



# Quality Connection

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*Support your local Section this year.  
Attend monthly Section meetings..*

## Problem-Solving Success Tip - I

Jeanne Sawyer, Ph.D.

**Choose solutions that are effective—and implement the solution completely.** The solution phase is where everything gets tied together and you start to get results. This part of solving problems is straightforward in concept but not necessarily easy to do.

Because you've defined the problem carefully, identified the root causes and verified them, you know what the problem is and why it occurs. You've also assessed the impact of each of the causes, so you know which causes to focus on.

Solving the problem requires eliminating each of the root causes that are important enough to bother with. Take each of them one at a time. Decide how you will eliminate that cause and write down your action plan: the tasks that need to be done, who is responsible, when they're due and completion criteria that will tell you when each task is complete. Crosscheck your action plans to be sure:

- When the action plan for a particular cause is completed, the cause will be eliminated,
- When all your action plans are completed, you will achieve the success criteria for the whole problem,

- Your contingency plans are sufficient to deal with any surprises.

Double-check to be sure your solution plan really will eliminate the causes you've identified. This is a good time to apply the motto, "Everything necessary, nothing extraneous." Make sure each action plan includes everything necessary to eliminate the cause it is focused on. Eliminate anything that doesn't contribute to eliminating that cause.

Then execute the plan. Implementing the plans will take your best project management skills to keep everything on track. This is the time when you and your colleagues are most at risk of getting distracted by other projects. Don't let your action plan join the list of good intentions.

Jeanne Sawyer is an author, consultant, trainer and coach who helps her clients solve expensive, chronic problems, such as those that cause operational disruptions and cause customers to take their business elsewhere. These tips are excerpted from her book, *When Stuff Happens: A Practical Guide to Solving Problems Permanently*. Find out about it, and get more free information on problem solving at her web site: <http://www.sawyerpartnership.com>

**Electronic Registration Now Available**

The Section has instituted an electronic system for dinner (Continued on page 2)

**Electronic Registration** (continued)

reservations for the meetings. Simply go to the Section Web page, [www.asqbaltimore.org](http://www.asqbaltimore.org), and click on the link for "Reservations for the Next Meeting. This is in an alternate to the telephone registration system in use now. If you do not get an on-screen confirmation of your information, please make a telephone reservation.

**Lean Manufacturing (and Six Sigma)**

By Eric Whichard

This short piece briefly describes the addition of Lean Manufacturing and its integration with Six Sigma in a company with headquarters and manufacturing operations right here in the Baltimore area.

My employer is a leading global supplier of catalysts and other specialty chemicals headquartered in Columbia, MD with annual sales of approximately \$2 billion and over 6,000 employees worldwide in nearly 40 countries. We supply products and services to petroleum refiners; catalysts for the manufacture of plastics; silica-based materials; specialty chemicals, additives and materials for commercial and residential construction; and, sealants and coatings for food packaging.

Since 1999, we have been using Six Sigma to improve productivity, quality, and performance both in terms of our products and services, and in terms of our business success. Six Sigma, with its systems analysis and quantitative / statistical approaches, has been in use now for about 5 years with great success both early on and recently. But in today's business environment, you've always got to look toward and move toward the next level. You can bet the competition is! So a few years ago, we began to ask, "What's next? Where do we go beyond Six Sigma?"

For us, the answer is Lean Manufacturing. In my own view, after the complex systems analysis and statistical tools of Six Sigma, Lean seems, in some ways, like a return to the fundamentals. But there is certainly much more to Lean than that. Lean has allowed us to add a number of useful mind-sets and tools such as Value Stream Mapping, Kaizen, Kanban, standardization, 5S, and "total maintenance".

Beyond Six Sigma results, costs have been further trimmed, capital spending avoided, and working capital freed up. This is very important to us in a market environment where sales growth is just nominal, and pricing power limited at best. If you can't grow sales very much, you've got to better control the costs of doing business to maintain and improve business performance -- and survive as an employer, corporate citizen of the community, etc.

As with Six Sigma, we're tending to start in manufacturing, but are also finding many applications for Lean in our business processes. Lean, along with Six Sigma, is being incorporated into the very fabric of how we do manufacturing, and business in general.

So: What's next? Where do we go beyond Six Sigma and Lean? It's already happening. But I'll save that for a future piece.

**Strengthening Supplier Relationship: With Comprehensive Audit Planning**

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**Summary**

Supplier relationships can be significantly affected by an auditor's approach to arranging, preparing and executing an audit. Proactive planning and clearly defined and communicated audit objectives can be mutually beneficial. The objective of this paper is to present information that will assist in Supplier Audit planning. The audit planning process must include:

- Defining the audit objective,
- Understanding the audit requestor's requirements, and
- Researching the supplier's past audit history and product performance.

Thorough planning will increase the value of Supplier Audits by using the information gathered during the planning phase to emphasize key concerns with the supplier. A well-planned audit will enable better communication with a supplier.

