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HOUSTON LIGHTING AND POWER COMPANY
SOUTH TEXAS PROJECT
ELECTRIC GENERATING STATION
PLANT PROCEDURES MANUAL

DEPARTMENT PROCEDURE

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NON SAFETY-RELATED (Q)

MAY 10 1993

STP-DC

Calibration of
Digital Low Resistance Ohmmeter(s)

OPTP03-ZC-1022

Rev. 2

Page 1 of 4

APPROVED:

Wm R. [Signature]
MANAGER, TECHNICAL SERVICES

5/4/93
DATE APPROVED

5/11/93
DATE EFFECTIVE

PROCEDURE USE CONTROL: REFERENCED

1.0 Purpose and Scope

- 1.1 This procedure provides instructions for calibrating Digital Low Resistance Ohmmeter(s), herein referred to as the Test Instrument (TI).
- 1.2 This procedure is intended for Biddle 247000 or equivalent and 247001, Digital Low Resistance ohmmeters.

2.0 Definitions

- 2.1 None

3.0 Prerequisites

- 3.1 Required test equipment:
 - 3.1.1 Current Shunt, Guildline 9211A or equivalent
 - 3.1.2 Decade Resistor, General Radio 1433-T or equivalent
 - 3.1.3 Cables, loads, terminations, and adaptors as required
- 3.2 Check the TI batteries and recharge/replace as necessary prior to taking AS FOUND data.

4.0 Precautions

- 4.1 Observe normal precautions when working with energized equipment and HIGH VOLTAGE.

Calibration of
Digital Low Resistance Ohmmeter(s)

OPTP03-ZC-1022
Rev. 2
Page 2 of 4

5.0 Procedure

5.1 Resistance

- 5.1.1 Connect the Current Shunt to the TI Rx terminals in a 4-wire configuration using short heavy leads.
- 5.1.2 Set the TI Range to 0-6 Milliohms and the Current Shunt Range to 100 amps (0.001 ohm).
- 5.1.3 Set the TI On(Mom)/On(Lock) switch to On(Lock), allow the TI indication to stabilize, and note the TI indication.
- 5.1.4 Press and hold the TI Forward/Reverse switch to Reverse, allow the TI indication to stabilize, and note the TI indication.
- 5.1.5 Release the TI Forward/Reverse switch and set the On(Mom)/On(Lock) switch to OFF.
- 5.1.6 Average the absolute values of the TI indications noted in Steps 5.1.3 and 5.1.4 and record the result in the AS FOUND column of the Calibration Form.
- 5.1.7 Repeat Steps 5.1.2 through 5.1.6 for the settings listed in Table 1.

TI RANGE	CURRENT SHUNT RANGE
0-60 MILLIOHMS	10 AMPS (0.01 OHM)
0-600 MILLIOHMS	1 AMP (0.1 OHM)
0-6 OHMS	.1 AMP (1 OHM)

Table 1

- 5.1.8 Replace the Current Shunt with the Decade Resistor.
- 5.1.9 Repeat Steps 5.1.2 through 5.1.6 for the settings listed in Table 2.

TI RANGE	DECADE RESISTOR SETTING (OHMS)
0-60 OHMS	6.00
	10.00
	30.00
	59.00

Table 2

Calibration of
Digital Low Resistance Ohmmeter(s)

OPTP03-ZC-1022
Rev. 2
Page 3 of 4

5.2 Evaluate the AS FOUND data with the accuracy listed on the Specification Sheet. If any AS FOUND data is out-of-tolerance/unsatisfactory, refer to OPTP03-ZC-0001. Take the necessary corrective action and repeat Section 5.0, recording the final data in the AS LEFT column of the Calibration Form.

5.2.1 Record any corrective action taken in the REMARKS section of the Calibration Form.

5.3 If all AS FOUND data is within tolerance/satisfactory, SAME may be entered in the AS LEFT column of the Calibration Form.

5.4 Complete all remaining applicable portions of the Calibration Form.

5.4.1 N/A all unused data recording portions of the Calibration Form.

5.5 Refer to OPTP03-ZC-0001 for disposition.

6.0 Acceptance Criteria

6.1 The AS LEFT data shall be within the accuracy listed on the Specification Sheet.

7.0 References

7.1 OPTP03-ZC-0001, Rev. 1 (Measuring and Test Equipment Calibration Program)

7.2 ML-BIA-00001-A-XX (Biddle DLRO Instruction Manual)

8.0 Documentation

8.1 The Calibration Form, when completed, shall be retained for the life of the plant.

9.0 Support Documents

9.1 Addendum 1 - Typical Calibration Form.

Calibration of
Digital Low Resistance Ohmmeter(s)

OPTP03-ZC-1022
Rev. 2
Page 4 of 4

ADDENDUM 1
TYPICAL CALIBRATION FORM
(Page 1 of 1)

STP 986 (06/92) REV 0		SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION METROLOGY LABORATORY CALIBRATION FORM		FILE: <u>Z-5</u>	
EVALUATION NUMBER: _____					
PAGE <u>1</u> OF <u>1</u>					
ID NO: _____		TEST INSTRUMENT: <u>DIGITAL LOW RESISTANCE OHMMETER</u>			
MANUFACTURER: <u>BIDDLE</u>		MODEL: <u>247000</u>			
SPEC SHT NO: <u>BIA-247000</u>		CAL PROC NO: <u>OPTP03-ZC-1022</u>			
REVISION: <u>4</u>		REVISION: <u>2</u>			
AS FOUND CONDITION:		AS LEFT CONDITION:		METROLOGY LABORATORY:	
SATISFACTORY: ☐		SATISFACTORY: ☐		TEMPERATURE _____ °F	
UNSATISFACTORY: ☐		UNSATISFACTORY: ☐		RELATIVE HUMIDITY _____ %	
SEE REMARKS: ☐		SEE REMARKS: ☐		BAROMETRIC PRESS. <u>N/A</u> in Hg	
CALIBRATION AREA: EE ☐ PD ☐ CL ☐ H1 ☐ H2 ☐ OA ☐					
CALIB EQUIP	ID NO	CAL DUE	REMARKS		
THERMOHUMIDIGRAPH			TYPICAL CALIBRATION EQUIPMENT USED IS TRACEABLE TO THE NIST OR A NATURAL PHYSICAL CONSTANT.		
FUNCTION TESTED	NOMINAL	MEASURED VALUES		CALIBRATION TOLERANCES	
RESISTANCE	(mOHM)	AS FOUND (mOHM)	AS LEFT (mOHM)	(mOHM)	
RANGE: 6 mOHM	1.000			0.994 TO 1.006	
60 mOHM	10.00			9.94 TO 10.06	
600 mOHM	100.0			99.4 TO 100.6	
	(OHM)	(OHM)	(OHM)	(OHM)	
6 OHM	1.000			0.994 TO 1.006	
60 OHM	6.00			5.96 TO 6.04	
60 OHM	10.00			9.94 TO 10.06	
60 OHM	30.00			29.84 TO 30.16	
60 OHM	59.00			58.69 TO 59.31	
CAL DATE: _____		TECHNICIAN: _____			
CAL DUE: _____		MHRS: _____ TIME: _____			
CAL INTERVAL: <u>6 MONTHS</u>		REVIEWED BY: _____			
EDP: _____		DATE: _____			
THIS FORM, WHEN COMPLETED, SHALL BE RETAINED FOR THE LIFE OF THE PLANT PLUS THE AMERICAN NUCLEAR INSURERS' REQUIREMENT					

BEST ORIGINAL DOCUMENT
AT TIME OF REPRODUCTION