

January 3, 2001

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Office of Nuclear Regulatory Research

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SUBJECT: SUMMARY OF NOVEMBER 16, 2000 PUBLIC MEETING ON
RISK-INFORMED CHANGES TO LOCA-RELATED
REGULATORY REQUIREMENTS

A one-day public working-level meeting was held for NRC staff, the Nuclear Energy Institute (NEI), reactor owner's groups, and other interested stakeholders to exchange more detailed information regarding potential changes to loss of coolant accident (LOCA)-related regulatory requirements, as part of the staff's efforts to risk inform the regulatory requirements of 10 CFR Part 50 (Option 3). This meeting was a follow-up to the public workshop on Option 3, held on October 2, 2000, and to previous staff meetings with the Westinghouse Owners Group (WOG) on their large break LOCA (LBLOCA) redefinition program and on the staff's efforts to risk-inform the technical requirements of 10 CFR 50.46. Attachment 1 contains the list of attendees and Attachment 2 provides the meeting agenda.

Prior to the meeting, the NRC staff and NEI exchanged lists of questions or topics to be discussed at the meeting. A meeting outline was prepared by assimilating the questions contained in both lists, and categorizing them by meeting agenda topic. The meeting outline, as well as some other supporting information, was provided by the staff to all meeting participants. The staff's handout, as well as copies of all stakeholder viewgraphs, are available under ADAMS accession number ML003773957.

Virtually all of the discussions during the meeting were associated with one of the following topics: (1) scope, approach and implementation of the staff's efforts to make risk-informed changes to LOCA-related regulatory requirements; (2) technical issues associated with the WOG's LBLOCA redefinition program; or (3) other options for developing a risk-informed alternative to 10 CFR 50.46. A summary of the discussion on each of these topics is presented below.

Scope, Approach and Implementation for Risk-Informing LOCA-Related Regulatory Requirements

The NRC staff provided a brief overview of the scope and approach for its efforts to risk-inform LOCA-related regulatory requirements. The staff presented its view that the LOCA-related regulatory requirements can be subdivided into three principal areas: emergency core cooling (ECC) performance, containment performance, and equipment qualification (EQ). It is recognized that the most benefits (in terms of both safety enhancement and unnecessary burden reduction) are obtainable if all three areas are addressed simultaneously as a complete package. However, due to the complexity of such a large undertaking, it could require a very long time to reach the point of full implementation. Consequently, the staff indicated that it is considering a phased approach to risk-informing the LOCA-related regulatory requirements, wherein the requirements associated with ECC performance would be addressed first, and the requirements associated with containment and EQ would be addressed in a subsequent phase. Making risk-informed changes to the ECC requirements, which are basically contained in 10 CFR 50.46, Appendix K, and GDC-35, appears to be less complicated than making changes associated with containment and EQ, while still providing substantial safety and unnecessary burden reduction benefits.

Industry representatives were of an essentially unanimous opinion that they strongly prefer to pursue redefining the LBLOCA in a comprehensive fashion, i.e., simultaneously addressing the ECC, containment and EQ aspects, even though this would require a delay in the schedule. Industry representatives also stated that they did not feel incorporation of these additional areas (i.e., containment and EQ) would represent a significant impediment to timely completion of this effort.

One of the principal reasons for the difference in the NRC staff and industry views regarding the effort required to simultaneously assess all aspects of the LOCA-related regulatory requirements derives from different perceptions of how a risk-informed alternative would be implemented. The guidance provided in the staff's framework for risk-informed changes to the technical requirements of 10 CFR Part 50 implies that as part of developing a risk-informed alternative regulation, the staff would need to examine all related regulations and implementing documents (e.g., standard review plan sections and regulatory guides), and make all conforming changes concurrently. As part of this effort, the staff would need to ensure that all of the risk-significant safety concerns addressed by this set of regulations and implementing documents would still be adequately addressed given the redefinition of the LBLOCA. Since the LBLOCA is used as a surrogate for many other potential accident initiators, the possibility exists that some new or revised design basis accidents (DBAs) may need to be identified, with particular consideration to both internal and external events, as well as all modes of plant operation (i.e., including low power and shutdown). The principal drawback with this implementation approach is that it puts the onus on the staff to anticipate all possible plant change requests that may arise as a result of redefining the LBLOCA, and to ensure that all risk-significant safety concerns impacted by these changes remain adequately addressed for all plants.

