SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT □ 6201 S Street, Box 15830, Sacramento, California 95813; (916) 452-3211

August 3, 1982

R H ENGELKEN, REGIONAL ADMINISTRATOR
REGION V OFFICE OF INSPECTION AND ENFORCEMENT
U S NUCLEAR REGULATORY COMMISSION
1450 MARIA LANE SUITE 210
WALNUT CREEK CA 94596

DOCKET NO. 50-312
LICENSE NO. DPR-54
LICENSEE EVENT REPORT 82-17

In accordance with Regulatory Guide 1.16 Section C, the Sacramento Municipal Utility District hereby submits Licensee Event Report No. 82-17.

On July 15, 1982, a visual inspection of the polar crane rail at Rancho Seco Nuclear Generating Station discovered 4 failed bolts on the rail hold-down clips. Inspection of all clip bolts, using a hammer impact test initially and a torque test as the ultimate evaluation technique, resulted in failure of 11 additional bolts. The bolts were originally installed using the Nelson stud weld process. The failures appeared to be due to high cycle fatigue.

Attached is a sketch of the cross section of the rail and its supporting girders. As can be seen from this sketch, the rail is located in such a way that it cannot fall, nor due to the length of the crane bridge itself, could the crane fall should the rail shift. For this reason, there is no safety impact on the plant. The District is reporting this only as an event of potential public interest. The NRC Site Resident Inspector was notified of this condition on July 19, 1982.

The cause of the failures appears to be a complex process involving several factors. First, the rail is a solid ring supported by the structural steel girders inside the containment. Due to the temperature variations in the containment, provision had to be made for thermal expansion of the rail. Thus, the hold-down clips were designed to allow lateral movement of the rail. Additionally, post-tensioning of the Reactor Building would have resulted in a lateral shift of the rail.

In reviewing the bolt failure data, a pattern can be extrapolated. It appears that the majority of the bolts that failed were located

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on the outside rail clips and that the highest frequency of failure was in a sector of crane travel that coincided to an area above and to either side of the hatch. This would be the area which would see the most frequent crane usage, hence it would be the area of the rail that would experience the largest load cycles.

The District is planning to replace the failed bolts with new bolts using full penetration welds. There is evidence that this will correct the problem because when similar failures were observed in 1974, they were replaced using full penetration welds. There has been no evidence of failure of those replacements, to date.

There were no transients associated with this event nor was plant or public safety affected.

John J. Mattimoe

John J. Mattimoe
Assistant General Manager
and Chief Engineer

Attachment

cc: DCD, Washington
INPO

ATTACHMENT 1

POLAR CRANE RAIL CONFIGURATION