March 22, 2002

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Office of Nuclear Regulatory Research

THRU: Mary T. Drouin, Section Leader **ASK for MTD /RA/**
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SUBJECT: SUMMARY OF FEBRUARY 5, 2002, PUBLIC MEETING WITH INTERESTED STAKEHOLDERS REGARDING PRA QUALITY AND STANDARDS AND RISK-INFORMED CHANGES TO 10 CFR 50.46

On February 5, 2002, a public meeting was held at NRC headquarters with interested stakeholders to provide and solicit feedback on (1) the staff's current ideas on endorsement of PRA standards and other guidance documents and the update to Regulatory Guide (RG) 1.174, and (2) the staff's efforts on risk-informing the ECCS reliability requirements of 10 CFR 50.46, specifically General Design Criterion (GDC) 35. A summary of the discussions on each of these areas is provided below. The viewgraphs for the staff presentations are available under ADAMS accession number ML020430010. Attachment 1 contains the list of attendees.

The staff plans to include the update of RG 1.174 as part of a Commission paper to be submitted in March 2002. Also included with the March Commission paper will be a plan for developing a new RG which will provide guidance to licensees on using PRA standards or industry peer review programs to determine the level of confidence in PRA insights/results so that they are appropriately used by decision-makers. Supporting appendices will provide staff endorsement of specific PRA standards (e.g., ASME) or industry programs (e.g., NEI-00-02). Industry representatives indicated that the staff's plan to develop the new RG seemed reasonable, but that the more important consideration was the details that would be contained in the new RG. Industry requested, and the staff agreed, that there be additional public meetings as work progressed on the new RG.

With respect to risk-informed changes to 10 CFR 50.46/GDC 35, the staff described its intention to revise GDC 35 to provide an alternative to demonstrate that ECCS safety function can be reliably accomplished using a more general reliability requirement, as opposed to the prescriptive requirements currently contained in GDC 35 (i.e., the assumptions of a coincident loss of offsite power [LOOP] and single additional failure). Two approaches to this proposal are

being considered: a plant-specific approach and a generic approach. In late March, the NRC intends to hold a public meeting, in which it will provide the technical basis for the plant-specific approach as well as provide the status of the generic approach. In the plant-specific approach, NRC-specified risk criteria would be used to assure acceptable ECCS reliability. The criteria to be used would be adapted from the Option 3 framework document and RG 1.174. In the generic approach, all plants would be grouped based on their ECCS (and support system) configurations, and each plant group would be assigned a minimal set of equipment necessary to meet the reliability goal. The practicality of the generic approach depends on the extent to which the plants can be grouped together (i.e., whether the number of plant groups can be kept reasonably small).

Substantial discussion between the staff and industry occurred at the meeting with regard to how the proposed ECCS reliability requirements would affect the ECCS thermal-hydraulic (T-H) performance calculations. Industry representatives stated that the primary benefits they were anticipating as a result of the risk-informed alternative to GDC 35 would derive from changes to the current failure assumptions for the ECCS T-H calculations. The staff responded that while the topic of the current meeting was specifically on the approach for assuring adequate ECCS reliability, the staff was also currently in the process of determining how the risk-informed ECCS reliability approach would interface with the ECCS T-H calculations. It was agreed that additional meetings, both internal staff and public, are necessary to resolve this issue.

Two other issues were principal sources of discussion: (1) the estimation of LOCA frequencies, and (2) the estimation of the conditional probability of a LOOP following, and as the result of, a large LOCA. NUREG/CR-5750 (February 1999) is the most recent source of LOCA frequencies; however, recent operational experience has raised some concerns over the appropriateness of these frequencies for the LOCA-LOOP application. The staff stated its intention to hold a separate meeting in the near future which would focus on the concerns with the LOCA frequency estimation contained in NUREG/CR-5750. An industry representative noted that EPRI also has a LOCA frequency database, which provides frequencies as a function of the number of pipe segments involved. Since the staff needs LOCA frequencies to support its near-term activities related to risk-informing GDC 35, it related that it is considering the possibility of an expert elicitation process in order to obtain reasonable bounding LOCA frequencies. Industry expressed a desire to be involved if an expert elicitation process were to be pursued. Representatives from both the Westinghouse Owners' Group (WOG) and Babcock and Wilcox Owners' Group (BWOG) indicated that their top concern related to the staff's efforts on risk-informing the ECCS reliability requirements was staff progress on the issue of LOCA frequencies. It was also commented by industry that many licensees have already used the NUREG/CR-5750 LOCA frequency values for updating their probabilistic risk assessments (PRAs). At the conclusion of the discussion on LOCA frequencies, an NEI representative related that a petition for rulemaking would be forthcoming in the next few days to amend 10 CFR Part 50 to allow the use of an alternative to the currently required double-ended rupture of the largest pipe in the reactor coolant system in ECCS evaluation models.

The principal concern associated with the issue of conditional LOOP given a large LOCA is the lack of a robust data sample. Since there have been no large LOCAs in the nuclear industry, the staff has proposed using conditional LOOP following major ECCS actuations as a surrogate. The staff indicated that data on conditional LOOP following standard reactor trips (i.e., without coincident ECCS actuation) do not represent a suitable surrogate for data on conditional LOOP following a large LOCA since these events impose less severe electrical

challenges to the plant, particularly with regard to the probability that safety bus voltage will drop to the undervoltage trip setpoints. It was generally agreed that the conditional LOOP probability obtained using major ECCS actuation data (~7E-2) probably represents an upper bound to the true conditional LOOP probability following a large LOCA, and that the conditional LOOP probability obtained using all reactor trip data (~3E-3) represents a lower bound. One meeting participant suggested the use of international data on conditional LOOP in order to expand the data sample. However, an EPRI representative countered that such data would probably not be representative of plants in the U.S. due to differences in grid reliability between countries. Recognizing the limitations of existing data, industry indicated their intention to explore alternatives for estimating the probability of conditional LOOP following a large LOCA. It was agreed that a follow-up public conference call or meeting should be scheduled to specifically address this issue.

A final issue discussed at the meeting involved what and how credit should be given to non-ECCS systems in demonstrating ECCS functional reliability. Since it is envisioned that CDF and LERF thresholds would be used for demonstrating adequate ECCS reliability, and most PRAs include credit for non-ECCS systems, consideration needs to be given to whether some limit on the crediting of these systems should be established for this application, and/or how credit for such systems should be accounted for in the ECCS T-H performance calculations. The staff noted that it is only in the preliminary stages of exploring this issue, and would provide more discussion on this topic at the next public meeting.

Attachment: List of Attendees

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Attachment 1

LIST OF PARTICIPANTS PRA QUALITY AND STANDARDS AND RISK-INFORMED CHANGES TO 10 CFR 50.46 FEBRUARY 5, 2002			
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