



**Wunderlich-Malec**

**WUNDERLICH-MALEC SERVICES**  
**Standard Operating Procedure**

<b>Title:</b> ANALOG LOOP Calibration Procedure	<b>Department:</b> New England Office	<b>No:</b> SOP 0731
	<b>Prepared by:</b> Shane G. Fowler	<b>Page:</b> 1 of 3
<b>Revision Number:</b> 1.1	<b>Issue Date:</b> June 30, 2002	<b>Date Revised:</b> September 26, 2002

**Revision History**

<b>Change</b>	<b>Rev. #</b>	<b>Date</b>	<b>Written By</b>
Original Draft	0.0	3/1/02	Gene Lambert
Original Issue	1.0	6/30/02	Doug Fowler
Upgrade to calibration criteria	1.1	9/26/02	Doug Fowler

**1. PURPOSE**

SOP 0731 will define the manner in which WMS shall calibrate an ANALOG LOOP.

**2. SCOPE**

SOP 0731 shall provide procedures for calibration of ANALOG LOOP, documentation requirements, and safety precautions to protect the technician and equipment.

**3. RESPONSIBILITY**

The Wunderlich-Malec Service Manager or designee is responsible for calibrating ANALOG LOOP and accountable for documentation accuracy.

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## 4. REFERENCES

WMS SOP 0501 *Implementation of Instrument Calibration and Documents Program*  
WMS SOP 0505 *Calibration General Procedure*  
WMS SOP 0510 *Method for Preparing a Calibration Report*  
*ISA Instrumentation Standards & Practices 9<sup>th</sup> Edition*

## 5. DEFINITIONS

*ANALOG LOOP* – A complete system which receives an analog signal from a Process Variable (PV) and converts it to a corresponding output such as 4 – 20 ma dc. The loop ultimately displays engineering units in a controller or on to a engineering work station (or by reading the signal into input device (analog/digital converter) such as a PLC Analog Input Card)

## 6. MATERIALS AND EQUIPMENT

N.I.S.T. Traceable Milliamp , Voltage , Frequency , Resistance , Temperature , Pressure , Flow ,Weights , Calibrator or PH,DO,Silica ,and other Standard Solutions

## 7. SAFETY PRECAUTIONS

Person performing calibration shall confirm all electrical limitations of instruments and equipment as defined in manufacturer's specifications.

Person performing calibration at a client's facility shall abide by all safety rules and regulations that apply.

## 8. ATTACHMENTS

N/A

## 9. PROCEDURE

Calibration

9.1 Before the ANALOG LOOP is removed from production for calibration, ensure that it is not going to disruptive to the process.

9.2 Use the loop display on the Work Station/MMI or the PLC or a calibrator, which will be connected in the ANALOG LOOP to view the loop's action. (The calibrator is

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installed usually at the instrument and used in place of a process variable.) Confirm electrical terminations comply with manufacturers recommendations.

9.3 Generate a process variable analog signal(s) with test equipment at intervals (minimum of 3) determined by “Standard Set point” section of the analog’s transmitter’s or end element’s Calibration Report. Use the calibrator if access to a process variable is not available or access to a system driven output is not available.

9.4 Record the Test method and the Test Results in the proper sections of the Loop Calibration Form.

9.5 If all *standard* and *instrument* readings in the “Readings Before Adjustment” section of the analog’s instrument Calibration Report are found to be within the specified limit, proceed to item 9.7. If any *standard* or *instrument* readings exceeds the specified limits proceed to Item 9.11 Adjustment Required Section.

9.7 Complete Instrumentation Loop Calibration Form document as per WMS SOP 0510.

9.8 Prepare Calibration Label and affix to ANALOG LOOP as per WMS SOP 0501 if requested.

9.9 Remove test equipment from ANALOG LOOP.

9.10 Put ANALOG LOOP back into service

### *Adjustments*

9.11 Go to the individual instrument’s Loop calibration SOP for adjustment procedures.

## Approvals

Approved by Originator: \_\_\_\_\_ Date: 9/26/02

Approved by Service Manager: \_\_\_\_\_ Date: 9/26/02

Approved by QA Manager: \_\_\_\_\_ Date: 9/26/02

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