



## Software Quality Assurance

DOE O 414.1D Graded Approach Terminology

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**SUMMARY:**

The EFCOG SQA task group Graded Approach Subcommittee was tasked to review the graded approach information in DOE O 414.1D and recommend improvements to the existing language.

The following recommendations would clarify DOE O 414.1D requirements for a graded approach:

- In DOE O 414.1D, Section 6.h, modify the text to include the term “risk” in the definition
- Change the wording in Section 6.h.(5) to remove the confusion around the phrase “particular characteristics”.

To support implementation of a graded approach across sites, it would be useful to have individual sites/labs share their SQA procedures and other associated documentation for implementing graded approaches in a central location, such as at the EFCOG SQA website and/or Box folder.

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**PURPOSE:**

The purpose of this white paper is to provide recommended changes to DOE O 414.1D to improve the interpretation of the graded approach.

**SCOPE:**

The scope of the task was to provide recommended changes to DOE O 414.1D graded approach requirements when the decision is made by DOE to revisit the document.

**DEFINITIONS:**

Per the DOE O 414.1D Section 6.h, the definition of **graded approach** is the process of ensuring that the level of analyses, documentation, and actions used to comply with requirements are commensurate with:

- (1) the relative importance to safety, safeguards, and security;
- (2) the magnitude of any hazard involved;
- (3) the life-cycle stage of a facility or item;
- (4) the programmatic mission of a facility;
- (5) the particular characteristics of a facility or item;
- (6) the relative importance to radiological and non-radiological hazards; and,
- (7) any other relevant factors. (10 C.F.R. § 830.3)

**NARRATIVE:****DOE O 414.1D Discussion**

Overall, the graded approach definition in DOE O 414.1D is sufficient; however, the subcommittee recommends more emphasis on the application of risks across the seven (7) areas for which the graded approach should be applied.

The subcommittee also found the phrase “particular characteristics” confusing (see 6.h.(5) in the Definition section. Across sites, there are different interpretations of this phrase. Either removing this phrase or replacing it with another phrase seemed appropriate. Recommended replacement phrases included: key, risk significant, and safety related. There was also a recommendation to strike the term “particular” and leave the rest of the phrase as it is.

The subcommittee recognizes that making this change to the definition could potentially be difficult because the seven (7) areas listed in the definition are a direct quote from 10 C.F.R. § 830.3. The subcommittee still recommends a change to this phrase.

Finally, site/lab sharing of implemented graded approaches could assist in the implementation of the DOE O 414.1D graded approach across the complex.

**DOE G 414.1-4A Discussion**

Currently, detailed guidance on the graded approach is provided in DOE G 414.1-4. The subcommittee agreed that the Guide is the appropriate location to provide elaborations rather than placing this level of detail into the Order.

While out of scope for this review, the subcommittee would like to document issues discussed for future consideration. Specifically, there is a need for the Guide to elaborate on the phrase “grade to zero”.

**CONCLUSION:**

The following actions would improve the existing DOE O 414.1D graded approach requirements.

**Recommendation 1**

Add the **underlined, bold-faced, and italicized** words to the existing definition.

h. Graded Approach. The process of ensuring that the levels of analyses, documentation, and actions used to comply with requirements are commensurate with **the associated risks, including:**

- (1) the relative importance to safety, safeguards, and security;
- (2) the magnitude of any hazard involved;
- (3) the life-cycle stage of a facility or item;
- (4) the programmatic mission of a facility;
- (5) the particular characteristics of a facility or item;
- (6) the relative importance to radiological and non-radiological hazards; and,

(7) any other relevant factors. (10 C.F.R. § 830.3)

### Recommendation 2

Change the definition of 6.h.(5) for “particular characteristics” by removing the term “particular”. Alternatively, replace the term with another, such as: key, risk significant, and safety related.

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- (4) the programmatic mission of a facility;
- (5) the ... characteristics of a facility or item;
- (6) the relative importance to radiological and non-radiological hazards; and,
- (7) any other relevant factors. (10 C.F.R. § 830.3)

### Recommendation 3

A non-DOE O 414.1D recommendation is that all participating members of the EFCOG SQA Task Group are requested to upload the following items to the Box site to assist in implementation of the graded approach definition.

- Site / Lab level SQA Procedure
- Any SQA Templates for implementing Software Quality Assurance Plans, Requirements, Design, Testing, Change Control, Software Retirement
- Any other procedures or documents such as Job Aids that help users to understand/use the Graded Approach process for their organization.

### Recommendation 4

Other non-DOE O 414.1D recommendations to be tabled until future work on the DOE G 414.1-4A occurs (i.e., revision of DOE G 414.1-4A becomes official) are as follows.

- Improve the definition of “grade to zero” in the guide to avoid this phrase becoming a “catch all” for not following requirements.
- Applicability (is software applicable to the grading criteria) versus grading (conducted on all applicable software) should also be addressed separately.
- A diagram for lower-level grading would be helpful in the guide along with recommendations on what should or should not be considered for lower-level grading.

### **REFERENCES:**

- DOE O 414.1D

- DOE G 414.1-4, SAFETY SOFTWARE GUIDE for USE with 10 CFR 830 Subpart A, Quality Assurance Requirements, and DOE O 414.1C, Quality Assurance
- DOE G 414.1-2B Chg 2, Quality Assurance Guide

**ATTACHMENTS:**

None.