Procedure Preparation for ISO 9000 Certification

Kansas City Division

R. E. Klement

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PROCEDURE PREPARATION
FOR ISO 9000 CERTIFICATION

R. E. Klement

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Purpose

The purpose of this paper is to share information about the successful implementation of centralized procedure administration and the re-engineering of the procedure system, leading to successful ISO 9001 certification at AlliedSignal Inc., Kansas City Division.

Background

The Kansas City Division (KCD) produces nonnuclear components for nuclear weapons. The company has operated the plant for the United States Department of Energy since 1949. Throughout the history of the plant, procedures were written to reflect the nuclear weapons industry best practices, and the facility built a reputation for producing high quality products.

In 1991 a critical process team was asked to use Just In Time principles to determine a better way to administrate procedures. By 1992 the team was successful in implementing a full-time centralized procedure group to handle the creation, coordination, review, resolution, and publication of plant-wide administrative and operating procedures.

In 1993 AlliedSignal was commissioned by its President and CEO Larry Bossidy to register all of the world-wide sites under the ISO 9000 quality standard. This presented a formidable challenge for the Kansas City Division. Though the independent third-party auditors conceded during a preassessment that the company did in fact build high quality products, the procedures and procedure system did not accurately reflect the current business practices. There was, in essence, a great disconnect between saying what we did and doing what we said.

Though the critical process team was highly successful in eliminating non-value activity, this resulted in eliminating only a contributing cause to the problems associated with procedures. The root cause was the lack of total management commitment to all associates using high quality procedures in the everyday work life. The cornerstone to ISO 9000 certification is the demonstration with objective evidence that a quality system does exist. Pursing that goal in 1994 and 1995 produced the momentum that the facility needed to re-engineer the administrative procedures at every level and ensure that controls were in place to hold the gains that had been made in the earlier part of the decade.

The Kansas City Division, however, did more than what was expected to be recommended for certification. It turned its 46-year legacy procedure system upside down with the introduction of a totally electronic process-based procedure system that is fully integrated with the business model for the plant. This system, affecting thousands of documents, was installed in less than six months.


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In 1991-92, a critical process team calling itself the Procedure Improvement Enterprise studied the procedure process in length and determined that significant improvements could be made. The team proposed a phased transition to an electronic system that would eventually replace the current paper system of procedures. To support this goal, the Team recommended formation of a separate department, Policy & Procedure Services, for the express purpose of preparing, maintaining, distributing, and controlling administrative and operating procedures.

The proposed review process would build quality into each procedure draft; a cooperative effort between expert and procedure coordinator would result in a more complete initial document, blending technical requirements within a clear, consistent format. Additionally, the review process would be streamlined by requiring review meetings to discuss the requirements and resolve differences; an escalation in management levels would result from failure of reviewers to reach timely agreement. A period of time would be required to eliminate the backlog of procedure reviews and to implement an electronic system. After that time, annual reviews of all procedures would be the norm.

Based on benchmarking data collected, the Team felt the proposal met or exceeded best industry practices for a world-class procedure review system.

Mission

The Team defined its mission as follows.

To develop and implement within the Kansas City Division an effective and flexible procedure system that will establish a model of excellence, will emphasize teamwork and open communication, and will ensure compliance with corporate/government requirements.

Current "As-Is" Process

One of the first tasks undertaken was to define the current procedure review system. The Team assembled a process map that symbolically depicted the operation, transportation, decision, filing, computer, and document steps. The process map served to define a complicated review process currently performed without consistency from one internal division to another. The process at that time was not adequate to meet the required three-year review cycle. The process map documented over 220 steps and 34 potential delays/bottlenecks from initial receipt of a draft by a divisional procedure coordinator through review, approval, publication, and distribution.

Data collected to measure lead time of the current procedure review system indicated an enormous opportunity for improvement; a median of 205 workdays was required to revise or publish a new procedure.
Benchmarking

In collecting data to determine "industry best practices" for processing procedures, the Team investigated the systems currently in place at 12 Department of Energy facilities and four companies in the metropolitan Kansas City area. Because of a wide divergence of practices, the Team compared the processes of these 16 benchmark organizations against the preliminary goals established by the Team. These four goals are as follows.

- Publish new procedures in 90 days.
- Publish revisions within 30 days.
- Limit use of Procedure Change Notices (amendments).
- Install an annual review cycle for procedures.

Seven of these organizations were chosen as closest to meeting the goals established. The data showed four characteristics common to most of the organizations:

- Procedures are processed by a department specifically dedicated to that task.
- Significant amounts of cooperation are evident between the coordinator and the subject experts, including those who review the procedure revisions.
- When resolution of disputed sections is not forthcoming, the problem is escalated to higher management levels.
- The organizations are working toward a system that is totally electronic, with procedures reviewed, approved, and available on-line.

