



GE Power Generation Engineering

Materials and Processes Engineering
Schenectady, NY 12345

PROCESS SPECIFICATION

P3K-AL-0326-A01

TEST INSTRUCTIONS FOR POWER LOAD UNBALANCED LOGIC CIRCUIT BOARD

DOCUMENT REVISION STATUS: DETERMINED BY THE LAST ENTRY IN THE "REV" AND "DATE" COLUMN

REV.	AN NO.	DESCRIPTION	SIGNATURE	REV. DATE
A	YA00096	SPECIFICATION LISTED IN STEAM TURBINE/GENERATOR INDEX AS "INACTIVE" HAS BEEN FORMALLY REVISED AS "INACTIVE FOR NEW DESIGN". (PR BUDKA)	C.R. Trippi	DEC 02 1991
<div>INACTIVE FOR NEW DESIGN AS OF 12/02/91</div>				

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PREPARED BY: P.R. BUDKA

ORIG. ISSUE DATE: --

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CIRCUIT BOARD REVISION #1

REVISIONS

I. SCOPE

This instruction outlines the test specifications for circuit board 1PU2-A001 (Board Drawing 117D7745G1).

II. CIRCUIT DESCRIPTION

This circuit board:

- a. Contains the necessary logic to provide +24V to action relays located throughout the EHC system wherever a PLU condition exists. (i.e. mechanical power exceeds electrical power by a set amount, and at least momentarily during the same period the rate of decrease of the electrical power exceeds a set amount). Inputs to FH & PC are also * provided.
- b. Provides the means to test itself and the rest of the PLU circuits.
- c. Provides a path to activate a signalling lamp in case of loss of pressure signal (which represents mechanical power).
- d. Provides paths for lamp testing.

Function (a) is initiated by a Volt. Com. (proportional part of unbalance) which shorts pins 34, 35 and another VC (rate part of unbalance) which applies 24V to pin 34. This voltage activates K3, which applies 24V to pin 34, (so that the action of the second VC is no longer necessary-hence the word momentarily above), as well as to pin 33. Besides, this 24V finds its way through NC contacts to pins 8, 9, 10, 11, 12, 13 and 14 where the "action relays" (located elsewhere) and the inputs to FH & PC are connected. All relays except K3 remain de-energized.

Function (b) is accomplished by applying 24V to pin 2. This provides power to the lamp connected on pin 3 and energizes relays K1, K2. These relays (1) interrupt the path to pins 8, 9, 10, 11, and 12; (2) apply 24V to pin 20, which causes a simulated PLU condition, which in turn is fed back as a 24V voltage to pin 35, and (3) connect relays K5, 6, 7, 8 coils to pin 35. The main function of these is to light lamp 1L2. Disconnecting 24V from pin 2 causes lamp 1L2 to go out. Any defect of the PLU circuits, including this one, will cause this lamp either not to light or to light and stay on after release of the test button. This function is performed in a fail safe manner in the sense that will never cause a valve closure, and with a high degree of redundancy.

Function (c) is performed by applying 24V to pin 4, which lights the lamp connected to pin 5. Function (d) is performed by applying 24V to pin 6, which lights the lamps connected to pins 7, 3, 5.

1	O.Y. JMC	JAN 21 1975	<i>Up chg. Huc x88</i>
2	O.Y. JMC	FEB 7 1975	<i>* - Chg. P. JMC</i>
273-5			
273-34			
ET-273			
273-2			
273-12			
273-13			
273-71			
PRINTS TO			

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MADE BY D. Mone Mar. 20, 1973 ISSUED MAR 20 1973	APPROVALS	Steam Turbine Schenectady, N.Y.	DIV OR DEPT. LOCATION	P3K-AL-0326-A01 CONT ON SHEET 3 SH NO. 2
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TITLE TEST INSTRUCTIONS FOR POWER LOAD
UNBALANCE LOGIC CIRCUIT BOARD

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SH NO. **3**

FIRST MADE FOR

REVISIONS

III. CIRCUIT SPECIFICATIONS

1. Before the board is coated, each diode of the 8 diode pairs should be checked (e.g. using an ohmmeter) both in the forward and reverse direction, to insure that redundancy is effective.

The rest of the tests can be conducted with the board coated as well as uncoated.

2. With ground connected at pin 40 and +24V connected to TP6, TP52-TP3, should form a closed circuit, TP8-TP55 should form a closed circuit, and TP55 should remain at 0.V.

