



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

November 22, 2017

LICENSEES: Entergy Operations, Inc.; Duke Energy Progress, LLC; and Southern Nuclear Operating Company, Inc.

FACILITIES: Grand Gulf Nuclear Station, Unit 1; Shearon Harris Nuclear Power Plant, Unit 1; and Vogtle Electric Generating Plant, Units 1 and 2

SUBJECT: SUMMARY OF OCTOBER 10, 2017, MEETING WITH ENTERGY OPERATIONS, INC.; DUKE ENERGY PROGRESS, LLC; SOUTHERN NUCLEAR OPERATING COMPANY, INC.; AND NUCLEAR ENERGY INSTITUTE TO DISCUSS PILOT SUBMITTALS USING TORNADO MISSILE EVALUATOR METHODOLOGY (EPID L-2017-LRO-0020)

On October 10, 2017, the U.S. Nuclear Regulatory Commission (NRC) staff conducted a Category 1 public meeting with Entergy Operations, Inc. (Entergy), Duke Energy Progress, LLC (Duke), Southern Nuclear Operating Company, Inc. (SNC), and the Nuclear Energy Institute (NEI) at NRC Headquarters, 11545 Rockville Pike, Two White Flint North, Rockville, Maryland. The purpose of the meeting was to discuss the NRC staff's efforts in support of the development of NEI's Tornado Missile Risk Evaluation (TMRE) Tool. Revision 1 of NEI 17-02, "Tornado Missile Risk Evaluator (TMRE) Industry Guidance Document," was provided in support of a previous meeting and is available in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML17268A023. The licensees' presentations are available in ADAMS under Accession Nos. ML17283A412 and ML17283A416. The NRC staff's methodology feedback document was briefly discussed as part of this meeting and is available in ADAMS under Accession No. ML17235B148.

BACKGROUND

Revision 1 to NEI 17-02 provides a risk-informed option to assess the risk posed by tornado missiles at any site to determine whether additional physical protection is warranted. This methodology is known as the TMRE. Another methodology, known as TORMIS, is used to determine the probability of components being struck and disabled by a tornado-generated missile, and was accepted for use by the NRC. In cases where some components were not in conformance with a plant's licensing basis, licensees can use the TORMIS methodology as a means for demonstrating that the probability of these components being struck by a tornado-generated missile was low enough to justify that protection from tornado-generated missiles was not required. Several licensees have incorporated the TORMIS methodology into their plant-specific licensing basis. One of the advantages of TMRE is that, if approved, it is intended to be applied regardless of the vintage of the plant or the content of the plant's licensing basis.

On August 30, 2017, the NRC staff met with a focus on the pending TMRE submittals for SNC's Vogtle Electric Generating Plant (Vogtle) and Duke's Shearon Harris Nuclear Power Plant

(Harris). Both licensees summarized their applications. The NRC staff had some questions including the basis for treatment of short-term operator actions (i.e., those that need to be executed within 1 hour of the initiating event) and indicated a concern with nonconservative assumptions and the feasibility of those actions. Both licensees indicated that work was still ongoing related to the approach to addressing the recovery actions related to a loss of offsite power.

DISCUSSION

During the meeting, Entergy presented information related to the pending Grand Gulf Nuclear Station (GGNS) submittal. The licensee covered the current licensing and design bases related to tornado missiles bases, including the proposed justification for why the proposed changes constituted no significant hazards. The NRC staff reminded the licensee that significant hazards consideration reviews were not risk-informed, but reflect deterministic considerations including the significance of the effect of the change on accidents and malfunctions previously analyzed, among other requirements.

The licensee provided a listing of the vulnerabilities identified during its walkdowns. The presentation identified the scope of the vulnerabilities identified and presented the contribution of the compliant and degraded cases to the initiating event frequencies. The NRC staff questioned the initiating event frequency contributions from the degraded case for the Fujita Prime (F') 2 and F'3 cases. The NRC indicated that the submittal should address the difference between the compliant case, which represents the plant as if it met the current licensing basis, and the degraded case, which represents the plant as it currently exists (the as-built, as-operated plant).

Appendix E, "TMRE Methodology Sensitivity Studies," of NEI 17-02, Revision 1, examines the sensitivity of missile impact probability values to target size, target elevation, and the distribution of missiles inventory around the plant. The results are used to support the derivation of missile impact probability values. Entergy provided results regarding various model sensitivities. The NRC staff questioned how those sensitivities are reflected in the model, as it was the NRC staff's understanding from previous discussions that the sensitivities would be combined. The licensee indicated that combining the sensitivities would result in too much conservatism and that the sensitivities would be applied separately. The NRC staff indicated that a better discussion regarding sensitivities was needed. It was indicated that NEI and the pilot licensees would look at the assumptions to see how combining the sensitivities would affect the results. It was suggested that this issue be discussed at the next meeting. Additional questions focused on whether Entergy used the TORMIS methodology. The licensee indicated that it reviewed the equipment lists both ways and it was unchanged.

Duke presented a discussion to address feedback received during the August 30, 2017, pre-application meeting regarding the need for additional detail for the defense-in-depth and safety margin discussions. The licensee indicated that as it relates to barriers such as the containment, no nonconforming conditions were identified. Additionally, Duke indicated that in support of demonstrating that its analyses did not have an over-reliance on programmatic activities, no credit was intended to be taken for compensatory measures, nor would the reliability of current actions be credited. For safety margins, Duke indicated that the number of nonconformances was small and that margins would be maintained since non-safety equipment had been identified in the event of a loss of function due to a tornado missile.

The pilot licensees indicated tentative submittal dates in 2017 of October 13th for Vogtle, October 20th for Harris, and October 24th for GGNS. The NRC indicated that the goal was to complete review of the submittals by the end of June 2018.

Members of the public were in attendance. No public Meeting Feedback forms nor comments needing additional follow-up were received.

Sincerely,

/RA/

Eva A. Brown, Senior Project Manager
Special Projects and Process Branch
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-400, 50-416, 50-424,
and 50-425

Enclosure:
List of Attendees

cc: Listserv

LIST OF ATTENDEES

U.S. NUCLEAR REGULATORY COMMISSION PUBLIC MEETING

CONCERNING PILOT SUBMITTALS OF THE

TORNADO MISSILE RISK EVALUATOR METHODOLOGY

OCTOBER 10, 2017

U.S. Nuclear Regulatory Commission

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External Stakeholders

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Gary Smith, Enercon
Tim Sande, Enercon
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NRC-001

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