Proposed Process

The Team, after careful study of the data collected, recommended that the Kansas City Division procedure process be structured as an “expedite” system. That is, procedures should be reviewed by all interested and affected parties and any conflicts resolved in a meeting called specifically for that purpose. In this way, each participant can hear and react to the opinions and desires of the others, discuss compliance and implementation issues, and reach timely agreement.

A subject matter expert will make the decision that a procedure is necessary to meet a specific requirement. That expert collects the basic information for the procedure, with details provided by others as required. The information would then be provided to a procedure coordinator for drafting to the prescribed format.

Once drafted, the procedure would be typed into a database. Once recorded, the version resident on the appointed computer would be the “official” copy. Review copies would be transmitted electronically to each interested party, based on a list of reviewer/experts maintained.
by the department. Changes suggested during this review could be implemented in the procedure draft only by the coordinator. Thus, positive control of the procedure revisions would remain in the hands of the coordinator, who is continually in touch with the subject expert and department of primary responsibility. By assigning primary responsibility at as low a level as possible within the operating division, reviews and revisions would be much easier to handle expeditiously.

Once transmitted, the draft would be available for review by interested parties; along with the draft would be an invitation to attend a meeting to discuss the procedure changes and obtain concurrence. If necessary, a second meeting may be held. Failure to obtain concurrence at that time would cause the coordinator to ask the involved managers to arbitrate the matter. Should that not settle the issue, then the involved directors or even the president's office may have to resolve the issue.

Reviewers would be selected based on their expertise in the subject covered by the procedure and the organizations having responsibility as a result of the procedure requirements. Preliminary information would be obtained from managers and supervisors. When meetings are scheduled, managers are also notified to ensure that the appropriate people are invited and that no interested parties are omitted.

Once concurrence is obtained, the procedure is approved by the responsible division director; such approval will be in the form of an electronic signature controlled by the director. The procedure coordinators have responsibility of ensuring appropriate sign-off. The coordinator is also responsible for initiating periodic review of published procedures. To attain the projected goal of an annual review, an average of one procedure would have to be distributed each day.

As part of this process, procedure change notices would gradually disappear. At first, the only permitted use would be as a transmittal device for new or revised procedures and to correct minor typographical errors. Any significant change in the provisions of a procedure would require its reissue. Once an electronic system is in place, the procedure change notice concept would not be viable; each procedure would be updated on the computer database with a current reissue date.

To begin building toward this goal, a manual system that incorporated many of the electronic system features was installed. The major difference was the transmission of drafts.

Cycle Time Improvement

The Team cited the perception of the unimportance of procedures at the Kansas City Division as the root cause of the current system's cycle time of 205 work days based on 220 plus process steps; that is, procedures were given a low priority, there were many review loops, and there was a lack of resource dedication (personnel/time) for the number of procedures in the facility. The interim process (using paper) would require 37 work days based on 78 process steps. The proposed electronic solution would require 16.5 work days based on 39 process steps, resulting in a 92% improvement over the old process.

Organizational Structure and Training

Recommendations were made to create a new department that would be staffed with full-time procedure coordinators, reporting to a managerial level to demonstrate the Kansas City
Division's commitment to adhere to the requirements in the procedure documents. Training in the following three specific areas would be needed: methodology in the new process, format and writing, and user process prove-in.

Expectations and Schedule

Nine goals were suggested by the Team and all were met. In addition, the sponsors, other associates, and the Department of Energy had expectations about procedures that were all taken into consideration. The Team developed a two-year timeline to accomplish the tasks that were necessary to usher in the electronic system. That goal was achieved in January 1995.

PHASE TWO - PROCESSED-BASED COMMAND MEDIA

In September 1993 a Total Quality Team was commissioned to prepare the plant for an ISO 9001 preassessment scheduled for July 1994. During the audit week, one of the Category I findings presented to AlliedSignal management revealed the lack of objective evidence to demonstrate compliance with Element 4.5, Document and Data Control of the ISO 9001 standard, particularly in the area of administrative procedures. Our policies and procedures had evolved over the past 46 years into a system that is very complex and not well controlled. What we needed to create was a system that is very simple to understand and with controls that ensure only value-added changes are incorporated. What we needed was a collection of documents that accurately reflected our business today and a system which links the high-level process descriptions of what we do here with "how-to" work instructions.

Re-Engineering the Administrative Procedure System

In a large company there is a temptation to overlook the previous successes and "pockets of excellence." However, with little time remaining until a certification audit, speed was of utmost importance to take the corrective action necessary to comply with ISO 9001. A leadership team of four senior officials began the task of preparing the plant for certification. One leader was commissioned with the task of developing what we call process-based command media. The proposal's characteristics as it was being developed took on striking similarities (and radical improvements!) to the earlier critical process team proposal.

