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Subject: Arkansas Nuclear One - Units 1 and 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6
Technical Requirements Manual Special Report: Seismic Instrumentation

Gentlemen:

The Arkansas Nuclear One (ANO), Units 1 and 2 Technical Requirements Manuals (TRMs), require the preparation and submittal of a Special Report to the Nuclear Regulatory Commission, within the next 10 days, if one or more seismic monitoring instruments are inoperable for more than 30 days. The report must outline the cause of the malfunction and the plans for restoring the instruments(s) to an operable status.

In accordance with the TRM for each unit, this Special Report is submitted regarding the removal of a portion of the seismic monitoring instrumentation located on the top of the ANO-2 Containment Building. Triaxial Peak Accelerograph 2XR-8349 has temporarily been removed to prevent damage and to avoid generation of erroneous seismic historical data due to construction activities in support of the steam generator replacement project.

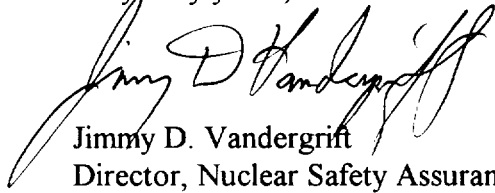
The accelerograph was removed on June 14, 2000, prior to the commencement of steam generator replacement-related construction activities on top of the containment dome. The activities that could potentially damage the monitor include, but are not limited to, erection of the tower crane, material and equipment staging on the dome, concrete removal for the construction opening and tendon removal and reinstallation. The monitor will be reinstalled at the conclusion of the steam generator replacement outage that is scheduled to begin in the fall of this year.

The accelerograph is a redundant instrument. ANO will continue to meet the requirements for seismic instrumentation found in Safety Guide 12, "Instrumentation for Earthquakes," with 2XR-8349 out of service during the period of steam generator replacement activities. Additional details are provided in the attachment.

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Should you have any questions or comments, please contact me.

Very truly yours,



Jimmy D. Vandergrift
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Attachment

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ANO-1/ANO-2 Technical Requirements Manual Special Report Regarding Seismic Monitor

Requirement:

The requirements for seismic instrumentation are contained in section 3.5.1 of the Arkansas Nuclear One, Unit 1 (ANO-1) Technical Requirements Manual (TRM) and section 3.3.3.3 of the Arkansas Nuclear One, Unit 2 (ANO-2) TRM. The Triaxial Peak Accelerograph 2XR-8349 seismic monitor, listed in ANO-1 TRM Table 3.5.1-1 and ANO-2 TRM Table 3.3-7 is required to be operable at all times. A Special Report to the Commission must be prepared within the next 10 days, if one or more seismic monitoring instruments are inoperable for more than 30 days. The report must outline the cause of the malfunction and the plans for restoring the instrument(s) to an operable status.

Monitor Location:

Triaxial Peak Accelerograph 2XR-8349 is located on the top of the ANO-2 Containment Building at Elevation 531'-6" just east of buttress number 1 (@ AZ 0°). It is aligned with the centerline of the nuclear steam supply system.

Monitor Description:

The Triaxial Peak Accelerograph detects and records peak amplitudes of low frequency accelerations resulting from strong local earthquakes, strong winds, or blasting. They require no external power source. The instrument records structure accelerations in three (3) orthogonal axes by indications on magnetic tape/film medium from spring loaded inertia driven styli.

Section 3.7.4 of the ANO-2 Safety Analysis Report describes the ANO-2 seismic instrumentation program as follows:

Two triaxial time-history accelerographs are installed on the Unit 1 reactor building. The instruments are mounted at El. 531'-6" & El. 335'-0". The location of these instruments coincides with two essential elements in the Unit 2 dynamic model for seismic analysis. Therefore, the data obtained from these instruments may be analyzed for both units 1 and 2. This seismic instrumentation system conforms to Safety Guide 12, "Instrumentation for Earthquakes," dated March 1971.

Three triaxial accelerometers located at the base slab provide alarms in the control room for Unit 1. One accelerometer will provide an alarm when a set point of 0.01 g has been exceeded. This alarm will indicate that an earthquake has occurred and the seismic monitoring system is recording seismic data. The alarm from the other two accelerometers will provide an immediate indication if the predetermined vibratory ground motion acceleration value of 0.1 g for the operating basis earthquake (OBE)

has been exceeded. The actions to be taken in case of this alarm are included in the operating procedures.

