

May 12, 2016

MEMORANDUM TO: Donna Williams, Acting Chief
Licensing Branch 2
Division of New Reactor Licensing
Office of New Reactors

FROM: James Steckel, Project Manager **/RA/**
Licensing Branch 2
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: SUMMARY OF THE MARCH 16, 2016, PUBLIC TELECONFERENCE
WITH KOREA HYDRO AND NUCLEAR POWER CO. LTD. TO DISCUSS
DESIGN CONTROL DOCUMENT CHAPTER 15 TOPICS RELATED TO
THE ADVANCED POWER REACTOR 1400 DESIGN

On March 16, 2016, a Category 1 public meeting teleconference was held between the U.S. Nuclear Regulatory Commission (NRC) staff and Korea Hydro and Nuclear Power Co. Ltd. (KHNP). During the business portion of the meeting there were no proprietary discussion items; the non-proprietary discussion included a follow up to two earlier requests for additional information (RAIs) regarding Boron dilution after loop seal clearing during a small break loss-of-coolant accident (SBLOCA), along with a discussion of the applicant's response to a RAI regarding the range of reactor power levels related to reactivity insertion and withdrawal rates with regard to General Design Criteria (GDC) 10 and 20. There were no participants from the public at this teleconference. The meeting notice was issued on March 1, 2016, and is documented in the NRC's Agencywide Documents Access and Management System (ADAMS) under Accession Number ML16061A533. The notice included the meeting agenda. The List of Attendees is provided as an enclosure.

Discussion Summary:

The purpose of the meeting was to provide KHNP with clarification of the identified Chapter 15 meeting topics. A Discussion Initiators List of the meeting topics was provided to KHNP in advance of the discussion and is provided in ADAMS under Accession Number ML16088A278. The teleconference discussion included the following:

A. Small Break Loss of Coolant Accident (SBLOCA) Topics:

- 1) Boron Dilution – The NRC staff issued a RAI regarding Boron dilution after loop seal clearing to request KHNP to demonstrate, by analysis, that a return to criticality cannot occur following a SBLOCA.
- 2) Core peak cladding temperature (PCT) – KHNP will provide test information regarding core PCT during SBLOCA loop seal formation, in relation to:

- i. ATLAS loop seal formation/clearing test data.
- ii. RELAP5 model benchmark.
- iii. Justification for CEFLASH code usage.

B. Design Control Document (DCD) Chapter 15, Section 15.4, "Reactivity and Power Distribution Anomalies":

The staff were unable to make a safety finding for Section 15.4.2 based on KHNP's response to RAI 346-8434 (ML16014A758), Question 15.04.02-1. A discussion was held regarding the potential need for additional analyses and/or justification to supplement the original RAI response to address how the APR1400 design is compliant with GDC 10 and 20, specifically:

- 1) Rod Withdrawal Analysis – The staff is requesting that KHNP provide the full range of power level and the full range of rates of reactivity addition, to make a safety finding regarding General Design Criteria (GDC) 10 and 20 for DCD Section 15.4.2.
- 2) Rod Insertion Analysis – The staff requests clarification regarding whether the applicant has completed 12-finger CEA drop analyses. Specifically, the analyses information is needed to verify that KHNP has presented the most limiting case.

C. Vessel Fluence Method Benchmark:

- 1) A combined license information item may be required to ensure that the methodologies used to determine pressure-temperature limitation (P-T Limit) curves are valid.

The KHNP representatives that attended the teleconference, indicated that they understood what was being requested, and there were no additional items discussed with KHNP at this teleconference.

Please direct any inquiries to James Steckel at (301) 415-1026 or via email to james.steckel@nrc.gov.

Docket No.: 52-046

Enclosure:
List of Attendees

cc w/enclosure: See next page

- i. ATLAS loop seal formation/clearing test data.
- ii. RELAP5 model benchmark.
- iii. Justification for CEFLASH code usage.

B. Design Control Document (DCD) Chapter 15, Section 15.4, "Reactivity and Power Distribution Anomalies":

The staff were unable to make a safety finding for Section 15.4.2 based on KHNP's response to RAI 346-8434 (ML16014A758), Question 15.04.02-1. A discussion was held regarding the potential need for additional analyses and/or justification to supplement the original RAI response to address how the APR1400 design is compliant with GDC 10 and 20, specifically:

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NRC-001

OFFICE	DNRL/LB2: PM	DNRL/LB2: LA	DNRL/LB2: PM	DNRL/LB2: PM (signed)
NAME	JSteckel	CSmith	JCiocco	JSteckel
DATE	04/24/2016	04/26/2016	05/12/2016	05/12/2016

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List of Attendees

Meeting Summary of the SRSB Chapter 15 Teleconference Held on March 16, 2016

	NRC	
1.	Alex Burja	
2.	Tim Drzewiecki	
3.	Shanlai Lu	
4.	James Steckel	
5.	Matt Thomas	
6.	Donna Williams	
7.	Douglas Barber - ISL	
8.	Ron Ellis - ORNL	

	KHNP	
1.	Jiyong (Andy) Oh - KHNP	
2.	Woochung Chon - KNF	
3.	Teahwan Kim – KEPCO-ENC	
4.	Kaeyeol Lew - KNF	
5.	Jaehoon Jeong - KNF	
6.	Sungju Cho - KNF	
7.	Jaeil Lee - KNF	

Enclosure

KHNP Mailing List

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