AUG 12 1982

MEMORANDUM FOR: Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Richard C. DeYoung, Director
Office of Inspection and Enforcement

Robert B. Minogue, Director
Office of Nuclear Regulatory Research

FROM: Carlyle Michelson, Director
Office for Analysis and Evaluation
of Operational Data

SUBJECT: CASE STUDY REPORT ON SAN ONOFRE UNIT 1 LOSS OF SALT WATER COOLING EVENT OF MARCH 10, 1980

SEE REPTS. # 8208270697

On March 10, 1980, while operating at 100% power, San Onofre Unit 1 experienced a complete loss of the salt water cooling system. The event involved an unlikely triple failure which resulted in operations exceeding the plant's limiting conditions for operation. The event was later determined to be an abnormal occurrence. Enclosed for your information and appropriate action is the AEOD case study of the event. The report contains a detailed description of what occurred along with our findings, conclusions, and recommendations.

The report recommendations concern:

a) single failure vulnerability of the salt water cooling system;

b) contamination of plant air systems;

c) in-service testing programs; and

d) plant technical specifications

With regard to the single failure vulnerability of San Onofre 1's salt water cooling system, we note that on May 13, 1982, while the plant was in cold shutdown, maintenance activities were performed which caused two more complete losses of the salt water cooling system. These occurred as follows:

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While the plant staff was removing the internals of one salt water cooling pump for preventive maintenance operations, the Pacific Ocean flooded the pump bay. The flooding took place because an error was made in calculating the tide elevation. Subsequently, the operating salt water cooling pump was secured to prevent it from being damaged. The auxiliary salt water cooling pump was inoperable due to the on-going maintenance activities.

About an hour after resuming salt water cooling pump operations, the discharge valve on the north salt water cooling pump failed closed causing another interruption of the salt water cooling system. The flooding is suspected as the cause of this failure (residual moisture in the pressure switch and melted insulation in an associated time delay relay).

During both of these interruptions of cooling the screen wash pumps (which are of a lower capacity and are not "safety-related") were used to supply salt water cooling. Since the unit had been in cold shutdown at the time, there were no adverse effects to the plant or the public.

As shown in the case study report (Section 3.1), a complete loss of the salt water cooling system during the early stages of RHR operation could lead to damage to safety-related equipment within a few minutes. Fortunately, the March 10, 1980 and the May 13, 1982 events did not occur while the plant was in the early stages of RHR operation.

In NRR's peer review comments (memorandum from H. Denton to C. Michelson, June 7, 1982), NRR agreed that the salt water cooling system is critical during RHR operation, and that special attention should be focused on such single failure vulnerability. Furthermore, NRR stated that SEP Topic 1X-3, Station Service and Cooling Water Systems, will include a single failure analysis of the cooling water systems. We note that the May 13, 1982 failures have provided additional failure modes for consideration in the SEP study.

This office would like to be kept informed as to how the aforementioned recommendations are being addressed and/or will be addressed by future actions.

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If you have any questions regarding this matter, please contact either myself or Harold Ornstein of my staff.

Original Signed by
Carlyle Michelson

Carlyle Michelson, Director
Office for Analysis and Evaluation
of Operational Data

Enclosure:
As Stated

cc w/enclosure:

RCHaynes, RI	MVirgilio
JPO'Reilly, RII	WPaulson
JGKeppler, RIII	DCrutchfield
JTCollins, RIV	GHolahan
RHEngelken, RV	RRussell
VStello	RBernero
TMurley	RBaer
WCottrell	LMiller
RDeYoung	GAArlotto
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