In the industry view, risk-informing the LOCA-related regulatory requirements would only entail making a few wording changes to the regulations, and that as part of the process for licensee applications for change, each licensee change request would have to come complete with

documentation (e.g., 50.59 analysis and RG 1.174 analysis) to ensure that all risk-significant safety concerns are addressed. Industry indicated that they could develop an implementation guidance document to be used for this purpose, which the NRC could endorse by way of a regulatory guide. The drawback with what industry is envisioning is that it could require a lot of effort from both the licensees and NRR prior to making each plant-specific change.

At the conclusion of this discussion, the staff indicated that they would need to meet internally in order to discuss the industry feedback, and to determine an appropriate course of action.

Technical Issues Associated With LBLOCA Redefinition

The WOG provided an overview of their probabilistic risk assessment (PRA)-related activities in support of their program for redefinition of the licensing basis LBLOCA. The WOG explained how estimated LBLOCA initiating event frequencies based on pipe size were obtained using their Structural Reliability and Risk Assessment (SRRA) tool. The WOG SRRA tool includes deterministic models of failure (e.g., fracture mechanics), considers uncertainties in input parameters (e.g., flaw size, stress, material properties, etc.), and uses Monte-Carlo simulation to generate failure probabilities. The WOG stated that the SRRA tool is compatible with known experience, has been benchmarked against the pc-PRAISE code, and has been previously reviewed and approved by the NRC for application to risk-informed in-service inspection. The WOG provided tables of LOCA initiating event frequencies and core damage frequencies by line size, in order to demonstrate that LBLOCAs are not risk-significant accident initiators. The WOG stated that the LBLOCA initiating event frequencies they obtained compare well with those presented in NUREG/CR-5750, "Rates of Initiating Events at U.S. Nuclear Power Plants: 1987-1995," February 1999. The WOG does not currently have data on large early release frequency (LERF) or conditional containment failure probability (CCFP) for LBLOCAs.

The WOG indicated that they are planning to submit to the NRC in mid or late December 2000, an executive summary package on their LBLOCA redefinition program activities, including a coarse schedule.

Other Options for Developing a Risk-Informed Alternative to 10 CFR 50.46

Besides redefining the LBLOCA size, the staff is also considering a number of other possible options for developing a risk-informed alternative to 10 CFR 50.46. The staff requested industry feedback on each of these options. Industry representatives indicated that, at present, they only want to focus on redefining the LBLOCA size, and that they are not prepared to give feedback on the other options for risk-informing 10 CFR 50.46 at this time. The industry's position is that the other options should only be pursued if it becomes apparent that redefining the LBLOCA size is no longer a viable option. This feeling was unanimous among the owners groups. The WOG also stated that it would be harder to make safety benefit arguments for the other options, as compared to redefining the LBLOCA size. It was noted that a joint committee of all of the owners groups was going to be formed for the purpose of focusing on the redefinition of the LBLOCA size.

At the conclusion of the meeting, it was agreed by all parties that another public meeting should be held in early January, so that the staff could present its proposal for moving forward with developing a risk-informed alternative for the LOCA-related regulatory requirements. The date

for this meeting has been tentatively set as January 11, 2001. A pre-meeting conference call has also been tentatively scheduled for January 4, 2001.

Attachments:

1. List of Attendees
2. Agenda

Project No. 689
 cc: See next page

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ATTENDANCE SHEET
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AGENDA FOR PUBLIC MEETING ON POTENTIAL CHANGES TO LOCA-RELATED REGULATORY REQUIREMENTS

November 16, 2000

T-10A1

8:30am-9:10am	<p>NRC Overview</p> <ul style="list-style-type: none"> – Initial thoughts: scope, approach, implementation – Schedule
9:10am-2:05pm	<p>Technical Issues Associated With LBLOCA Redefinition¹</p> <ul style="list-style-type: none"> – WOG-developed draft LOCA frequencies (~2 hrs) – Break (15 min) – LOCA-related risk data and insights (30 min) – Risk-impact of LBLOCA redefinition (45 min) – Lunch (45 min) – Potential benefits of LBLOCA redefinition (20 min) – Impact of LBLOCA redefinition on implementing documents and safety issues (20 min)
2:05pm-3:00pm	Other ECCS-Performance Options
3:00pm-3:15pm	Break
3:15pm-4:00pm	Other ECCS-Performance Options (Continued)
4:00pm-5:00pm	Approach and Implementation

¹ The technical issues associated with LBLOCA redefinition are listed in order of priority. If insufficient time is available, then not all of these issues will be discussed.