g GE Energy	**Functional Testing Specification**
Parts & Repair Services ***Louisville, KY***	**LOU-GED-IS200TSVO**

Test Procedure for a Mark VI Servo Terminal Board

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

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A	Initial release	John Madden	04/16/07
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DATE	**DATE**	**DATE**	**DATE**
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1. SCOPE

1.1 This is a functional testing procedure for a Mark VI Servo Terminal Board.

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 N:\Design Folders\IS2\IS200T\TSVO\Important Notes for TSVO.doc
3.1.2 N:\Design Folders\IS2\IS200T\TSVO\GEU-100034.pdf
3.1.3 N:\Design Folders\IS2\IS200T\TSVO\ECN's
3.1.4 N:\Design Folders\IS2\IS200T\TSVO\BB\Use These Prints.pdf

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		Fluke 87 DMM (or Equivalent)
1		Function Generator (A simple Tenma 72-5010 works better than the Fluke 5500 Calibrator for this test)
1		Power Supply, 28Vdc

6. TESTING PROCESS

6.1 Setup

6.1.1 Connect power supply as follows: Com to either JR1-2, JS1-2, or JT1-2, hereafter known as JR-S-T1-2. Connect P28V to either JR1-1, JS1-1, or JT1-1, hereafter known as JR-S-T1-1.

Note: Whenever you see these three connectors combined like this (JR-S-T1-x), it means that the particular pin # mentioned is the same for each connector (all three wired in parallel, but only concerning that particular pin). This is purely a Louisville Repair Center reference, not to be confused with any factory markings or circuit designations.

6.2 Testing Procedure

6.2.1 Apply power to card, and with respect to COM, JR-S-T1-2, there should be +24Vdc at TB2-41 & TB2-45.

6.2.2 With your function generator set to 8Vac rms (this voltage is used because it is the maximum output of the Tenma function generators in our shop, and also because it is low enough to not harm the circuits we will be testing on this card), Sine Wave, and with a frequency of 60Hz, apply this voltage across TB2-43 & 44. You should observe 1.2Vac out between JR-S-T5-1 & 9. Move input over to TB2-47 & 48. You should observe the same output of 1.2Vac now across JR-S-T5-8 & 15.

6.2.3 Apply the same 8Vac 60Hz now to TB1-1 & 2, and you should see 8Vac output across JR-S-T1-5 & 6. This transient suppression circuit is designed to clamp things to around 34Vac, so you just need to see that it's not shorted out, and zeners and TVS diodes can do. The following table shows more of this circuit which should yield identical results:

Input	Output
TB1- 1 & 2	JR-S-T1- 5 & 6
TB1- 3 & 4	JR-S-T1- 7 & 8
TB1- 5 & 6	JR-S-T1- 9 & 10
TB1- 7 & 8	JR-S-T1- 11 & 12
TB1- 9 & 10	JR-S-T1- 24 & 25
TB1- 11 & 12	JR-S-T1- 26 & 27

6.2.4 Apply the same 8Vac 60Hz sine wave to TB1-23 & 24. JT1-3 & 4 should show approximately .23Vac to .5Vac out. Varying the frequency down to around 16Hz and output will drop to around .12Vac, and at 240Hz you should see appx. 1.5Vac. The transformers tested in this step will tend to couple better as you increase the frequency. The following table will show the inputs and outputs to be repeated in this step, which should yield the similar results:

Input	Output
TB1- 23 & 24	JT1-3 & 4
TB1- 21 & 22	JS1-3 & 4
TB1- 19 & 20	JR1-22 & 23
TB1- 17 & 18	JR1-3 & 4

6.2.5 With 28Vdc applied as in step 6.2.1, short together either JD1-1 & 2 or JD2-1 & 2 to make relay K1 pull in. This should apply approximately 27.5Vdc (basically P28) to TB2-25, 31, 32, & 33. This concludes the use of P28 and function generator inputs.

6.2.6 The rest of the test will consist of resistance readings of voltage divider circuits. First you will measure the circuits related to JP1 & JP4. Place your ohmmeter leads across TB2-25 & 31 (yes, the same ones you just tested in step 6.2.5). Bearing in mind that TB2-31 has 170 ohms of series resistance, you will read this same 170 ohms when JP1 is in position 120B. The same will be true of position 120b of jumper JP4 when reading across TB2-32 & 33. The following table gives the correct resistance measurements for particular jumper positions of both circuits:

JP1 & 4 Positions	Values
120B	170 Ohms
120A	206 Ohms
80	275 Ohms
40	355 Ohms
20	603 Ohms
10	340 Ohms

6.2.7 This test checks the remaining jumpers similar to the previous step, but with slightly different resistance values. JP2, 3, 5, & 6 all test the same, so follow the tables below for connections and values:

Jumper	**Connections**
JP2	JS1-13 to TB2-27
JP3	JT1-13 to TB2-29
JP5	JS1-32 to TB2-35
JP6	JT1-32 to TB2-37
JP2, 3, 5, or 6 Positions	**Values**
120B	0 Ohms
120A	36 Ohms
80	104 Ohms
40	185 Ohms
20	432 Ohms
10	170 Ohms

6.2.8 Test all six data ID chips that are connected to the Jx1 and Jx5 connectors on the chip ID computer to ensure their accuracy.

6.3 Post Testing Burn-in **Required** ___ **Yes** _**x**_ **No**

6.4 ***TEST COMPLETE ***

7. NOTES

7.1 None at this time.

8. ATTACHMENTS

8.1 None at this time.