



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

December 22, 2015

Mr. Oscar A. Limpias
Vice President-Nuclear and CNO
Nebraska Public Power District
Cooper Nuclear Station
72676 648A Avenue
P.O. Box 98
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION – INTERIM STAFF RESPONSE TO
REEVALUATED FLOOD HAZARDS SUBMITTED IN RESPONSE TO
10 CFR 50.54(f) INFORMATION REQUEST – FLOOD-CAUSING MECHANISM
REEVALUATION (TAC NO. MF4712)

Dear Mr. Limpias:

The purpose of this letter is to provide a summary of the U.S. Nuclear Regulatory Commission (NRC) staff's assessment of the reevaluated flood-causing mechanisms described in the February 3, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15041A523), flood hazard reevaluation report (FHRR) submitted by Nebraska Public Power District (the licensee) for Cooper Nuclear Station (Cooper), as well as supplemental information resulting from requests for additional information and audits.

By letter dated March 12, 2012, the NRC issued a request for information pursuant to Title 10 of the *Code of Federal Regulations*, Section 50.54(f) (hereafter referred to as the 50.54(f) letter) (ADAMS Accession No. ML12053A340). The request was issued as part of implementing lessons-learned from the accident at the Fukushima Dai-ichi nuclear power plant. Enclosure 2 to the 50.54(f) letter requested licensees to reevaluate flood-causing mechanisms using present-day methodologies and guidance. Concurrently, with the reevaluation of flooding hazards, licensees were required to develop and implement mitigating strategies in accordance with NRC Order EA-12-049, "Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A735). On March 30, 2015, the Commission provided Staff Requirements Memoranda (SRM) (ADAMS Accession No. ML15089A236) to COMSECY-14-0037, "Integration of Mitigating Strategies for Beyond-Design-Basis External Events and the Reevaluation of Flooding Hazards," dated November 21, 2014 (ADAMS Accession No. ML14309A256), affirming that licensees need to address the reevaluated flooding hazards within their mitigating strategies for beyond-design-basis external events.

Enclosure two transmitted herewith contains Security-Related Information. When separated from the Enclosure, this document is decontrolled.

O. Limpias

- 2 -

The NRC staff has reviewed the information submitted by the licensee and has summarized the results of the review in the tables provided as Enclosure 1 to this letter. Table 1 provides the current design-basis flood hazard mechanisms. Table 2 provides reevaluated flood hazard mechanisms; however, reevaluated hazard mechanisms bounded by the current design-basis (Table 1) are not included. Because Table 2 includes security-related information, Enclosure 1 contains the redacted version of Table 2. Enclosure 2 is withheld from public disclosure and restores the security-related information to Table 2.

The NRC staff has concluded that the licensee's reevaluated flood hazards information, as summarized in the Enclosure, is suitable for the assessment of mitigating strategies developed in response to Order EA-12-049 (i.e., defines the mitigating strategies flood hazard information described in guidance documents currently being finalized by the industry and NRC staff) for Cooper. Further, the NRC staff has concluded that the licensee's reevaluated flood hazard information is a suitable input for other assessments associated with Near-Term Task Force Recommendation 2.1 "Flooding". The NRC staff plans to issue a staff assessment documenting the basis for these conclusions at a later time.

In addition, Nuclear Energy Institute (NEI) guidance document NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" is currently being revised. This revision will include a methodology to perform a Mitigating Strategies Assessment (MSA) with respect to the reevaluated flood hazards. Once this methodology is endorsed by the NRC, flood event duration parameters and applicable flood associated effects should be considered as part of the Cooper MSA. The NRC staff will evaluate the flood event duration parameters (including warning time and period of inundation) and flood-related associated effects developed by the licensee during the NRC staff's review of the MSA.

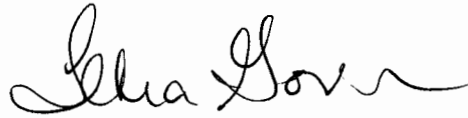
As stated above, Table 2 of the enclosure to this letter describes the reevaluated flood hazards that exceed the current design-basis. In order to complete its response to the information requested by Enclosure 2 to the 50.54(f) letter, the licensee is expected to submit an integrated assessment or a focused evaluation, as appropriate, to address these reevaluated flood hazards, as described in the NRC letter, "Coordination of Request for Information Regarding Flooding Hazard Reevaluation and Mitigating Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML15174A257). This letter describes the changes in the NRC's approach to the flood hazard reevaluations that were approved by the Commission in its SRM to COMSECY-15-0019, "Closure Plan for the Reevaluation of Flooding Hazards for Operating Nuclear Power Plants" (ADAMS Accession No. ML15209A682).

