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August 11, 1981

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Director, Office of Nuclear Reactor Regulation  
Attention: D. M. Crutchfield, Chief  
Operating Reactors Branch No. 5  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555



Gentlemen:

Subject: Docket No. 50-206  
SEP Topic III-6  
Seismic Design Considerations  
San Onofre Nuclear Generating Station  
Unit 1

My letter of July 7, 1981 provided a summary of all activities pertaining to the seismic reevaluation of San Onofre Unit 1 and addressed the justification for continued operation by reference to our April 28, 1980 submittal. On July 30, 1981 we met with the NRC staff to discuss the structural capacity of the turbine building during the time required to complete the evaluation and any required modifications. In addition, at the meeting we committed to implement modifications to the north extension and west heater platform of the turbine building by June 1, 1982. The purpose of this letter is to supplement our July 7, 1981 and April 28, 1980 submittals and to provide additional information regarding the structural capacity of the turbine building.

The turbine building consists of four structural systems which surround the turbine pedestal. These four systems are known as the north and south extensions and the west and east heater platforms. The turbine pedestal was originally designed as a Category A structure to a 0.5g Housner response spectrum and therefore is considered adequate pending completion of the reevaluation of this structure in connection with the overall seismic reevaluation program. The four structural systems were designed as Category B structures to 0.2g. In light of this, additional information is provided regarding the structural capacity of these structures and the impact of their failure following a large seismic event on the capability to remove decay heat.

Enclosure 1 provides a detailed structural integrity evaluation of the north extension and the west heater platform including the masonry walls. As indicated in this evaluation, these two structures are considered capable of withstanding a 0.3 to 0.4g Housner ground motion within their elastic limits. Other factors identified in Enclosure 1 suggest a substantial reserve capacity beyond this elastic limit. This evaluation is further supported by the information in Enclosure 2 which documents a review of the seismic performance of steel framed structures in past earthquakes. Enclosure 2

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suggests that steel framed structures are capable of withstanding ground motions two to three times their design acceleration level without significant damage. In fact, in all of the data reviewed in Enclosure 2 no gross structural failure of any steel framed structure was found.

Although a detailed structural evaluation of the south extension and east heater platform has not been performed, these structures have been examined to estimate their structural capability. The east heater platform is generally similar to the west heater platform and therefore would be expected to have the same seismic response as the west heater platform. The general conclusions regarding the capability of the west heater platform to withstand earthquakes in excess of a 0.3 to 0.4g Housner ground motion are therefore considered applicable to the east heater platform. These conclusions, however, cannot be extended to the south extension. During operation the turbine gantry crane is normally parked on the south extension, thereby adding a significant load to this structure. In view of this, it cannot be concluded that this structure will be able to withstand ground motion much in excess of its original design level. It should be further noted that structural failure of the turbine gantry crane while it is parked on the south extension would not affect either the west or east heater platforms.

In addition to evaluating the structural capacity of these structures, we have also evaluated the impact of their failure following a seismic event on the capability to remove decay heat. Enclosure 3 discusses the safety-related systems which could be affected in each of the four turbine areas. In addition, Enclosure 3 discusses the capability for removing decay heat from the reactor in the event the auxiliary feedwater system were not available. As discussed in Enclosure 3, only a failure of the north extension could potentially preclude the ability to remove decay heat by either the auxiliary feedwater system or the alternate decay heat removal system. A failure in the three other areas would not preclude the ability to remove decay heat.

Based on the discussions in the enclosures it is concluded that San Onofre Unit 1 can continue to operate during the time required to complete the modifications to the turbine building without undue risk to the health and safety of the public. This conclusion is based on the fact that these structures with the exception of the south extension as discussed above, have a structural capacity on the order of two to three times their original design level, that the probability of exceedence of a 0.4g earthquake is on the order of  $2 \times 10^{-3}$  per year based on our April 28, 1980 letter, and that for all but the most extreme structural failure of the north extension, the capability to remove decay heat will not be precluded. As stated above, modifications to the north extension and west heater platform will be implemented by June 1, 1982. Modifications to the south extension and east heater platform will be evaluated following completion of the analysis of these structures as described in our July 7, 1981 letter.

Mr. D. M. Crutchfield

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August 11, 1981

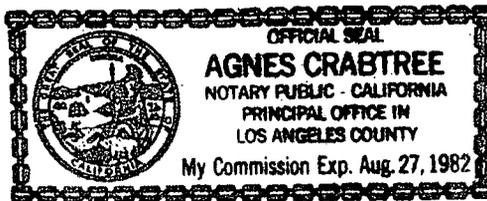
Finally, as has been discussed with members of the NRC Staff, due to efforts involved on the part of SCE and its consultants in performing this interim evaluation of the turbine building, the submittal of criteria for the Balance of Plant Mechanical Equipment and Piping Program as described in our July 7, 1981 letter and the response to NRC Generic letter No. 81-14 dated February 10, 1981 will be delayed by approximately two weeks. This information is now scheduled for submittal by August 28, 1981. In addition, there is a potential delay of about four weeks in the overall schedule for the completion of the Balance of Plant Structures Seismic Reevaluation Program.

If you have any questions on any of this information, please let me know.

Subscribed on this 11<sup>th</sup> day of August, 1981.

Very truly yours,

By K.P. Baskin  
K. P. Baskin  
Manager of Nuclear Engineering,  
Safety, and Licensing



Subscribed and sworn to before me  
this 11<sup>th</sup> day of August, 1981.

Agnes Crabtree  
Notary Public in and for the County of  
Los Angeles, State of California

Enclosure