

October 27, 2010

Dr. Said Abdel-Khalik, Chairman  
Advisory Committee on Reactor Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: RESPONSE TO THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
LETTER: REPORT ON THE SAFETY ASPECTS OF THE SOUTH TEXAS  
PROJECT NUCLEAR OPERATING COMPANY'S APPLICATION TO AMEND THE  
CERTIFIED U.S. ADVANCED BOILING-WATER REACTOR DESIGN TO  
INCORPORATE THE AIRCRAFT IMPACT ASSESSMENT RULE

Dear Dr. Abdel-Khalik:

I am writing in response to the letter from the Advisory Committee on Reactor Safeguards (ACRS), dated September 20, 2010. The letter addresses the U.S. Nuclear Regulatory Commission (NRC) staff's safety evaluation (SE) of the South Texas Project Nuclear Operating Company's (STPNOC's) application to amend the certified U.S. Advanced Boiling-Water Reactor (ABWR) design. ACRS discussed the SE during its 575<sup>th</sup> meeting on September 9–11, 2010. The ACRS ABWR subcommittee had met previously on August 18, 2010, to discuss the technical aspects of the application, the aircraft impact assessment (AIA), and the staff's SE and AIA inspection report.

In its letter, the ACRS stated that the STPNOC application to amend the ABWR design certification rule and the staff's SE are acceptable upon satisfactory closure of Recommendations 1 and 2 only. The staff's responses documenting the satisfactory closure of Recommendations 1 and 2 are given below. In addition, the ACRS letter contained three additional recommendations to the staff. The enclosure to this letter details with the staff's responses to those three additional ACRS recommendations.

ACRS Recommendation 1: The STPNOC application to amend the ABWR design certification rule and the staff's SE are acceptable subject to satisfactory closure of the issues identified in the Notice of Violation and Recommendation 2.

Staff Response: Based on the applicant's initial response to the notice of violation (Agencywide Documents Access and Management System (ADAMS) Accession No. ML102590073) and its subsequent letter containing additional clarification on two items (ADAMS Accession No. ML102850361), the staff has accepted the applicant's response to the notice of violation (ADAMS Accession No. ML102861857) and the staff considers this issue closed.

S. Abdel-Khalik

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ACRS Recommendation 2: The staff should ensure that the applicant demonstrates and documents that the temperature within the fire-protected area where the Alternate Feedwater Injection (AFI) system instrument rack is to be located will not exceed the instruments' environmental qualification conditions.

Staff Response: The applicant completed the calculations demonstrating that the temperature within the fire-protected area in which the AFI system instrumentation rack will be located will not rise to a level that exceeds the environmental qualification of the instrumentation. The applicant included those calculations as an appendix to the AIA heat removal report. The staff inspected the appendix and confirmed that the temperature limits of the AFI instrumentation will not be exceeded and that the calculation is documented in the AIA.

The staff appreciates the Committee's efforts and recommendations. We thank the ACRS for its time and its valuable input, and we look forward to working with the Committee in the future.

Sincerely,

*/RA by Martin J. Virgilio for/*

R. W. Borchardt  
Executive Director  
for Operations

Docket No.: 52-001

Enclosure:  
As stated

cc: Chairman Jaczko  
Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff  
SECY

S. Abdel-Khalik

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**ADAMS Accession No.: ML102800594 (Package) \*via e-mail EDO-002**

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Letter to Dr. Said Abdel-Khalik from R. W. Borchardt dated October 27, 2010

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LETTER: REPORT ON THE SAFETY ASPECTS OF THE SOUTH TEXAS  
PROJECT NUCLEAR OPERATING COMPANY'S APPLICATION TO AMEND THE  
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**STAFF RESPONSE TO ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
RECOMMENDATIONS 3, 4, AND 5 ON THE SOUTH TEXAS PROJECT NUCLEAR  
OPERATING COMPANY'S APPLICATION TO AMEND THE CERTIFIED U.S. ADVANCED  
BOILING-WATER REACTOR DESIGN TO INCORPORATE THE AIRCRAFT IMPACT  
ASSESSMENT RULE**

In addition to the two recommendations addressed within the staff's letter, the ACRS identified three additional recommendations to the staff. The staff responses to the additional ACRS recommendations are given below.

