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SOFTWARE QUALITY ASSURANCE

Software Quality Assurance

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DOE Order O 414.1B, Quality Assurance, was revised to include Attachment 5 addressing SC for nuclear safety applications at DOE nuclear facilities. The revised Order, [DOE O 414.1C](#) w/ 2005. This Order and its associated Guide for safety software, [DOE G 414.1-4](#), Safety Software with 10 CFR 830 Subpart A, Quality Assurance Requirements, are available through the DOE website at <http://www.directives.doe.gov/>



The Order identifies 10 software quality work activities that are to be performed using the practices specified in the Order. These 10 work activities are: (1) software project management, (2) software configuration management, (3) software configuration management, (4) procurement and vendor management requirements identification and management, (6) software design and implementation, (7) software design, (8) verification and validation, (9) problem reporting and corrective action, and (10) training in the design, development, use and evaluation of safety software. These 10 work activities were derived from practices and activities identified in several well known consensus standards and federal standards including ASME NQA-1-2000, ASME NQA-1-2000, *Quality Assurance Requirements for Nuclear Applications*, or other national or international consensus standards that provide an equivalent assurance requirements as NQA-1-2000, must be used to develop processes and implement quality work activities. The standards used must be specified by the user and approved by DC

DOE Guide G 414.1-4 provides acceptable implementation strategies and appropriate standards for software quality work activities. This new guide incorporates practices from appropriate existing national/international standards and processes currently in use at DOE facilities (ref. [site specific guides](#)). The Guide describes how the quality work activities may be implemented using a grading system to satisfy the Order requirements. The grading guidance identifies subactivities that can be implemented at different levels of rigor to align with the grading level (Level A, B or C) for the specific safety software. A grading level is based upon the impact on safety and the safety software type (e.g., custom developed, or acquired).

The Guide contains two key appendices: Appendix B, Procedure for Adding or Revising Software from the DOE Safety Software Central Registry and Appendix F, DOE O 414.1C Criteria Revision Document. These appendices have been updated to reflect the 10 work activities in the Order. The assessment/evaluation criteria and information collected during evaluations of proposed Central Registry software are based upon the 10 work activities and their sub-activities.

Questions on DOE O 414.1C can be directed to [Colette Broussard](#).

[Quality Assurance Policy and Directives](#)

This page was last updated on January 11, 2008

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