

DOCUMENT NUMBER <b>90-2000-8.4</b>	REVISION <b>A</b>	TITLE <b>Analysis of Data</b>	REV DATE <b>4/2017</b>	PAGE <b>1 of 3</b>
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## **1.0 Purpose**

The primary purpose of this procedure is to describe the analysis of QMS and other company data as a regular, recurring, periodic event, to provide for a listing of the data analyzed, to assign responsibility, and to set frequency.

The secondary purpose of this procedure is to describe the use of statistical and other numerical techniques to ensure a sound basis for the analysis of company performance data, for the improvement of production processes, and for carrying out inspection activities, and to assign responsibility for it.

## **2.0 Policy**

Product Resources shall establish high level objectives that are compatible with and relate to Product Resources' Quality Policy, and Product Resources shall further assign measures that allow it to assess its performance to one or more objectives. These measures shall be updated / new data analyzed at a predetermined frequency with known responsibilities for the different measures. These measures shall be updated at least annually.

Steps shall be taken to provide a sound basis for sampling inspections and for data analysis and improvement. Instruction on descriptive statistics and other basic data analysis techniques shall be made available so that Product Resources employees may effectively communicate findings on data. Statistical techniques can be used to monitor processes. Statistical sampling techniques can be utilized when compatible with customer and company and regulatory requirements.

## **3.0 Responsibility**

Product Resources management has responsibility for ensuring that measures are assigned frequencies for analyzing new data, for ensuring that measures have responsible parties, and for ensuring that the analysis of data is kept up to date.

QA has responsibility for providing instruction on descriptive statistics and other data analysis techniques. QA, Engineering, and Production have responsibility for requiring that certain processes be monitored by statistical techniques. These techniques are established and specified by QA and Engineering in the Quality

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plan, which is documented in the product's routing by reference to procedures and forms. QA has responsibility for adopting statistical sampling techniques.

#### **4.0 Periodic Measures**

- 4.1 The objectives, measures, and goals document 43-2829 contains a breakdown of objectives and measures. This document also serves other processes, such as Quality Objectives, Customer Satisfaction, and Management Review.
- 4.2 Associated with each measure is a Frequency of Analysis of Data, and this is completed as, for example, monthly, quarterly, every six months, or annually. The frequency is picked to be as needed to manage the company but per Policy above, it shall be at least annually.
- 4.3 Associated with each measure is an Owner, and this is completed as a role or as a department. It is this role / this department that is responsible for updating the analysis of this data at the determined frequency.

#### **5.0 Descriptive Statistics**

- 5.1 Descriptive statistics can be defined as those methods involving the collection, presentation, and characterization of a set of data to properly describe the various features of that data.
- 5.2 A basic knowledge of descriptive statistics is necessary to effectively communicate one's findings. Instruction on descriptive statistics can be found in 90-7101 (Descriptive Statistics - Part 1), 90-7102 (Descriptive Statistics - Part 2), 90-7103 (Descriptive Statistics - Part 3), 90-7104 (Descriptive Statistics - Part 4), and 90-7105 (Descriptive Statistics - Part 5). See also 90-7201, Pareto Diagram / Analysis.

#### **6.0 Process Analysis**

- 6.1 Engineering, QA, or Production may require that certain processes be monitored by statistical or other numerical techniques to assist in the monitoring or improvement of production processes. Engineering and QA shall assist in specifying the type of data collection or charting needed. Statistical Process Control (SPC) methods can be used in areas where process variations can be charted or plotted, and such methods can assist in verifying the acceptability and capability of the process. As a resource, QA maintains a guide on how to use SPC titled An SPC Primer and written by Thomas Pyzdek. It describes how to construct various control charts.

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- 6.2 The product routing shall note any additional requirements for statistical sampling if the standard first piece inspection (see below) is insufficient or if another method is required by contract. In short, all requirements for data collection and inspection shall be communicated via the routing.
- 6.3 Engineering, QA, or Production may conduct a Pareto Analysis of collected data to flag the “vital few” from the “trivial many” and thereby permit one to focus on the important categories for improvement. See 90-7201, Pareto Diagram / Analysis, for details on this numerical technique.

## **7.0 Statistical Sampling**

- 7.1 Statistical sampling, where not prohibited by contract or regulatory requirements, can be employed for new design verification, verification of purchased product, in-process inspections, and final inspections. Military Standard 105 (MIL STD 105) is used as the basis for selecting sample sizes. See procedure 43-1355 for the sampling plan for QA incoming inspection.
- 7.2 The job order time sheet contains a record of first piece visual inspection. All assemblies are given a first piece visual inspection. This prevents the continued production of nonconforming product.