ACRS Recommendation 3: The staff should ensure that the assumptions and initial conditions credited in the applicant's Aircraft Impact Assessment (AIA) are properly incorporated into the amended Design Control Document (DCD).

Staff Response: The staff agrees with this comment. Following the inspection of the applicant's AIA, the staff ensured that the amended DCD included the key assumptions related to the credited design features and functional capabilities necessary to ensure the plant is constructed in accordance with the AIA rule (Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.150, "Aircraft Impact Assessment"). The AIA rule does not require applicants to document all their assumptions and initial conditions in the DCD. The staff believes that those items that it required the applicant to document in the DCD are the key assumptions and initial conditions required for inclusion by the AIA rule. The level of detail with regard to assumptions and initial conditions that South Texas Project Nuclear Operating Company (STPNOC) included in its amended DCD is consistent with the level of detail normally provided in DCDs.

The ACRS letter cited the example of the AIA assumption of divisional separation for cable routing. Section 9.5.1.1.1, "Plant Arrangement", of the DCD states that the plant arrangement for the ABWR naturally groups cable trays together in divisional arrangements and does not require routing of services of one division across space allotted to another division. The term "space" refers to physical space and not just fire area. Section 9.5.1.1.2, "Divisional Separation", describes that in general, systems are grouped together by safety division so that there is only one division of safe shutdown equipment in a fire area, but that there are areas where there is equipment from more than one safety division in a fire area. Section 9A.5.5, "Fire Separation for Divisional Electrical Systems," clearly describes each case where cables of more than one division are in relatively close proximity and require special justification. The AIA accounted for the special cases detailed in Section 9A.5.5 of the DCD. The key assumptions made in the AIA are consistent with the descriptions for divisional separation of cables in the ABWR DCD. In addition, the applicant has documented in the DCD that for the alternate feedwater injection (AFI) system, a credited system that survives all impact scenarios, the required cabling will be routed outside of physical damage footprints.

Enclosure

ACRS Recommendation 4: The staff should ensure that Combined License (COL) applicants referencing this amendment have an appropriate process to assure the reliability of the AFI system.

Staff Response: COL applicants will establish the structure, systems, components (SSCs) in the plant-specific maintenance program and other programs that contribute to reliability assurance. This will be accomplished by using the advanced boiling-water reactor design reliability assurance and maintenance programs described in the DCD as starting points and augmenting them as necessary based on the plant-specific design and the plant-specific Probabilistic Risk Assessment (PRA). This activity will occur after the applicant has received a COL. If the COL applicant decides to credit the AFI system in the PRA for providing core cooling for beyond-design-basis accidents, then the AFI system would be considered in the scope of the reliability assurance and maintenance programs. In that case, the NRC would use its reactor oversight process to ensure that these programs address the SSCs associated with the AFI system commensurate with their importance to risk. The DCD amendment has not credited the AFI system for mitigation of non-AIA design basis events and therefore, it is not considered, nor is it required, to be in the scope of the reliability assurance and maintenance programs. The AIA rule does not require applicants to include systems credited for mitigation of this beyond-design-basis accident in the scope of the reliability assurance and maintenance programs. At a minimum, and as stated in Section 9.5.14.3 of STPNOC's amended DCD, licensees that have referenced this DCD will test and maintain SSCs associated with the AFI in accordance with the manufacturer's recommendations to ensure the reliability of the AFI system.

ACRS Recommendation 5: The staff should complete a lessons-learned review of this application to identify any deficiencies in the AIA Inspection Procedure (IP) 37804 and the AIA methodology prescribed in Nuclear Energy Institute (NEI) 07-13, Revision 7. Resolution of these deficiencies should be communicated to the industry and incorporated into the staff's future reviews.

Staff Response: The staff agrees with the ACRS recommendation to complete a lessons-learned review of this application. The staff is currently in the process of formally documenting the lessons-learned as a result of the initial AIA inspections. As the staff completes each AIA inspection, it is informally incorporating lessons-learned into the inspections for each subsequent design center application. The staff also plans to communicate its lessons-learned to the industry and to update the AIA guidance documents and inspection procedure by the end of the third quarter of fiscal year 2011.