Southern California Edison Company

23 PARKER STREET

IRVINE, CALIFORNIA 92718

F. R. NANDY
MANAGER, NUCLEAR LICENSING

TELEPHONE
(714) 587-5400

July 27, 1990

NOTE: J. TATUM IS PM & ONLY WANTS 1 CY, NOT 5 CYS

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Subject: Docket No. 50-206
SMC O'Donnell Final Report
Thermal Shield Support System Replacement
San Onofre Nuclear Generating Station
Unit 1

The purpose of this letter is to provide the NRC with the SMC O'Donnell final report (Enclosure). The SMC O'Donnell final report is an independent analysis and evaluation of the thermal shield replacement support system design. The information given in the enclosure was requested by the NRC in our June 25 to 27, 1990 meetings in Pittsburgh.

This letter also provides clarification of the results of the Westinghouse analysis of the replacement support system design, and a discussion of the results of the O'Donnell independent analysis. In a July 19, 1990 telephone discussion between SCE, Westinghouse, and the NRC, we provided clarification of the results of the design analyses. This letter documents the July 19, 1990 discussion.

047

CLARIFICATION OF WESTINGHOUSE ANALYSIS

Westinghouse based the design of the thermal shield replacement support system on a configuration consisting of six flexures, four limiter keys, and six lower support blocks (6-4-6). The base design was discussed in detail in our April 20, 1990 submittal. The Westinghouse analysis, which was completed after the April 20, 1990 submittal, concluded that, in the 6-4-6 case, the lower support block fasteners meet the requirements of the ASME Code, Section III, design fatigue curve for a design life of 15 years; and the flexures also meet the requirements of the design fatigue curve when the stress intensity range of the proposed ASME Code Case on fatigue is used. The proposed ASME Code Case on fatigue was provided to you in our June 8, 1990 letter.

In anticipation of wear in the limiter keys, Westinghouse also performed fatigue analysis for the case of six flexures, no limiter keys, and six lower support blocks (6-0-6). The

A001
1/1

results show that the stresses in the lower support block fasteners meet the limits defined by curve A in the ASME Code for high cycle fatigue with a 15 year design life.

The maximum stress ranges in the flexures, in the 6-0-6 case, do not meet the limits defined by curve A, using the proposed ASME Code Case on fatigue. The flexure stresses, however, are lower than the limits defined by the high cycle fatigue failure curve (i.e. two times curve A) for 15 years of operation.

Our submittal of April 20, 1990 did not clarify that the flexure stresses in the 6-0-6 case only meet the fatigue failure curve limits, because the final results of flexure analyses were not available at that time.

SMC O'DONNELL ANALYSIS

SMC O'Donnell has performed an independent analysis of the 6-0-6 case, which assumes fully worn limiter keys. Since some eventual wear at the limiter keys is expected, an independent analysis of the 6-0-6 case provides a conservative confirmation of the design. The results of the 6-0-6 case are included in the O'Donnell final report (Enclosure). The results confirm Westinghouse conclusions that the lower support block fasteners meet the limits defined by curve A of the ASME Code, and the flexures only meet the limits defined by the ASME Code failure fatigue curve for 15 years of operation, using the proposed ASME Code Case on fatigue.

SUMMARY OF THE RESULTS

The results of the above discussed Westinghouse and O'Donnell analyses are:

- In the 6-4-6 case, which is the design basis configuration, the lower support block fasteners and the flexures meet the ASME Code design fatigue curve limits for 15 years of operation. (Westinghouse analysis)

- In the 6-0-6 case, the lower support block fasteners meet the ASME Code design fatigue curve limits for 15 years of operation. The flexures do not meet the design fatigue curve limits, however, they meet the failure fatigue curve limits for 15 years of operation, using the ASME proposed Code Case on fatigue. (Westinghouse, and O'Donnell analyses)

If you have any questions or desire further information, please let me know.

Very truly yours,

Enclosure:

cc: (All w/o enclosure)
J. B. Martin, Regional Administrator, NRC Region V
C. Caldwell, NRC Senior Resident Inspector, San Onofre Units 1, 2 and 3

ENCLOSURE