

Quality Auditor Review

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Prophet or Profit

Audit Thinking By: *J.P. Russell*

[Excerpt from Annual Quality Congress talk, May 2000]

We audit to help support value added processes that are profit generating. For nonprofit organizations we audit to support value-added services and the advancement of the service organization.

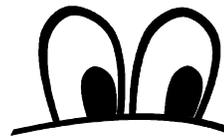
The value received from the audit program should be greater than the cost. In-fact, there should be a return on expenses (ROEx) at-least equal to the organization return on investment goal. The return revenue, less depreciation and expenses, should be X% over what was spent. The benefit from auditing should exceed the cost of the audit program and be consistent with other ROEx goals throughout the organization.

At first glance it may appear that auditing is not for prophet or prophesy. But management doesn't care about yesterday, they want to know what will happen tomorrow. The audit report is used to prophesy. For example, based on the audit results, management may have a certain confidence level that the organization will continue to be compliant as long as the system controls remain, there are no significant changes, and sufficient resources are continually provided. If you are compliant today, it is likely that you will be compliant tomorrow (for a stable process). If you



are making significant improvements today, it is likely that you will continue to make significant improvements tomorrow. The confidence level in performance of the audited area decreases with time and when there are changes to the system. That is why audits are scheduled for areas where there has been significant management/ system changes. Audit results can be viewed as a leading indicator for continuous compliance, sus-
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From the News Desk

⇒ The second edition of The Quality Audit Handbook is due out November 15th. Quality Press will give backorders first priority. There is about 30% more material in the 2nd edition compared to the 1st edition. The new edition is aligned with the current quality auditor body of knowledge, the ethics, audit program management, and sample topics have been greatly enhanced.

THIS IS THE FINAL ISSUE OF THE NEWSLETTER.

Refunds have been pro-rated and included with this last issue. Thank you for your patronage.

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The Audit Guy Dennis Arter

Quality Audit Standards

Current auditing standards

While there are a number of auditing standards, only two standards for our kind of auditing - quality auditing - exist: ISO 10011, *Guidelines for auditing quality systems*, and NQA-1, *Quality assurance program requirements for nuclear facilities*. ISO 10011 was first published in 1994 and is in the process of being revised. NQA-1 is a consolidation of separate quality system standards for the nuclear power industry and has limited application today.

The ISO technical committees for quality management systems and environmental management systems have been told to develop a combined international standard for auditing. Tentatively numbered ISO 19011, this document will be used by internal and external auditors of quality and environmental management systems. Before this consolidation effort, the USA was making progress on getting quality audit principles defined for both process and system auditing. That work has stopped. The draft 19011 documents released so far have dealt with system audits. They also focus on compliance applications of the audit. This is due to a difference in philosophy between the quality and environmental camps on who should be evaluating the effectiveness and suitability of the underlying controls being examined. Environmental folks believe this should rest solely with management; whereas, quality folks believe there is value in allowing auditors to perform these evaluations. Additionally, third party registrars are heavy users of the existing quality and environmental auditing standards (10011 and 14010 series). They perform compliance audits of enterprises wishing to be registered to these management systems (or their spin-offs, such as QS9000 for the automotive industry). Although these third party auditors review the effectiveness and suitability of the local control methods, they do not question the usefulness of the baseline standards themselves. If the enterprise has met the requirements of the management system standard, they pass and get the certificate. The registered system may be inefficient, marginally implemented, totally decentral-

ized, hard to maintain, and yet compliant. Current interest in third-party registration leads me to conclude that the ISO 19011 development effort will be limited to compliance, system auditing.

Conferences and literature

For the past nine years, the ASQ Quality Audit Division has held an annual conference on auditing. Over these many years, a consistent theme has emerged: auditing can be a powerful tool to promote change and improvement. Recent articles

in the *Quality Progress* magazine have echoed this message. Audits can be used to help the enterprises improve their performance. The Malcolm Baldrige National Quality Award criteria emphasize the importance of evaluating performance indicators in order to improve. Internal auditing is one very effective way to do this. With all of this attention

being directed to the audit function as a change mechanism, there is no standard for management auditing.

Process and product audits

These two types of audit are not currently being used to their full potential. While product audit-

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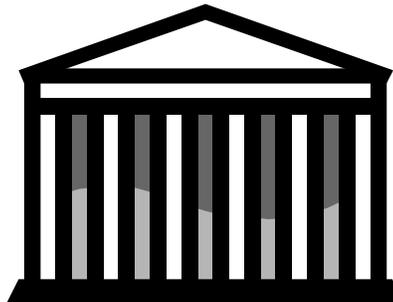
Dennis Arter is the newsletter feature writer and author of the best selling book Quality Audits for Improved Performance.



