FirstEnergy®

Davis-Besse Nuclear Power Station
5501 North State Route 2
Oak Harbor, Ohio 43449-9760

July 17, 2014
L-14-235

10 CFR 50.54(f)

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

SUBJECT:
Davis-Besse Nuclear Power Station
Docket No. 50-346, License No. NPF-3
Supplement to Flood Hazard Reevaluation Report in Response to Near-Term Task Force Recommendation 2.1

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a letter titled, "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," to all power reactor licensees and holders of construction permits in active or deferred status. Enclosure 2 of the 10 CFR 50.54(f) letter addresses NTTF Recommendation 2.1 for flooding. One of the required responses is for licensees to submit a Hazard Reevaluation Report (HRR) in accordance with the NRC's prioritization plan. By letter dated March 11, 2014, FirstEnergy Nuclear Operating Company (FENOC) submitted the Flood HRR for Davis-Besse Nuclear Power Station (DBNPS).

On June 6, 2014, a public meeting was held between NRC staff and FENOC to discuss the Flood HRR and interim actions regarding flood levels for two postulated flood hazard events (local intense precipitation and probable maximum storm surge) determined during the hazard reevaluation to exceed the current licensing basis (CLB) flood levels. The increased levels were the result of newer methodologies and not the result of errors within the CLB evaluations. No additional actions beyond those currently in place at DBNPS were determined to be necessary at the time. As a result of the discussion held during the June 6, 2014 public meeting, FENOC hereby provides the attached additional detail regarding this conclusion in order to supplement the Flood HRR for DBNPS.

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at 330-315-6810.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 7th, 2014.

Respectfully,

Raymond A. Lieb
Site Vice President

Attachment:
Supplemental Information for Flood Hazard Reevaluation Report

cc: Director, Office of Nuclear Reactor Regulation (NRR)
NRC Region III Administrator
NRC Resident Inspector
NRR Project Manager
Utility Radiological Safety Board

By letter dated March 11, 2014, FirstEnergy Nuclear Operating Company (FENOC) submitted the Flood Hazard Reevaluation Report (HRR) for Davis-Besse Nuclear Power Station (DBNPS) in response to the 10 CFR 50.54(f) request for information issued by the Nuclear Regulatory Commission (NRC) on March 12, 2012. Specifically, this report was in response to Near-Term Task Force Recommendation 2.1 for flooding. On June 6, 2014, a public meeting was held between NRC staff and FENOC to discuss the Flood HRR and interim actions regarding flood levels for two postulated flood hazard events [local intense precipitation (LIP) and probable maximum storm surge (PMSS)]. During this meeting, FENOC communicated supplemental information regarding the conclusions made in the Flood HRR. The supplemental information communicated to the NRC during the public meeting follows.

The Flood HRR stated, in part, in Section 5, Interim and Planned Future Actions:

> The Flooding Hazard Reevaluation Report evaluated applicable flooding hazards for DBNPS. Two of the postulated reevaluated flood hazard events, the PMSS and the LIP events, resulted in maximum flood water elevations higher than previously calculated for DBNPS. The assessment of the buildings, resulting from the flood hazard reevaluation, found a number of doors leading to areas containing safety related equipment to be susceptible to the postulated water infiltration. These postulated flooding events are considered beyond design basis events. The reevaluated flood levels are small increases with short durations. These low probability events would likely be identified in advance by meteorological forecasting. Current plant procedures addressing flooding at the site provide actions to be taken in the event flooding is imminent or has occurred at or near the DBNPS site. No additional actions beyond those currently in place are necessary at this time. The total plant response to the reevaluated hazard is to be determined by the Integrated Assessment.

For the PMSS event, the initial lake water level (starting value prior to probable maximum wind storm/PMSS) for the beyond design basis event is taken as the 100-year monthly average water level for Lake Erie and is equal to 574.33 feet (ft)-International Great Lakes Datum of 1985 (IGLD85). However, the most current monthly average water level for Lake Erie at the Toledo Station was 571.90 ft-IGLD85 (April 2014). Over the past 5 years the maximum monthly average water level for Lake Erie at the Toledo Station was 572.62 ft-IGLD85 and the overall average monthly average water level over the entire period of record for Lake Erie at the Toledo Station (since 1918) is 571.18 ft-IGLD85. Based on these values, there is notable margin between the initial lake level used in the PMSS reevaluation analysis and the recorded Lake Erie levels for the period of record. Significant changes in lake levels occur slowly over time (many years) and, therefore, is not expected to change significantly over the interim period.

A PMSS sensitivity analysis was performed using an initial Lake Erie water level of 572.0 ft-IGLD85. This initial lake level is greater than the overall average monthly average water level over the entire period of record for Lake Erie at the Toledo Station by 0.82 ft. This reduced lake water level results in the calculated maximum flooding elevations from the PMSS event to be 584.5 ft-IGLD55. This is below the DBNPS finish floor elevation of 585.0 ft-IGLD55. This PMSS sensitivity analysis result provides a margin of 0.5 ft before water would enter the plant.

