

## 2003 Showcase in Excellence Awards Recipient

### Boeing- Corrective Action Process and System



#### Boeing-Mesa:

##### *Highest Ranking Official:*

Ed Koopman, General Manager

##### *Contact Person:*

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##### *Type of work:*

Boeing-Mesa's principal lines-of-business is producing the AH-64D Apache Longbow Attack Helicopter for the US Army and international customers. The Mesa site also reconfigures older versions of the AH-64A model Apache Helicopters with newer electronics, and avionic systems. Boeing-Mesa contains the finest helicopter simulation facilities as well as high-technology research and a state-of-the-art manufacturing center. Also on-site is the Electrical Product Center which produces electrical assemblies for the Boeing family of products and for external customers.

*Workforce:* 4100

#### Testimonial of Value of Arizona State Quality Awards Program:

"Having an independent review of our processes validates the current strategic direction Boeing-Mesa is pushing business excellence, while the additional ideas we gather from the assessors adds to our ability to investigate different opportunities" – Danette Harris

#### Highlights of the Corrective Action Process and System:

In 1997, our company set a target to cut product costs by 20% to ensure our prime product, the Apache Helicopter, could compete in the global marketplace. Higher defects and rework directly increase product costs. Corrective and Preventive Action was one of the processes identified for improvement. In addition to increasing competitiveness, Boeing-Mesa needed to increase, its primary customer, the United States Army's confidence in the sites ability, which is measured through Army risk assessments. In 2000, besides our Army risk scores for corrective action being high, Boeing-Mesa was at risk of receiving a major non-compliance for our corrective action process. This related in part to the mainframe corrective action tracking system that was a subset of the product non-conformance system. Its functionality was limited: CA requests were generated but few could validate they were acted upon. Limited system query and reporting capabilities made it difficult to trend or determine preventive action opportunities.

Our approach to corrective action was to enable anyone with access to a company computer (most employees) to initiate, and work corrective actions. The entire process is supported via a web-based application call the Enterprise Common Action Tracking System (ECATS). ECATS is utilized to document and track a variety of actions that affect everything from quality issues, customer concerns, requesting design changes, to process improvements. The purpose for creating the system was to establish a single tracking tool and repository for many different types of actions. This repository is simple to query, establish trends, redundant corrective actions and opportunities for preventive action. The more it is used the more useful the data to indicate overall trends and preventive action opportunities.

Unlike other systems of its kind, ECATS was designed with a primary focus being ease-of-use for its users. Several focus groups and pilot studies were conducted early on to ensure we met that objective. The system uses a “folder tab” metaphor. The tabs are sequenced in an order that walks the user through each step of the problem solving process (i.e., problem statement, cause analysis, action plan, measure of effectiveness, and verification of results). The first step in the corrective action process is the identification of opportunities. Though some corrective actions are mandatory (customer requested corrective action and non-conformities identified through audits) the majority of corrective actions (92%) are initiated by Management Corrective Action Boards (MCABs). MCABs are management teams responsible to review product and process data, approve and assign corrective and preventive actions. Once the corrective action opportunity has been prioritized by the MCAB, it is documented on the Enterprise Corrective Action Tracking System (ECATS).

Preventive action opportunities are identified via audit observations, and program risk identification. Program risks are identified via a 3P activity, and program management reviews. Typical examples of proactive actions being tracked in the Enterprise Common Action Tracking System (ECATS) are the process control plans for the Apache Fuselage, and pre-production design reviews.

An approved C/PA begins with the documentation of the problem statement. If corrective action is desirable then a search for root causes begins. A root cause analysis is performed to determine the causes of the problem that need to be eliminated or mitigated to preclude recurrence. The Apollo Root Cause Analysis method has demonstrated the greatest utility in our organization therefore, it is the method most encouraged and taught. In 2001, Boeing-Mesa developed an agreement with the Apollo Group to allow Boeing employees to teach this method within The Boeing Company. Since then, we have taught this method to over 600 people at Boeing-Mesa and other Boeing components. In preventive action the problem statement becomes a risk statement. Process analysis occurs to mitigate the risk and the action plan is tracked in the ECATS system.

Once the causes or factors of risk are determined the best solutions are identified and a plan is documented. The action plan is approved by the applicable MCAB and put into action to implement the solutions identified. If barriers are encountered, there is a formal escalation process that raises the issue through management levels. The highest level is the Executive Corrective Action Board (ECAB). The ECAB membership is made up of senior managers including the site General Manager and on-site Army Commander.

Before the action plan is implemented a Measurement of Effectiveness (MOE) is established to compare the actual results to those expected. This is our method to determine whether the actions achieved planned results.

Finally, after all elements of the plan are completed, verification is performed to ensure the actions were completed per plan. If the results were successful, then the ECATS record is closed. If the desired results are not attained, then the root causes, significant factors, and/or action plan are revisited or the entire effort may be started over.

The Mesa corrective action process and ECATS system is currently shared between three Boeing business units with additional interests being shown throughout Boeing. The Long Beach business made some improvements to the process and system to support their Air Force customer. Boeing Mesa adopted many of these refinements as part of our joint benchmarking activity. Their implementation of the system significantly pleased their customer and ultimately we received the prestigious Silver Eagle Award for the original design.