

Organizational Transformation through Implementation of a Quality System in a Metrology Laboratory

Speaker/Author: Mark Antonison
mark.antonison@rttc.redstone.army.mil

Co-Authors: Terry Boldin, Alisha Youngblood, PhD.

Abstract

A dimensional metrology laboratory, staffed by eight technicians and engineers, has begun to implement a quality improvement plan at the grass-roots level within the Test Center. The catalyst for change has been the voice of the customer. A bottom-up approach is chosen due to the lack of any formal quality initiatives from management.

While conventional wisdom in engineering management theory states successful implementation of a quality system requires a strong top-down management approach, with success dependent on sustained support by top management, can one succeed with the deployment of a quality system starting at the bottom of the organization? A case can be made that if certain environmental conditions are present in this organization, a top-down management approach may not be required up front. Consideration of alternative approaches to the initial deployment of the quality system is required. What are the obstacles to implementation of such a quality system? Where do opportunities for process improvements exist? How can the progress of change efforts be measured?

This paper provides both a management theory framework for implementation of this plan, and a progress report on the practical application of theory to improve quality in the author's organization. Analysis of the current state of the laboratory is progressing with application of six sigma and lean manufacturing methods. The National Voluntary Laboratory Accreditation Program of the National Institute of Standards and Technology has been chosen as the framework for development of specific technical processes and procedures that will demonstrate competency in dimensional metrology within the laboratory. A vigorous training program for the technical staff is in process. A three part improvement program has been outlined and approved that tackles changes within the laboratory from a systems perspective: first, development of a quality system for the metrology laboratory that can be used later on as a template for other laboratories in the Test Center; second, a Measurement Assurance Program for monitoring and controlling measurement processes, especially for the eight coordinate measuring machines utilized daily in dimensional metrology tasks; and third, development of an in-house calibration program for test equipment within the dimensional metrology laboratory.