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SUBJECT: Submits special rept pursuant to requirements of facility
 tech spec 3.3.7.2 "Seismic Monitoring Instrumentation"
 which requires instruments to be operable at all times.

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G02-91-107

Docket No. 50-397

May 24, 1991

Mr. J. B. Martin
Regional Administrator
USNRC, Region V
1450 Maria Lane, Suite 210
Walnut Creek, CA 94596

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1991 MAY 28 AM 9:54

Dear Mr. Martin:

Subject: NUCLEAR PLANT NO. 2, LICENSE NO. NPF-21
SPECIAL REPORT: SEISMIC MONITORING INSTRUMENTATION

This Special Report is submitted pursuant to the requirements of WNP-2 Technical Specification section 3.3.7.2 "Seismic Monitoring Instrumentation" which requires the instruments to be operable at all times.

The seismic monitoring system has been designed and installed to record the response of plant buildings and systems to ground motions produced by earthquakes. Some of this information would then be used by plant operators to immediately determine the relative size of the event. The remaining information would be used over the long term to determine the plant response to a significant seismic event.

The action statement for this specification requires that "with one or more of the above required seismic monitoring instruments inoperable for more than 30 days, in lieu of any other report required by Specification 6.9.1, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the instrument(s) to operable status."

SEIS-TPA-1

On April 16, 1991, with the plant in Mode 4 (cold shutdown) and preparing to enter Mode 5 (refueling) for the annual maintenance and refueling outage, the triaxial peak accelerograph (SEIS-TPA-1) attached to the space frame above the reactor vessel head was taken out of service as the frame was removed for reactor refueling. This action makes the instrument inoperable and caused entry into Technical Specification Action Statement 3.3.7.2.

Triaxial peak accelerograph SEIS-TPA-1 is a sensitive, wide band, low frequency, acceleration recording instrument. Permanent records are scribed by diamond styli on replaceable metal plates. The peak acceleration is computed by multiplying the maximum excursion of the trace by the acceleration sensitivity of the recorder. This passive instrument is used to capture the response of the space frame, a steel structure located between the reactor vessel head and containment head structures. The data collected is for subsequent engineering analysis and does not provide any external parameter display, annunciation, or initiate any automatic action. This data does not play a role in the immediate determination of plant operability following a seismic event. Any loss of data from this instrument can best be characterized as a lost opportunity to aid in an analysis to support a decision to restart should a significant seismic event have been experienced.

A review of previous plant outages shows that SEIS-TPA-1 was necessarily removed from service along with the disassembly of the reactor head components. Each period was for greater than 30 days and should have been reported in a special report in accordance with Technical Specification requirements, but was overlooked. This condition will be reported in the future.

SEIS-TPA-1 will be restored to operable status at the completion of refueling when the reactor head components are reinstalled. During the interim, the occurrence of a seismic event will be captured by other seismic instruments. Plant restart is currently scheduled for early-June following the conclusion of the maintenance and refueling outage.

SEIS-TPA-2 and SEIS-RSR-1/1, 1/2, 1/3

On April 26, 1991 during annual maintenance of the High Pressure Core Spray (HPCS) seismic instruments, it was noted that the as-found condition would have precluded full recording capability during a real seismic event. Both SEIS-TPA-2 and SEIS-RSR-1 were found to have recorded accelerations on the permanent scratch plates which would have likely masked any record produced by a seismic event if one had occurred. These instruments are, therefore, considered inoperable and are being reported in accordance with the action statement described above.

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SEIS-TPA-2 is a triaxial peak accelerograph located on the HPCS injection line inside primary containment at elevation 538 feet. Its operation is identical to SEIS-TPA-1 previously described. Recorder SEIS-RSR-1/1, 1/2, and 1/3 is a triaxial response spectrum recorder located on a HPCS injection line pipe support in the HPCS pump room at the 448 feet elevation of the reactor building. Its operation is different from the TPA instrument in that it monitors 12 discrete frequencies between 2 and 25 Hz. All the accelerometers use diamond-tipped styli to inscribe permanent records of displacement on special record plates. These plates are only capable of a single recording. Subsequent actuations without plate replacement will only produce records if they exceed the previous displacement, although there is no way to distinguish between the sources of acceleration.

In the case of SEIS-TPA-2 and SEIS-RSR-1/1, 1/2, and 1/3 it is postulated that the accelerations generated by the HPCS system actuations produce records which would effectively mask and seismic events. Evaluation of the records from SEIS-RSR-1 show that below 8 Hz the records were less than the OBE basemat spectrum. Above 8 Hz the records were larger than the spectrum and, therefore, would mask any actual records around this critical area of interest. The as-found records from SEIS-TPA-2 were for all practical purposes off-scale high. There is no way with certainty to determine when these records were made and thus how long the instruments would have been rendered inoperable. A test involving a HPCS system injection to the vessel was conducted in November 1990 and is the most likely source of the high accelerations. To prevent the occurrence of this event plant procedures will be changed to require checking the HPCS seismic instruments if a vessel injection is performed.

Engineering evaluations have determined that these instruments must be moved to prevent recurrence of this data masking problem. A selection process is currently underway to determine small displacement locations along the HPCS system. This process will involve a routine test actuation of an instrumented HPCS system. The test will include operation of the HPCS system with water returned to the Containment Suppression Pool or the Condensate Storage Tank. These two instruments will be installed at their new locations prior to plant restart from the outage which is currently scheduled for early-June.

Very truly yours,



J.W. Baker
WNP-2 Plant Manager

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