Auditors can facilitate this increased communication by carefully considering the end results desired by an audit process during the initial audit preparation. An audit planning reference flowchart is included in this paper to suggest areas and time lines for thorough audit planning. This reference can be used to develop a checklist for comprehensive audit planning. This type of planning will ensure a "no-surprises" audit environment where auditing can become a tool for enhancing supplier communication and partnerships.

**Introduction**

Buyers and managers are often surprised to find out that there are many types of audits. Sometimes an audit requestor does not know what he is asking for. He may know what objective he has for audit results but may have no idea how to get there. It is our job as

lead auditors and audit team members to ask the hard questions and do in depth research to determine why an audit program is in place and specifically why a Supplier Audit is to be performed.

Audits are frequently defined as system audits, process audits and product audits. Many Supplier Audits are a combination of all three. What combination of audit types and what audit information is needed to meet an audit objective? Audit planning is essential to answer this question.

### Defining a Supplier Audit

Managers and quality professionals often have difficulty defining a Supplier Audit. A Supplier Audit may be defined as an *audit to ensure that*:

- *The product to be received by the customer is as specified,*
- *The production process is well defined and consistent,*
- *Procedures, calibration and full product traceability are in place.*

This definition illustrates that a complete Supplier Audit is a combination of product, process and system audits. The identification of what combination of audit types and audit information is needed to meet an audit objective is important.

Audit planning begins with the question, “Why is this audit being performed?” Sometimes the answer is clear:

- Too many incoming rejections of material received from the supplier,
- Field failures of the supplier’s product,
- A new *manufacturer* introduced to the supply chain, or
- A change in product or service facility.

Sometimes you must dig further to answer the question. If the initial answer to “Why am I performing this audit?” is “because it is scheduled,” a few other questions must be asked. Why is the audit scheduled? This could be determined by the following questions.

- Is this a critical supplier of a single source or certified material?
- Does the supplier provide material with major impacts on product safety or customer satisfaction?
- Is this supplier part of a working alliance for supply chain improvement between companies?

In order to clearly define the audit we are planning, it is necessary to determine what combination of audit types is needed to meet the audit objective.

### Selecting the Audit Team

Selecting an audit team is an important process. Details and concerns involved in team selection are specific to each audit type. It is important that we define the type of audit and that we select representatives with the background to review each critical area. For example, if there has been an important change in the material components we may want an engineer on our audit team who is familiar with the components and how the product is used.

The team must be involved in each step of the planning process. Audit team members must review all background materials for the audit and information received prior to the audit.

### Establishing the Audit Objective

Audit requestors who have a clear idea of what Supplier Auditing can achieve can make audit planning easy by clearly stating what their expectations are for audit results. However, it is often the case that the audit request comes with some generic objectives such as “improve supplier relationships” or “prevent nonconforming products.” Even when the stated audit objective is clear we need to complete research to firmly establish what can be accomplished with this audit program. This research should include:

- Your company history with the product
- How the product is used? What is the product specification?
- Will this product save the Company money or improve safety?
- How critical is the product to your Company?
- Industry articles and reports
- Past audit reports
- How has the product failed?
- Number of alternative manufacturers qualified.
- Interviews with your in-house personnel about the supplier and the product.

Once you have reviewed the product and company history, the next step is to meet with the requestor and come to an agreement about the objective of the audit. A clear statement of the audit objective will assist the auditor in completing a checklist of items that must be completed prior to the actual audit.

### Flowchart to Guide Planning

Whatever the level of auditor experience, it is important to have a checklist to ensure that the key components of audit planning are completed on schedule. A flowchart or checklist can also assist in audit team communication. Shared audit planning

information can help inform the team about the objective of the audit, the background of the supplier, and the expected participants and roles of the supplier and audit team.

A flow-chart that I have used for audit planning is illustrated in Figure One. Each industry has specific requirements for Supplier Auditing. This flow-chart was developed for auditing suppliers of critical pipeline materials.