O. Limpias

- 3 -

If you have any questions, please contact me at (301) 415-6197 or e-mail at tekia.govan@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Tekia Govan". The signature is fluid and cursive, with a long horizontal flourish at the end.

Tekia Govan, Project Manager
Hazards Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket No. 50-298

Enclosures:

1. Summary of Results of Flooding Hazard
Re-Evaluation Report (Redacted Version)
2. Summary of Results of Flooding Hazard
Re-Evaluation Report (Non-Public Version)

cc w/encl: Distribution via Listserv

ENCLOSURE 1:
SUMMARY TABLES OF
REEVALUATED FLOOD HAZARD LEVELS

Table 1. Current Design Basis Flood Hazards for Use in the MSA¹

| Mechanism | Stillwater Elevation | Waves/ Runup | Design Basis Hazard Elevation | Reference |
|--|----------------------------------|----------------------------------|--------------------------------------|-------------------------------|
| Local Intense Precipitation | Not included in DB | Not included in DB | Not included in DB | FHRR Addendum A, Table 3.14-1 |
| Streams and Rivers | | | | |
| Other SSCs | 903.4 ft NVD88 | Not applicable | 903.4 ft NVD88 | FHRR Addendum A, Table 3.14-1 |
| Intake Structure | 903.4 ft NVD88 | Not applicable | 903.4 ft NAVD88 | FHRR Addendum A, Table 3.14-1 |
| Failure of Dams and Onsite Water Control/Storage Structures | | | | |
| Offsite Dam Failure | Not included in DB | Not included in DB | Not included in DB | FHRR Addendum A, Table 3.14-1 |
| Storm Surge | | | | |
| | No Impact on the Site Identified | No Impact on the Site Identified | No Impact on the Site Identified | FHRR Addendum A, Table 3.14-1 |
| Seiche | | | | |
| | No Impact on the Site Identified | No Impact on the Site Identified | No Impact on the Site Identified | FHRR Addendum A, Table 3.14-1 |
| Tsunami | | | | |
| | No Impact on the Site Identified | No Impact on the Site Identified | No Impact on the Site Identified | FHRR Addendum A, Table 3.14-1 |
| Ice-Induced Flooding | | | | |
| | Not included in DB | Not included in DB | Not included in DB | FHRR Addendum A, Table 3.14-1 |
| Channel Migrations/Diversions | | | | |
| | Not included in DB | Not included in DB | Not included in DB | FHRR Addendum A, Table 3.14-1 |

Note 1: Reported values are rounded to the nearest one-tenth of a foot.

Table 2. Reevaluated Flood Hazards for Flood-Causing Mechanisms for Use in the MSA^{1,2,3}

| Mechanism | Stillwater Elevation | Waves/ Runup | Reevaluated Hazard Elevation | Reference |
|-----------------------------|----------------------|----------------|------------------------------|----------------------------------|
| Ice-Induced Flooding | 896.9 ft NAVD88 | Not applicable | 896.9 ft NAVD88 | FHRR Addendum A, Table 3.14-1 |
| Channel Migration/Diversion | ----- Note 6 ----- | | | FHRR Addendum A, Table 3.14-1 |

Note 1: Reevaluated hazard mechanisms bounded by the current design basis (see Table 1) are not included in this table.

Note 2: Reported values are rounded to the nearest one-tenth of a foot.

Note 3: The licensee is expected to develop flood event duration parameters and applicable flood associated effects to conduct the MSA. The staff will evaluate the flood event duration parameters (including warning time and period of inundation) and flood associated effects during its review of the MSA.

Note 4: Flood height informed by use of 2-D model.

Note 5: The licensee is expected to update and submit these scenarios to the NRC by September 30, 2016, because evaluations of these scenarios using the 2-D model are not available. Reevaluated flood elevations using the 2-D model are expected to be bounded by the elevation from the [Redacted] Failure. However, the associated effects and flood event durations will differ from the [Redacted] Failure scenario and should be separately evaluated and provided in the September 30, 2016 submittal.

Note 6: Channel Migration/Diversion is dependent on the results of Streams and Rivers, Failure of Dams, and Onsite Water Control/Storage Structures scenarios in Table 2. It is expected that the water elevations for Channel Migration/Diversion would be bounded by these associated scenarios, however the associated effects may be different. The licensee is expected to complete the evaluation for Channel Migration/Diversion, including the associated effects, and provided the results in the September 30, 2016 submittal.