



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

December 14, 1999  
NOC-AE-000709  
File No.: G.20.01  
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U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

South Texas Project  
Units 1 and 2  
Docket Nos. STN 50-498, STN 50-499  
Response to Request for Additional Information on  
Request for an Exemption from Seismic Instrumentation Requirements

- References:
- 1) Letter from J. J. Sheppard, STPNOC, to the Nuclear Regulatory Commission dated July 13, 1999 (NOC-AE-000536)
  - 2) Letter from Thomas W. Alexion, Nuclear Regulatory Commission to William T. Cottle, STPNOC dated October 29, 1999 (ST-AE-NOC-000539)

Reference (1) was a request for exemption from the requirements of 10 CFR 50.34(b)(11), 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 2, and 10 CFR Part 100, Appendix A, Section VI(a)(3) to the extent that they require the maintenance of seismic instrumentation. On the basis of the Nuclear Regulatory Commission (NRC) staff review of reference (1), the staff determined that additional information is needed as discussed in reference (2).

The attachment to this letter lists the additional information requested by the NRC staff with STPNOC responses. If you have any questions, please contact Mr. Ken Taplett at (361) 972-8416 or me at (361) 972-8757.

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KJT/

Attachment: Response to Request for Additional Information Regarding Seismic Instrumentation Exemption Request

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## **Response to Request for Additional Information Regarding Seismic Instrumentation Exemption Request**

- References:
- 1) Letter from J. J. Sheppard, STPNOC, to the Nuclear Regulatory Commission dated July 13, 1999 (NOC-AE-000536)
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In reference (2), the NRC staff had the following questions concerning STPNOC's proposed earthquake response plan (Appendix C to Attachment 1 of reference (1)) and the statement on page 2 of Attachment 1 of reference (1) that South Texas Project will follow the Electric Power Research Institute (EPRI) "Guidelines for Nuclear Plant Response to an Earthquake," EPRI NP-6695.

1. **NRC Staff Question:** Do the "acceleration data" referred to on page 1 of Appendix C to Attachment 1 represent the response spectrum and cumulative absolute velocity (CAV) checks required by the operating basis earthquake (OBE) exceedance criterion given in Appendix A of EPRI NP-6695? If not, then explain the term "acceleration data".

**STPNOC response:** The term "acceleration data" refers only to measured acceleration time history and calculated response spectrum. The response spectrum curve is generated for comparison with design basis OBE information to determine if OBE limits have been exceeded. At this time the optional CAV will be generated but not used as part of the criteria for determining if the OBE has been exceeded. Appendix A of EPRI NP-6695 uses CAV to permit continued operation in some cases even though the OBE response spectrum has been exceeded. The shutdown criteria at STP conservatively use exceedance of the OBE response spectrum.

2. **NRC Staff Question:** Are you planning on following the revised OBE exceedance criterion given in EPRI TR-100082, "Standardization of the Cumulative Absolute Velocity"? If not, then what OBE exceedance criterion are you following?

**STPNOC response:** There are currently no plans to follow the revised OBE exceedance criterion given in EPRI TR-100082. The criteria for OBE exceedance will be accelerations exceeding the design OBE accelerations between 0 and 32 Hz.

3. **NRC Staff Question:** Describe the stand-alone seismic instrument, the hardware that you will use to retrieve the ground motion data from the seismic instrument and the software that you will use to process the ground motion data in order to obtain response spectra and CAV.

**STPNOC response:** Although the specific equipment to be purchased depends on the technology at that time, the following description is based on today's technology which will either be met or exceeded by the purchased equipment. The seismograph will be a triaxial unit with programmable alarm, trigger, and recording and data retrieval capabilities. The existing equipment being considered is the GSR-12 Strong Motion Accelerograph provided by Terra Technology Corporation. The recorded information can be analyzed and displayed using a PC and the "AllView" software supplied with the machine. This software displays the measured response spectrum as well as the preloaded OBE and SSE response spectrum. The CAV is also calculated and displayed.

4. **NRC Staff Question:** Describe your procedures for calibrating the seismic instrument and retrieving and processing the ground motion data.

**STPNOC response:** Since the instrument has not been selected, there are no existing procedures for calibrating and data retrieval. However, the instrument currently being considered will be calibrated at the supplier's facility at supplier recommended intervals. Backup battery replacement, periodic self-testing, inspections for damage, and checks for appropriate indications, as applicable, would be conducted at manufacturer recommended intervals to ensure continued satisfactory performance.

It is recommended by the manufacturer of the GSR-12 Strong Motion Accelerograph that the self-test be conducted once per year. The results should be compared to the results of the previous year's self tests, which are used as a baseline. If the differences in amplitude are greater than pre-specified criteria, then the factory is to be contacted. Calibration is performed at the factory.

Data retrieval would be accomplished either by removing a computer disk or portable memory, or by transferring data directly via serial connection or other similar means to a personal computer. Data would be processed using factory-supplied software. A plant procedure would be developed that would describe how to process the data into a usable format.

5. **NRC Staff Question:** Will you be able to process the ground motion record from the stand-alone seismic instrument, which will be maintained at the site, in order to determine the ground motion parameters required by the OBE exceedance criterion (response spectrum and CAV) within a time period of 4 hours as stated on page 4-5 of EPRI NP-6695?

**STPNOC response:** The event information recorded in the seismograph is available immediately following the event. The recorded information will be retrieved and fed into a PC for processing which requires only a few minutes. The event response spectrum will be displayed along with the OBE and SSE response spectrum allowing operations personnel to determine if the OBE has been exceeded within 4 hours following the event.

6. **NRC Staff Question:** Are you planning to locate the stand-alone instrument in either a free-field location adjacent to the plant or at a location in the plant for which there is a design basis in-structure response spectrum as recommended by EPRI NP-5930 "A criterion for Determining Exceedance of the Operating Basis Earthquake"? If not, then provide the rationale for the location of the seismic instrument.

**STPNOC response:** The instrument will be located in the plant at a location with an existing calculated structural response spectrum and in compliance with the recommendations made in EPRI NP-5930.

7. **NRC Staff Question:** Page 1 of Appendix C to Attachment 1 states, "Information regarding the earthquake magnitude and epicenter will be readily available from the National Earthquake Resource Center". Identify the "national Earthquake Resource Center" in the event that this organization differs from the National Earthquake Information Center (NEIC). Also provide the details of the procedure that will be used to "readily" obtain the earthquake epicenter and magnitude information.

**STPNOC response:** The reference to the National Earthquake "Resource" Center is an editorial error in reference (1) and should have referred to the National Earthquake "Information" Center. The plant procedure for responding to a Seismic Event presently requires that the National Earthquake Information Center be contacted for confirmation that a seismic event has taken place. Upon approval of this exemption request and prior to deleting requirements to maintain STPNOC's present seismic instrumentation, the procedure will be revised to require obtaining specific information regarding a seismic event including the earthquake epicenter and magnitude.