October 16, 2009

To:	J. N. McKamy	Manager, US DOE NCSP
From:	C. M. Hopper	Chair, US DOE NCSP CSSG

In response to Tasking 2010-02 a subgroup of the Criticality Safety Support Group (CSSG) was organized to draft a position white paper regarding the proper role of criticality accidents as a hazard in the selection of facility hazard categorization.

The drafting team consisted of the following CSSG members:

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The draft white paper was reviewed by the entire CSSG and several independent subject matter experts. Minor comments were incorporated into the final version of the paper that is attached to this memo. This version represents a consensus position by the entire CSSG.

Cc: CSSG Members
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CSSG Response to Tasking 2010-02
Role of Criticality Safety in Facility Hazard Categorization
October 15, 2010

In response to the US DOE NCSP Manager's Tasking 2010-02, *Role of Criticality Safety in Facility Hazard Categorization*, the CSSG has developed this consensus white paper on the proper role of criticality accidents as a hazard in the selection of facility hazard categorization.

This position paper relates only to the technical arguments associated with the potential consequences (i.e., hazard) of a criticality accident in terms of its unshielded[i] effects on the worker, the public and the environment. Furthermore, this paper concludes that with the proper application of criticality safety orders and standards there are no safety gaps between this CSSG position and DOE regulations.

Executive Summary

It is concluded that a criticality accident should be evaluated during the hazard categorization process in the same manner as all other potential accidents. Since it has been demonstrated that criticality accidents present only a localized hazard, there is no technical justification for mandating a facility be categorized as Hazard Category (HC) 2 only because of the potential for a criticality accident. This is consistent with the use of the existing regulatory structure (e.g., DOE-STD-3009) which derives the correct level of categorization based on accident consequences and not some predetermined criterion.

Based upon the discussion in the body of this paper and the review of the cited references, the following are the responses to the four questions posed in the CSSG Tasking 2010-02.

Question 1: *Given the history and nature of criticality accidents and given that DOE Order 420.1B and the ANSI/ANS-8 Standards are appropriately implemented for criticality safety, how should the potential for a criticality accident affect facility hazard categorization?*

> It is reasonable to include criticality accidents in the hazard analysis for a nuclear facility only as one of the many accidents considered in the hazard analysis process. If the likelihood and consequences of a criticality accident are evaluated using the same criteria as other accidents, the results will be that criticality accidents are of extremely low likelihood and that they produce only locally severe consequences that will not warrant mandating a HC 2 classification. In other words, criticality accidents should not be handled differently from other accidents in facility hazard categorization. Additionally, historic evidence and reasonably postulated criticality accident scenarios justify a hazard categorization no higher than HC 3 based upon the definitions of 10 CFR 830.

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[i] Unshielded means no intervening direct radiation shielding between the criticality accident reacting material, co-located workers, the public, and the environment.

Question 2: *What safety gaps remain after implementation of DOE O 420.1B and the ANSI/ANS-8 Standards that are addressed via the facility hazard categorization process and subsequent application of requirements strictly from a criticality accident prevention and mitigation standpoint?*

> It is concluded that there are no safety gaps remaining after the application of DOE O 420.1B for criticality safety. Regardless of hazard categorization, DOE-STD-3009 requires that Chapter 3 of the DSA documents the evaluation of the facility and its hazards and provides a summary of the controls to ensure adequate protection. Chapter 6 of the DSA provides a summary of the facility criticality safety program. DOE O 420.1B points to DOE-STD-3007 and the ANSI/ANS-8 series of standards to ensure that the evaluation and selection of controls for criticality safety are performed without regard to the facility hazard categorization.

Question 3: *How does implementation of ANSI/ANS-8.23 mitigate the hazard of a criticality accident to co-located workers and offsite individuals regardless of the hazard categorization of the facility?*

> Implementation of ANS-8.23 is predicated upon having an active criticality accident alarm system as defined by ANS-8.3 that is based upon a non-trivial accident risk.
>
> As provided in the subsequent discussion of this white paper, historically demonstrated prompt evacuation and response following a criticality accident alarm mitigates the risk to co-located workers. That historic evidence has been used to support the development of requirements in ANSI/ANS-8.23, *Nuclear Criticality Accident Emergency Planning and Response*. Those requirements ensure that radiation exposures subsequent to the initiation of a criticality accident are minimized to the extent practicable with worker evacuation, radiation field measurements, and accountability during the period of the emergency response.