Dennis has been an independent quality assurance consultant since 1984. His primary service is instruction in the field of management auditing for a wide variety of clients, including government, manufacturing, energy, research, aerospace, and food processing. He is an ASQ Fellow and active in the Quality Audit Division. His home page is

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Audits can be used to help the enterprises improve their performance.



Quality Audit Primer

Auditing tips and reminders



Audit Preparation:

Sampling Techniques

In the last issue we talked about random sampling that can be used for statistical analysis. In this issue we will continue with sampling and spend some time on several sampling techniques. There are many techniques for dividing, segmenting, and determining the population or a sub group of the population to be sampled.

Stratified Sampling

The auditor may divide the population into strata. Strata is the plural form of stratum. This simply means dividing the population into sub-populations or groupings of things you want to test or evaluate. Anytime you create a sub-category for a sample selection, you are said to be practicing *stratified sampling*. For example: When faced with sampling 1000 purchase orders, the auditor may use stratified sampling by examining a random sample of purchase orders in certain dollar amount ranges (e.g. 0-\$5K, \$5K-20K, \$20K-\$100K, >\$100K). Sub groups may be formed based on dollar amount, processes control changes (before and after), process history, risk (safety, health, dollar, poor quality, environmental), and so on. Random sampling techniques should be used when selecting samples within each stratum or subgroup. Stratified sampling may improve sampling efficiency and ensure audit results are relevant (representative). Conclusion from the samples selected are limited to the defined group or stratum.

Other examples of stratified sampling are:

- Sampling corrective action reports for each product line or service
- Sampling parts from two difference shifts, but same machine and run (lot) number
- Sampling major and regular projects/ cases

Analogy: I want to determine the quality of all the butchered (cut) meat at the super market so I create sub-populations of difference meat cuts (filet, T-bone, sirloin) and randomly sample each one.

Block (Cluster) Sampling

Block or Cluster sampling is similar to Stratified sampling in that subgroups are identified as part of the total population. However, for block sampling, a block is chosen from the total population to be sampled. The block may or may not be rep-

resentative of the total population. In many cases the decision to choose blocks to sample is an economical decision because it would be very costly to collect random samples from the entire population. For example: 1) Failure investigation records may be scattered throughout 5 different facilities so the auditor decides to conduct block sampling by only selecting records to examine from the existing facility file cabinet; 2) The auditor selecting a block of day workers to interview as opposed to nights and weekend shifts, or 3) the auditor selects complaints from the last three months to

sample. Block sampling is useful for problem investigations and reducing sampling (auditing) costs. Statistical inferences can only be drawn on the block selected. Random number sample techniques should be used when choosing samples within the block.

Analogy: Bill is the week day butcher at the super market so I decide to create a block and randomly sample meat (filet, T-bone, sirloin) butchered by Bill. Over time, I should be able to determine if Bill is a good butcher.

Judgmental and Directed Sampling

The auditor uses judgment or directs that samples be taken based on the auditor's understanding and experience. The auditor normally uses judgment to sample higher risk processes or transactions. Many processes handle normal or routine situations well but tend to falter when dealing with the non-routine or an exception. Many times the exception to the rule is not really an exception, but a special order or circumstance that happens frequently. Auditors should test controls to ensure they are effective

(Continued on page 4)

Block sampling is useful for problem investigations and reducing sampling (auditing) costs.



Sampling Techniques (Continued from page 3)

in all situations. Some clues for identification of controls to sample that have a higher risk of failure are:

- ⇒ new requirement/ specification issued
- ⇒ changed customer order or project requirements
- ⇒ special requests
- ⇒ changed process (improved, upgraded)
- ⇒ trouble areas for auditee
- ⇒ new equipment or recent start-up
- ⇒ delays and backlogs
- ⇒ repeats and doing things over
- ⇒ when it is different from the rest
- ⇒ new employee performance
- ⇒ exceptions to procedures
- ⇒ activities with significant swings (seasonal retail sales, all calibrations due in October each year, shifting resources to meet a specific requirement)

Judgmental or directed sampling should be used when auditing mature systems (systems we believe normally operate very smoothly). Infact, picking apart all the weaknesses of an immature system could hurt the deployment and evolution of the new system.

