

June 12, 2012

MEMORANDUM TO: Amy E. Cabbage, Chief  
Policy Branch  
Division of Advanced Reactors and Rulemaking  
Office of New Reactors

FROM: Russell E. Chazell, Project Manager */RA/*  
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Division of Advanced Reactors and Rulemaking  
Office of New Reactors

SUBJECT: SUMMARY OF MAY 16, 2012, PUBLIC MEETING ON NEXT  
GENERATION NUCLEAR PLANT RISK-INFORMED, PERFORMANCE  
BASED LICENSING APPROACH

On May 16, 2012, U.S. Nuclear Regulatory Commission (NRC) staff held a public meeting as part of its ongoing pre-application interactions with the U.S. Department of Energy (DOE) and its Idaho National Laboratory (INL) for DOE's Next Generation Nuclear Plant (NGNP) Project. The meeting was held at the NRC Twinbrook Building, Conference Room TWB-05OE1, Rockville, MD. The purpose of the meeting was to discuss technical and policy issues associated with NGNP Risk-Informed, Performance Based (RIPB) Licensing Approach. The meeting addressed INL white papers that describe the proposed RIPB approach for NGNP licensing specific to licensing basis events. The meeting was a continuation of a proposed series of working meetings to be held over the coming months.

The associated meeting notice is available at NRC's Agencywide Documents Access and Management System (ADAMS) under Accession No. ML12125A137. The following provides a brief summary of the meetings.

### **Summary**

Dr. Donald Carlson, Policy Branch, Division of Advanced Reactors and Rulemaking (DARR), Office of New Reactors (NRO), opened the meeting with an introduction and brief summary of the meeting agenda.

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INL staff then laid out the objectives for the meeting. Those objectives included 1) summarizing closed issues, 2) discussion of the need for additional information, 3) containment discussion, and 4) future topics and meetings. The slides for the discussion can be found in ADAMS under Accession No. ML12136A102.

INL staff discussed the basis for the NGNP project's use of "event sequences" rather than "initiating events" in considering the selection of licensing basis events (LBEs) and the categorization of selected LBEs in accordance with predicted event sequence frequencies. INL staff further clarified that initiating events are part of the event sequences. The NGNP project's position is that the new technology represented by the NGNP requires new thinking about the respective roles of deterministic and probabilistic risk analyses. INL's perspective was that the relevant determination is the sequence to the consequence – not the initiating event standing alone. The NRC took an action item that they would consider how the use of event sequences rather than initiating events might change the NRC's assessment reports in terms of LBE selection and categorization.

### **Discussion of the Status of Specific LBE Issues**

INL discussed with the NRC staff the status and path forward for a number of LBE issues. The NRC staff NGNP working group has been reviewing various NGNP project white papers (see ADAMS Accession No. ML12153A297) and issuing Requests for Information (RAIs) as a result of those reviews. The LBE issues discussed in this public meeting were developed from those RAIs and INL's responses to them. Two tables containing these LBE issues - shown by the tracking number assigned to the issue (see ADAMS Accession No. ML12160A330 for that table) and by topical groups such as anticipated operational occurrences (AOOs) and frequency-consequence curve (F-C curve) development (see ADAMS Accession No. ML12160A339 for that table) – were used to drive the discussion. LBE issues included: LBE-9 – discussion of an NGNP project proposal to base the frequency of LBEs on a plant-year rather than a unit-year; LBE-12 – discussion of the NRC's working group view that the dose calculation model for AOOs should include all structures, systems, and components that have a role in the deterministic safety analysis of the event sequence; LBE-14 – discussion of an NGNP project proposal for a best estimate offsite dose consequence calculation rather than use of the more conservative Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20 calculations; LBE-10 - discussion of the NRC working group's view that design basis events (DBEs) involve event sequences of initiating events with mean frequencies  $< 1E-2$  per reactor-year and a mean frequency of  $> 1E-5$  per reactor-year and that beyond DBEs should involve event sequences of initiating events with mean frequencies  $< 1E-5$  per reactor-year and a mean frequency of  $> 1E-7$  per reactor-year; and LBE-22 - discussion of the NRC working group view of frequency ranges for categorizing LBEs as guidelines and not sharp break points in categorizing events. These discussions resulted in a number of action items for both the NGNP project team and the NRC working group that will inform future meetings and revisions to NGNP project documents.

### **Functional Containment**

A discussion regarding reactor containment then ensued. NRC staff stated that NGNP project positions related to “functional” containment should be discussed in terms of Standard Review Plan, Section 6.2 thereby focusing on retention of radionuclides. INL stated that containment is not necessarily equal to a reactor building and that it is difficult to impose the light water reactor paradigm to the high temperature gas reactor concept. This issue will require additional discussion at subsequent meetings

### **Conclusion**

The meeting concluded with discussions about future meeting scheduling and topics as well as an opportunity for public comment. Future meetings will include additional discussion of LBE issues, fuel qualification issues, mechanistic source term issues, and functional containment issues.

There was one member of the public present at the meeting. He stated that he found the meeting to be very informative and that he hoped this information gets used.

Enclosure:  
Attendance List

cc w/encl: See next page

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**ADAMS Accession Number: ML12153A286-pkg** **\*via e-mail** **NRO-001**

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**NEXT GENERATION NUCLEAR PLANT  
RISK-INFORMED PERFORMANCE BASED LICENSING APPROACH MEETING  
May 16, 2012**

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Mary Drouin	NRC/RES/DRA	Jeffrey Cruz	NRC/NRO
Mark Holbrook	INL/NGNP	Danny Chien	NRC/NRO
Fred A. Silady	INL/ Tech Insights	David Alberstein*	INL/NGNP
Jonathan DeGange	NRC/NRO/DARR	Pete Jordan*	INL/NGNP
Pete Lowry	INL/NGNP		
Michelle Hart	NRC/NRO/DSEA		
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Jason Tokey	DOE/NE		
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\*On teleconference bridge line