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Martin, Robert

From: Franke, Mark
Sent: Friday, August 26, 2011 10:50 AM
To: Khanna, Meena; Karas, Rebecca; Martin, Robert
Subject: FW: North Anna Pending activities Early afternoon at latest
Attachments: Talking Points for North Anna NPP Seismic Event.docx

fyi

From: Jones, William
Sent: Friday, August 26, 2011 10:44 AM
To: Pruett, Troy; Kulesa, Gloria; Wilson, George
Cc: Croteau, Rick; Wert, Leonard; McCree, Victor; Munday, Joel; McCoy, Gerald; Franke, Mark; Ninh, Son
Subject: North Anna Pending activities Early afternoon at latest

Discussion of MD 8.3 with hdqtrs. Deterministic for outside design basis with risk evaluation in the AIT range (outside overlap with SI). 8.3 and draft charter to be provided before conference call.

Second call with licensee this afternoon to discuss decision involving AIT and information we have regarding magnitude and accelerations of earthquake. Please see attached 1 page talking points and associated leads. Region II will discuss the basis and logistics for an AIT and begin the discussion of the USGS information. Specific technical discussion will fall to hdqtrs expertise.

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Talking Points for North Anna NPP Seismic Event

Design Basis (Region)

- North Anna Nuclear Power Plant (NANPP) has two Safe Shutdown Earthquake (SSE) ground motions, one for structures, systems, and components (SSCs) located on top of rock, which is anchored at 0.12 g, and the other is for SSCs located on top of soil, which is anchored at 0.18 g.
- NANPP has two corresponding Operating Basis Earthquake (OBE) ground motion spectra, anchored at 0.09 g for soil and 0.06 g for rock

Seismic Event (Region)

- Earthquake occurred at a close distance to the plant with a magnitude of 5.8 (5.9) at a relatively shallow depth

Seismic Impact at NANPP (Headquarters lead)

- The current best estimate of the Peak Ground Acceleration (PGA) for the NANPP site is 0.2g, which contains uncertainty
- Estimate indicates that the ground motion likely exceeded the SSE response spectra for NANPP Units 1 and 2 (0.12g) over a considerable frequency range

NRC Evaluations (headquarters lead discussion)

- NRC staff performed an independent analysis using the best estimate of the earthquake location and magnitude together with the EPRI ground motion prediction equations
- It can be seen that the 84th percentile ground motions calculated by the staff are close to the USGS predictions. This makes sense because the USGS theoretical values were increased due to the intensity information that came out of the Did You Feel It system
- The licensee is expected to perform plant walk downs in accordance with RG 1.167, "Restart of a Nuclear Power Plant Shutdown by a Seismic Event,"
- Information from the NANPP will be used to evaluate the USGS estimates of ground motion and will be compared against the FSAR design basis. The data will be used to inform the staff whether additional analysis is needed.

Significant Information Outstanding for Assessing Seismic (Region lead)

- Results from seismic scratch plates
- Validation of onsite instrumentation and outputs
- ISFSI response

Actions for Seismic Spectrum Beyond Design Basis (Headquarters lead)

- RG 1.167 Regulatory Guide 1.167 (Draft Was Dg-1035) Restart Of A Nuclear Power Plant Shut Down By A Seismic Event
- Appendix S to Part 50—Earthquake Engineering Criteria for Nuclear Power Plants Required Plant Shutdown. If vibratory ground motion exceeding that of the Operating Basis Earthquake Ground Motion or if significant plant damage occurs, the licensee must shut down the nuclear power plant. If systems, structures, or components