Question 4: *If safety gaps are identified in addressing question two above, what features of safety management programs or federal oversight programs should be implemented to address these regardless of facility hazard categorization?*

> No “safety gaps” are identified. However, it is recommended that Chapter 6 of the DSA be included for HC 3 facilities so that the Safety Management Program (i.e., Criticality Safety Program) is defined according to the requirements of 10 CFR 830. It is further recommended that DOE O 4201.B and DOE-STD-1027 be revised to more correctly address the role of the Criticality Safety Program for HC 3 and radiological facilities.

CSSG Response to Tasking 2010-02
Role of Criticality Safety in Facility Hazard Categorization
October 15, 2010

Introduction

The CSSG was tasked in CSSG-2010-02 (see Attachment) to respond regarding the proper role of criticality safety and the potential consequences of a criticality accident with regard to facility hazard categorization. While acknowledging some parts of the current DOE regulatory structure, this paper relates only to the technical arguments associated with the potential consequences of a criticality accident in terms of effects on the worker, the public and the environment.

In many cases, those facilities with criticality hazards contain sufficient high activity material (e.g., plutonium) that they are classified as hazard category (HC) 2 where that material, regardless of the criticality hazard, can produce significant onsite or public consequences. In this case, the hazard categorization for criticality is moot as the hazard category for the facility is set to the most restrictive of the requirements for the combined hazards. At issue are those facilities that do not contain sufficient material to pose a risk to the onsite workers or the public from other hazards, but that may contain enough low activity material (e.g., uranium), as determined from onsite nuclear criticality safety evaluations, to pose a non-trivial criticality accident risk. In this case there would be both criticality safety evaluations and a criticality accident alarm system associated with the criticality safety program (CSP.

Discussions

The following discussions provide the CSSG bases and conclusions that answer the four questions of CSSG-2010-02.

Question 1: ***Given the history and nature of criticality accidents and given that DOE Order 420.1B and the ANSI/ANS-8 Standards are appropriately implemented for criticality safety, how should the potential for a criticality accident affect facility hazard categorization?***

There have been only 22 reported[1] process facility criticality accidents worldwide and only 7 of these have occurred in the US. These 22 accidents have occurred over a span of more than 60 years since this uncommon hazard has been in existence. It is estimated that many millions of operations with significant quantities of fissionable materials have occurred during this time. A histogram of these 22 accidents is shown below in Figure 1.

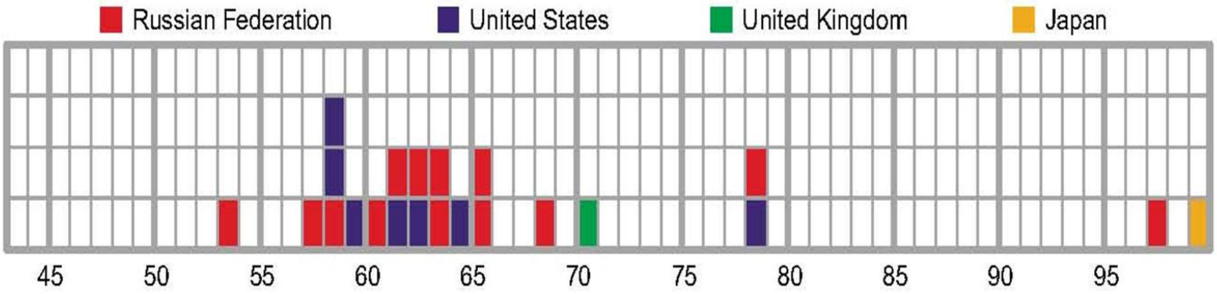

Figure 1. Chronology of process criticality accidents.

