

RS-16-044

10 CFR 50.54(f)

February 19, 2016

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

Quad Cities Nuclear Power Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: High Frequency Supplement to Seismic Hazard Screening Report, Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident

References:

1. NRC Letter, 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 (ML12053A340)
2. NRC Letter, Electric Power Research Institute Report 3002000704, "Seismic Evaluation Guidance: Augmented Approach for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic," As An Acceptable Alternative to the March 12, 2012, Information Request for Seismic Reevaluations, dated May 7, 2013 (ML13106A331)
3. NEI Letter, Final Draft of Industry Seismic Evaluation Guidance (EPRI 1025287), dated November 27, 2012 (ML12333A168 and ML12333A170)
4. NRC Letter, Endorsement of Electric Power Research Institute Final Draft Report 1025287, "Seismic Evaluation Guidance", dated February 15, 2013 (ML12319A074)
5. Exelon Generation Company, LLC letter to NRC, Seismic Hazard and Screening Report (CEUS Sites), Response to NRC Request for Information Pursuant to 10CFR50.54(f) Regarding Recommendation 2.1 of Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident: Quad Cities Nuclear Power Station, Units 1 and 2, dated March 31, 2014 (RS-14-072)
6. NRC Letter, Screening and Prioritization Results Regarding Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Seismic Hazard Re-evaluations for Recommendation 2.1 of the Near Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, dated May 9, 2014 (ML14111A147)

7. NRC Letter, Support Document for Screening and Prioritization Results Regarding Seismic Hazard Re-Evaluation for Operating Reactors in the Central and Eastern United States, dated May 21, 2014 (ML14136A126)
8. NEI Letter, Request for NRC Endorsement of High Frequency Program: Application Guidance for Functional Confirmation and Fragility Evaluation (EPRI 3002004396), dated July 30, 2015 (ML15223A100/ML15223A102)
9. NRC Letter, September 17, 2015 to NEI: Endorsement of Electric Power Research Institute Final Draft Report 3002004396: "High Frequency Program: Application Guidance for Functional Confirmation and Fragility" (ML15218A569)
10. NRC Letter, Final Determination of Licensee Seismic Probabilistic Risk Assessments Under the 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 the Fukushima Dai-Ichi Accident, dated October 27, 2015 (ML15194A015)

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a Request for Information per 10 CFR 50.54(f) (Reference 1) to all power reactor licensees. The required response section of Enclosure 1 of Reference 1 indicated that licensees should provide a Seismic Hazard Evaluation and Screening Report within 1.5 years from the date of the letter for Central and Eastern United States (CEUS) nuclear power plants. By NRC letter dated May 7, 2013 (Reference 2), the date to submit the report was extended to March 31, 2014.

By letter dated May 9, 2014 (Reference 6), the NRC transmitted the results of the screening and prioritization review of the seismic hazards reevaluation submittal for Quad Cities Nuclear Power Station, Units 1 and 2 (Reference 5). In accordance with the screening, prioritization, and implementation details report (SPID) (References 3 and 4), and Augmented Approach guidance (Reference 2), the reevaluated seismic hazard is used to determine if additional seismic risk evaluations are warranted for a plant. Specifically, the reevaluated horizontal ground motion response spectrum (GMRS) at the control point elevation is compared to the existing safe shutdown earthquake (SSE) or Individual Plant Examination for External Events (IPEEE) High Confidence of Low Probability of Failure (HCLPF) Spectrum (IHS) to determine if a plant is required to perform a high frequency confirmation evaluation. As noted in the May 9, 2014 letter from the NRC (Reference 6) on page 3 of Enclosure 2, Quad Cities Nuclear Power Station, Units 1 and 2 is to conduct a limited scope High Frequency Evaluation (Confirmation).

