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SUBJECT: Forwards repts on MSIV root cause analysis & insp results.

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July 13, 1988

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

Gentlemen:

Subject: MSIV Root Cause Analysis and Inspection Results
Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

On May 9, 1988, Southern California Edison (SCE) was informed by Louisiana Power and Light (LP&L) that the two Main Steam Isolation Valves (MSIVs) installed at the Waterford-3 Nuclear Steam Station had suffered internal damage. The valves are manufactured by the Flow Control division of WKM. The MSIVs currently installed at San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 are of the same type as the damaged LP&L MSIVs. A root cause analysis was initiated to determine the failure mechanisms and to determine if the SONGS MSIVs are subject to similar failures. The results of this analysis are documented in the enclosed report entitled, "Root Cause Analysis For The Guide Rail Lev-R-Lock Interaction Problem For MSIVs", dated June 19, 1988. A draft of this report was reviewed with NRC staff on June 13, 1988 in the NRC White Flint offices.

As stated in the Root Cause Analysis report, SCE concluded that it is unlikely that SONGS MSIVs would experience the failure mechanism that can shear two gate skirt assembly guide rails (the guide rails interacting with the lev-r-lock arm during closing) that occurred in one of the Waterford-3 MSIVs. This conclusion was based on, among other supporting evidence, a dynamic impact analysis and the fiber optic inspection results on Unit 3 MSIVs 3HV-8204 and 3HV-8205. The dynamic impact analysis revealed that one of the key parameters determining the magnitude of the shearing energy is the stroke time. Since SONGS MSIVs stroke approximately two and one-half times slower, it is very unlikely that they are subject to the failure mechanism experienced by Waterford-3 MSIVs. The Root Cause Analysis also includes a safety evaluation that concludes that even in the worst case with a dislodged guide rail, the MSIVs will still perform their safety function.

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On June 20, 1988, SCE was requested by the NRC to disassemble and inspect Unit 3 MSIV 3HV-8205 to see if it had experienced the Waterford-3 failure mechanism. The inspection results are documented in the enclosed report entitled, "Inspection Results of SONGS-3 MSIV-8205".

The Inspection Report, which is a supplement to the Root Cause Analysis Report also includes an evaluation of the minor damage observed on the opening guide rail capscrews. The evaluation concludes that the damage is caused by interference between the lev-r-lock arm shoe and the chamfer of the opening guide rail. The damaging mechanism is much less severe than the Waterford-3 failure mechanism and it is self-limiting. The inspection confirms the major conclusion of the root cause report that the valve did not experience the Waterford-3 failure mechanism in that all capscrews on the closing guide rails were found intact, the guide rails were tightly held against the valve skirt, and there was no damage on the closing guide rail chamfers.

To ensure that any failure mechanism can be corrected before it results in significant damage, Unit 2 MSIV 2HV-8204 and MSIV 2HV-8205 will be inspected by borescope in the next Mode 5 outage of sufficient duration (greater than 7 days). SCE will preestablish inspection criteria so that a predetermined course of action will be followed depending on the inspection results. In addition, a borescope inspection program will be developed for subsequent refueling outages.

If you have any additional questions regarding this matter, please call me.

Very truly yours,

Enclosures

cc: D. Hickman, NRR Project Manager, San Onofre Units 2 and 3 (w/enclosures)
J. B. Martin, Regional Administrator, NRC Region V (w/enclosures)
F. R. Huey, NRC Senior Resident Inspector, San Onofre Units 1, 2 and 3