All but one of these accidents involved the fissile material in a liquid medium[2]. The one exception, with metal ingots, occurred in the USSR. As is evident, criticality accidents in the last 40 years have become very infrequent events. This is attributed largely to strict adherence to codified rules and regulations, particularly those present in the American National Standards Institute/American Nuclear Society 8.XX (ANSI/ANS-8.XX) series of standards[3] directed towards nuclear criticality safety practices, as referenced in DOE Order 420.1B[4].

A major underlying reason for this is that many facilities replaced the “unfavorable geometry” process vessels which were intended for handling of fissile-bearing liquids of high concentrations. Nuclear processing facilities in developed countries worldwide have largely adopted limited geometry/dimension vessels, in spite of their undesirable economic characteristics. This transition occurred throughout the 1960’s in the US and the USSR and Figure 1 demonstrates the reduction in events.

Along with this very low accident likelihood experience is the associated highly localized nature of the consequences of process criticality accidents. This consequence feature is partly inherent in the accidents themselves and partly aided by application of emergency plans and procedures for those facilities that have active criticality accident alarm systems. These plans and procedures are codified in national consensus standard ANSI/ANS-8.23[5]. Several of the 21 accidents involving liquids have had only a single fission burst with the excursion being terminated immediately by inherent features of the operation. Somewhat more than half of the accidental excursions were terminated either naturally or deliberately by personnel actions subsequent to prompt evacuation, driven by the sounding of a radiation-sensing alarm system. For these latter accidents the application of an alarm system coupled with plans and procedures such as embodied in ANS-8.23 have limited injuries and deaths to nearby workers.

Historically, in only one accident the release and dispersion of radioactive fission fragments and activated materials resulting from a criticality accident has led to local doses greater than the direct dose from neutrons and gamma rays because the direct dose was heavily shielded. For workers or public at greater than one hundred meters the potential inhalation or immersion-cloud exposures have been well below regulatory guidelines and begin to approximate the first-spike unshielded radiation exposures. These minimal effects are due primarily to the containment of fission products in solid forms of the fissionable materials or the entrainment of fission products in the aqueous solution medium of the fissionable materials. Noble gas fission products rapidly disperse through the process of diffusion and natural turbulence of the ambient environments of the accident.

While almost all of the 22 process accidents involved "hands-on" operations, only 6 resulted in fatalities. That is, most of the process accidents resulted in non-lethal radiation exposures even though personnel were within a few meters of the accident. None of the accidents resulted in injurious exposures to plant personnel more than a few meters from the accident site and no members of the public were exposed to health-threatening exposures from any of the accidents. These accident experiences are supported by knowledge obtained from experiments simulating solution criticality accidents in process settings[6, 7, 8].

Actual and realistically postulated[ii,1, 2, 9, 10] physical and biological consequences frame the character of the criticality accident hazard for defining the proper role of criticality accident consideration in the facility hazard categorization process as required by regulation. As a hazard, criticality accidents primarily pose a transient (seconds to several minutes and rarely a few hours) direct gamma and neutron radiation hazard to persons within about 100 meters. Qualitatively, based upon references1, 2 and 9, with prompt[iii] evacuation following a criticality accident alarm from a reasonably conservative 10^{17} fission spike[iv], people within about:

- within three meters of the reacting criticality accident will likely receive a lethal exposure to the radiation,
- three to six meters from the accident would receive but may recover from serious to moderate radiation sickness,
- six to ten meters from the accident may receive slight radiation sickness from their exposures with virtually certain recovery,
- ten to one hundred meters from the accident may have a slight to minimal short term reduction in blood count, and
- greater than one hundred meters from the accident will receive less than 500 millirad whole body exposure.

These consequences do not take into consideration incidental radiation shielding from facility construction or manufacturing process equipment which serves to further reduce the consequences. With today's evolving construction requirements, newer facilities afford significant radiation shielding to the co-located worker and the public. Virtually no physical damage to equipment or facilities result from criticality accidents and the impact to the environment are inconsequential.