Within the May 9, 2014 letter (Reference 6), the NRC acknowledged that these limited scope evaluations will require additional development of the assessment process. By Reference 8, the Nuclear Energy Institute (NEI) submitted an Electric Power Research Institute (EPRI) report entitled, High Frequency Program: Application Guidance for Functional Confirmation and Fragility Evaluation (EPRI 3002004396) for NRC review and endorsement. NRC endorsement was provided by Reference 9. Reference 10 provided the NRC final seismic hazard evaluation screening determination results and the associated schedules for submittal of the remaining seismic hazard evaluation activities. This submittal is provided in response to the NRC's verbal request made for the purpose of consistently and more formally handling plants with high frequency exceedance across the US nuclear fleet. The Seismic Hazard and Screening submittal (Reference 5) for Quad Cities Nuclear Power Station, Units 1 and 2 concluded, similar

to this transmittal, that the high frequency exceedance is minimal and a detailed high frequency confirmation is not warranted. Contrary to the NRC's verbal request, Reference 10, Table 1a, does not require a High Frequency Evaluation for Quad Cities Nuclear Power Station, Units 1 and 2.

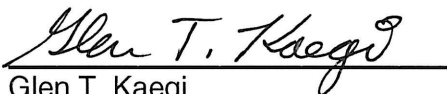
The High Frequency Confirmation for Quad Cities Nuclear Power Station, Units 1 and 2, provided in the attachment to this letter, shows that the GMRS exceedance area between the control point GMRS and SSE is "on the order of 10% or less of the area under the SSE" (Reference 8, Section 3.1.2) over the frequency range of exceedance. As such, the GMRS exceedances are consistent with the criteria identified in Section 3.1.2 of Reference 8. Therefore, no additional evaluation is necessary. The attachment to this letter provides the SSE and GMRS information (attached Figures 1 and 2) derived from Reference 5 and Quad Cities Nuclear Power Station, Units 1 and 2 UFSAR, Rev. 13 (October 2015), Figure 3.7-2. Figure 1 provides a comparison of the Quad Cities Nuclear Power Station, Units 1 and 2 GMRS and SSE. Figure 2 provided for information only shows the GMRS, Housner, Golden Gate, SSE (the envelope of both the Housner & Golden Gate curves), and the SSE (TDBD-DQ-01), used for current design basis evaluations.

This letter contains no new regulatory commitments.

If you have any questions regarding this report, please contact Ronald Gaston at 630-657-3359.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 19th day of February 2016.

Respectfully submitted,



Glen T. Kaegi
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Attachment: Quad Cities Nuclear Power Station, Units 1 and 2 GMRS and SSE Supporting Information

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station
NRC Project Manager, NRR – Quad Cities Nuclear Power Station
Mr. Nicholas DiFrancesco, NRR/JLD/JHMB, NRC

Attachment

Quad Cities Nuclear Power Station, Units 1 and 2
GMRS and SSE Supporting Information
(Reference 5 & UFSAR (Rev. 13), Fig. 3.7-2)

(4 Pages)

**Table 1 – Quad Cities Nuclear
Power Station, Units 1 and 2
SSE and GMRS Data**

SSE		GMRS	
Freq (Hz)	Accel (g)	Freq (Hz)	Accel (g)
0.1		0.1	0.0108
0.125		0.125	0.0136
0.15		0.15	0.0163
0.2		0.2	0.0217
0.25		0.25	0.0271
0.3		0.3	0.0325
0.35		0.35	0.0380
0.4		0.4	0.0434
0.5		0.5	0.0542
0.6		0.6	0.0583
0.7		0.7	0.0623
0.8		0.8	0.0665
0.9		0.9	0.0710
1		1	0.0752
1.25		1.25	0.0835
1.5		1.5	0.0907
2		2	0.104
2.5		2.5	0.110
3		3	0.137
3.5		3.5	0.162
4		4	0.186
5		5	0.237
6		6	0.269
7		7	0.295
8		8	0.316

**Table 1 (cont'd) – Quad Cities
Nuclear Power Station,
Units 1 and 2
SSE and GMRS Data
(SSE values from UFSAR (Rev. 13),
Fig. 3.7-2)**

SSE		GMRS	
Freq (Hz)	Accel (g)	Freq (Hz)	Accel (g)
9		9	0.329
9.78	0.6853		
10		10	0.342
10.19	0.6033		
10.55	0.5223		
10.95	0.4733		
11.38	0.4253		
11.83	0.3621		
12		12	
12.5		12.5	0.356
13		13	
13.34	0.3847		
14.01	0.3545		
15		15	0.351
15.86	0.3272		
19.56	0.2697		
20		20	0.318
25		25	0.286
30		30	0.261
35		35	0.247
40		40	0.236
50		50	0.209
60		60	0.185
70		70	0.170
80		80	0.165
90		90	0.162
100		100	0.160