- A fully electronic system would be installed for all administrative-type procedures, not just those at the highest level.
- A centralized department with help from specialists would administrate the command media.
- Process Leaders would own the command media and with the help of process teams would ensure that the information was accurate at all times.
- A Process Steering Committee would oversee the business model of the plant and approve new processes.

Command Media Training would be accessible to all associates, including one document presentation format and style for all administrative documents. This would be facilitated by the use of document templates.
Beginning the Journey

In order to accomplish such a massive project in such a short time, several associates were assigned various tasks. These four major tasks were implemented as follows:

- Create the business model and assign process leaders.
- Produce process maps from which to write Command Media.
- Create the electronic system.
- Incorporate existing procedures into the Command Media immediately or devise a plan to roll the procedures into non-ISO related Command Media by the end of 1995 or destroy.

Quality System Structure

A numbering system was devised to identify command media documents. Each document was identified by a sequence of four or five sets of digits.

**Process Descriptions:** xx.xx.xx.xx

**Work Instructions:** xx.xx.xx.xx.xx

- **xx.xx.xx.xx** Identifies Work Instruction
- **| | | |** Identifies Process Description
- **| | |** Identifies Business Process
- **| |** Identifies Business Function
- **|** Identifies Business Functional Area

This system was designed to facilitate immediate identification of any component of the command media system within the context of the KCD business model. Figure 1 illustrates how this numbering system is used in the KCD Quality System Architecture.

The Command Media (including forms) is part of the Quality System. Following are explanations of terms used in the architecture.

**Quality Manual**

The organization’s compliance document.

**Functional Business Areas**

A major area of activity within the business that consists of a group of business functions.
Business Functions

A group of activities which together support one aspect of furthering the mission of the business. A function is ongoing and continuous, is not based on organization structures, and categorizes "what" is done, not "how."

Business Processes

A specific activity that is repeatedly executed in a business. A process can be described in terms of inputs and outputs, has definable start and stop, is not based on organizational structures, and identifies "what" is done, not "how."

Process Descriptions

Describe an interrelated set of activities that support a single business process with sufficient detail to establish "what" is accomplished.

Work Instructions

Describe "how" specific details of each process are to be accomplished.

Forms

Document the objective evidence of compliance to processes.

Command Media Processes

Three processes were created to describe Command Media:

- Process Identification and Control - Initiation, review, disposition, and revision/release of processes
- Command Media - Investigation, creation/revision, review/validation, approval, release/archiving of process descriptions and work instructions
- Forms Administration - Creation/revision, review/approval, documentation, reproduction of hardcopy forms and release of electronic forms

Early work on determining the magnitude of the problem began in October 1994. Over 50 different procedure processes were identified in the current system. So many document types existed that efforts to identify the complete list of documents was abandoned. However, this exercise did prove valuable in separating the administrative documents from technical product definition. Care was taken to ensure that every "shall" statement in Element 4.5, Document and Data Control of the ISO 9001 standard was addressed and that objective evidence was established.
SUMMARY

The Kansas City Division now has a flexible procedure system that is transitioning from department-based procedures to process-based Command Media. It has built-in controls to exceed customer expectations. It ensures that we are using the correct version of a document and that it accurately reflects the way we do business. It is easily accessible electronically but available in paper form if necessary. Most importantly, it is backed by the total commitment of management to use it and make the system work.
KCD Quality System Architecture

Quality Manual (Tier 1)

Functional Business Areas

Business Functions

Business Processes

Process Descriptions (Tier 2)

Work Instructions (Tier 3)

FIGURE 1
BIOGRAPHY

Russell E. (Russ) Klement is a master scheduler in the Master Planning and Material Requirements Planning department at the Kansas City Division of AlliedSignal Inc. The facility is a manufacturer of nonnuclear components for nuclear weapons for the United States Department of Energy. He recently completed a special assignment as an assistant project manager to implement a new electronic process-based procedural system in preparation for ISO 9000 certification. His previous functional responsibilities for seven years included coordinating product-related procedures, forms, and special projects. He also has six years experience as a material requirements planner.

Russ received certification in production and inventory management from APICS in 1991. He has been actively involved in the coordination of a major in-plant APICS certification program, available to over 3,000 associates. He also holds B.S. and B.M.E. degrees from Central Missouri State University.

Russ is a member of the Procedures Special Interest Group (ProSIG) of the United States Department of Energy's Training Resources and Data Exchange (TRADE). Many opportunities are available to network and benchmark with other procedure specialists in the world-class nuclear industry arena.