This combination of extremely low likelihoods and only localized consequences associated with process criticality accidents has resulted in many facilities nationwide (that generally have limited fissile material inventories in solution form) being able to justify not having criticality accident alarm systems. Under these circumstances it is appropriate that the criticality accident hazard be treated with a view towards the consequences of the event the same as other hazards in determining facility hazard categorization.

[ii] This refers to accidents that are theoretically postulated <u>within</u> the constraints of known fissionable material processes and process controls, known theoretical and heuristic fission yield models for process upsets, and the applications of DOE Order 420.1b and ANSI/ANS-8.xx standards for ensuring nuclear criticality safety of fissionable materials outside of reactors and experiments facilities.

[iii] Prompt refers to the historically typical elapsed time for personnel to evacuate from the vicinity of a criticality accident.

[iv] The chosen 10^{17} fission spike, as a reference point, is far greater than that for nearly all of the 22 known accidents.

Given the history and nature of criticality accidents provided above, this information can now be factored into the approach for hazard categorization. 10 CFR Part 830[11] provides the foundation for safety basis, of which hazard categorization is a part. Appendix A to Subpart B to 10 CFR Part 830 – General Statement of Safety Basis Policy Section B – Purpose states: "The safety bases requirements of Part 830 require the contractor responsible for a DOE nuclear facility to analyze the facility, the work to be performed and its associated hazards, and to identify the conditions, safety boundaries and hazard controls necessary to protect the workers, the public and the environment from adverse consequences. This safety analysis and hazard controls constitute the safety basis upon which the contractor and DOE rely to conclude that the facility can be operated safely. Performing work consistent with the safety basis provides reasonable assurance of adequate protection of workers, the public and the environment."

Thus, there is a requirement to analyze the facility, its hazards and controls in order to adequately protect the affected populations. Since there are wide differences among facilities regarding the complexity and the consequences of various hazards, 10 CFR 830 provides for a graded approach to the safety basis rigor (level of analysis and documentation).

In an effort to define the level of rigor required, Table 1 of Appendix A of 10 CFR 830 provides definitions of hazard categories for non reactor nuclear facilities. Hazard Category 3 is defined as only having localized significant consequences. As documented in the preceding paragraphs of this position paper, a criticality accident has been shown to produce life threatening or significant dose effects, only to the localized workers. Thus, mandating a HC 2 classification is inconsistent with the Safety Rule. In other words, criticality accidents should not be evaluated differently from other hazards in facility hazard categorization. Additionally, historic evidence and reasonably postulated criticality accident consequences justify an expected hazard categorization of no more than HC 3.

Question 2: *What safety gaps remain after implementation of DOE O 420.1B and the ANSI/ANS-8 Standards that are addressed via the facility hazard categorization process and subsequent application of requirements strictly from a criticality accident prevention and mitigation standpoint?*

The basic principle of criticality safety is that all practicable means shall be taken to prevent a criticality accident. This applies to all operations with fissionable material without consideration of any hazard categorization scheme that might be imposed by regulations.

Criticality safety programs are established to ensure that controls and limits are in place to protect workers by eliminating, to the extent practical, the potential for a criticality accident. The consequences of a criticality accident have the same potential severity in any hazard category facility and as a result criticality safety programs should not be based on facility hazard categorization.

The criticality safety regulatory hierarchy begins with 10 CFR 830, which invokes DOE O 420.1B, which in turn requires adherence to the ANSI/ANS-8.XX series of nuclear criticality safety standards. Criticality safety programs based on the requirements and recommendations in these documents have been shown to be successful in the prevention and/or mitigation of criticality accidents.

10 CFR 830.204(b) includes the following requirements for inclusion in a documented safety analysis (DSA) for Hazard Category 1, 2 and 3 non-reactor nuclear facilities.