### AUDIT PLANNING REFERENCE CHART

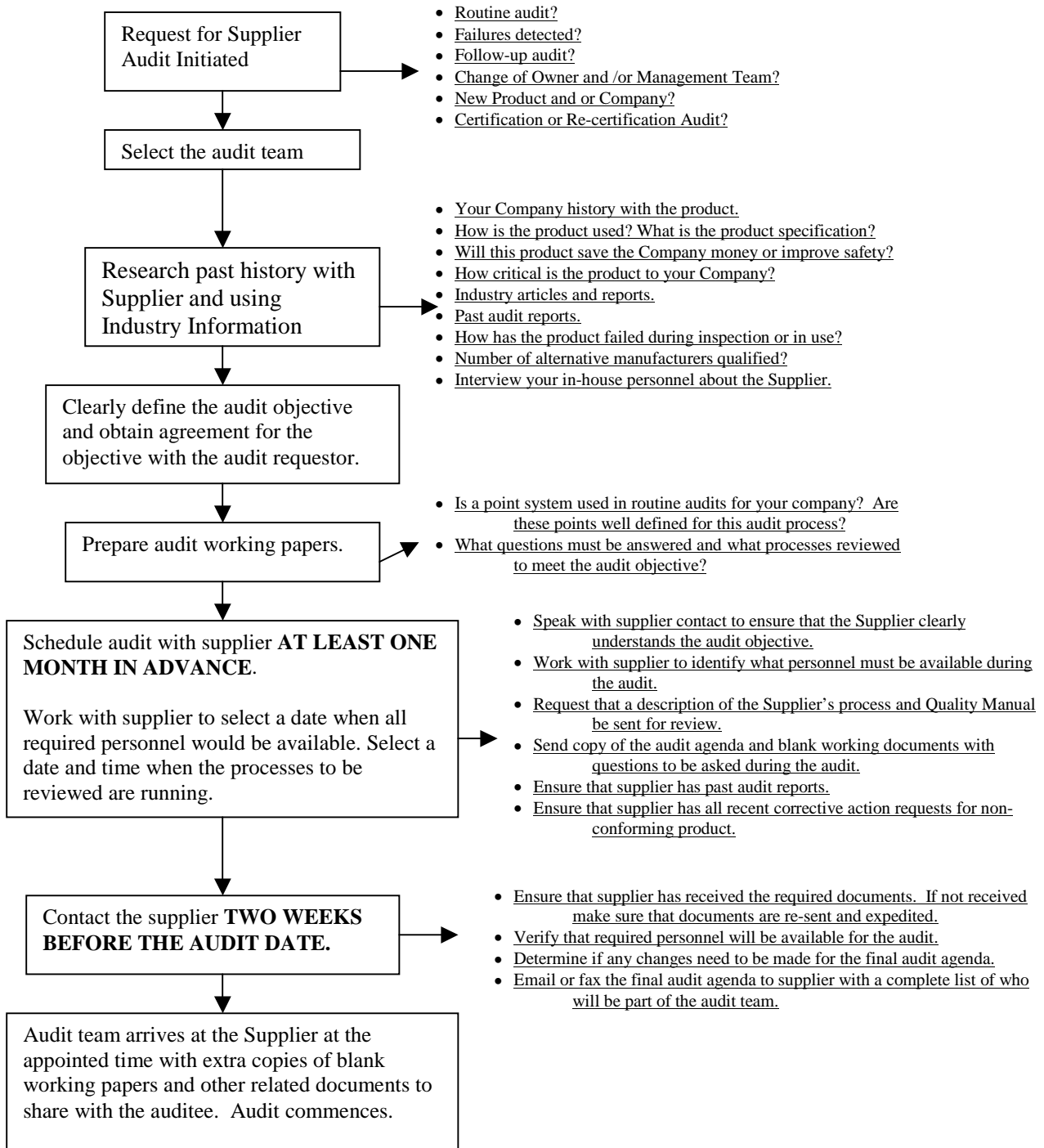


Figure One: Audit Planning Reference Flowchart

## Preparing the Working Papers

A decision on what type of audit working papers will be used may be made well before any one audit is planned. Does your audit program have a set of questions that can be modified for each specific audit? Do your purchasing decisions include a component of quality? How can your audit reports provide consistent input to the purchase decision? A set of auditing working papers can be created to facilitate your auditing evaluation program. For this discussion on audit planning, we are assuming that there is a program in place that defines what working papers will be used in an audit. The program in place should include what point system (if any) will be used and knowledge of how a new audit will relate back to past audits and different suppliers.

Audit survey materials, questions and other working papers should be prepared and ready prior to contacting the supplier to arrange the audit. The working papers should document sampling plans and sampling procedures to be used in the audit.

## Scheduling the Audit

Scheduling an audit is a lot more than selecting a date. Arrangements need to be made with the supplier and the Audit Team to make sure that all the participants will be available for the audit. Make contact with a living person to make these arrangements, either in a meeting or phone call. It is too easy to quickly read through an email and miss an important fact such as, "We would like to arrange the audit when our line of extra special widgets is being produced."

The audit is ideally scheduled with a minimum of thirty-days notice. Of course, scheduling must be flexible. On an exception basis, Audits may be scheduled with a much shorter notice when product acceptance is suspended or a new supplier is required immediately.

During your discussion to schedule the audit you need to:

- Establish who will be participating in the audit. Do they have the knowledge to answer your questions in the areas being audited?
- Ensure that the supplier has past audit reports.
- Ensure that the supplier has copies of all product specifications (may be a new supplier).
- Ensure that supplier has received all of your recent corrective action requests.

- Request that the supplier send a copy of their *Quality Manual* (if possible) and any specific procedures you need to review.

Once the audit has been scheduled, send the Supplier Contact a written confirmation. The confirmation should state all of the items discussed and agreed to during your scheduling meeting. The audit objective, audit agenda and any audit working papers you would like to share prior to the audit should be sent along with the confirmation. Do not forget to copy each member of your audit team with this information.

