QUALITY ASSURANCE
WHO NEEDS IT?

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ABSTRACT

The article discusses what Quality Assurance is, why it is needed in the MoD and recommends readers to seek formal education in its application.

Whilst reading recent issues of the *Journal of Naval Engineering*, I was surprised to see that none of the contributors admitted to having any association with the Institute of Quality Assurance, even though some of the articles were on quality assurance topics.

The article in Volume 35 No 2 regarding ISO 9001 certification of the MASU at *Daedalus* shows that some of the contributors are directly involved in Quality Assurance (QA), but there is no indication that academic training and qualifications have been sought in this field of endeavour in the same way that BSCs, CENGS, MIMECHES, etc. have in other fields. The author of the article referred to above could probably verify that the disciplines and principles in ISO 9000 series are just as complex as some of the engineering principles. Setting up a management system suitable for certification to ISO 9000 series is not easy, but is becoming an increasingly common requirement.

In practice, many of the management practices used by readers and contributors probably follow some of the requirements set out in the ISO, but they may not be formalized into a coherent system that can be assessed for compliance by an independent assessor.

The need for independent assessment of an organization may be customer driven or when some activity of the organization is involved in Competing for Quality (or Market Testing as it used to be known), but the initiative and commitment has to come from the senior manager of the activity concerned.

What is QA?

QA is a means of demonstrating, to second or third parties (i.e. customers or independent parties), that you have an effective system for managing your processes and that you control the variability in your products. Management systems do not have to be based on British Standard (BS) EN ISO 9000, but this is the standard usually followed.

Standards

The principles of QA were first devised and introduced by the MoD during the World War II. The aim was to bring some order into the variability of products manufactured by industry, in an effort to increase their reliability. Factory inspectors would visit or be resident in factories and could be called on to amend processes to eliminate faults that had been experienced by the users—the era of the 'men from the Ministry'. After the war, leaders of industry saw that the principles that they had been forced to follow were actually quite sound in their own right, and could enable them to become more successful and cost effective. The basic requirements in the original Defence Standards (05-20 series) were issued as BS 5750 and its use throughout industry became more widespread. The BS went through two

revisions until the latest evolution was issued as BS EN ISO 9000 (1994) series—a sign of its international recognition.

The situation today is that industry is better at QA than the MoD. The scope of its application has moved far beyond the original concept of managing only manufacturing processes, and now includes such service industries as banks and those with less tangible products such as consultancies. The original requirements have become more rigorous with more actions being added. Some actions that were originally recommendations have now become requirements. The standard is used as a yardstick for success in all areas of business, and most companies that have been successfully assessed are listed in the DTI register of assessed companies.

The next revision of the ISO, due for issue in 2000, will be even more demanding on the manager, as it will embrace Health and Safety and environmental safety with QA. Successful assessments are expected to be far more difficult to achieve.

Measurement

There have been a few notable leaders in the field of QA, and it is no accident that many of these were originally statisticians. They showed that the way to prove that a quality management system is working is to use statistics. There is an important doctrine in QA that:

'if you can't measure it, you can't manage it.'

The question that probably springs to mind is:

"What should be measured?"

There is only merit, in QA terms, in measuring the performance of activities that have a bearing on your product. Having taken a measurement, it should be recorded and compared with earlier measurements of the same attributes. The analysis should show if there are trends, inconsistencies or irregularities which would lead you to the conclusion that the actual process output is not (or will not be) consistent with the intended process output. With this information in mind, you can now make informed decisions on what, if anything, needs to be done to bring the process back in specification. The fourth step is to re-measure to verify that the corrective action taken has been effective in correcting the trend.

This four stage cycle—measure, analyze, decide, check—is a continuous process with the objective of eliminating variability.

The actual measurement process will depend on the activity being considered. The trick is to be careful in selecting the right performance indicator—there is no point in using the numbers of defects detected as a measure, giving the false impression that the greater the number of defects, the better you seem to get! Different measurement techniques can be used in different circumstances, and the results analyzed and corrective actions introduced.

This is management in its finest form. No more flying by the seat of your pants. Informed decisions can now be made to control the output of processes that you are responsible and accountable for.

But why seek academic training and qualifications just to do a bit of statistics that you may already know, you ask? The answer is that this is not pure statistics to be learnt in the isolation of academia, it is statistics applied to **management**. Statistics are the tip of the QA iceberg. They are the physical evidence that the management system is working as intended, and is under control. The other 19 twentieths (read the ISO!) of the iceberg are the supporting structure to ensure that the statistics are accurate, meaningful and properly used.

Training courses in QA are available commercially, and in colleges of further education, covering specific techniques or the whole prospectus that

will allow successful students to qualify as members of the Institute of Quality Assurance. There is even a Diploma course available. For information regarding your nearest centre, contact the Institute of Quality Assurance.

There are quality initiatives springing up all over the MoD:

- Total Quality Management
- Competing for Quality
- Investing In People
- Business Process Re-Engineering, etc.

These have been introduced with the intention of reducing running costs by eliminating wasted effort (Quality costs—another statistic). They have different styles of application, but a single message:

'Survival of the fittest'.

A BSc may enable its owner to proclaim himself to be professional in the field of engineering, but the daily activity is more likely to be wrestling with the intricacies of management.