THE CHANGING ROLE OF THE QUALITY PROFESSIONAL
IN SUPPORT OF TOTAL QUALITY MANAGEMENT

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ABSTRACT

The role of the quality professional needs to change dramatically to keep pace with the new Total Quality Management (TQM) philosophy now being implemented at DOD activities. Our traditional quality inspector or specialist will not have the knowledge and skills that will be essential to supporting the concept of continuous process improvement. Technical knowledge of the product will become less important while analytical techniques will be crucial to helping production understand and improve their processes. The new quality professional will need to be an expert on measurement, analysis, improvement and control of processes. In addition, they must become the catalyst that stimulates the teamwork so critical to achieving total quality management.

An increasingly large segment of American industry has discovered, the hard way, that they cannot compete using an inspection based quality system. Inspection and some other traditional quality control procedures are by nature non-value added functions only necessary because another activity will not, has not or cannot do their job properly. Total Quality Management (TQM) systems concentrate on getting all functions to assume their part of achieving quality. This in turn has led to opportunities to reduce or eliminate inspections and other control mechanisms that do not directly add value to the product or service. With the producers essentially performing their own quality control, the role of the quality organization and the quality personnel must change. Quality is no longer the sole domain of the quality professional, but has now become a primary duty of everyone in the organization.

In the quest for total quality AFLC Organic Depot Maintenance is no different than the private sector. We must find more efficient and effective ways to do our jobs. Continuous improvement through teamwork and analytical techniques seems to be the best way to do this. Our TQM concept is QP4 - Quality is People, Process, Performance and Product. QP4 means that people working processes that perform, provide products to our customers that meet or exceed their needs. QP4 officially began in October 1987, but prior to that, a year-long prototype was in progress in maintenance at the Aerospace Guidance and Metrology Center at Newark, Ohio. This was a great success and clearly demonstrated the usefulness of continuous improvement in our organic repair environment. It was also very timely since it meets almost every requirement of the ODQ Master Plan for Total Quality Management published in August 1988. The original modernization of our quality program actually began some years earlier with a major quality improvement study called Project Overlook. The recommendations of this study were implemented in three separate stages, the last stage is QP4 which is the catalyst needed for the first two to enable them to reach their full potential.

The first stage was to establish a formal accountability and traceability system for all services and products. This was accomplished by qualifying and certifying mechanics and technicians to self inspect and accept their own work. This system, called Production Acceptance Certification or PAC, requires task training and a period of demonstrated performance before certification is granted. It is an agreement where management provides all the requirements the workers need to do the job right and then holds them accountable. Once the person doing the work accepts the responsibility for the quality of what they produce, the quality work force is able to cease mass inspection and do more proactive defect prevention activities.

The second stage was the addition of scientific and technical skills to augment the existing quality specialists. In the Quality Engineering Branch, the primary emphasis is to provide professional engineering expertise in solving reliability and maintainability problems and in preventing future problems through active technical involvement in the improvement of processes, procedures and methods. In this regard the quality engineers make recommendations for...
parts improvements, design changes, better technical data and procedures. To support this effort the new quality verification centers provide sophisticated measurement and examination for critical aircraft and engine components while special methods laboratories aid in the development of new ways of performing maintenance processes and in developing new tools and equipment for unique applications. Also added were a software quality assurance function and metrology expertise.

The Physical Science Branches were also integrated into the quality organizations. The traditional functions of chemical and metallurgical analysis were retained with several new capabilities added. These included a special industrial process section to lead multidisciplined teams to enhance and control processes such as aircraft painting and metal plating. The new look for the quality organizations was completed with the creation of nondestructive test, environmental management and industrial safety sections. Adding these new technical and scientific functions to the quality organizations provided a new dimension to the traditional quality role with a full range of support to the production efforts.

In just a few years the capabilities of the quality organizations in AFLC organic depot maintenance were tremendously expanded, but something more was needed. This was the need to achieve total quality involvement of all maintenance activities and to integrate these new quality technical functions into our day to day activities. The time was right for a total quality concept like QPA.

The success of a total quality effort depends on developing a true quality culture throughout the whole organization. It requires extensive education and training of great numbers of people of all grades and disciplines. The objective is to get everyone continually striving to improve their processes. The primary mechanism of QPA is the Process Action Team or PAT. PATs are small teams of people who represent all elements of a process. These teams are composed not only of production workers, but of supervisors, schedulers, engineers, suppliers and anyone else who contributes to the process from beginning to end. Getting people organized to work together for improved quality is a powerful thing in itself, but a method is also needed.

The methods used by our teams are similar to those used by others; flow charting, customer supplier relationships internal and external, cause and effect diagrams, pareto analysis, graphs and charts and other analytical techniques. The continuous improvement goes on until the process is controlled at a desirable level. At this point, pulse points that best indicate the variability of the process are monitored by the production workers to ensure the process continues to perform in a predictable manner.

There are now about 200 active PATs throughout AFLC maintenance. Many processes have been helped and many more are being worked. But it's not enough. There can never be a PAT for every process. All processes do not need a formal team, but they all need continuous improvement.

The role of our quality personnel has changed with our quality system. From primarily a black hat inspector to one of supporting production with process analysis expertise. The old inspectors are now quality specialists tasked to help measure, analyze, improve and control processes. To support these specialists are a variety of technical and scientific experts provided by the reorganization each educated or trained in a professional discipline that can be applied to process improvement.

The new look quality professional must be the champion or mentor of total quality. One of their primary duties will be to get the "real experts" involved in improving processes.... those people who work them everyday. This includes not only industrial processes, but also the paperwork processes. The quality specialist's job is to get all the other disciplines to do their part for total quality and to be the interface between the process workers and the quality technology support functions. The tools used are basically the same as those of the PATs....flow charting, cause and effect, pulse point measurement etc.

The skills and knowledge required to perform this new role are very different from that of the black hat days. The inspectors needed to have a technical knowledge of the product whereas the specialists in the process improvement mode, need to know how to measure, analyze, improve and control processes. In addition, they have to know how to get the process workers to work as a team to achieve real improvement. The quality person in the work area will no longer be the expert on the product, but will have the analytical and organizational dynamics required to support "Quality Teamwork" in the work unit. They will also help tap quality technology resources such as those available in the quality engineering and physical science laboratories. No longer should the quality
professional in the work area be looked at in a negative sense, their black hats have become white or will in the future.

The QP4 total quality concept does not necessarily need a formal team like our PATs. The methodology can be used by anybody with a little education. What QP4 requires is a desire for total quality and a little teamwork. The quality professional must become a process improvement expert and act as the catalyst to promote this teamwork if Total Quality Management is to reach its full potential.

**CHANGING ROLE OF QUALITY PROFESSIONALS**

**PERCENT OF TOTAL MANPOWER DEVOTED TO EACH CATEGORY**

<table>
<thead>
<tr>
<th></th>
<th>QUALITY INSPECTORS</th>
<th>QUALITY SPECIALISTS (%)</th>
<th>ENGINEERS/SCIENTISTS (%)</th>
<th>OTHER (%)</th>
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<tr>
<td><strong>BEFORE</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Overlook</td>
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<tr>
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<td>45%</td>
<td>10%</td>
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<tr>
<td><strong>STAGE THREE</strong></td>
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<td>20%</td>
<td><strong>70%</strong></td>
<td>10%</td>
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*POSSIBLE RATIO BASED ON PROJECTED FUTURE NEEDS
**SOME MAY BE IN ORGANIZATIONS OTHER THAN QUALITY