## Contact the Supplier Two Weeks Before the Audit

A phone call or email two weeks prior to the audit can add assurance that all audit planning materials have been exchanged and that all of the arrangements have been understood by both the auditor and auditee. Review the purpose of the audit and what processes will be reviewed during the audit. This is a good time to review the list of audit participants and their job title. At the end of this communication, document any changes to the audit agenda. Prepare the final audit agenda and send a copy to all participating members of the auditee and your audit team.

## Audit Planning Benefits Audit Results

A thorough audit planning process prepares all audit participants. It can increase the efficiency of an audit and prevent those misunderstandings that can result in an adversarial relationship between you and your supplier. The importance of audit planning can be illustrated by examples of audit results when audit planning and good pre-audit communication is not established. Two audit scenarios are presented here, illustrating how audit preparation or lack of audit preparation can affect supplier relationships.

### Example One: Widget Company Gone Wrong

**Scene:** Conference room of a key supplier, Widget Co.

#### **Background:**

- This supplier provides over \$2 million dollars in material from four different production lines.
- The audit was scheduled 2 months ago.
- Audit One Company has Widget Company as a sole source of supply for these materials.
- Six months ago Widget Company lost their certification due to several nonconformances reported from the production line. An audit at that time resulted in three findings.

- Widget Company must pay for all the incoming inspection at Audit One Company since they lost their certification. They have been paying for all incoming inspections for six months.

**Audit Attendees:**

- The four managers for each product line, the QA manager, the Plant Manager, and the Company president are in the conference room along with the four members of the Audit One Company team.

*The audit-opening meeting begins:* After introductions and a review of the audit agenda: the Company president asks the lead auditor of the Audit One team, “How can we get our certification renewed?”

Audit One Team Lead explains, “We require a six-month period with no product rejections and assurance that the findings of the last audit were corrected. We have had a six month period free of nonconformances and today we will confirm that corrective action has been implemented for the findings reported in the audit report six months ago.”

The plant manager is newly transferred from another plant. He has held the new position for four months. The plant manager, in a stressed voice says, “We have not seen the audit report from our prior audit six months ago. We do not know what the findings were.”

Audit One team looks to their audit team leader who has a dazed look in his eyes. The audit team leader says, “I have a copy here.”

The room begins to buzz, a secretary is summoned, and copies are made of the audit report from six months before and passed around the room.

Widget Company feels betrayed. They have done the best they could with the information they had. Now, there may be no chance to reinstate their certification immediately. An adversarial situation has been established before the audit has begun.

**Results:** Another audit will be needed with Widget Company prior to re-certification. The scheduled audit and meeting with Widget Company has not improved relationships between the two companies.

**Example Two: Check Making Company Supplier Approved**

**Scene:** Conference room of a new supplier, Check Making Company.

**Background:**

- A new supplier of blank checks is needed for the billing department, due to problems with an old supplier.
- Check Making Company has prepared a proposal to provide 100% of Audit Two Company’s billing checks.
- Audit Two Company would like to qualify the Check Making Company as a supplier as a result of a disappointing audit with their existing supplier.
- Audit planning steps have been completed by Audit Two Company to ensure that all participants have a copy of the specification for checks. The checks must fit into the billing departments printing and mailing machines.

**Attendees:**

- The managers for the check production line, the QA manager, the plant manager and the company president are in the conference room along with two members of the Audit Two Company team.

After introductions and a review of the audit agenda, the Audit Two team leader reviews the audit working papers and specifications with Check Making Company. All participants in the opening meeting have copies of the check specifications and know what processes will need to be reviewed during the audit. The opening meeting concludes after Check Company lays out an overview of their process and explains what automatic controls and inspections are in place to ensure that the product will consistently meet specifications.

The audit proceeds with resulting qualification of the Check Making Company product. The closing meeting ends with plans for representatives from Audit Two Company and Check Making Company to work together in designing a higher quality, lower cost check in the future.

**Results:** This audit has resulted in an open supplier relationship.

**Conclusion**

As seen in our “Audit One” example, inadequate audit planning can lead to disaster. It can change the audit process from one that will strengthen a supplier relationship into an audit that is strained and confrontational. Audit planning, including good communication with the auditee prior to the audit, will enhance the audit process for all participants. This

planning is the key to ensuring that audit objectives are met.

The "Audit Two" example illustrates that a well-planned audit can be used as a springboard to strong supplier relationships. An auditor who clearly identifies his company's product and process needs from a supplier can assist in opening communications between the Supplier and the User.

A Supplier Audit may be a combination of audit types and it is important that an auditor clarify the requestor's audit objectives early in the audit process. A checklist or flowchart can be used to ensure that all the steps for thorough audit planning are completed. When conducting an audit, it is helpful to have the Company audit procedures or a good reference handbook. A handbook that I frequently recommend for an audit reference is the *Quality Audit Handbook* available from ASQ Quality Press. This is a great book to use for audit training, when planning your audit program and for assistance in developing your audit checklist. There are also many audit references available for specific audit and industry specifications.

