



Software Quality Assurance Implementation Plan

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Defense Nuclear Facilities Safety Board

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Overview

- SQA Directives Status
- SQA Directives Rollout
- Toolbox Code Upgrade
- Toolbox Code Addition
- Path Forward





SQA Directives Status

- DOE O 414.1C, Quality Assurance
 - Resolved DNFSB Staff Comments
 - Revised Safety Software definition
 - Includes software important to safety for all nuclear (and radiological) facilities/activities
 - Submit new definition for 10 day RevCom review 2/23/05
 - Elevating open non- concurrence on requiring NQA-1-2000
 - Issue April 2005 (contingent on decision on non-concurrence)
- DOE G 414.1-4, Software Quality Assurance
 - Completed Comment Responses
 - Consistent with requirements, NQA-1-2000 and other standards
 - Modifying consistent w/new Safety Software definition
 - Issuing Guide with the Order





New Safety Software Definition

- **Safety System Software:** Software for a nuclear facility that performs a safety function as part of an SSC and is cited in either; 1) DOE approved Documented Safety Analysis or, 2) an approved hazard analysis per DOE P 450.4 Safety Management System Policy and the DEAR clause.
- **Safety and Hazard Analysis Software and Design Software:** Software that is used to classify, design, or analyze nuclear facilities. This software is not part of an SSC but helps to ensure the proper accident or hazards analysis of nuclear facilities or an SSC that performs a safety function.
- **Safety Management and Administrative Controls Software:** Software that performs a hazard control function in support of safety management programs or technical safety requirements or, other software that performs a control function necessary to provide adequate protection from hazards. This software supports eliminating, limiting, or mitigating hazards to workers, the public, or the environment.





Rational for new definition

- Includes software important to safety at Category 1, 2, 3 and <3 nuclear (and radiological) facilities
- Scope and terminology aligned with 10 CFR 830, Subpart A





SQA Directives Rollout

- Audience and Session Types
 - Assessors
 - DOE Oversight
 - Contractor SQE, SW Engineers, Developers
 - Industry/Standards Bodies
- Rollout Methods Worked w/PSOs
 - Video Conferencing
 - Online Conferencing/Video on demand
 - Site Meetings & Workshops
 - Personal Site Support Visits



Toolbox Codes - Upgrades

Software Application	Version (s)	Level of Effort to Achieve Minimum Compliance with SQA Criteria, (Duration/Cost)	DSA Process Support Importance, (High/Medium/Low)	Level of Use in DOE Complex, (High/Medium/Low)	General Observations
1. CFAST	3.1.7 And 5.1	1.0 Year \$250K	High	High	<ul style="list-style-type: none"> •Extensive NIST Validation Program •Supports functional requirements for safety SSCs and Administrative Controls
2. MACCS2	1.13.1	1.5 Years \$300K	High	High	<ul style="list-style-type: none"> •Supports Safety-Class Determination •Appendix A Applications •PRA Applications Support from NRC
3. GENII	2.0	1.5 Years \$345K	High	Low	<ul style="list-style-type: none"> •Appendix A Applications •Safety-Class Control Confirmatory Use •Extensive, ongoing support through EPA
4. MELCOR	1.8.5	1.5 Years \$325K	Medium	Low	<ul style="list-style-type: none"> •Useful for multi-cell facilities •NRC-Supported •International Benchmark Program
5. ALOHA	5.2.3	1.5 Years \$250K	Medium	Medium	<ul style="list-style-type: none"> •Extensive NOAA Development Program •Helps Support Identification of Safety-Significant Controls
5. EPIcode	7.0	1.0 Years \$220K	Medium	Low	<ul style="list-style-type: none"> •Proprietary •Helps Support Identification of Safety-Significant Controls





Toolbox Codes - Upgrades

- CFAST code upgrade
 - Use as pilot for upgrade effort
- DOE and NRC working with NIST
 - Fund SQA portion of effort
- Phenomenon Identification and Ranking Table (PIRT) training March 7, 2005
- CFAST PIRT planned for Summer 2005





Toolbox Code - Addition

- Evaluating Integrated Module for Bioassay Analysis (IMBA) for addition to Toolbox
 - Internal dose calculation software
 - Widely used within DOE and also by NRC, Canada and Europe
- Planning IMBA SQA gap analysis
 - Lining up technical and software experts
 - Will be used to demonstrate the process





Path Forward

- Issue Order and Guide – Dependent upon resolution of non-concurrence
- EH-1 memo to PSO's on flow-down of SQA requirements after Order issued
- Finalize rollout strategy for Order and Guide with PSO's
- Conduct rollout activities – 30 to 60 days after Order is issued





Path Forward (cont.)

- Monitor and evaluate rollout implementation
- Begin upgrading effort for CFAST code – Planned for Summer 2005
- Revise other directives to provide reference to new SQA requirements and guidance – per published schedule
- Evaluate IMBA for addition as Central Registry Toolbox Code