> *(3) Evaluate normal, abnormal, and accident conditions, including consideration of natural and man-made external events, identification of energy sources or processes that might contribute to the generation or uncontrolled release of radioactive and other hazardous materials, and*

> *consideration of the need for analysis of accidents which may be beyond the design basis of the facility;*
> *(4) Derive the hazard controls necessary to ensure adequate protection of workers, the public, and the environment, demonstrate the adequacy of these controls to eliminate, limit, or mitigate identified hazards, and define the process for maintaining the hazard controls current at all times and controlling their use;*
> *(5) Define the characteristics of the safety management programs necessary to ensure the safe operation of the facility, including (where applicable) quality assurance, procedures, maintenance, personnel training, conduct of operations, emergency preparedness, fire protection, waste management, and radiation protection; and*
> *(6) With respect to a nonreactor nuclear facility with fissionable material in a form and amount sufficient to pose a potential for criticality, define a criticality safety program that:*
>> *(i) Ensures that operations with fissionable material remain subcritical under all normal and credible abnormal conditions,*
>> *(ii) Identifies applicable nuclear criticality safety standards, and*
>> *(iii) Describes how the program meets applicable nuclear criticality safety standards.*

Hazard categorization requires the evaluation of the facility, hazards and controls to ensure adequate protection to workers, co-located workers and the public. Since hazards associated with criticality accidents have been shown to have only localized consequences, the evaluation of the criticality hazard can be done using qualitative methods. Criticality hazards are generally addressed by implementation of a criticality safety program.

According to 10 CFR 830, a safety management program is defined to mean a program designed to ensure a facility is operated in a manner that adequately protects workers, the public and the environment by covering topics such as: quality assurance; maintenance of safety systems; personnel training; conduct of operations; emergency preparedness; fire protection; waste management or radiological protection.

DOE O 420.1B (Chapter III) requires development of a criticality safety program for "nuclear facilities and activities that involve, or potentially involve, nuclides in quantities that are equal to or greater than the single parameter limits for fissionable materials listed in ANSI/ANS-8.1 and 8.15" without specifying any distinction between different hazard category facilities. The following specific requirements are included in this chapter of DOE O 420.1B.

> *(2) Criticality safety programs (CSPs) must satisfy the requirements of the revisions to consensus nuclear criticality safety standards of American National Standards Institute (ANSI)/American Nuclear Society (ANS) 8 in effect as of the date of this Order, unless otherwise modified or approved by DOE.*
> *(3) All recommendations in applicable ANSI/ANS standards must be considered, and an explanation provided to DOE through the CSP description document whenever a recommendation is not implemented.*
> *(4) The double contingency principle defined in ANSI/ANS 8.1, Nuclear Criticality Safety in Operations with Fissionable Material outside Reactors, is a requirement that must be implemented for all processes, operations and facility designs within the scope of this chapter unless the deviation is documented, justified, and approved by DOE.*
> *(5) The methodology for preparing criticality safety evaluations must be approved by DOE unless the evaluations are conducted in accordance with DOE-STD-3007-2007, Guidelines for Preparing Criticality Safety Evaluations at Department of Energy Non-Reactor Nuclear Facilities, or successor document and evaluated in accordance with DOE-STD-1134-1999, Review Guide for Criticality Safety Evaluations, or successor document.*

Similar to the requirements in 10 CFR 830, these requirements make no distinction between the different hazard categories of facilities conducting fissionable material operations.

The requirements in 10 CFR 830, especially the last three items (i.e., 10 CFR 830.204(b)(6) i, ii, iii), and items (2) through (4) cited from DOE O 420.1B duplicate or parallel the requirements and recommendations in the ANSI/ANS-8 series of standards, which form the safety basis for all operations with fissionable materials in the DOE complex. The same safety criteria and degree of rigor apply to the analysis of criticality hazards or development of criticality controls and limits in any hazard category facility.

As demonstrated by the foregoing discussion, proper application of the requirements in 10 CFR 830, DOE O 420.1B and the ANS-8 series of criticality safety standards leaves no safety gaps from a criticality accident prevention and mitigation standpoint.