Judgmental sampling is the most cost effective sampling approach yielding the greatest potential benefit and does not preclude statistical analysis. Statistical analysis would depend on how the population was defined, how the samples within the population were selected and the number of samples examined.

Analogy: Based on judgment, I go to the meat counter and select only meat of a certain thickness, certain amount of fat, and marbled. After destructive testing, I will determine if I like the best (supposedly) meat that is available at the super market.

Unplanned (haphazard) Sampling

The official term for no sampling plan is Haphazard Sampling, but I prefer Unplanned Sampling. Unplanned sampling is just that, it is unplanned. No factors such as risk, dollar amount, representativeness are considered when sampling. It is the “I know it when I see it” sampling approach. Since no thought has been given for selecting random representative samples of defined populations, statistical analysis of the data is unlikely. Many auditors practice unplanned sampling due to time constraints and lack of knowledge of the controls being examined. Unplanned sampling is not necessarily bad, it is just that all we can say

after the audit is, the auditor was here and didn't find anything this time. Unplanned sampling contributes to inconsistency between auditors evaluating the same controls.

Analogy: I am in a hurry so I take the closest meat packages and move to the next item. Here, I may not be able to draw any conclusions about the quality of the meat, quality of various cuts of meat, quality of work done by different butchers.

Summary:

Nonstatistical sample techniques are when no statistical inference can be drawn about the population. Whenever a sample is taken from a larger population there is always a risk that the sample is not representative of the entire population. When samples are taken in such a way that the risk cannot be determined, it is called nonstatistical sampling. When it is determined that the cost of statistical sampling exceeds the benefit, nonstatistical sampling is used.

Non-statistical sampling is commonly used by auditors. However, good practice is to randomly select samples and use one or more of the techniques discussed to identify the population being



Prophet or Profit *(Continued from page 1)*

tained effectiveness, or on-going performance improvement.

An auditor looks at the past to foretell a future of prosperity or future business success or failure. This method is a lot more scientific than TAROT Cards, interpretation of tea leaves, or visions in a crystal ball, etc. Perhaps an audit may show no improvement or that there is a risk that the company could lose its license, or a probability that it may not be able to pass a customer audit, or financial risks due to waste or quantity and quality of inventory.

We also audit for profit. We audit for profit by ensuring the audit process adds value by: 1) paying for itself, and 2) identification of process improvement opportunities. Process improvement may come from cost saving, identification of new business opportunities, and avoidance of risk to organization wealth. Nonprofit seeking organizations want to continue to do more with the same or fewer resources (improve effectiveness and efficiency).

Management is not asking for audits to report what happen last month. Management wants to know how we are going to do tomorrow. Audits are done to check on today's performance as a predictor of future performance/ events. If things are bad, are they going to get worse or are they on the mend because the organization is moving in the right direction. There may be several problem areas but the issues are being addressed one by one because system controls exist to meet the challenges of the future.

An example audit conclusion may be: All areas have maintained satisfactory system controls and continued support should ensure ongoing product quality and improvement.

Audit customers (management) expect audits to contribute to profit (improve effectiveness) and be a predictor of the future.

Multiple Choice Question:

A prophet is one who:

1. utters divinely inspired revelations
2. is gifted with more than ordinary spiritual and moral insight
3. is employed as a quality auditor

Answer: All the above



Quality Audit Standards *(Continued from page 2)*

ing was quite common in the 1960s, it has fallen into disfavor. Those few enterprises using the product audit are doing so in an inconsistent manner. A product audit performed in manufacturing is significantly different than one performed in the hospitality sector. Yet, they both have common characteristics that could be captured in a standard.

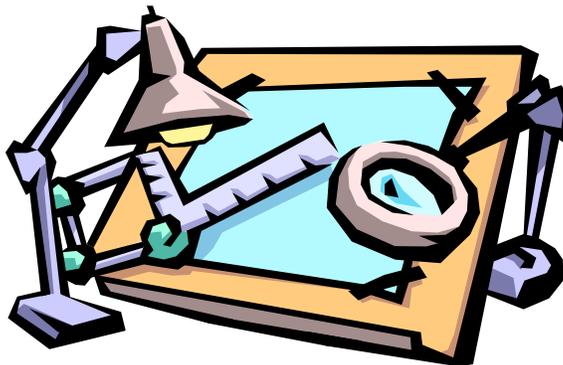
Process audits are not well defined yet. While all agree that they could have usefulness, we don't yet have common, defined methods for their performance. We need a standard.

