

October 5, 1998

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D.C. 20555-0001

Gentlemen:

Subject: **NRC Generic Letter 97-04: Assurance of Sufficient Net Positive Suction Head for Emergency Core Cooling and Containment Heat Removal Pumps  
San Onofre Nuclear Generating Station Units 2 and 3 (TAC Nos. MA0040 and MA0041)**

- References: 1) August 19, 1998 letter from James W. Clifford (NRC) to Harold B. Ray (SCE), Subject: Request for Additional Information - San Onofre Nuclear Generating Station Units 2 and 3 (TAC Nos. MA0040 and MA0041)
- 2) January 2, 1998 letter from J. L. Rainsberry (SCE) to Document Control Desk (NRC), Subject: NRC Generic Letter 97-04: Assurance of Sufficient Net Positive Suction Head for Emergency Core Cooling and Containment Heat Removal Pumps, San Onofre Nuclear Generating Station Units 2 and 3

This letter provides the additional information requested in Reference 1 concerning NRC Generic Letter (GL) 97-04. This information confirms the adequacy of the net positive suction head (NPSH) available for emergency core cooling and containment heat removal pumps at San Onofre Units 2 and 3. In addition to the information requested in Reference 1, a correction to Reference 2, Southern California Edison's (SCE's) initial response to GL 97-04, is provided below. The NRC questions in Reference 1 and SCE responses are the following:

**NRC Question 1:**

What is the maximum sump temperature assumed in the net positive suction head (NPSH) analysis?

**SCE Response:**

The maximum sump temperature assumed in the NPSH analysis (Calculation M-0012-01D) is 270 degrees F.

San Onofre Nuclear Generating Station  
P. O. Box 128  
San Clemente, CA 92674-0128

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**NRC Question 2:**

Tables 1, 3, and 4 in the GL response (Reference 2) list the NPSH required for the containment spray pumps as 13 feet. However, the flowrate provided in Tables 1 and 3 is 2200 gpm whereas the flowrate in Table 4 is 2500 gpm. Explain why the NPSH required did not increase with the 300 gpm increase in flow.

**SCE Response:**

For clarification, the flowrates provided in Reference 2 Tables 1 and 4 are 2500 gpm (runout flow), and the flowrate in Table 3 is 2200 gpm (worst case design flow).

The data provided in Tables 1 and 4 were taken from the NPSH calculation of record, M-0012-01D, which states that the NPSH required for Containment Spray pumps at runout flow of 2500 gpm is 13.0 ft. A review of the manufacturer's certified test curves confirmed that three of the four containment spray pumps (there are two at each unit) were bounded by the data presented in the calculation. For three of these pumps, the NPSH required @ 2500 gpm is equal to or less than 13.0 ft. However, the remaining pump (2P012) requires 13.0 ft. NPSH @ 2200 gpm and 14.0 ft. NPSH @ 2500 gpm. This difference is not significant due to the large margin; NPSH available is 24.5 ft. The NPSH calculation of record, M-0012-01D, is an original Bechtel calculation, issued November 13, 1980. SCE has added a note to the calculation documenting that 2P012 requires 14.0 ft. NPSH @ 2500 gpm.

**NRC Question 3:**

Have there been any other revisions to the NPSH calculations other than those discussed in response to question 3 of the subject Generic Letter?

**SCE Response:**

The NPSH calculation of record to date (M-0012-01D) has not been revised other than as discussed in the response to question 3 in Reference 2 and addition of the note as stated in the response to question 2 above. A design change package (DCP-2(3)-6863.0SN) was issued in 1993 to enable the use of the Containment Spray pumps for Shutdown Cooling or Spent Fuel Pool Cooling. This design change added a 16"x10" weldolet in the suction of the Containment Spray pumps. Since Containment Spray flow from the Refueling Water Storage Tank or the Emergency Safety Features Sump is straight through the run of this connection, the change was considered to have a negligible impact on the NPSH calculation, and no changes were made.

**Correction to Reference 2:**

Reference 2 referenced two calculations: M12.1D and N-0024-006. The actual calculation numbers are M-0012-01D and N-0240-006, respectively.

If you have any questions or would like additional information, please let me know.

Sincerely,

A handwritten signature in cursive script, appearing to read "J. H. Rainey". The signature is written in dark ink and is centered below the word "Sincerely,".

cc: E. W. Merschoff, Regional Administrator, NRC Region IV  
J. A. Sloan, NRC Senior Resident Inspector, San Onofre Units 2 & 3  
J. W. Clifford, NRC Project Manager, San Onofre Units 2 and 3