Question 3: *How does implementation of ANSI/ANS-8.23 mitigate the hazard of a criticality accident to co-located workers and offsite individuals regardless of the hazard categorization of the facility?*

The scope of ANSI/ANS-8.23 is to provide criteria for minimizing risks to personnel during emergency response to a nuclear criticality accident outside reactors. It applies to those facilities for which a criticality accident alarm system is installed, as specified in ANSI/ANS-8.3-1997 (R2003), “Criticality Accident Alarm System,” but does not apply to nuclear power plant sites or to licensed research reactor facilities which are addressed by other standards. ANSI/ANS-8.23 clarifies the immediate evacuation zones consistent with the alarm requirements of ANSI/ANS-8.3 and establishes emergency plans and response requirements for management, technical staff, and workers. As part of the emergency planning, ANSI/ANS-8.23 requires the evaluation of potential criticality accidents to include the estimated fission yield and the likelihood of criticality recurrence.

Implicit to the implementation of ANSI/ANS-8.23 are the ANSI/ANS-8.3 criticality accident alarm system installation requirements. The ANSI/ANS-8.3 requirement of particular interest to mitigating the radiation exposure consequences to people is to promptly evacuate areas for which a criticality accident may lead to an excessive radiation dose. That dose is defined in ANSI/ANS-8.3 as any dose to personnel corresponding to an absorbed dose from neutrons and gamma rays equal to or greater than 0.12 Gy (12 rad) in free air, an appropriate alarm measurement criterion for a one-time, not chronic, acute radiation exposure.

In concert with the requirement for alarming areas with the potential for an excessive radiation dose is the requirement for prompt evacuation. As demonstrated by accident history[1] of recurrent criticality power excursions, and critical/super-critical solution experiments[6, 7, 8], such power excursions generally occur about every 10 – 12 seconds and are of lesser power magnitudes than previous excursions. Prompt evacuation places distance between co-located workers and the hazard thereby mitigating the consequences of re-criticality radiation exposures.

As demonstrated by the foregoing discussion, the implementation of ANSI/ANS-8.23 mitigates the radiation exposure consequences of the criticality accident hazard regardless of the hazard categorization selected. The implementation does not mitigate the hazard of a criticality accident.

Question 4: ***If safety gaps are identified in addressing question two above, what features of safety management programs or federal oversight programs should be implemented to address these regardless of facility hazard categorization?***

> As demonstrated in the basis for answering "Question 2" no "safety gaps" are identified. However, it is recommended that Chapter 6 of the DSA be included for HC 3 facilities so that the Safety Management Program is defined according the requirements of 10 CFR 830. It is further recommended that DOE O 4201.B and DOE-STD-1027 be revised to more correctly address the role of the Criticality Safety Program for HC 3 and radiological facilities.

Conclusion

It is concluded that a criticality accident is a hazard that should be evaluated for Hazard Categorization and it has been demonstrated to be only a localized hazard. The use of the existing regulatory structure (e.g., 10 CFR 830 and DOE-STD-3009[12]) should drive the correct level of hazard categorization and documentation for all accident types - for criticality accidents it would be expected to be no higher than HC 3. Chapter 3 of the DSA would focus on the criticality hazards as described in the NCSEs and in the Criticality Safety Program. This also is consistent with wording in DOE-STD-1189[13] that for hazards that only have localized consequences, the safety management program (in this case the Criticality Safety Program) should be the primary means of control and other controls are added only if they bring added value and not excessive cost/burden.

References

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1 T. P. McLaughlin et al, A Review of Criticality Accidents, 2000 Revision, LA-13638, May 2000.

2 Thomas P. McLaughlin, Process Criticality Accident Likelihoods, Magnitudes and Emergency Planning – A Focus on Solution Accidents, ICNC 2003. Japan.

3 American Nuclear Society, 555 North Kensington Avenue, La Grange Park, Illinois 60526 USA.

4 DOE O 420.1B, Facility Safety, U.S. Department of Energy, Washington, D.C., Chg. 1: 4-19-10.

5 ANSI/ANS-8.23-2007, Nuclear Criticality Accident Emergency Planning and Response, American Nuclear Society, 555 North Kensington Avenue, La Grange Park, Illinois 60526 USA.