The most effective part of audit planning is open communications between the audit team and the auditee. Communicating all audit requirements, objectives and expectations will create an audit environment of mutual respect and teamwork.

**References**

Juran, J.M. and Gryna, F.M. *Juran's Quality Handbook, Fourth Edition*, Mc-Graw-Hill Inc., 1988, 15.32-15.33 (Discussion on Supplier Certification).

Smith, Janice L., *The Quality Audit Handbook*, ASQ Quality Press, Milwaukee, Wisconsin, 1997.

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We commend each of these individuals that have successfully achieved these Certifications. They have reached a new level in their professional growth.

***Section Pass Rates - October, December 2003***

| <b>Exam</b> | <b>Total</b> | <b>Pass</b> | <b>Per Cent</b> |
|-------------|--------------|-------------|-----------------|
| CQA         | 6            | 6           | 100.0%          |
| Cal. Tech.  | 1            | 0           | 0.0%            |
| CQE         | 6            | 3           | 50.0%           |
| CSQE        | 3            | 1           | 33.3%           |

***Comments on Certification***

**Tory Peeler, CQE** - I prepared for the examination through self-study using the CQE Primer and CQE Electronic Exam from the Quality Council of Indiana. I began studying for the exam six months in advance and studied, on average, five hours per week. This allowed me to work through all of the modules in the primer in about five months, leaving the remaining month for comprehensive review.

As I travel some for my job, I found the CQE electronic exam, which I loaded on to my laptop, to be a viable study option for flights and downtime on the road. I also found the electronic exam to be of particular value in acclimating me to the style and wording of questions on the exam.

Just prior to beginning study for the CQE exam, I completed Six Sigma Black Belt Training through a company-sponsored training program. Completing Six Sigma Black Belt Training prior to the CQE exam provided a level of familiarity and understanding of the statistics-related BOK elements that I would have lacked otherwise. With respect to the actual exam, I was able to complete the test within the allotted time with roughly 30 minutes to spare. I used this time to revisit the ten or so questions I had provided marginal or low confidence responses to. In the end, there were still a few questions that I was totally unprepared for and for which I could not locate related information in any of my study references.

***ASQ - Baltimore Section 0502***

***THE VISION: To be the Baltimore Metropolitan Area recognized resource on issues related to Quality.***

***OUR MISSION: To create value for our members and others by providing opportunities for development and resources for managing quality in the community.***

***Newly Certified Quality Personnel***

The Baltimore Section recognizes the following newly certified individuals who have passed either the June 2004 ASQ exams.

**Certified Quality Auditor**

Martin J. Schneider U.S. Can Co.  
Joseph P. Manik Food & Drug Administration

## *An Overview of Software Testing*

By Kay E. Duchesne

Who am I to be writing this? Well I'm someone who has done this job for over 20 years. I've worked in such places as Digital, Hewlett Packard, Lockheed Martin, RCA, GE. I've seen good and bad testing. So, this is mostly a lessons well-learned and best practices learned the hard way.

There is nothing technical here, it is simply following rules.

The rules come from some of the best minds in the field, people like Johanna Rothman. Some rules are parts of business processes, others are simply common sense.

### **Why Do We Test?**

- Contractual obligation
- Product quality
- Ensuring correct development
- Ensuring product has a life of more than 20 minutes
- AND, because people make mistakes

### **Who Tests?**

The answer is simple in theory – We all test. In reality – testing is usually done by a designated team. Or, anyone that can be spared. Test teams should be independent – not part of software or systems unless there in a separate management structure in place. It is OK to use developers as testers, providing they are not testing code they have developed above the unit level, and their testing effort is managed by the test team management.

### **What Do We Test?**

- The Requirements Document
- The Software Design
- The Software Code Modules
- The Integrated Code
- The System

We start at contract onset, and work until contract end. Testing, traditionally, has been something that can be done later. Testing early and often saves time and money on a project. This is my experience, and has been well documented by several well-known authors in the field like Barry Boehm, Boris Beizer, and Cem Kaner.

If you sometimes get the feeling that testing software is a moving target, you are probably correct. It moves constantly because of the development schedule.

### **Where Do We Test?**

- In our offices
- In labs
- On specialized hardware
- Where required by contract
- Where ever necessary to get the job done

Frankly, we should be testing from project inception, so we test in the proposal phase – conference room. We test in the product definition phase – conference room. There are times when the contract calls for a special place and special hardware to complete testing.

### **When Do We Test?**

- Not At Night!
- When Requirements are written
  - Are they testable
  - Are they understandable
  - Are they stand-alone

The first line is a not so funny joke. End of schedule testing quite often ends up being nights and weekends. This occurs because schedules allow software to be completed at close of business on Friday – rather than Monday. Scheduling for Monday would allow the software to be test by close of business Friday (in most cases). This also occurs because there are managers who seem to think that the code is complete when it compiles.

Requirements analysis is the key to having testable requirements. This should be the first work phase of testing any software. This is a very important task; systems, software and test should do this as a team. The problem of not doing it is running into non-testable requirements further down the line.

