



UNITED STATES
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Dr. Han-Gon Kim, Project Manager
APR1400 Design Certification
Advanced Reactors Development Laboratory
Korea Hydro and Nuclear Power Co., Ltd.
70-1312-gil, Yuseong-daero
Yuseong-Gu, Daejeon
305-343 Korea (Republic of)

SUBJECT: REVIEW UPDATE OF THE KOREA HYDRO AND NUCLEAR POWER CO., LTD., AND KOREA ELECTRIC POWER CORPORATION APPLICATION FOR STANDARD DESIGN CERTIFICATION OF THE ADVANCED POWER REACTOR 1400

Dear Dr. Kim:

By letter dated June 2, 2015, the U.S. Nuclear Regulatory Commission (NRC) issued a schedule to Korea Hydro and Nuclear Power Co., Ltd., (KHNP) and Korea Electric Power Corporation for reviewing the Advanced Power Reactor 1400 (APR1400) Design Certification (DC) application (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15091A241). By letters dated March 7, 2016 (ML16067A165), September 27, 2016 (ML16245A847), and March 21, 2017 (ML17058A100), the NRC staff provided review updates. This letter is to inform you of the current status of the review.

The NRC staff has made substantial progress toward completing both the remaining Phase 4 Advanced Safety Evaluation Reports (ASERs) with no Open Items and the Phase 5 Advisory Committee on Reactor Safeguards (ACRS) meeting milestones. As of the date of this letter, the ASERs for Chapters 2, 5, 8, 10, 11, and 12 of the APR1400 application have been completed and are being processed for issuance to the ACRS for review, and all ACRS subcommittee meetings have been scheduled. ASERs for Chapters 15, 16, 19.3, 19.4, and 19.5 will be completed shortly.

However, in several areas, issues related to the technical quality, completeness, or timeliness of your submittals have resulted in delays that are now affecting the estimated dates for completion of Phase 4 and Phase 5. The most significant example of such issues is the updated probabilistic risk assessment (PRA). As noted by the ACRS¹, because the update to the PRA involves changes to the risk models and reevaluations of actions, it will affect the overall risk results and the PRA documentation in the Design Control Document (DCD). ACRS expressed its concern that additional delays in its review may occur as the result of these updates.

¹ Letter from Dennis Bley (Chairman of the ACRS) to Victor McCree (NRC Executive Director for Operations) dated June 21, 2017 (ML17171A033).

KHNP first committed to submitting its updated PRA information by May 2016 (ML16144A862), but was not successful in meeting that date. By letter dated September 12, 2017 (ML17255A952), KHNP informed the NRC staff of its plan to complete the submission of all information regarding the PRA update by no later than September 29, 2017. The staff appreciated this schedule update and notes that KHNP submitted responses to all outstanding requests for additional information (RAIs) by that date. Because some of the RAI responses referenced technical reports that are not yet available, the staff has not received all of the information it needs to complete its evaluation. In addition, the staff's initial review of the information that has been submitted has identified technical issues, such as the methodology used in the PRA-based seismic margins analysis, and quality issues, including internal inconsistencies in the DCD. As discussed on October 25, 2017, the additional information requested by the staff must be provided and the technical and quality issues must be resolved in order for the staff to complete its review.

Additional examples of technical quality, completeness, and timeliness issues are found in the following technical areas of your application: design description inconsistencies exist between the Common Q™ Platform Topical Report that the staff was relying on and the information presented in the Westinghouse Nuclear Safety Advisory Letter (NSAL)-17-2; the lack of a water hammer analysis for the safety injection tank fluidic device outlet pipe as required by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code; and the RAI responses for the new and spent fuel rack design were submitted significantly later than expected. These first two issues were discussed with your staff in meetings on October 16, 2017, and October 18, 2017, respectively. Lastly, there are multiple RAIs that either have not been responded to, or for which the responses have not yet been found to be adequate.

The combined effect of the issues discussed above has caused the staff to delay completion of many of the Phase 4 ASERs. Therefore, the staff is revising the Phase 4 public milestone date from December 2017 to March 2018, recognizing the potential for additional delays to this phase should the issues discussed above not be addressed by KHNP by November 15, 2017. This delay may also impact whether the entire review of your application can be completed within 42 months. Therefore, the staff will consider extending the public milestones of the remaining phases in the APR1400 review schedule, as needed.

As we have done throughout this review, the staff will continue to interact with KHNP to resolve any issues which may arise as we work to complete the review, issue the Final Safety Evaluation Report, and execute the rulemaking. If you have any questions, please contact William Ward, the Lead Project Manager for this review, at (301) 415-7038 or via e-mail at William.Ward@nrc.gov.

Sincerely,

/RA/

Frank Akstulewicz, Director
Division of New Reactor Licensing
Office of New Reactors

Docket No.: 52-046

cc: See next page

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 1400 DATED: 10/31/2017

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*via email

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KHNP Mailing List

Daegeun (Tony) Ahn
Director
KHNP Washington DC Center
8100 Boone Blvd, Suite 620
Vienna, VA 22182

Email

kimhg1108@khnp.co.kr
hansang.kim@khnp.co.kr
dohwan.lee@khnp.co.kr
junghokim@khnp.co.kr
yunho.kim@khnp.co.kr
jiyong.oh@khnp.co.kr
ahn.daegeun@khnp.co.kr
jksuh@khnp.co.kr
hachewung@khnp.co.kr
kang.deogji@khnp.co.kr
sunguk.kwon@khnp.co.kr
ptmaster300@kepco.co.kr

[Han-Gon Kim]
[Hansang Kim]
[Do-Hwan Lee]
[Jung-Ho Kim]
[Yun Ho Kim]
[Jiyong Andy Oh]
[Daegeun Tony Ahn]
[Jeong Kwan Suh]
[Che Wung Ha]
[Deog Ji Kang]
[Sun Guk Kwon]
[Hyun Chul Park]

sisk1rb@westinghouse.com
david.wagner@aecom.com
robert.sweeney@consultant.aecom.com

[Rob Sisk]
[David Wagner]
[Robert Sweeney]