that does not properly fit within this sequence; thus up to 255 errors can be detected per pass.

The W display changes as characters are output or input, so it is a good display to watch. However, it conveys no information relevent to errors. When errors occur, view the R display.

8.1