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

March 15, 2016

Mr. Bryan C. Hanson
Senior Vice President
Exelon Generation Company, LLC
President and Chief Nuclear Officer
Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BYRON STATION, UNITS 1 AND 2 – SUPPLEMENT TO STAFF ASSESSMENT OF INFORMATION PROVIDED PURSUANT TO TITLE 10 OF THE *CODE OF FEDERAL REGULATIONS* PART 50, SECTION 50.54(f), SEISMIC HAZARD REEVALUATIONS FOR RECOMMENDATION 2.1 OF THE NEAR-TERM TASK FORCE REVIEW OF INSIGHTS FROM THE FUKUSHIMA DAI-ICHI ACCIDENT (CAC NOS. MF3884 AND MF3885)

Dear Mr. Hanson:

The purpose of this letter is to transmit a supplement to the U.S. Nuclear Regulatory Commission (NRC) staff's assessment of Byron Station, Units 1 and 2 (Byron) reevaluated seismic hazard information that was issued to you by letter dated February 17, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16027A045). The supplement updates the original staff assessment to align with the final screening determinations documented in the NRC letter dated October 27, 2015 (ADAMS Accession No. ML15194A015).

By letter dated March 12, 2012, the NRC issued a request for information pursuant to Title 10 of the *Code of Federal Regulations*, Part 50, Section 50.54(f) (hereafter referred to as the 50.54(f) letter). The purpose of that request was to gather information concerning, in part, seismic hazards at each operating reactor site and to enable the NRC staff, using present-day NRC requirements and guidance, to determine whether licenses should be modified, suspended, or revoked.

By letter dated March 31, 2014 (ADAMS Accession No. ML14091A010), Exelon Generation Company, LLC (Exelon, the licensee), responded to this request for Byron.

By letter dated February 17, 2016, the staff transmitted to you its assessment of the information provided in the March 31, 2014, letter. The NRC staff indicated that it has completed its review of the information provided, as documented in the staff assessment and the enclosed supplement to the staff assessment. The enclosed supplement to the NRC staff assessment updates the staff's conclusions in accordance with the NRC letter dated October 27, 2015, concerning the final screening determinations and the set of information necessary for Byron to submit in order to complete its response to the 50.54 (f) letter.

The February 17, 2016, staff assessment states that a spent fuel pool (SFP) evaluation, and either a High Frequency (HF) confirmation or the Individual Plant Examination of External Events (IPEEE) relay chatter review are needed for Byron to complete the Seismic Hazard Evaluation identified in Enclosure 1 of the 50.54(f) letter. This screening determination does not reflect the October 27, 2015, letter and the conclusions reached in the October 27, 2015, letter supersede those stated in the staff assessment.

The October 27, 2015, letter provided Byron with two options in Table 1b to complete the closure of the Recommendation 2.1 Seismic 50.54(f) response. Table 1b requested Byron to address either [Option 1] by performing a SFP evaluation, a full-scope IPEEE relay chatter review and a HF confirmation or [Option 2] by performing a SFP evaluation and a HF confirmation. Either option represents the set of information necessary for Byron to submit in order to complete its response to the 50.54 (f) letter. In choosing one of the two options, Exelon should consider that a relay chatter study will continue to be needed for the IPEEE submittal to meet the SPID acceptance criteria. Meeting the SPID criteria will be necessary if Exelon plans to rely on the IPEEE results in its mitigation strategies assessment with respect to the reevaluated hazard.

If you have any questions, please contact me at (301) 415-1617 or email at Frankie.Vega@nrc.gov.

Sincerely,

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

Docket Nos. 50-454 and 50-455

Enclosure:
Supplement to Staff Assessment of Seismic Hazard Reevaluation Report

cc w/encl: Distribution via Listserv

SUPPLEMENT TO

STAFF ASSESSMENT BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO SEISMIC HAZARD REEVALUATION REPORT

NEAR-TERM TASK FORCE RECOMMENDATION 2.1

BYRON STATION, UNITS 1 AND 2

DOCKET NOS. 50-454 AND 50-455

1.0 INTRODUCTION

This document is a supplement to the U.S. Nuclear Regulatory Commission (NRC) staff assessment that was transmitted by letter dated February 17, 2016 (NRC, 2016a), to Exelon Generation Company, LLC (Exelon, the licensee), for Byron Station, Units 1 and 2 (Byron). This supplement only contains the sections that were changed to reach alignment with the final screening determinations documented in the October 27, 2015, letter (NRC, 2015b). Instead of repeating the Reference section in its entirety, only the additions to the list of references are included in the supplement.

