

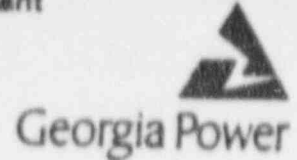
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Vogtle Electric Generating Plant  
NUCLEAR OPERATIONS

Procedure No.  
2235d-C

Date  
*6/20/79*

Unit COMMON



Revision No.  
2

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DIFFERENTIAL PRESSURE SWITCH  
CALIBRATION

FOR INFO  
ONLY

1.0 PURPOSE

The purpose of this procedure is to provide instructions for calibration of Differential Pressure Switches.

2.0 PRECAUTIONS AND LIMITATIONS

- 2.1 All steps in this procedure are to be performed in sequence except as noted. []
- 2.2 Performance of procedure steps, as identified by a double asterisk (\*\*), shall be initialed on "Checklist" except when recording data on Data Sheet. []
- 2.3 The instrument may be located in a radiation area, service a contaminated process, or be contaminated. If so, follow instructions on "Radiation Work Permit". []
- 2.4 Any calculations necessary for the performance of this procedure shall be shown on "Calculation Sheet". []
- 2.5 For Safety-Related systems, an Independent Restoration Verification shall be performed, after completion of Test/Calibration, and initialed in "Restoration Verification" section of "Checklist". []
- 2.6 Ensure that each lead (wire) to be lifted is marked with a completed and installed Jumper and Lifted Wire tag. Instead of "Control No." the "Procedure No." should be identified on the tag. []
- 2.7 If this procedure is completed and temporary jumper(s) must remain installed and/or lifted wire(s) cannot be reconnected, a Jumper and Lifted Wire Clearance must be obtained per Procedure 00306-C, "Temporary Jumper And Lifted Wire Control". []
- 2.8 For Non-Safety Related systems, QC Hold Points may be marked non-applicable (N/A) on "Checklist".
- 2.9 This procedure may be performed in any plant operational mode. []
- 2.10 If, during performance of this procedure, any of the following occur, immediately notify I&C Foreman:
  - 2.10.1 Any personnel error, procedure inadequacy, or malfunction is identified which could prevent fulfillment of "Acceptance Criteria". []
  - 2.10.2 Any test exceeds specified limits. []

- 3.0 PREREQUISITES OR INITIAL CONDITIONS
- 3.1 \*/\* Notify Shift Supervisor, or designee, of work to be performed and obtain signature authorization. [ ]
- 3.2 \*/\* Notify Reactor Operator (RO) that instruments associated with switch may be erratic or inoperable during performance of this procedure and obtain RO signature. [ ]
- 3.3 TEST EQUIPMENT
- 3.3.1 Triplet Model 630 PLK Multimeter or equivalent. [ ]
- 3.3.2 Variable Pressure Source. [ ]
- 3.3.3 Pressure Test Gauge. [ ]
- 3.4 \*/\* Verify all Prerequisites or Initial Conditions are met. [ ]
- 4.0 MAIN BODY
- 4.1 CALCULATIONS
- 4.1.1 \*/\* Obtain instrument setpoint data from appropriate controlled document(s) and record document number in "Comments" section of "Data Sheet". [ ]
- 4.1.2 \*/\* Calculate expected values and record in "Expected" section of "Data Sheet". [ ]
- 4.1.3 \*/\* Calculate Hi and Lo limit values and record in "Hi Limit" and "Lo Limit" sections of "Data Sheet". [ ]
- 4.2 REMOVAL FROM SERVICE
- 4.2.1 Close high pressure isolation valve. [ ]
- 4.2.2 Open equalizing valve. [ ]
- 4.2.3 Close low pressure isolation valve. [ ]

FOR INFO  
ONLY

## WARNING

ANY TRAPPED FLUID VENTED DURING ISOLATION FROM OR RESTORATION TO SERVICE MAY BE CONTAMINATED. A SUITABLE CONTAINER, AS RECOMMENDED BY THE HEALTH PHYSICS DEPARTMENT, SHALL BE USED TO ENTRAP THIS FLUID. THE FLUID SHOULD BE DISPOSED OF IN ACCORDANCE WITH HEALTH PHYSICS DEPARTMENT PROCEDURES.

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- 4.2.4 Vent D/P switch to slowly bleed pressure, then close vent. ( )
- 4.2.5 Open input test ports. ( )
- 4.3 CALIBRATION
- 4.3.1 \*/\* Disconnect D/P switch lead wires as required. (If Safety-Related, an Independent Verification is required.) ( )
- 4.3.2 Close equalizing valve. ( )
- 4.3.3 Connect pressure source, test gauge and DMM to D/P switch as required. ( )

## NOTE

During calibration one side of D/P switch is vented while pressure is applied to the opposite side.

- 4.3.4 \*/\* Adjust pressure source until D/P switch trips and record pressure in "As Found" section of "Data Sheet". ( )
- 4.3.5 \*/\* Adjust pressure source until D/P switch resets and record pressure in "As Found" section of "Data Sheet". ( )
- 4.3.6 \*/\* If As Found values are within limits specified on "Data Sheet" and more accurate values are not desired, record values in "As Left" section of "Data Sheet" and proceed to step 4.3.11. ( )
- 4.3.7 \*/\* QC Hold Point
- Obtain QC authorization to proceed before continuing with procedure. ( )