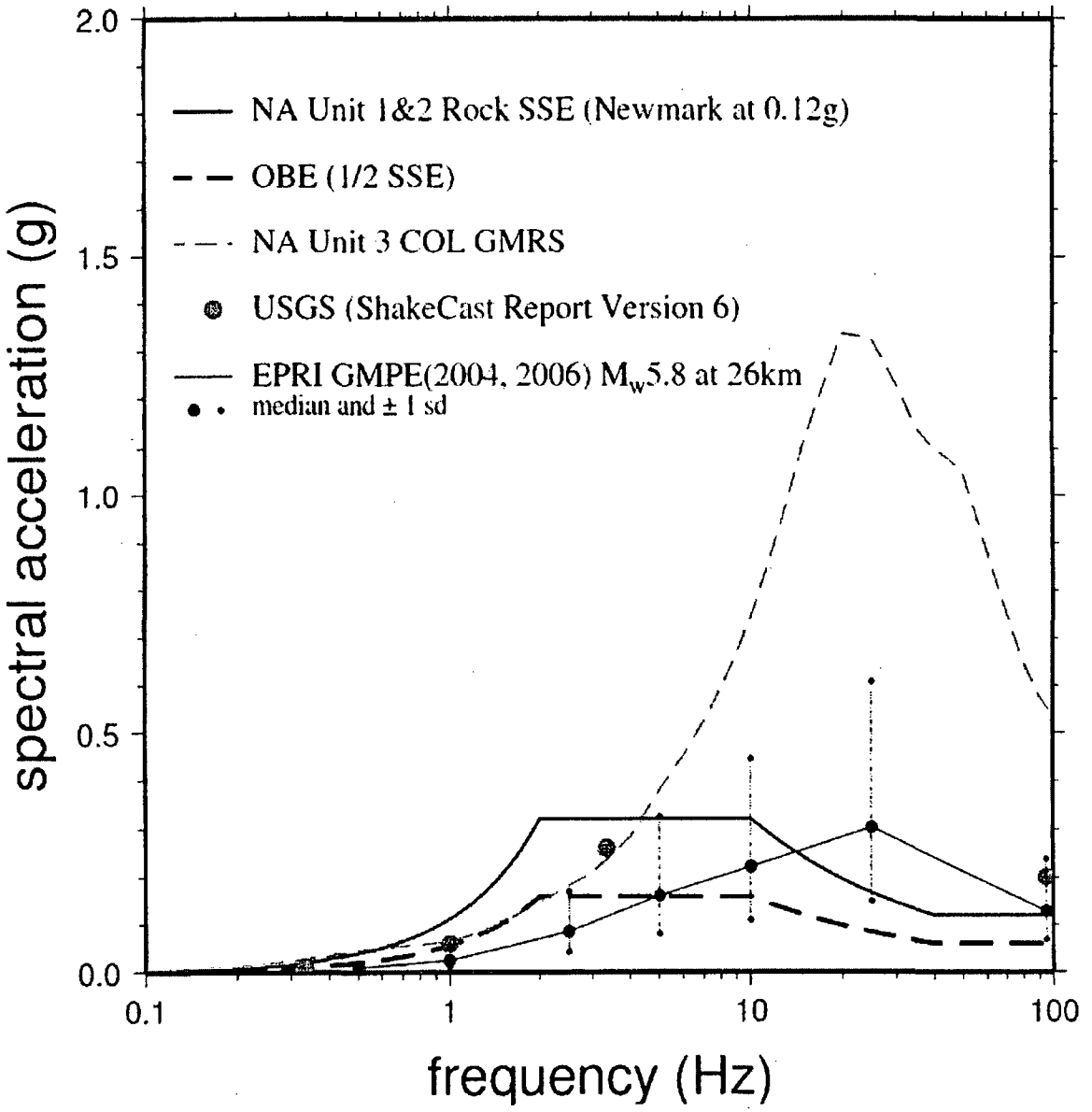
necessary for the safe shutdown of the nuclear power plant are not available after the occurrence of the Operating Basis Earthquake Ground Motion, the licensee must consult with the Commission and must propose a plan for the timely, safe shutdown of the nuclear power plant. Prior to resuming operations, the licensee must demonstrate to the Commission that no functional damage has occurred to those features necessary for continued operation without undue risk to the health and safety of the public and the licensing basis is maintained.

Additional Background

The current best estimate of the PGA for the rock is 0.2g, which contains significant uncertainty. The SSE of the North Anna NPP is 0.12g.

The initial estimate from Version 1 of the ShakeCast report was based on very preliminary information. The present Version 6 is attached. As information has become available, - the ground motion estimate, particularly the location and magnitude of earthquake has become better constrained. This is due to aftershock information and intensity information from the USGS "Did You Feel It?" system, which provides a level of "ground truthing". We just spoke to the USGS and they think that the numbers have stabilized, however we will provide further updates as we receive them.

The underlying data comes from something called a ShakeMap, which is the information that the USGS puts out to the public. North Anna is on hard rock which may further amplify the incoming motions. It appears that there are many indications that the SSE was exceeded.


NA Unit 1&2 Rock SSE (Newmark at 0.12g)
OBE (1/2 SSE)
NA Unit 3 COL GMRS
USGS (ShakeCast Report Version 6)
EPRI GMPE(2004, 2006) M_w5.8 at 26km
median and ± 1 sd
spectral acceleration (g)
frequency (Hz)
2.0
1.5
1.0
0.5
0.0
0.1
1
10
100