Call for action

I believe we should continue to support the international effort of developing a combined standard for auditing quality and environmental management systems. Many folks will receive significant value from this combined standard.

I believe we also need to develop standards for auditing applications that are not receiving attention right now. These should be USA national standards, rather than international standards. The ASQ Quality Audit Division is in a unique position to do this. They can assemble resources for two projects: a national standard on product and process auditing and a national standard on management auditing. This will probably take from three to five years for each standard. It is a lot of hard work.

Perhaps our national efforts will become the basis for international standards. Perhaps they will not. Regardless, we will have filled an important void and advanced the profession of auditing through our efforts.



Field Reports:

The Good.. The Bad.. The Ugly..



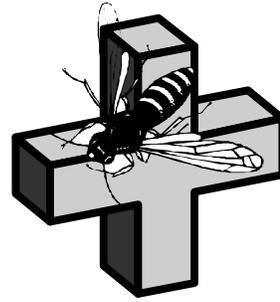
B +

By J.P. Russell

When my children were growing up and they were down in the dumps, I would tell them to remember my blood type, B positive. It was silly, I know, but some times you need something to put a smile on your face and a focus on the good things around you.

On a personal note, please B+ and avoid being mean spirited and self righteousness in the name of quality. Above all don't get caught in the brutal honesty trap. Being honest is natural for auditors but use it wisely. I can remember at one point my daughter did not have any friends. I noticed that she was being open and honest with every person that visited our home by sharing what she did not like about them and where they had short comings.

Frankly I have experienced too much brutal honesty, mean spirited behavior, and self righteous-



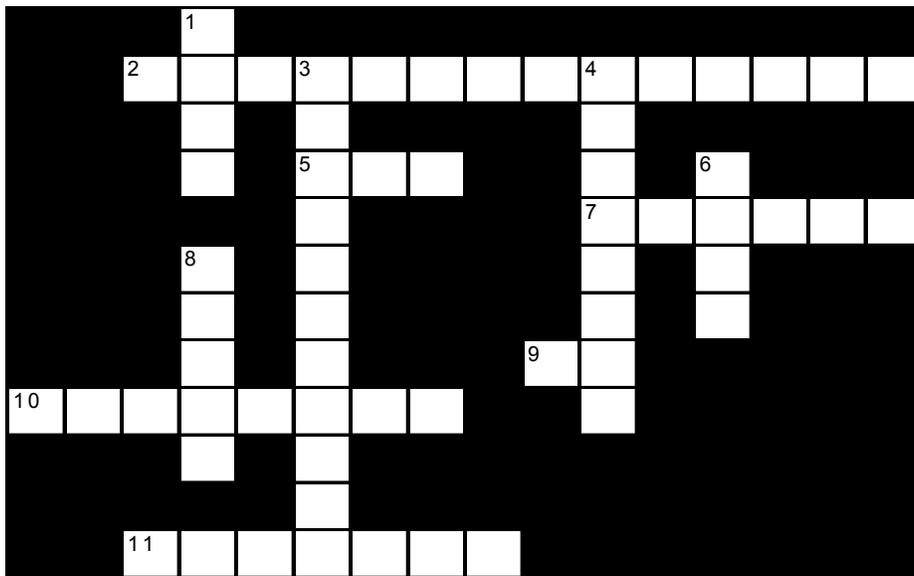
ness in the auditing profession. I have heard about or observed auditors losing their best friends, using personal abusive attacks to combat an opposing

view, audit gurus being demeaning to others, and a host of unprofessional book review comments. Perhaps it comes with the territory, but you don't need to succumb to it. Be positive and think about the effect your choice of words will have on the people receiving them. In this case the end does not justify the means.

A second reminder is to be positive about the audit results before you report it.



Quality CrossWord



Across

2. Haphazard sampling
5. A joiner
7. Sites
9. Elected one
10. Assessing
11. Does it right the first time

Down

1. One and two
3. Of numerical facts
4. Tasting
6. Own
8. His and her

Solve the CrossWord and discover the quality quote taken from *The Quality Audit Handbook*.

Ans:

Both non-statistical and statistical sampling have their place in quality auditing.

We the QAR staff wish to thank you for your support. However, we have been operating with a negative cash flow and the future potential does not warrant the continued expense.

If you have a need for a quality consultant or trainer, keep us in mind, I am only a couple of clicks away.

Keep the faith!

J.P. Russell
<http://www.JP-Russell.com>

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