If requirements are not available, then product descriptions should be used. If using product descriptions, divide up what is done in hardware, and what is done in software. Sometimes this isn't possible – so make the best guess and go from there. This can be massaged again in the design phase.

The final derivative of this process should be the software requirements that can be broken down into lower level requirements that allow the software design to be started.

### **When Do We Test?**

#### ***When Design is being done – Inspection***

We inspect the architecture and the design to ensure that it follows the customer requirements.

#### ***When Code is being written – Inspection***



If there isn't too much code, a desktop check here is nice. Otherwise, a full up formal inspection is a good idea. A lot of problems get nipped in the bud with a good inspection process.

### ***Unit Test***

Here is where we see if the code works. Does it do what is expected of it? Does it handle errors correctly?

### ***Integration Test***

This is where we see if we can make the block of code work with all the other code.

### ***Regression Test***

This is more important testing than most people realize. Just because the new code now works, we don't stop there; we have to make sure the old code still works the way it did before we put in the new code.

### ***Requirements Test***

This is the test where we make sure that we are meeting the requirements. This is not a place to do timing. Save that for the performance testing.

### ***Performance Test***

Here is where we do the throughput. Here is where the question of how long does it take to process that 'thing' is answered. We should have been taking surreptitious measurements all along. Don't wait until the end and get surprised.

### ***Systems Level Test***

Here is where the testing should be a 'dog and pony' show. Problems should be wrung out before this, or at the least, identified. This is where we show the customer what he bought.

OLD ADAGE – Test Early, Test Often, Finish on Schedule

### **How Do We Test?**

Write a Test Plan that satisfies Management and the contract. This should be a parallel process with writing the Requirements Document. It should include the definition of input data, output results, and any hardware required to do the testing. Also, at this point you should be able to gain an idea of how many people will be required to handle testing and analysis and meet the schedule.

Design Tests that meet the criteria set out in the Test Plan. This should be a parallel process with designing the code.

Run Tests in a manner consistent with the Test Plan. Start running tests during the development phase. Finish in the test phase.

Gather results in accordance with the Test Plan. The test plan should have an area for analysis, and for documenting problems found.

Analyze results to determine contractual acceptance. Are the results as expected by the plan, and the contract?

### **How Do We Test? (Shoulds)**

- Should test requirements, if there are any (Requirements Based)
- Should test how a user will work with the software (Scenario Based)
- Should test threads if being used (Thread Based)
- Should use a coverage/complexity tool to determine completeness of testing – this is probably best at a unit level.

It is not OK to do free form testing without a plan or methodology for collecting results, and recreation of situations found.

### **How Do We Test? (Shoulds)**

- Test development and testing should be done iteratively, as the system is being developed.
- Every software delivery should mean another iteration of testing
- All failed tests should be rerun

But, first make sure it is the software that failed, not the test. Then this test becomes a good candidate for regression testing.

- Selected passed tests should be rerun

If it is mainline functionality, it should be run with every software delivery. This will aid in ensuring that nothing was broken with the new delivery.

### **How Do We Test? (Should Nots)**

- Should not do exhaustive testing (too expensive, for too little return). Should this be attempted, it can cost more than developing the system.
- Should not deviate from planned testing (how do you prove what was done). Unless very good notes are taken during a deviation, you have no way of knowing how you got where you are.
- Should not do Ad Hoc testing (not unless requested by the customer). If this is a GUI interface for Internet software, usability testing should be formal, not off the cuff.

### **Finale**

Software Testing is not an orphan child (though it feels that way). Software Testing (according to programs) may be a necessary evil. It is an evil that can end up saving a lot of project money, if done well. Software Testing as described, spots bad trends early. Testing early and often saves money. Testing is a great job that requires a really very different discipline than development

**Recertification**

As of mid-October only 34% of eligible members scheduled for recertified by June 30, 2004 have submitted their journals and funds for review. Less than 10% of the December 2004 recertification candidates have submitted their journals. Time is quickly running out on the June date line. Due to the upcoming holidays, I will process journals that arrive at my address by December 11 2004. If they arrive after that date, there is no guaranty that they will reach headquarters prior to the December Holidays. So I urge all the June 30 2004 candidates that have not

submitted their journals for review to do so at their earliest possible time.

Thank you for your cooperation

Joel Glazer – ASQ Fellow; Recertification Chair

Joel Glazer  
2021 Jolly Rd.  
Baltimore MD. 21209-1013  
Telephone: 410.765.4567 (Work)

**Update Your E-Mail Address**

If you have listed your e-mail address with ASQ and have indicated a preference to receive electronic mailings from both ASQ and the Section, make sure that your current address is on file at ASQ. Be sure to update your address whenever there are changes. You may contact ASQ at [help@asq.org](mailto:help@asq.org) or at 1-800-248-1946. You may also update your information on line at [www.asq.org](http://www.asq.org) by entering your membership number with your first name as the password. You will then be requested to change your password..