2.0 REGULATORY BACKGROUND

There are no changes to this section of the NRC staff assessment.

2.1 Screening Evaluation Results

By letter dated March 31, 2014 (Heacock, 2014), Exelon provided its Seismic Hazard and Screening Report (SHSR) for Byron. The licensee's SHSR indicates that the site ground motion response spectrum (GMRS) exceeds the site safe shutdown earthquake (SSE) for a portion of the frequency range between 1 to 10 Hertz (Hz). However, the licensee indicated that over the frequency range of 1 to 10 Hz, the GMRS is bounded by the site Individual Plant Examination of External Events (IPEEE) plant- level high confidence of low probability of failure (HCLPF) spectrum (IHS) for Byron. The licensee provided the evaluation of the IPEEE program screening criteria referenced in the SPID to allow screening credit for the plant capacity determined in the IPEEE program. As such, the licensee indicated that Byron screens out of performing a plant seismic risk evaluation. At frequencies above 10 Hz, the GMRS exceeds the IHS. Therefore, the licensee stated that it will complete the relay chatter review specified in Screening, Prioritization, and Implementation Details (SPID) Section 3.3.1, consistent with the NEI letter to the NRC dated October 3, 2013 (Keithline, 2013), on the same schedule as the HF confirmation as proposed in the NEI letter dated April 9, 2013 (Pietrangelo, 2013), and accepted in NRC's letter dated May 7, 2013 (NRC, 2013a). Finally, due to the GMRS exceeding the SSE spectrum in the 1 to 10 Hz frequency range, Byron screens-in to perform a SFP evaluation.

On May 9, 2014 (NRC, 2014a), the NRC staff issued a letter providing the outcome of its 30-day, preliminary, screening and prioritization evaluation. In the letter, the NRC staff characterized the Byron site as screened-out, because, consistent with the SPID, the licensee demonstrated the IPEEE plant capacity bounds the re-evaluated hazard. The licensee's GMRS, as well as the NRC staff's confirmatory GMRS, exceeds the SSE for Byron over a portion of the frequency range of 1 to 10 Hz. However, Byron demonstrated that the plant met the IPEEE screening program in the SPID, provided that a IPEEE relay chatter review is successfully completed, and either the SSE or IHS bounds the GMRS over the 1 to 10 Hz range. Therefore, Byron was screened out for conducting a seismic risk evaluation. This initial screening decision was contigent on the licensee's successful completion of the IPEEE relay chatter review, in accordance with the IPEEE program screening criteria in the SPID. As stated in the October 27, 2015 (NRC, 2015a), letter, the NRC revised this initial screening determination. Based on the NRC staff's comparison of the GMRS to the SSE and the review of additional hazard and risk information, the NRC concluded that a seismic risk evaluation was not merited for Byron regardless of satisfying the IPEEE acceptance criteria in the SPID. The GMRS exceeds the IHS above approximately 15 Hz for Byron and therefore, a HF confirmation is merited for Byron. Finally, because the IPEEE program did not include the SFP and the GMRS exceeds the SSE above 7 Hz, the SFP evaluation is merited.

3.0 TECHNICAL EVALUATION

There are no changes or updates to this section of the NRC staff assessment.

3.1 Plant Seismic Design-Basis

There are no changes or updates to this section of the NRC staff assessment.

3.2 Probabilistic Seismic Hazard Analysis

There are no changes or updates to this section of the NRC staff assessment.

3.3 Site Response Evaluation

There are no changes or updates to this section of the NRC staff assessment.

3.3.1 Site Base Case Profiles

There are no changes or updates to this section of the NRC staff assessment.

3.3.2 Site Response Method and Results

There are no changes or updates to this section of the NRC staff assessment.

