October 16, 2003

MEMORANDUM TO: Joseph Holonich, Deputy Director
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Materials Safety and Safeguards

FROM: Margaret Chatterton /RA/ HFelsher for
Criticality Team Leader
Division of Fuel Cycle Safety and Safeguards

SUBJECT: MEETING SUMMARY OF THE NRC/NEI SPONSORED WORKSHOP ON CRITICALITY SAFETY, SEPTEMBER 25, 2003

On September 25, 2003, Division of Fuel Cycle Safety and Safeguards (FCSS) Staff conducted a Criticality Safety (CS) Workshop with the Nuclear Energy Institute (NEI) at the Sofitel Hotel in Washington, D.C. The presenters were from NEI, fuel cycle licensees/applicants, and staff from FCSS and the Spent Fuel Project Office. Sixty-one people attended the workshop, including representatives from Agency offices/divisions, NEI, fuel cycle licensees/applicants, U.S. Department of Energy, national laboratories, Electric Power Research Institute, FCSS contractors, and other consultants/contractors. This workshop followed the Integrated Safety Analysis (ISA) Workshop with NEI held the previous two days at the same location. Both workshops were Category 2 open public meetings.

NEI/industry presented licensee/applicant views and questions on CS aspects of 10 CFR Parts 70 and 71. NRC presented information on the regulations, reviewing licensing actions, and technical CS aspects. The general topics of discussion are contained in the agenda in Attachment 1 and more detailed industry and NRC perspectives are contained in Attachments 2 and 3, respectively.

As a result of the information and views exchanged at the workshop, NRC staff is confident that it can continue to make progress in the implementation of the new regulatory framework established by Subpart H. Specifically, the staff intends to develop interim staff guidance to clarify portions of the fuel cycle facility standard review plan (SRP) (NUREG-1520). NRC agreed to consider issuing interim staff guidance to provide clarification on the type of information required for a license amendment/renewal, how the double contingency principle and highly unlikely are related, and how the defense-in-depth requirements of 10 CFR Part 70 will be reviewed. Also, NRC staff agreed to consider initiating a rule change to address the comment concerning 10 CFR 70.24, that 70.24 only requires justification if a licensee wants an exemption from the criticality accident alarm system requirements. However, the commentor suggested that a licensee should have to justify either why or why not an alarm system is needed because sometimes having an alarm system actually decreases safety.

Discussion

Overall views of Part 70 were discussed between the industry and NRC.

Industry requested clarification as to the level of detail required to be submitted to NRC for a site-wide ISA Summary review, a license amendment/renewal review, and whether there is any difference in the level of detail required. Industry was also concerned about whether it was required to submit a nuclear criticality safety evaluation (NCSE) for an amendment/renewal. NRC staff stated that the level of detail required for a license amendment/renewal submittal depends on the complexity of the operation. Also, the review of a license amendment/renewal is not any different than it was before ISA summaries were required. That is, staff need enough information to be able to independently determine that the operation is safe and the licensee will meet regulatory requirements. The information required in an ISA Summary for a license amendment/renewal and a site-wide ISA Summary are the same. NRC staff will review an amendment/renewal request in more detail because the licensee needs to demonstrate safety. NRC has not completed the review of any site-wide ISA summaries. The ISA summaries that NRC has reviewed so far have not contained the safety basis needed to make a finding of reasonable assurance of safety for a license amendment. NRC staff does not require the submittal of an NCSE, as long as the safety basis is contained in the submittal for the license amendment/renewal. The SRP describes in detail the review processes for both ISA summaries and license amendments/renewals. Industry asked why NRC needs to review more than what is contained in an ISA Summary for amendments/renewals. NRC staff stated that NRC must look at attributes of the CS Program to see if it is robust enough to provide adequate safety. Also, when a new or revised operation, as opposed to one previously licensed is reviewed, NRC must also use the guidance given in the CS chapter of the SRP. NRC staff noted that to do a risk informed review, strict guidelines on what is reviewed cannot always be given. NRC staff agreed to consider interim staff guidance as to what information is required to be submitted for a license amendment/renewal.

A public commentor remarked that 10 CFR 70.24, when applicable, only requires justification if a licensee wants an exemption from the criticality accident alarm system requirements. They suggested that a licensee should have to justify either why or why not the alarm systems are needed because sometimes the use of the alarms actually decrease safety. NRC staff agreed to consider initiating a rule change to address this comment.