In addition to the above instrumentation, three peak-recording accelerographs are installed in the Unit 2 containment; one near the top, another near the reactor support, and a third on the containment base slab. One local reading triaxial response spectrum recorder is mounted outside the containment on the base slab, to provide rapid determination of the response spectrum.

Following an earthquake, the resulting measurements will be evaluated by qualified seismology and engineering personnel. If the analysis indicates the shock may have caused stresses exceeding design limits of the OBE earthquake to structures, systems or components, specific action will be taken as recommended by the evaluating personnel.

Similar ANO-1 seismic instrumentation requirements are described in Section 2.7.6 of the ANO-1 Safety Analysis Report.

Cause:

Triaxial Peak Accelerograph 2XR-8349 was temporarily removed from its mounting on the ANO-2 Containment Building to prevent damage to it and to avoid generation of erroneous seismic historical data due to steam generator replacement-related construction activities on top of the dome. Construction activities related to the steam generator replacement activities could induce load impacts near or on the accelerograph or its support bracket. These loads include, but are not limited to, erection of the tower crane, material and equipment staging on the dome, concrete removal for the construction opening and tendon removal/installation. Triaxial Peak Accelerograph 2XR-8347 (the lower accelerograph) and Triaxial Response-Spectrum Recorder (located at the base slab) will not be affected by construction activities due to their location. Additionally, none of the instrumentation on the ANO-1 Containment Building will be affected by the construction activities.

Triaxial Peak Accelerograph 2XR-8349 was removed on June 14, 2000, prior to the commencement of replacement steam generator construction activities on the ANO-2 Containment Building dome. The 2XR-8349 accelerograph will not be reinstalled until the potential for damage from construction activities is past. The accelerograph will be returned to service prior to heatup following refueling outage 2R14 currently estimated to be in November 2000.

Discussion:

The accelerographs are not especially sensitive to vibration from most load handling impacts on the structure if the impacts occur at a relatively long distance away from the instruments. This is because the mass of containment building with respect to most

construction loads is very large and the impact loads are not large enough to overcome the inertia of the containment structure. However, if construction loads were to strike the mounting bracket of the instrument, or immediately adjacent to the mounting bracket, an erroneous indication could occur. This is due to localized effects and because the impact force from a construction load may be much larger than the mass of the support bracket and monitor.

Primary seismic monitoring for both units is provided on the ANO-1 Reactor Building by the two triaxial time-history accelerographs mounted at El. 531'-6" & El. 335'-0". The three triaxial accelerometers on the ANO-1 base slab turn on the recorders and provide an alarm in the ANO-1 control room at 0.01g and 0.1 g setpoints. The local reading triaxial response spectrum recorder mounted on the base slab outside the ANO-2 Containment Building provides data for the rapid determination of the response spectrum. These instruments provide the primary data for evaluation of the effects of an earthquake. These instruments will remain in service during the time the 2XR-8349 is taken out of service.

Acceptability for Removal of Seismic Monitor

Triaxial Time-History Accelerograph ACS-8002 (mounted on the top of the ANO-1 Reactor Building at El. 531'-6" provides primary seismic data (frequency, amplitude, etc.) that is representative of both containment structures. The instrument (except the seismic trigger) is checked monthly to ensure that it is functioning. These monthly checks will continue to be made during the period that 2XR-8349 is out of service.

2XR-8349 provides a record of maximum acceleration/amplitude for confirmation as a check on the primary instrument. It is a redundant instrument. It provides data that could be used in evaluating the possible effects of an earthquake on the plant. The instrument does not have warning/alarm capabilities nor does it provide a time history record that would indicate frequencies and amplitudes of the seismic event. If 2XR-8349 is left in service during the replacement steam generator construction activities, it could be inadvertently damaged. Damage to the instrument could go undetected or it could result in erroneous seismic data, should it be needed in the unlikely occurrence of a seismic event. ANO will continue to meet the requirements for seismic instrumentation found in Safety Guide 12, "Instrumentation for Earthquakes," (March 1971) with 2XR-8349 out of service during the period of steam generator replacement activities.