CCNPP3COLA PEmails

From: Perdue, Barbie [Barbara.Perdue@unistarnuclear.com]
Sent: Friday, May 30, 2008 4:57 PM
To: John Rycyna; Michael Canova
Cc: Price, John (UniStar)
Subject: UN#08-016 Seismic Catalog Question_053008
Attachments: UN#08-016_Seismic Catalog Question_053008.pdf

Attached is the subject correspondence dated May 30, 2008.

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Recipients:
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NUCLEAR ENERGY

10 CFR 50.4

May 30, 2008

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

UN#08-016

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Submittal of Supplemental Information for the
Calvert Cliffs Nuclear Power Plant, Unit 3
Combined License Application, Seismic Catalog

During a telephone conference call between U.S. Nuclear Regulatory Commission (U.S. NRC) and UniStar Nuclear representatives on April 15, 2008, the NRC questioned the consistency between the seismic events delineated in the CCNPP Unit 3 Combined Operating License (COL) application and those delineated in the Shearon Harris Nuclear Power Plant Units 2 and 3 COL application. The UniStar Nuclear response to this question is provided in the Enclosure.

If you have any questions or need additional information, contact John Price at 410.470.5531.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on May 30, 2008

Jean-Pierre West

Enclosure: Response to NRC Question Regarding Seismic Catalog

cc: U.S. NRC Region 1
U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
U.S. NRC Project Manager, U.S. EPR Combined License Application
U.S. NRC Project Manager, U.S. EPR Design Certification Application

ENCLOSURE

RESPONSE TO NRC QUESTION REGARDING SEISMIC CATALOG

NRC Question Regarding Seismic Catalog

On April 15, 2008, the NRC identified that the Shearon Harris Nuclear Power Plant Units 2 and 3 COLA appeared to identify additional seismic events that are not described in the CCNPP Unit 3 COLA.

UniStar Nuclear Response

Section 2.5.2 of the CCNPP Unit 3 Final Safety Analysis Report provides a detailed description of the vibratory ground motion assessment that was carried out for the site, resulting in the development of the CCNPP Unit 3 site Safe Shutdown Earthquake (SSE) ground motion response spectra. The starting point for the CCNPP Unit 3 Final Safety Analysis Report site Vibratory Ground Motion assessment is the EPRI-SOG probabilistic seismic hazard analysis (PSHA) methodology outlined in EPRI NP-4726-A 1988 (EPRI, 1988) and tectonic interpretations in EPRI NP-4726 1986. The EPRI-SOG earthquake catalog, as part of the data developed for the EPRI PSHA, is adopted.

The NRC identified that the Shearon Harris Nuclear Power Plant Units 2 and 3 COLA included additional seismic events that were in the region of concern for CCNPP Unit 3. This information was reviewed, and it appears that the source of the additional seismic events ultimately goes back to work done by and for the Tennessee Valley Authority (the "GG&S study") originally as part of a review of the seismic design for their dams. The focus of the question was "added" earthquakes of magnitude between 4 and 4.9 occurring during the period of coverage of the EPRI-SOG earthquake catalog, but not in that catalog. A search of the GG&S data indicated that these earthquakes are, specifically, as given in the table below:

Geotechnical, Geological, and Seismological (GG&S) Evaluations for the Bellefonte Site, North Alabama – Appendix I
TABLE I-1 GG&S EARTHQUAKE CATALOG

ID No	Date Year	Date Mon	Date Day	Lat	Long	GG&S mb*	GG&S mb	EPRI-SOG rmb	EPRI-SOG emb	GG&S Sig mb	GG&S Type
3	1763	10	14	40.000	-75.200	4.86	4.52	0.00	0.00	0.56	Added
4	1772	4	25	39.800	-75.500	4.86	4.52	0.00	0.00	0.56	Added
17	1800	11	20	40.120	-76.390	4.86	4.52	0.00	0.00	0.56	Added
40	1821	5	11	39.300	-76.610	4.86	4.52	0.00	0.00	0.56	Added
147	1869	3	30	38.140	-78.190	4.58	4.24	0.00	0.00	0.56	Added
324	1893	1	11	39.430	-77.420	4.86	4.52	0.00	0.00	0.56	Added
468	1909	12	23	38.550	-75.570	4.86	4.52	0.00	0.00	0.56	Added

These 'added' earthquakes represent an initial compilation, generally from text searches of Internet data, of narrative accounts appearing in newspapers or private journals before the twentieth century. Estimates of intensity from these narrative shaking reports, and of magnitude from the intensity estimates, are often based on the judgment of the compiler.

Appendix E of Regulatory Guide 1.165 gives procedures for the evaluation of new geosciences information obtained from the site-specific investigations. This appendix states:

> "If new information identified by the site-specific investigations would result in a significant increase in the hazard estimate for a site, and this new information is validated by a strong technical basis, the PSHA may have to be modified to incorporate the new technical information."

The new information does not appear to warrant incorporation because of the lack of a strong technical basis to validate the information.

Appendix E of Regulatory Guide 1.165 provides the following statement regarding earthquake catalogs in particular:

> "In the future, expanded earthquake catalogs will become available that will differ from the catalogs used by the previous studies. Generally, these new catalogues have been shown to have only minor impacts on estimates of the parameters of the recurrence models. Cases that might be significant include the discovery of records that indicate earthquakes in a region that had no seismic activity in the previous catalogs, the occurrence of an earthquake larger than the largest historic earthquakes, re-evaluating the largest historic earthquake to a significantly larger magnitude, or the occurrence of one or more moderate to large earthquakes (magnitude 5.0 or greater) in the CEUS."

None of the cases in the supplemented catalog that may be considered significant in accordance with the guidance of Regulatory Guide 1.165 occur in the CCNPP Unit 3 site region.

An evaluation of the effect of these 'added' events to the vibratory ground motion assessment at the CCNPP Unit 3 site could be performed. The evaluation would require a more thorough examination of the primary data sources used to find the "added" earthquakes and of supplemental data from similar sources. The evaluation could: 1) incorporate an explicit way to determine uncertainty in the magnitude estimates developed; 2) incorporate this uncertainty into the revised recurrence parameter estimates; 3) include a re-evaluation of the EPRI-SOG probability of detection methodology or provide some other way to adjust completeness of the catalog upward from the EPRI-SOG completeness estimates; and 4) extrapolate its implications to larger events.

UniStar Nuclear does not believe that such an evaluation would be likely to add meaningfully to the existing vibratory ground motion assessment. In addition, the guidance established in Regulatory Guide 1.165 does not indicate that such an evaluation is needed or technically useful.