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MEASUREMENT SYSTEM EVALUATION

Operational Procedure: QOP-11-02

Rev.: A

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I PURPOSE

The purpose of this procedure is to provide for a system and instructions, and to assign responsibilities for evaluating measurement systems.

II APPLICATION

This procedure applies to measurement systems referenced in Control Plans, and used for verification of product Special Characteristics and for controlling corresponding processes.

This procedure directly concerns Quality Control, Production Engineering, and Production departments.

III PROCEDURE

1. Scope and Responsibility

- 1.1 All measurement systems referenced in the Control Plans are formally evaluated. Quality Control is responsible for conducting measurement system evaluation studies.
- 1.2 Measurement system studies are conducted using the approach, procedures, and acceptance criteria provided in the Measurement System Analysis (MSA) Reference Manual.
- 1.3 At a minimum, Repeatability and Reproducibility (Gauge R&R) study, using the Average and Range method, is conducted for variable measurement instruments; and Attribute Gauge Study is conducted for nonvariable (Go/No-Go) gauges.

Written by:

Original Issue Date:

Approved by:

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2. Conducting and Reporting Measurement System Study

- 2.1 The procedure for conducting Gauge R&R study is provided in the MSA Reference Manual, Section 4, Variable Measurement System Study — Average and Range Method. This section of the MSA manual is considered to be a part of this procedure. The study is reported using Gauge R&R Data Sheet and Gauge R&R Report Sheet provided in the MSA manual.
- 2.2 The procedure for conducting Attribute Gauge study is provided in the MSA Reference Manual, Section 6, Attribute Gauge Study — Short Method. The Long Method may be used when importance of the measurement and/or problems with gauges warrant it. This section of the MSA manual is considered to be a part of this procedure.

3. Acceptance Criteria

- 3.1 For variable instruments: Under 10% R&R is acceptable for any application; 10-30% R&R may be accepted depending on importance of application; Over 30% R&R is not acceptable.
- 3.2 For nonvariable (Go/No-Go) gauges: Acceptable only when all measurement decisions for the same part are in agreement (based on minimum 20 parts, two operators, and two measurements per operator).

IV ASSOCIATED DOCUMENTS

- Production Quality Planning — Oper. Proc. QOP-02-04
- Inspection, Measuring, and Test Equipment — Oper. Proc. QOP-11-01
- Measurement System Analysis (MSA) Reference Manual