Industry questioned the changes in Part 71 with respect to the use of a CS index (CSI) rather than using the current transportation index. A licensee requested that the number of packages allowed per shipment be in the certificate rather than the CSI, as this is how international shipments are handled. A licensee asked whether there were any potential changes to the Part 71 guidance that gives 0.95 as the criticality limit on k-effective. They felt that NRC follows this guidance too rigidly and that the guidance may be too prescriptive. A member of the public noted that the CS standards used by industry do not have a prescribed k-effective limit and that NRC guidance documents may be too prescriptive and this may detract from truly worrying about what can go wrong (i.e., need to be subcritical under normal and credible abnormal conditions). NRC staff replied that this k-effective limit is just guidance and that staff would consider other limits, but that it could make the review time longer. A licensee asked whether there is any consideration to consolidate validation reviews between Part 70 and Part 71 so that the review is not done twice. It was not clear whether this is a general industry concern or is an

isolated incident because NRC staff is not aware of any duplicate reviews. NRC staff stated that to eliminate duplicate reviews, the licensee can always point to where requested information is already on the docket.

A licensee presented on the lessons-learned from a recent license amendment submitted to NRC. The licensee discussed the use of enabling events, favorable geometry as an Item Relied on For Safety (IROFS), independence of IROFS, and initiating events. There was much industry discussion on how different licensees characterize favorable geometry IROFS and the appropriate management measures that they apply to these. There was unanimous agreement among industry that favorable geometry items need to be IROFS. Also, the issue of justifying independence, especially when human actions are used, was discussed.

Regarding the double contingency principle, both industry and NRC agreed that one must truly believe that each leg of the double contingency argument is unlikely. Some commentors indicated that using numbers to define unlikely and highly unlikely may be used to "rachet up the licensees." Others emphasized that it is meaningless to talk about a change in k-effective without discussing what can go wrong in the operation. There were mixed comments on whether quantitative methods are useful in CS. However, using some type of approach to show which operations are more likely helps to focus resources on those operations. NRC staff stated that their reviews are performed in such a manner as to try to be risk-informed rather than focusing only on numbers. Industry stated that highly unlikely and double contingency are equal. NRC staff stated that there are two different requirements, one for highly unlikely and the other for the double contingency principle. The double contingency principle requirement only applies to new facilities or new processes. Additionally, while a good robust application of the double contingency principle should make an accident sequence highly unlikely, there are cases where that is not true.

As noted above, NRC staff agreed to consider issuing interim staff guidance regarding type of information to submit, double contingency principle, and defense-in-depth. Also, NRC staff agreed to consider initiating a rule change to address a comment about 10 CFR 70.24.

Attachments:
1. Criticality Safety Workshop Agenda
2. NEI/Industry Slides
3. NRC Slides
4. Participants List

isolated incident because NRC staff is not aware of any duplicate reviews. NRC staff stated that to eliminate duplicate reviews, the licensee can always point to where requested information is already on the docket.

A licensee presented on the lessons-learned from a recent license amendment submitted to NRC. The licensee discussed the use of enabling events, favorable geometry as an Item Relied on For Safety (IROFS), independence of IROFS, and initiating events. There was much industry discussion on how different licensees characterize favorable geometry IROFS and the appropriate management measures that they apply to these. There was unanimous agreement among industry that favorable geometry items need to be IROFS. Also, the issue of justifying independence, especially when human actions are used, was discussed.

Regarding the double contingency principle, both industry and NRC agreed that one must truly believe that each leg of the double contingency argument is unlikely. Some commentors indicated that using numbers to define unlikely and highly unlikely may be used to "rachet up the licensees." Others emphasized that it is meaningless to talk about a change in k-effective without discussing what can go wrong in the operation. There were mixed comments on whether quantitative methods are useful in CS. However, using some type of approach to show which operations are more likely helps to focus resources on those operations. NRC staff stated that their reviews are performed in such a manner as to try to be risk-informed rather than focusing only on numbers. Industry stated that highly unlikely and double contingency are equal. NRC staff stated that there are two different requirements, one for highly unlikely and the other for the double contingency principle. The double contingency principle requirement only applies to new facilities or new processes. Additionally, while a good robust application of the double contingency principle should make an accident sequence highly unlikely, there are cases where that is not true.

As noted above, NRC staff agreed to consider issuing interim staff guidance regarding type of information to submit, double contingency principle, and defense-in-depth. Also, NRC staff agreed to consider initiating a rule change to address a comment about 10 CFR 70.24.

Attachments:
1. Criticality Safety Workshop Agenda
2. NEI/Industry Slides
3. NRC Slides
4. Participants List

Distribution:
SPIB r/f FCFB r/f MVirgilio MFederline
Attendees (w/Attachments) as listed in Attachment 4 (electronically)

ML032890532

C:\ORPCheckout\FileNET\ML032890532.wpd

OFFICE	SPIB	E	FCFB	C	FCFB	
NAME	HFelsher		JMuszkiewicz		JHolonich	
DATE	10/16/03		10/16/03		10/ /03	

C = COVER E=COVER AND ENCLOSURE N=NO COPY

OFFICIAL RECORD COPY