* The same conditions should exist with +24V connected to TP7
* instead of TP6.

3. Connect permanently ground to pin 40 and +24V to pin 38. A +24V should appear between TP1 and TP2.

Connect permanently loads (e.g. standard 20 ma 28V miniature lamps) between ground and pins 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 20, 33 and 34.

The logic and conduit continuity should be checked according to the following table:

1	0.7 ppc	JAN 21 1975	Re chg this off
2	0.7 ppc	FEB 7 1975	* - chg - made
ET-273			
273-2			
273-12			
273-13			
273-71			
PRINTS TO			

MADE BY D.Mone Mar. 20, 1973

APPROVALS

Steam Turbine

DIV OR DEPT.

P3K-AL-0326-A01

ISSUED MAY 20 1973

Schenectady, N.Y.

LOCATION

CONT ON SHEET **4**

SH NO. **3**

CODE IDENT NO.

FF-803-WB (6-74)
PRINTED IN U.S.A.

P3K-AL-0326-A01

CONT ON SHEET

SH NO.

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TITLE

P3K-AL-0326-A01

TEST INSTRUCTIONS FOR POWER LOAD UNBALANCE LOGIC
CIRCUIT BOARD

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SH NO.

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PROCEDURE	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14
1 All switches down.														
2 SW 3 up		X	X	X	X	X	X	X						
3 SW 3 down									X	X			X	
4 SW 4 up									X	X	X	X	X	
5 SW 4 down										X				
6 S5 up										X				
7 S5 down														
8 S6 up	X										X	X		
9 S6 down														
10 S7 up												X		
11 S7 down														
12 S8 up													X	
13 S8 down														X
14 S9 up													X	
15 S9 down														X
16 S3 up at 24 VDC Check for 24 VDC at TP5		X	X	X	X	X	X	X	X					

REVISION:

1	0.4 pmc	JAN 21 1975
Rm 9- Petalwood		

2 0414 FEB 7 1975
No cha. this obs-

PRINTS T

MADE BY

04/

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Schenectady, N.Y.

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P3K-AL-0326-A01

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TITLE

P3K-AL-0326-A01

TEST INSTRUCTIONS FOR POWER LOAD UNBALANCE LOGIC
CIRCUIT BOARD
FIRST MADE FOR

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SH NO.

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REVISIONS

1 047 JAN 21 1975

100

2000

22 04 PM FEB 7
Re dia. this morn.

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MADE BY *O. J. Moore* *Nov. 20, 1973*
ISSUED *FEB 7 1975*

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Steam Turbine

DIV OR
— DEPT.

P3K-AL-0326-A01

REV NO. 12 A

TITLE

P3K-AL-0326-A01

TEST INSTRUCTIONS FOR POWER LOAD UNBALANCE LOGIC
CIRCUIT BOARD
FIRST MADE FOR Mark II

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SH NO. 8

Table A

Pin 35	SW3 up
6	SW4 up
7	SW5 up
2	SW6 up
3	SW7 up
5	SW8 up
4	SW9 up
38	+24 VDC
40	24 V Com
20	L1
8	L2
9	L3
10	L4
11	L5
12	L6
34	L7
33	L8
6	L9
7	L10
2	L11
3	L12
5	L13
4	L14

NOTE: Switch commons are wired to +24 VDC.

REVISIONS

JAN 21 1975

1 D.P. [Signature] New & Retyped

2 D.P. [Signature] No chg this ver

PRINTS TO

MADE BY

ISSUED

D.P. [Signature] Nov 20 1973

FEB 1975

APPROVALS

Steam Turbine

Schenectady, N.Y.

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SH NO. 8

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PREPARED BY: D. Economou DATE: 2/7/1973
 D. Economou
 EHC DESIGN ENGINEERING

APPROVED BY: P.C. Callan DATE: 3-8-73
 P.C. Callan - MANAGER
 EHC DESIGN ENGINEERING

TEST PROCEDURE
 APPROVED BY: C. Bugg DATE: 2/21/72
 C. Bugg
 EHC TEST ENGINEER

REVIEWED BY: D. Economou DATE: 3/9/73
 D. Economou
 EHC DESIGN ENGINEERING

REVISIONS	
1	JAN 21 1975 D. Economou
2	FEB 7 1975 P.C. Callan

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ISSUED <u>MAY 20 1973</u>		Schenectady, N.Y.	LOCATION	CONT ON SHEET <u>-</u> SH NO. <u>9</u>