SOFTWARE QUALITY ASSURANCE

This is the second in a series of newsletters designed to provide updates to the Quality Assurance community on Software Quality Assurance (SQA) activities to improve communications and support of field activities.

WHAT'S NEW?

SQA Knowledge Portal Launched

The SQA Knowledge Portal has been launched and can be accessed from the Environment, Safety and Health home page or by going directly to http://www.eh.doe.gov/sqa/. The Portal is designed to promote continuous improvement and the sharing of knowledge of SQA among interested parties across the DOE complex. It consolidates information and contains links to subject matter experts, procedures, training material, program descriptions, good practices, lessons learned and central registry toolbox codes.

The Portal also provides capabilities for member collaboration in product development and threaded discussions. Instructions to access the discussion forum:

1. From http://www.eh.doe.gov/sqa/ select Discussion Forum from the left menu.
2. To obtain a user name and password, click on the hyperlink "use the online form to request a User Name and Password"
3. Complete the form and click on submit.
4. Once you receive your User Name and Password, click on the hyperlink "please use your User Name and Password to log in" and enter them on the login screen.For further information, please contact sqa@eh.doe.gov or Lily Alexander at (301) 903-1236 or Lily.Alexander@eh.doe.gov.

CENTREG Distribution List Reply Corrected

The problem using the REPLY-TO option related to emails sent through the CENTREG@VM1.HQADMIN.DOE.GOV list server has been corrected. Previously, all replies to a posting went back to everyone on the list as new postings. Now the REPLY-TO option goes only to the original sender. If any problems using the CENTREG list server are encountered, please send email to sqa@eh.doe.gov.

DOE O 414.1B, Quality Assurance Issued

DOE O 414.1B, *Quality Assurance* was issued April 29, 2004. It supersedes the suspect/counterfeit item (S/CI) portions of DOE O 440.1A, *Worker Protection Management of DOE Federal and Contractor Employees*, dated March 27, 1998 and cancels Attachment 1, Paragraph 8, Suspect and Counterfeit Item (S/CI) Controls and Attachment 2, Paragraph 22, Suspect and Counterfeit Item (S/CI) Controls. It also establishes the Office of Quality Assurance Programs, defines safety software responsibilities, and incorporates the improved Corrective Action Management Program.

SQA Assessment Lessons Learned

The Idaho Operations Office has developed an electronic document management system that increases the effectiveness of their process and reduces the time to perform the SQA I&C safety software assessments. The basic procedural steps include: 1. Create checklists for upgrades and no upgrades from the SQA Implementation Plan I&C CRAD 4.2.3.2. (A sample checklist is available.) 2. Email the checklist to the assessed organization. 3. The assessed organization inserts URLs / links to their electronic document management system that address the applicable CRAD element.

It was estimated that 90% of the field investigation time was conducted in the assessor's office rather than in the field. Both the assessor and organization being assessed believe that using this methodology saved time. For further information contact: Bob Blyth at the Idaho Operations Office 208-526-1181 or blythrl@id.doe.gov.

CURRENT ACTIVITIES

DOE Directives for Safety Software

DOE O 414.1C is being developed to address SQA requirements. The draft contains high level policy requirements for SQA in DOE nuclear facility safety software. The draft DOE O 414.1C was distributed to the DOE SQA subject matter expert panel in mid-May. The Order is expected to be completed by December 2004.

The Order will be supplemented by a Guide to further provide information and guidance in applying the Order to DOE nuclear facilities. The Guide will include suggestions on how to perform software quality assurance practices to meet DOE O 414.1C. Information from existing and draft grading approaches from sites across DOE, industry and government standards, and DOE's SQA subject matter experts will be the basis for this Guide. The initial draft of the Guide is expected to be reviewed by the SQA subject matter expert panel in July 2004. The Guide is expected to be completed in February 2005.

A writing group has been formed to assist EH-31 in the development of this Guide. The writing team members are:

Toni Austin, Bechtel, Hanford Waste Treatment Plant
Dwight Brayton, Fluor Government Group, Hanford
Bud Danielson, EH-31 DOE Office of Quality Assurance Programs
Pranab Guha, EH-31 DOE Office of Quality Assurance Programs
Scott Mathews, CCN-12 Scientific Software Engineering, Los Alamos National Laboratory
Keith Morell, Westinghouse Savannah River Company
Kevin O'Kula, Washington Safety Management Solutions, LLC
Ron Schrotke, Pacific Northwest National Laboratory
Subir Sen, EH-31 DOE Office of Quality Assurance Programs
John Shultz, SO- 10.1, DOE Office of Safeguards and Security Policy
Debra Sparkman, EH-31 DOE Office of Quality Assurance Programs
Bob Stevens, EH-31 DOE Office of Quality Assurance Programs

For further information, please contact Bud Danielson at (301) 903-2954 Bud.Danielson@eh.doe.gov or Debra Sparkman at (301) 903-6888 Debra.Sparkman@eh.doe.gov.