- 4.3.8 If As Found values are not within limits specified on "Data Sheet" or more accurate values are desired, proceed as follows:
- a. If not already performed, connect DMM across correct D/P switch terminals. []
  - b. Adjust as required to obtain correct values. []
  - c. Adjust pressure source until D/P switch trips. Note pressure. []
  - d. Adjust pressure source until D/P switch resets. Note pressure. []
  - e. Repeat steps 4.3.8b thru 4.3.8d until no further adjustments are necessary. []
- 4.3.9  
\*/\* Adjust pressure source until D/P switch trips and record pressure in "As Left" section of "Data Sheet". []
- 4.3.10  
\*/\* Adjust pressure source until D/P switch resets and record pressure in "As Left" section of "Data Sheet". []
- 4.3.11 If D/P switch has more than one switch contact, repeat steps 4.3.3 through 4.3.10 as required. []
- 4.4 RESTORE TO SERVICE
- 4.4.1 Reduce test pressure to zero psig. []
- 4.4.2  
\*/\* Disconnect all test equipment connected during course of this procedure. []
- 4.4.3  
\*/\* QC Hold Point
- Obtain QC authorization to proceed before continuing with procedure. []
- 4.4.4  
\*/\* Reconnect lead wires to switch. []
- 4.4.5  
\*/\* Close input test ports. []
- 4.4.6  
\*/\* Open equalizing valve. []
- 4.4.7  
\*/\* Slowly open low pressure isolation valve. []

## NOTE

Air must be vented from all switches used in liquid service.

- 4.4.8 \*/\* Close equalizing valve. []
- 4.4.9 \*/\* Slowly open high pressure isolation valve. []
- 4.4.10 \*/\* Inspect valves, tubing and instrument for leaks. Immediate action shall be taken to correct any leaks found. []
- 4.4.11 \*/\* Verify switch reflects current plant conditions after it is restored to service. []
- 4.4.12 \*/\* For Safety Related systems, have an Independent Restoration Verification performed by designated personnel. []
- 4.4.13 Notify RO switch has been returned to service. []
- 4.4.14 \*/\* Notify Shift Supervisor, or designee, of completion of work including test results and obtain signature on "Completion Sheet". []
- 5.0 ACCEPTANCE CRITERIA
- 5.1 The Acceptance Criteria for this procedure is the D/P switch is within specified limits listed on Data Sheet.
- 5.2 Satisfactory completion of this procedure has been met when I&C Foreman has evaluated data obtained per Acceptance Criteria of this procedure, reviewed, and signed Data Sheet provided.
- 6.0 REFERENCES
- 6.1 Instruction Manual for Appropriate Switch under test.
- 6.2 Appropriate Electrical and Mechanical Drawings required for calibration of instrument.
- 6.3 Procedure 00306-C, "Temporary Jumper And Lifted Wire Control"

END OF PROCEDURE TEXT

FOR INFO

DATA SHEET

SHEET 1 OF 1

Instr. No. _____	Location _____	Serial No. _____
Description <u>E/P Switch</u>	Manufacturer _____	Model No. _____

NOTES: N/A

ACTION	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
Switch Trips						
Switch Resets						
ACTION	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
Switch Trips						
Switch Resets						
ACTION	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
Switch Trips						
Switch Resets						
ACTION	INPUT	EXPECTED	LO LIMIT	HI LIMIT	AS FOUND	AS LEFT
Switch Trips						
Switch Resets						

TEST EQUIPMENT			COMMENTS:
I.D. NO.	MODEL NO.	CALIBRATION DUE DATE	
			<div style="font-size: 2em; font-weight: bold; margin: 0;">D P I N F O</div>
PERFORMED BY: _____			DATE
REVIEWED BY: _____			DATE
APPROVED BY: _____			DATE

### CALCULATION SHEET

Show all calculations performed during course of this procedure in the space below.

FOR INFO ONLY

Completed by: \_\_\_\_\_ Date \_\_\_\_\_  
Reviewed by: \_\_\_\_\_ Date \_\_\_\_\_  
Approved by: \_\_\_\_\_ Date \_\_\_\_\_



CHECKLIST

SHEET 1 OF 1

3.1 Shift Supervisor Authorization

Signature / Date

3.2 Reactor Operator (RO) Notified

Signature / Date

STEP VERIFICATION

Step/Substep	Initial	Step/Substep	Initial
3.4 Prerequisites are met	_____	4.4.5 Test ports closed	_____
4.3.1 D/P switch lead wires disconnected	_____	4.4.6 Equalizing valve open	_____
4.3.1 Independent Verification	_____	4.4.7 LP isolation valve open	_____
4.3.7 QC Notified	_____	4.4.8 Equalizing valve closed	_____
4.4.2 Test equipment disconnected	_____	4.4.9 HP isolation valve open	_____
4.4.3 QC Notified	_____	4.4.10 Leak inspection performed	_____
4.4.4 Lead wires connected	_____	4.4.11 Switch reflects current plant conditions	_____

RESTORATION VERIFICATION

Initial	Initial
1. Lead wires connected	5. Input test ports closed
2. LP isolation valve open	
3. Equalizing valve closed	
4. HP isolation valve open	

FOR INFO ONLY

Performed by:

Date:

Reviewed by:

Date:

COMPLETION SHEET

PROCEDURE TITLE DIFFERENTIAL PRESSURE SWITCH CALIBRATION

TIME TEST STARTED \_\_\_\_\_ BY \_\_\_\_\_ DATE \_\_\_\_\_

DEFICIENCIES OCCURRED AND ACTIONS TAKEN

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\_\_\_\_\_

FOR INFO ONLY

TEST RESULTS: ACCEPTABLE  UNACCEPTABLE

SWITCH RESTORED TO SERVICE

SWITCH COMMITTED TO REPAIR

TEST COMPLETED BY \_\_\_\_\_ TIME \_\_\_\_\_ DATE \_\_\_\_\_

SHIFT SUPERVISOR NOTIFIED \_\_\_\_\_  
Signature Time Date

REVIEWED BY: \_\_\_\_\_ DATE \_\_\_\_\_

APPROVED BY: \_\_\_\_\_ DATE \_\_\_\_\_