**Quality Management Classes – Spring 2005**

| Course Name  | CRN# | Sect.     | Date   | Time  | Loc.* | Cost** |
|--|------|-----------|--|---|-------|--------|
| <b>Certified Quality Manager Exam Review</b><br>Application Date: 01/07/05<br>Exam Date: 03/05/05              |      | QCT 072 D | Jan 8 <sup>th</sup> to Feb. 26 <sup>th</sup><br>8 Saturdays  | 8:00 am to 12:15 pm   | OM    | \$275  |
| <b>Certified Quality Auditor Exam Review</b><br>Application Date: 04/01/05<br>Exam Date: 06/04/05              |      | QCT 051 B | Feb 14 <sup>th</sup> – May 2 <sup>nd</sup><br>(Mondays) <b>plus</b><br>Saturday May 7 <sup>th</sup><br>No class February 21 <sup>st</sup> or<br>March 28 <sup>th</sup> | 7:15 pm to 10:00 pm<br>(Mondays)<br>8:00 am to 12:45 pm<br>(1 Saturday) | CC    | \$275  |
| <b>Basic Quality Principles and Methods</b><br>[Course addresses all requirements for CQIA certification exam] |      | QCO 001   | Feb 15 <sup>th</sup> – May 10 <sup>th</sup><br>(Tuesdays)<br>No class March 29 <sup>th</sup>   | 7:15 pm to 10:00 pm<br>(Tuesdays)                                       | CC    | \$275  |

\* CC = Catonsville Campus OM = Owings Mills Center HV = Hunt Valley \*\* = Md. Resident

Contact Lloyd Dixon [[lloyd.dixon@ngc.com](mailto:lloyd.dixon@ngc.com)] or 410-765-3153 if interested in other certification review courses.

**Course Descriptions:**

**Certified Quality Manager Exam Review** - This course is for professionals interested in becoming Certified Quality Managers by to the American Society for Quality. You will review fundamental knowledge and skills, which are included in the required body of knowledge. In addition, you will sharpen exam-taking skills. A mock exam is conducted prior to the actual exam.

**Certified Quality Auditor Exam Review** - This course is designed to prepare the quality auditor or engineer for satisfactory completion of the Certified Quality Auditor examination conducted by ASQ. Specific material and review exercises will be included n the course to provide the test with test taking skills for the CQA examination. Topics include: overview of auditing, administration of the auditing function and the audit assignment, the nature of quality auditing, audit planning and preparation and quality systems. A mock exam is conducted prior to the actual exam.

**Basic Quality Principles and Methods**

An introductory course covering Basic Principles and Methods for application in the fields of Quality Control and Quality Assurance. The material presented is basic to the field of Quality and is intended for those individuals preparing to take one of the various certification exams or courses.

**Four Easy Ways to Register**

- Mail-In** registration form and payment to: The Community College of Baltimore County, 800 South Rolling Road, Building V, Continuing Education Registration, Baltimore, MD 21228. Remember to include Social Security Number on check.
- Walk-In** registration form and payment to: The Community College of Baltimore County, 800 South Rolling Road, Building V, Continuing Education Registration, or the center near you.
- Phone-In** your registration by using MasterCard or VISA. Have credit card number and expiration date ready when you call 410-869-0296.
- FAX** your registration form with credit card or purchase order information to: 410-455-495