6 Merle E. Bunker, Status Report on the Water Boiler Reactor, Los Alamos Scientific Laboratory of the University of California, Los Alamos, New Mexico, LA-2854, October 1, 1963.

7 P.R. Lecorche and R. L. Scale, “The CRAC Experiments,” Y-CDC-12, Oak Ridge. Criticality Data Center, 1972.

8 F. Barbry, “SILEN’E: A Typical Solution Fuelled Research Reactor,” International Symposium on the Use and Development of Low and Medium Flux Research Reactors, MIT, Cambridge, USA, October, 1983.

9 C. M. Hopper and B. L. Broadhead, NUREG/CR-6504, Vol.2, An updated Nuclear Criticality Slide Rule, Functional Slide Rule, Oak Ridge National Laboratory Managed by Lockheed Martin Energy Research Corporation, Oak Ridge, TN 3783 1-6370, 1998.

10 James J. Conklin and Richard I. Walker, Eds., Military Radiation (Academic Press Inc., New York, 1987), pp. 165-190.

11 Title 10—Energy, Chapter III--Department of Energy, Part 830--Nuclear Safety Management.

12 DOE Standard Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses, DOE-STD-3009, Change Notice No. 3 March 2006.

13 DOE Standard Integration of Safety into the Design Process, DOE-STD-1189-2008, March 2008.

Attachment

CSSG TASKING 2010-02

Date Issued: September 21, 2010

Task Title: *Role Of Criticality Safety In Facility Hazard Categorization*

Task Statement:

The CSSG is directed to develop a white paper on the proper role of criticality accidents as a hazard in the selection of facility hazard categorization. The objective of the white paper is to provide guidance for the Department in what considerations, if any, criticality accidents should play in the determination of the facility hazard category. The position should look at the current state of criticality safety requirements, standards and guidance as well as the current intent of the facility hazard categorization process. The expectation is that the CSSG will make a recommendation on the proper role, or lack thereof, of criticality as a determining factor in hazards categorization. The CSSG should indicate how the criticality safety expectations inherent in the implementation of DOE Order 420.1B and the ANSI/ANS-8 Nuclear Criticality Safety Standards protect against the occurrence of a criticality accident and mitigate the consequences to workers and the public independently of the need for additional regulatory guidance or requirements. The CSSG should also consider the worldwide history of criticality accidents and what lessons learned have been gleaned from that history insofar as it pertains to the issue of facility hazard categorization.

Specific questions to be addressed include:

1 Given the history and nature of criticality accidents and given that DOE Order 420.1B and the ANSI/ANS-8 Standards are appropriately implemented for criticality safety, how should the potential for a criticality accident affect facility hazard categorization?

2 What safety gaps remain after implementation of DOE O 420.1B and the ANSI/ANS-8 Standards that are addressed via the facility hazard categorization process and subsequent application of requirements strictly from a criticality accident prevention and mitigation standpoint?

3 How does implementation of ANSI/ANS-8.23 mitigate the hazard of a criticality accident to co-located workers and offsite individuals regardless of the hazard categorization of the facility?

4 If safety gaps are identified in addressing question two above, what features of safety management programs or federal oversight programs should be implemented to address these regardless of facility hazard categorization?

Resources:

The CSSG Deputy Chair will form a writing team composed of CSSG members. Contractor CSSG members of the team will use their FY10 and FY11 NCSP CSSG support funding as appropriate; DOE CSSG members of the team will utilize support from their site offices. CSSG emeritus members may be included in the team on a voluntary basis. In addition, such resources as need to be consulted from the safety basis area may be involved to the extent that NCSP funds are not involved in their support.

Task Deliverables:

1. Draft white paper issued to the entire CSSG for comments by October 5, 2010.
2. CSSG members submit comments on the draft white paper to the writing team Lead by October 8, 2010.
3. CSSG Chair briefs the NCSP Manager on the comment resolution and the major recommendations of the writing team by October 13, 2010.
4. CSSG Chair transmits the CSSG white paper to NCSP Manager by October 15, 2010.

Task Due Date: October 15, 2010