February 26, 2009

MEMORANDUM TO: Michael R. Johnson, Director
Office of New Reactors

FROM: Jeffrey Jacobson, Assistant for International Cooperation ***/RA/***
Office of New Reactors

Eileen McKenna, Branch Chief ***/RA/ J. Jacobson for***
AP1000 Projects Branch 2
Division of New Reactor Licensing
Office of New Reactors

SUBJECT: COMBINED QUICK-LOOK AND FINAL TRIP REPORT

Enclosed, is a combined quick-look and final trip report that contains the observations of Eileen McKenna and Jeffrey Jacobson who participated in a meeting of the Multinational Design Evaluation Program (MDEP) AP1000 Design Centered Working Group in Beijing, China. The meeting was held at the offices of the Chinese National Nuclear Safety Administration (NNSA) and included participants from the regulators of the U.S., China, Great Brittan, and Canada. Eileen McKenna chaired the meeting and the NEA acted as secretariat.

The objective of the meeting was to exchange information on the current status of the regulatory reviews of the AP1000 in each respective country and to pick specific topics for technical cooperation. Three topics were picked for near term cooperation: adequacy of design, qualification, and inservice testing program for in-containment refueling water storage tank injection valves (squib valves); civil engineering aspects of shield building design; and safety classification and testing of control rod drive latch mechanisms. A fourth topic, variable speed drive mechanisms for reactor coolant pumps was also selected as a topic for consideration, but this topic is mainly of interest only to China and Great Brittan as in these two countries the reactor coolant pumps will be operated continuously from the variable speed drives. This is due to the 50 cycle frequency on their electrical grid and Westinghouse's desire to use the same reactor coolant pumps and motors as for the 60 cycle applications in the U.S. and Canada.

Minutes from the MDEP meeting are included as an Enclosure.

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Following the MDEP meeting, Mr. Jacobson discussed with representatives from NNSA potential bilateral activities that could be pursued between NRO and NNSA, outside of the MDEP effort. This was a follow-on to discussions that were held the previous week between NRO and NNSA at NRC headquarters and within the overall scope of the NRC/NNSA Memorandum of Cooperation on Nuclear Safety for the Westinghouse AP1000 signed in May of 2007. Among the items discusses were a future meeting on construction inspection program development, joint vendor inspections, foreign assignees from NNSA, and NRC observation of construction activities in China.

cc: B. Mallett, DEDR
G. Holahan, NRO
M. Doane, OIP
V. Ordaz, OEDO

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DATE:	02/26/2009	02/26/2009

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Combined Quick-Look and Final Trip Report

Subject
Participation in the Multination Design Evaluation Program (MDEP) AP1000 Design Centered Working Group

Travel Dates, Countries and Organizations Visited
February 17 – 19, 2009, Beijing, China - National Nuclear Safety Administration (NNSA) of China

Author/Title/Agency Affiliation
Jeffrey Jacobson, Assistant for International Cooperation, Office of New Reactors and Eileen McKenna, Branch Chief, AP1000 Projects Branch 2, Division of New Reactor Licensing, Office of New Reactors.

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Background/Purpose
The objective of the meeting was to exchange information on the current status of the regulatory reviews of the AP1000 in each respective country and to pick specific topics for technical cooperation.

Abstract: Summary of Pertinent Points/Issues
The first part of the meeting was taken up by presentations from each of the four participating regulators on the licensing process and associated status of the AP1000 design review in their respective countries. China is planning to issue a construction permit very soon (within the next few weeks) for the AP1000 assuming closure of a few remaining issues which now seem eminent. Great Brittan is continuing their Generic Design Assessment of the AP1000, which is focused on selected topical areas. They expect a finalized list of sites for new build in spring 2010 with a first application received in mid 2010 at the earliest (could be either an EPR or AP1000). The Canadian Nuclear Safety Commission (CNSC) is just beginning a high level pre-project of the AP1000 to Canadian safety standards.

After a roundtable discussion three topics were picked for follow-on action and near term cooperation by the group: adequacy of design, qualification, and inservice testing program for in-containment refueling water storage tank injection valves (squib valves); civil engineering aspects of shield building design; and safety classification and testing of control rod drive latch mechanisms. A fourth topic, variable speed drive mechanisms for reactor coolant pumps was also selected as a topic for consideration, but this topic is mainly of interest only to China and Great Brittan as in these two countries the reactor coolant pumps will be operated continuously from the variable speed drives. This is due to the 50 cycle frequency on their electrical grid and Westinghouse's desire to use the same reactor coolant pumps and motors as for the 60 cycle applications in the U.S. and Canada.

Discussion

AP1000 Project Status in Each Country

The first part of the MDEP meeting was taken up by presentations from each of the four participating regulators on the licensing process and associated status of the AP1000 design review in their respective country. China is planning to issue a construction permit very soon (within the next few weeks) for the AP1000 assuming closure of a few

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Eileen McKenna provided an overview of the NRC's licensing process and status of the AP1000 review in the U.S..

Selection of Technical Topics

After a roundtable discussion, three topics were picked for follow-on action and near-term cooperation by the group: adequacy of design, qualification, and the inservice testing program for in-containment refueling water storage tank injection valves (squib valves); civil engineering aspects of shield building design; and safety classification and testing of control rod drive latch mechanisms. A fourth topic, variable speed drive mechanisms for reactor coolant pumps was also selected as a topic for future consideration.

The in-containment refueling water storage tank injection valves (squib valves) were selected because of the uniqueness of these valves and their relative risk significance. Such valves are apparently not currently in existence and will require a new design and associated qualification programs. The squib valves to be used on the AP1000 are much larger than those used in existing nuclear applications. Questions have also been raised regarding the adequacy of the current inservice testing requirements for such valves, since there is little to no operating experience. This expert group will be led by Canada.

The shield building design was selected due to the uniqueness of its design and the fact that there are currently outstanding questions regarding the modular construction techniques to be used and the use of former plates rather that rebar in the design of the concrete retaining walls. This expert group will be led by the U.S..

The control rod drive system was selected as its safety classification (classified as non-safety) has been questioned by the Chinese, particularly the classification of the latch mechanisms and the adequacy of any associated testing or analysis to show that the latch mechanisms can perform their intended safety function. This expert group will be led by China.

The reactor coolant pump variable speed drives were selected for future consideration, but this topic is mainly of interest only to China and Great Brittan as in these two countries the reactor coolant pumps will be operated continuously from the variable speed drives. This is due to the 50 cycle frequency on their electrical grid and Westinghouse's desire to use the same reactor coolant pumps and motors as for the 60 cycle applications in the U.S. and Canada. When formed, this expert group will be led by Great Brittan.

The technical expert subgroups will meet between the general meetings via workshops, internet, video or telephone conferencing or email exchanges. The chair of each expert subgroup will provide summary reports after each meeting to the AP1000 chairs and to the NEA secretariat, if NEA doesn't attend the meeting.

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Pending Actions/Planned Next steps for NRC

Contacts from NRO's technical staff need to be assigned to each of the working groups. The NRC volunteered to lead the working group on the shield building/civil engineering and as such needs to develop plans for forwarding this effort. The next meeting for the MDEP AP1000 Design Centered Working Group will be in Paris in the September 2009 timeframe.

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