| CCBC NON-CREDIT REGISTRATION INFORMATION  |   |  |   | FOR OFFICE USE ONLY  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| <p><i>Mail-In</i></p> <p>Send registration form and payment to The Community College of Baltimore County, Continuing Education Division, Bldg. V, 800 South Rolling Road, Balto. MD 21228-5317.</p>   | <p><i>Walk-In</i></p> <p>Bring registration form and payment to the Registration Office of the CCBC Campus nearest you<br/>                     • CCBC Catonsville • CCBC Essex • CCBC Dundalk • CCBC Hunt Valley • CCBC Owings Mills</p> | <p><i>Phone-In</i></p> <p>Phone in your registration by using MasterCard, VISA or Discover Card. Have credit card number and expiration date ready when you call.<br/> <b>410-869-0296</b></p>   | <p><i>FAX</i></p> <p>Fax your registration form with charge information.<br/> <b>410-455-4952</b></p> | Date _____<br>Name _____<br>Term _____<br>Paymt. Type _____<br>Amt. _____<br>On-line _____<br>Sent to Bus. Office _____<br>Materials Fee _____ |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| New Student <input type="checkbox"/> Returning Student <input type="checkbox"/>   |   | <b>How did you hear about us?</b><br><input type="checkbox"/> Radio <input type="checkbox"/> Newspaper <input type="checkbox"/> Schedule <input type="checkbox"/> Brochure <input type="checkbox"/> Web <input type="checkbox"/> Employer <input type="checkbox"/> Friend/Relative |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Last _____ First _____ M.I. _____   |   |  | CCBC Employee<br><input type="checkbox"/> Yes <input type="checkbox"/> No                             |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Home Address (no Post Office Box) _____   |   | E-mail address _____   |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| City _____ State _____ Zip _____  |   | <input type="checkbox"/> Male <input type="checkbox"/> Female  |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| County of Residence _____   |   | Employer/Occupation _____  |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| I am 60 yrs. or older Yes <input type="checkbox"/> No <input type="checkbox"/> I am under 16 Yes <input type="checkbox"/> No <input type="checkbox"/>   |   | Birthdate (Month/Day/Year) _____   |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| I am a Baltimore County resident Yes <input type="checkbox"/> No <input type="checkbox"/>   |   | Social Security Number _____   |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| I have been a Maryland resident at least 3 months Yes <input type="checkbox"/> No <input type="checkbox"/>  |   | Ethnicity (Indicate Number)<br><input type="checkbox"/> (optional)   |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| I am a U.S. Citizen Yes <input type="checkbox"/> No <input type="checkbox"/>  |   | 01. White/Caucasian<br>02. African American/Black<br>03. Hispanic/Latino<br>04. Asian<br>05. Native American / Alaskan Native<br>07. Other _____   |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| out of state or international call 410.869.0296 for course cost   |   |  |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Signature _____ Date _____<br><i>I certify all information is correct.</i>  |   |  | Non-Baltimore Co. Res. add \$5 for each course  |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Guardian _____ Date _____<br><i>If under 18, signature of legal guardian is required.</i>   |   |  | TOTAL COST: _____   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Make check or money order for FULL AMOUNT payable to: The Community College of Baltimore County and mail to:<br><b>CCBC, Building V, 800 South Rolling Road, Baltimore Maryland 21228-5317.</b> Course Number MUST be written on check.<br>Non-Baltimore County residents add \$5.00 per course (not applicable to senior citizens).<br>Or charge to credit card    VISA <input type="checkbox"/> MASTERCARD <input type="checkbox"/> DISCOVER <input type="checkbox"/><br>Credit Card Number _____<br>Exp. Date _____<br>I hereby authorize the charge of \$ _____ to my account as listed above.<br>Card holder signature _____      Please print name _____  |   |  |   |  |          |       |          |              |            |      |          |      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Student must notify the Continuing Education Registration Office  
3 days prior to the start of class to receive a full refund.**

## Problem-Solving Success Tip - II

By Jeanne Sawyer, Ph.D.

### Identify and fix the right root causes.

Complicated problems have multiple root causes, probably more than you can handle all at once. The trick is to address the important causes first. Don't waste time or money on causes that are either insignificant in impact or only peripheral causes of the problem you're trying to fix.

*Root cause identification.* Use an appropriate root cause analysis tool to identify the possible causes of your problem. Which tool is best depends on the problem, but Ishikawa analysis (also called cause-and-effect or fishbone analysis) is a good general-purpose tool. Keep checking that the causes you identify are possible causes of the problem you are analyzing, and not some other problem. It's really easy for the problem definition to expand at this point.

*Root cause verification.* The result of the identification step is a list of possible causes. Check again that they are all possible causes of the problem you're working on, and that nothing extraneous has crept in. Then verify that the causes are real by answering:

Did the suspected cause really occur? e.g., if the possible cause is that a procedure wasn't followed, verify that the procedure really wasn't followed. No assumptions allowed. Second, could the suspected cause actually cause your problem? e.g., if not following that procedure couldn't actually cause the symptoms you see, following the procedure won't solve *this* problem.

*Set priorities.* Establish priorities to help you fix the right root causes, i.e., those that are the biggest

culprits in causing your problem. There two factors two consider:

Will eliminating the cause have a big impact on your ability to achieve your success criteria (your measurable definition of how you'll know the problem is solved)? If yes, make it a high priority.

Will it be easy to eliminate the cause? If yes, make it a high priority even if the impact is only moderate. It's hard to eliminate and won't have much impact, don't waste your time.

It's not necessary to fix every cause, even if it's real. Invest your effort where it will make a difference.

*Jeanne Sawyer is an author, consultant, trainer and coach who helps her clients solve expensive, chronic problems, such as those that cause operational disruptions and cause customers to take their business elsewhere. These tips are excerpted from her book, **When Stuff Happens: A Practical Guide to Solving Problems Permanently**. Find out about it, and get more free information on problem solving at her web site: <http://www.sawyerpartnership.com/>*

### Certification Exam Schedule

| Examination  | Application Date | Exam Date         |
|--|------------------|-------------------|
| CQT/CRE/CMI/<br>SSBB/HACCP/<br>Biomedical/<br>Quality Mgr. | January 07, 2005 | March 05,<br>2005 |
| CQE/CQA/<br>CSQE/CQIA/<br>CCT                              | April 01, 2005   | June 04, 2005     |

|                                 |                         |
|---------------------------------|-------------------------|
| <b>Next Newsletter Due Date</b> | <b>January 15, 2005</b> |
|---------------------------------|-------------------------|



**American Society for Quality  
Baltimore Section - 0502  
2716 Baldwin Mill Road  
Baldwin, MD 21013-9140**

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