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NL-14-104

August 18, 2014

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11545 Rockville Pike, TWFN-2F1
Rockville, MD 20852-2738

SUBJECT: Revised FLO-2D Analysis to Address the Current LIP Regarding the Flooding Aspects of Recommendations 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident
Indian Point Unit Numbers 2 and 3
Docket Nos. 50-247 and 50-286
License Nos. DPR-26 and DPR-64

REFERENCE:

1. NRC letter to Entergy, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated March 12, 2012.
2. Entergy Unit 2 Letter to NRC (NL-13-156) Entergy's Required Response for NTTF Recommendation 2.1: Flooding - Hazard Reevaluation Report, dated December 23, 2013

Dear Sir or Madam:

On March 12, 2012, the NRC issued Reference 1 to all power reactor licensees and holders of construction permits in active or deferred status. Recommendation 2.1 of the referenced letter requested a reevaluation of all appropriate external flooding sources and the submittal of a Hazard Evaluation Report. Entergy Nuclear Operations, Inc. (Entergy) completed the reevaluation and submitted a Hazard Reevaluation Report in Reference 2. Subsequently, an issue with the FLO-2D model was identified and discussed with the NRC. A revised FLO-2D analysis to correct the issue was completed as Calculation 32-9196321-000 Rev 1 and is being submitted in the Enclosure (a CD as electronic files). In a discussion on June 20, 2014, the NRC asked specific questions about the analysis which were addressed as follows:

- Flow discontinuity from the walkway between unit 1 and 2 to the unit 2 switch yard will not use the ARF (area reduction factor, which essentially removed grid elements), thus allowing connectivity to the critical switch yard area. Also certain areas will be reconnected and have continuous flows. The elimination of the ARF and a discussion of reconnection of areas is in Section 2.2.2.

- If a mesh resolution of 30 feet is planned for the reanalysis, the complexity of the flow paths in the 30 foot wide area between unit 1 and 2 and in the switch yard will require adequate justification that the mesh size is appropriate. The mesh size, which was reduced to 10 feet, is discussed and justified in Sections 2.2.2 (Model Grid Size) and 6.2.2.
- The model configuration is complex as it relates to flow down the steep road adjacent to Unit 2. The appropriateness of the model details, especially potential backwater conditions as flows combine at the transformer yard and mesh sizes, should be sufficiently justified. The mesh size, which was reduced to 10 feet, is discussed in Sections 2.2.2 (Model Grid Size) and 6.2.2 and the backwater issues are addressed in Section 6.2.8.
- If the FLO-2D model for flow near buildings uses a “mound solution,” the modeling solution should be justified in terms of conservative water surface elevations within the Unit 2 transformer yard and how it is consistent with guidance in ANSI/ANS-2.8-1992 Section 11.4. The alleyway by the EDG and between unit 1 and the switchyard going towards unit 3 have been clarified in the modeling. The area reduction factor elimination and reconnection of areas is discussed in Section 2.2.2.
- Describe how the FLO-2D model meets the three criteria from the users manual (i.e., mass conservation, lack of numerical instabilities (no surging), and inundated areas that are appropriate and make physical sense). The 3 criteria are addressed in Section 6.2.8.
- Discuss how supercritical flow conditions are considered with respect to FLO-2D dynamic modification of Manning’s roughness coefficients for model stability since this can lead to flow effects that are not consistent with the actual system. Supercritical checks were performed as per Section 2.2.7 and 6.2.7.

There are no new commitments contained in this submittal. If you have any questions regarding this confirmation of receipt, please contact Mr. Robert Walpole, Manager, Regulatory Affairs, at (914) 254-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 18, 2014.

Respectfully,



JAV/sp

Enclosure: CD with Calculation 32-9196321-000 Rev 1, Flood Hazard Re-evaluation-Local Intense Precipitation-Generated Flood Flow and Elevations at Indian Point Energy Center

cc: Mr. Douglas Pickett, Senior Project Manager, NRC NRR DORL with enclosure
Mr. William M. Dean, Regional Administrator, NRC Region 1 with enclosure
NRC Resident Inspector Office without enclosure
Mr. John B. Rhodes, President and CEO, NYSERDA without enclosure
Ms. Bridget Frymire, New York State Dept. of Public Service without enclosure

ENCLOSURE TO NL-14-104

CD WITH CALCULATION 32-9196321-000 Rev 1, FLOOD HAZARD RE-EVALUATION-LOCAL INTENSE PRECIPITATION-GENERATED FLOOD FLOW AND ELEVATIONS AT INDIAN POINT ENERGY CENTER

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2
DOCKET NO. 50-247