FUTURE ACTIVITIES

SQA Training

EH sponsored a Software Quality Engineer Course offered by the American Society for Quality (ASQ) on May 10-14, 2004 in Germantown, Maryland. The course was attended by twenty-two individuals from across the complex. The course satisfies several of the competency requirements in the Safety Software Quality Assurance Functional Area Qualification Standard. Additional offerings of the ASQ Software Quality Engineer Course will be arranged based on demand.

The course was augmented by the following lunch time presentations which are also available on the SQA Knowledge Portal at http://www.eh.doe.gov/sqa/

1. Shiv Seth (EM-RL) – NUREG/CR 6263, High Integrity Software for Nuclear Power Plants
2. Bob Peterson (NNSA-HQ) – Hummingbird Electronic Data Management System
3. Bob Blyth (NE-ID) – Software Capability Maturity Model

Final Gap Analysis Report

The final gap analyses reports for the MACCS2, ALOHA, EPICODE, MELCOR, GENII, and CFAST toolbox codes have now been completed and are available on the SQA Knowledge Portal http://www.eh.doe.gov/sqa/ in the SQA Library. The final reports include recommendations from additional code developer and peer reviews to further improve the accuracy of the gap analysis effort.

The reports describe the actions needed to bring the six toolbox codes into compliance with SQA criteria. The gap analyses reports include an estimate of the level of effort required to upgrade each code. However, because the Department does not own the six toolbox codes, a firm schedule with milestones for upgrading each code could not be developed as originally planned. EH is working with Program Secretarial Offices and the toolbox code developers to evaluate the feasibility and schedule for completing any upgrades.

Toolbox Code Guidance Reports

With the issuance of the final gap analyses reports for the six toolbox codes, work is underway to update each of the toolbox code guidance reports. The code-specific guidance reports identify applicable regimes in accident analysis, default inputs, and special conditions to be considered when using each of the six toolbox codes. Final versions of the reports will be issued by the end of June 2004 and will be available on the SQA Knowledge Portal http://www.eh.doe.gov/sqa/ in the SQA Library.

FUTURE NEWSLETTER TOPICS

Software Management Best Practices

SOURCE: CUTTER CONSORTIUM – SOFTWARE MANAGEMENT BEST PRACTICES

If your organization does not have a software quality team in place, follow these five steps to get an effective group up and running.

1. **Get support from senior management.** If developers know that a CIO, CTO or CEO is backing the software quality assurance manager, they will be more likely to produce cleaner code. Get the attention of executives by connecting software quality to the bottom line.
2. **Establish a quality organization (with processes, staff and an experienced manager).** You may be able to form a group from in-house staff; however, E.M. Bennatan, senior consultant at the Cutter Consortium, says having an experienced, strong quality manager is vital. "You need someone who has spent a few years in the trenches and has gotten products out the door," he says.
3. **Train developers too.** Don't save quality training just for the quality assurance group. Developers will pay closer attention to quality issues if they know what to watch out for.
4. **Listen to your customers (or user group).** Get customers involved in the development process. Offer them a beta version of software to test. "Their feedback is invaluable," says Bennatan.
5. **Collect metrics.** The quality process should be data-driven, according to Bennatan. Demonstrate that the quality of your products is improving.

Central Registry

Some code users have expressed an interest in adding codes to the central registry. EH is working on defining that process and developing a procedure that will follow the process used for the original six current toolbox codes. Look for this procedure (probably in the form of a guide) to be issued for review and comment within the next several months.

DNFSB Briefing

The fourth briefing to the DNFSB on the status of the SQA Implementation Plan will be conducted in June 2004. At this briefing, EH, EM and NNSA representatives will provide updates on progress made on the SQA Implementation Plan commitments. For further information, please contact Chip Lagdon at (301) 903-4218 or Chip.Lagdon@eh.doe.gov.

Articles Needed

If anyone has an interest in writing an article for this periodic news letter, please contact Chip Lagdon at (301) 903-4218 or Chip.Lagdon@eh.doe.gov. Please share any activities that your site is doing with respect to SQA that may help other sites, or provide useful lessons learned. As we continue to verify the status of SQA in the Department, field input is critical in fostering an environment that promotes continuous improvement.