**Figure 1
(UNVERIFIED BELOW 10 Hz)**

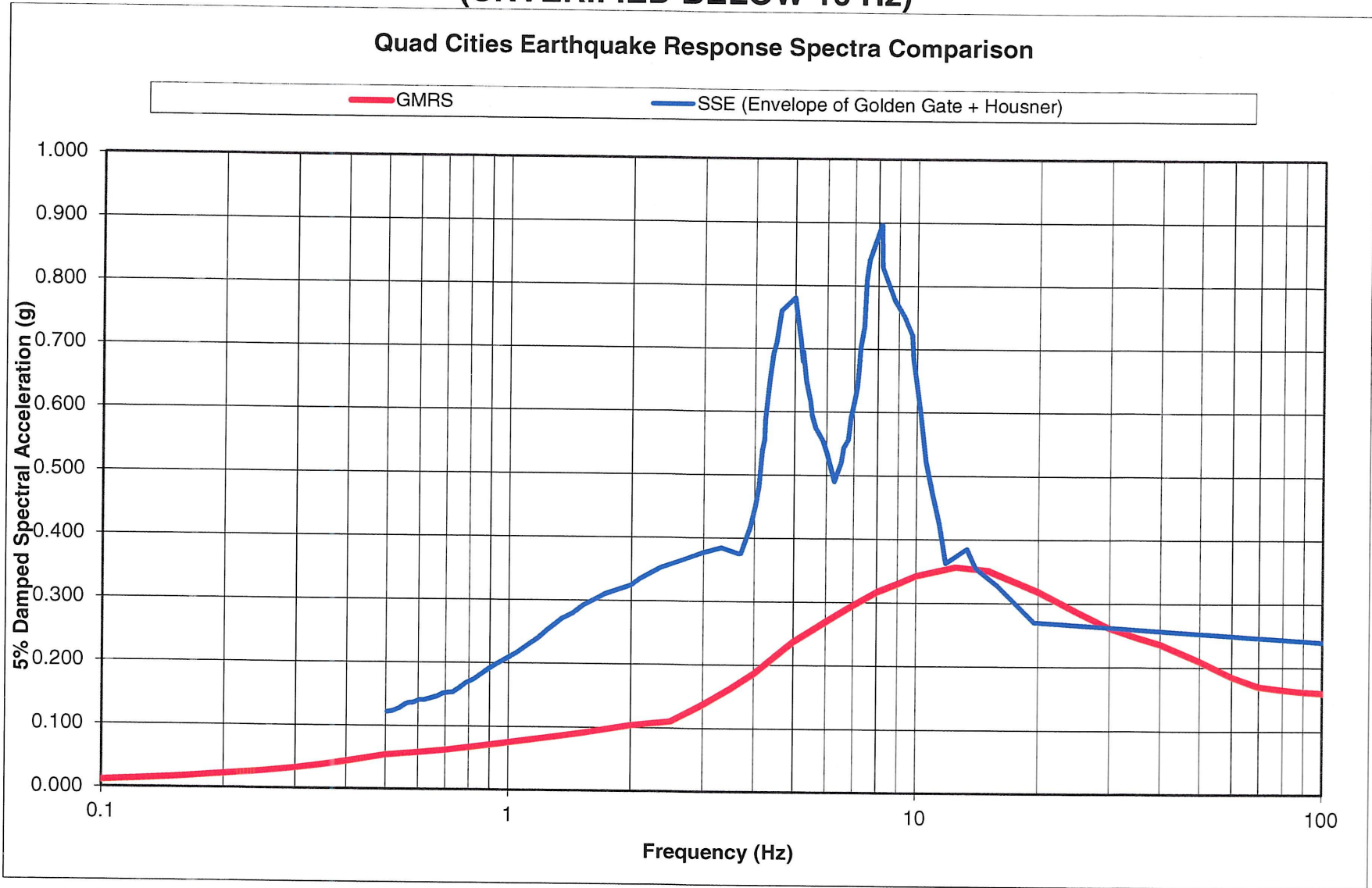


Figure 2
(Composite Plot FOR INFORMATION ONLY)