3.3.3 Staff Confirmatory Analysis

There are no changes or updates to this section of the NRC staff assessment.

3.4 Ground Motion Response Spectra

There are no changes or updates to this section of the NRC staff assessment.

4.0 CONCLUSION

The NRC staff reviewed the information provided by the licensee for the reevaluated seismic hazard for the Byron site. Based on its review, the NRC staff concluded that the licensee conducted its hazard reevaluation using present-day methodologies and regulatory guidance, it appropriately characterized the site given the information available, and met the intent of the guidance for determining the reevaluated seismic hazard. The NRC staff concluded that the licensee demonstrated that the IHS could be used for comparison with the GMRS for the screening determination. Based on the preceding analysis, the NRC staff concludes that the licensee provided an acceptable response to Requested Information Items (1) – (3), (5) – (7) and the comparison portion of (4) identified in Enclosure 1 of the 50.54(f) letter. Further, the licensee's reevaluated seismic hazard is acceptable to address other actions associated with NTTF Recommendation 2.1: Seismic.

In reaching this determination, and as stated in the October 27, 2015, letter the NRC staff confirms that a seismic risk evaluation (Item 8) is not merited. Further, the NRC staff confirmed the licensee's conclusion that the licensee's GMRS for the Byron site exceeds the IHS over the frequency range of above 10 Hz. Therefore, HF confirmation (Item (4)) is merited. A SFP evaluation (Item 9) is also merited, because the SFP was not included in the IPEEE program. A relay chatter evaluation will be needed for the IPEEE submittal to meet the SPID acceptance criteria if Exelon plans to rely on the IPEEE results in its mitigation strategies assessment with respect to the reevaluated hazard.

The NRC review and acceptance of either a SFP evaluation and a HF confirmation or a SFP evaluation, HF confirmation and an IPEEE relay chatter review for Byron will complete the Seismic Hazard Evaluation identified in Enclosure 1 of the 50.54(f) letter.

5.0 REFERENCES

U.S. Nuclear Regulatory Commission Documents and Publications

NRC (U.S. Nuclear Regulatory Commission), 2016a, letter from Frankie Vega, NRC, to Bryan C. Hanson, Senior Vice President, Exelon Generation Company, LLC – Byron Station, Units 1 and 2, Staff Assessment of Response to 10 CFR 50.54(f) Information Request "Seismic ", February 17, 2016, ADAMS Accession No. ML16027A045.

NRC (U.S. Nuclear Regulatory Commission), 2015a, Letter from W. Dean (NRC), Director, Office of Nuclear Reactor Regulation to All Power Reactor Licensees and holders of Construction Permits in Active or Deferred Status, Final Determination of Licensee Seismic Probabilistic Risk Assessments Under Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54 (f) Regarding Recommendation 2.1 "Seismic" of the Near Term Task Force Review of Insights from Fukushima Dai-Ichi Accident, October 27, 2015, ADAMS Accession No. ML15194A015.

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The October 27, 2015, letter provided Byron with two options in Table 1b to complete the closure of the Recommendation 2.1 Seismic 50.54(f) response. Table 1b requested Byron to address either [Option 1] by performing a SFP evaluation, a full-scope IPEEE relay chatter review and a HF confirmation or [Option 2] by performing a SFP evaluation and a HF confirmation. Either option represents the set of information necessary for Byron to submit in order to complete its response to the 50.54 (f) letter. In choosing one of the two options, Exelon should consider that a relay chatter study will continue to be needed for the IPEEE submittal to meet the SPID acceptance criteria. Meeting the SPID criteria will be necessary if Exelon plans to rely on the IPEEE results in its mitigation strategies assessment with respect to the reevaluated hazard.

If you have any questions, please contact me at (301) 415-1617 or email at Frankie.Vega@nrc.gov.

Sincerely,
/RA/
Frankie Vega, Project Manager
Hazards Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos. 50-454 and 50-455

Enclosure:
Supplement to Staff Assessment of Seismic
Hazard Reevaluation Report

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ADAMS Accession No.: ML16070A116 ***via email**

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DATE	03/10/2016	03/10/2016	03/13/2016	03/15/2016

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