For the LIP event, a preliminary LIP model utilizing an approximated site-specific probable maximum precipitation (PMP) instead of the general Hydrometeorological Report (HMR) PMP was performed. The site-specific PMP was based on the 5-inch reduction in PMP that was obtained at the Perry Nuclear Power Plant using the site-specific PMP method. The Perry Nuclear Power Plant is another FENOC plant located on the shore of Lake Erie. This site-specific reduction was confirmed as reasonable by third party industry experts. The resulting LIP flood level was reduced so that only one door location exceeded the finished floor elevation of the plant (by 0.16 feet) and this door is located in the non-safety related area of the turbine building. Based on this preliminary result, FENOC has issued a Request for Engineering Services to perform a formal site specific PMP analysis.

The use of actual lake levels and the site-specific PMP indicates that there are no immediate concerns to the plant safety related equipment. However, to verify the potential impact of these events, walkdowns were conducted by engineering staff that included all exterior doors, interior doors and building/equipment curbs that would act as barriers to prevent flood water from reaching safety related equipment. The walkdowns inspected for the following: the door state (open or closed), door operating direction (in or out), presence of door position monitoring equipment, door and door seal condition, nearby safety related equipment location and installed elevation, and the height and extent of protective curbs.

The areas of the plant that contain safety related equipment that could potentially be affected by flooding and, thus, included in the walkdowns were:

- High Voltage Switchgear Rooms
- Emergency Diesel Generator Rooms
- Mechanical Penetration Rooms No. 3 and No. 4
- Component Cooling Water Heat Exchanger and Pump Room
- Auxiliary Feedwater Pump Room entrance and ventilation curbs
- Intake Structure

The walkdowns confirmed that the exterior doors are equipped with seals on the sides and at the bottom of the doors, that the exterior personnel doors open outward and are normally closed, and that the doors in safety related rooms are closed and instrumented to control access and detect unauthorized opening. The walkdowns confirmed that exterior personnel doors open outward, which ensures that flood waters would force the doors into the jambs and, therefore, into the seal surfaces, which would minimize door leakage during a flood event. The walkdowns confirmed that the exterior doors and

seals are in good condition. The walkdowns also confirmed that the inspected interior doors are in good condition but only some interior doors have seals included. Those interior doors with seals are doors that provide for internal flooding or ventilation barriers. The walkdowns confirmed the interior door seals are in good condition.

It was noted that the turbine building rollup doors were open to provide for ventilation. There is, however, flood curbing in the turbine building and auxiliary building with a minimum height of 6 inches around safety related areas and equipment. The flood curbing provides adequate protection for safety related equipment even if the beyond design basis LIP event were to occur, based on maximum LIP levels of 0.41 ft above finish floor elevation. If the beyond design basis PMSS were to occur, the level and duration would not be contained solely by the flood curbing. However, site procedures were reviewed and the long lead time of the event would allow those procedures to be utilized, and the doors would be ensured to be closed. The door and door seal condition would prevent a large influx of water and the flood curbing would be adequate protection for the safety related equipment against the door leakage. Additionally, within the turbine building there is a large volume available below the 585 ft elevation that would provide capacity for accumulation of the door leakage.

The existing flooding and flooding-related procedures that were reviewed for applicability and actions are summarized as follows:

- RA-EP-02830, Flooding
  - Refers to RA-EP-01500, Emergency Classification, and RA-EP-02870, Station Isolation
  - Defines lake water levels at which procedure is entered
  - On Call Duty Team and Emergency Response Organization are mobilized based on lake levels
  - Shift manager to take action to ensure flood barriers are in place

- RA-EP-02880, Internal Flooding
  - Covers flooding to Service Water Pump Room, Component Cooling Water Pump Room and Emergency Core Cooling System Rooms (safe shutdown equipment)

- RA-EP-02810, Tornado or High Winds
  - Refers to RA-EP-01500, Emergency Classification
  - Refers to DBBP-OPS-0012, Guidance on Operation of Spent Fuel Pool Train Bay (Door #300) and North Train Bay Rollup Door (Door #334)
  - Provides guidelines for High Wind Watch and Warning
  - Doors shall be tightly fastened
  - Rapid shutdown guidelines

Review of the applicable flooding procedures determined that there is procedural guidance that can be implemented in advance of a flood emergency; that station personnel and the Emergency Response Organization are properly notified and mobilized by appropriate flooding trigger points; and that plant shutdown is included in procedurally specified decisions.

In conclusion, the interim evaluation that included additional studies, engineering walkdowns, and procedure reviews shows that the DBNPS plant design and material condition is adequate, that there is margin available in the analysis, and that procedural actions are in place addressing flooding emergencies, such that there are no additional evaluations or actions required prior to the completion of the Integrated Assessment.