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 MARTIN, J.B. Region 5 (Post 820201)

SUBJECT: Requests temporary waiver of compliance from requirements of TS 3.7.1.2.1 & a 48 h delay in action requirement applicability to allow sufficient time to install barriers that will assure that valves will remain operable.

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January 30, 1992

Mr. John B. Martin
Regional Administrator
U. S. Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Subject: Docket No. 50-361
Request for Temporary Waiver of Compliance
48 Hour Delay in Action Requirement Applicability
San Onofre Nuclear Generating Station, Unit 2

The purpose of this letter is to request a Temporary Waiver of Compliance from the requirements of Technical Specification (TS) 3.7.1.2.1, "Auxiliary Feedwater System," Action requirements "a" and "b" to allow sufficient time to install barriers which would assure that certain Auxiliary Feedwater isolation valves remain operable in the remote event of a High Energy Line Break (HEL B) of auxiliary feedwater steam supply piping. This request is not applicable to Unit 3 since Unit 3 is in Mode 5 (COLD SHUTDOWN) having just begun a refueling outage.

SCE is proceeding to install the required barriers and it is anticipated that installation will be complete in such time that a temporary waiver will not be required. However, if this work is not complete, it is necessary for the requested waiver to be approved by 0800 PST (1100 EST) to provide the approximately five hours necessary to return the turbine driven auxiliary feed water pump to service and avoid a plant shut down. Should you have any questions concerning this waiver request, please contact Mr. M. P. Short via the SCE switchboard operator at (800) 621-8516.

A. Requirements for which the waiver is requested:

TS 3.7.1.2.1, requires that in Modes 1 through 3, three independent Auxiliary Feed Water (AFW) Pumps (AFWP) and the associated flow paths to the two steam generators remain operable.

The AFW system is comprised of two motor driven AFWPs and one Turbine Driven AFWP (TDAFWP), tanks, piping, valves, instrumentation and controls. There are two AFW lines; one for each steam generator. Each of these lines contains two

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parallel containment isolation valves (one AC powered and one DC powered). Each motor driven AFWP provides an AFW flow path with one of the AC powered containment isolation valves. The TDAFWP provides an additional flow path with the DC powered containment isolation valves. The three pumps are located in the AFW pump building. Certain equipment in the AFWP building is qualified for the harsh environment resulting from a postulated guillotine break of the steam supply line to the TDAFWP. The four containment isolation valves are located in a separate valve room. The pump building and the valve room are interconnected by two pipe tunnels.

In the event that one AFWP or its associated flow path is inoperable, TS 3.7.1.2.1, Action "a" requires that it be restored to operability within 72 hours or the unit be placed in HOT STANDBY (Mode 3) within the next six hours and in HOT SHUTDOWN (Mode 4) within the following six hours. Similarly, with two pumps or two flow paths inoperable, Action "b" requires that the unit be placed in Mode 3 within the next six hours and in Mode 4 within the following six hours. In the event that three AFWPs or the flow paths are inoperable, Action "c" requires that corrective action be immediately initiated to restore at least one AFWP and the associated flow path to operability.

It has been concluded that steam released by a hypothetical steam line break in the AFWP room will migrate from the AFWP building to the valve room through the pipe tunnels and create an environment for which the AFW isolation valves are not qualified. At 1250 on January 27th, the steam supply to the TDAFWP was isolated by the closure of isolation valves 2HV-8200 and 2HV-8201. While this action prevents the possibility of a HELB event in the AFWP building, it also renders the TDAFWP inoperable. In accordance with Action "a" of TS 3.7.1.2.1, within 72 hours of pump inoperability, Unit 2 must be shut down. A temporary waiver from the requirements of Actions "a" and "b" of TS 3.7.1.2.1 is requested to permit reopening the two steam isolation valves thus restoring the TDAFWP to service while permitting the associated AFW flow paths to be operable. As discussed below, SCE has performed an evaluation and will implement compensatory measures which ensure the detection of crack development prior to a guillotine failure. As such, the remaining AFW equipment will satisfy all design assumptions except for those related to guillotine failure.

There are several other components affected by the condition described in this request which are governed by additional TSs. Although these components would logically be considered operable under the conditions of the above requested waiver of compliance for TS 3.7.1.2.1, it is requested that they also be included in this request for a waiver of compliance from their associated TSs. These components and their TSs are described below:

Each AFW flowpath has a flow transmitter which is located near the valve room end of the pipe tunnels. These flow transmitters are required to be operable in Modes 1 through 3 pursuant to TS 3.3.3.6, "Accident Monitoring Instrumentation."

The valve room also contains two steam generator blowdown containment isolation valves which are required to be operable in Modes 1 through 4 pursuant to TS 3.6.3, "Containment Isolation Valves," and TS 3.3.2,

"Engineered Safety Feature Actuation System Instrumentation" (with respect to their response time requirements for closure of the blowdown valves on a main steam isolation signal).

In the event of a guillotine steam line break in the pump building, the flow transmitters and blowdown isolation valves could also be exposed to an environment which is more harsh than that for which they are qualified. As discussed below, SCE has performed an evaluation and will implement compensatory measures which ensure the detection of crack development prior to a guillotine failure. As such, the remaining AFW equipment will satisfy all design assumptions except for those related to guillotine failure.

There is a safety equipment building electrical equipment vault which could potentially be affected by a harsh environment in the AFW tunnels since the vault has ten small drain holes between the vault and one of the tunnels. The purpose of these penetrations is to drain water from the vault to the tunnel in the event of actuation of the fire suppression system in the vault. One-way flappers will be installed on the ten drain holes connecting the vault with the AFW tunnel, thus isolating the vault from a steam environment while still providing for drainage from the vault. Since an evaluation of the impacted equipment in the vault has not been performed, this modification will be completed prior to returning the TDAFWP steam piping to service.

B. Circumstances Surrounding the Current Situation:

On January 27, 1992, with Unit 2 in Mode 1 at approximately 100% power, an ongoing program to re-constitute the design basis of San Onofre Units 2 and 3 concluded that in the remote event of a guillotine steam line break in the AFWP building, the four AFW containment isolation valves could be exposed to an environment which is more harsh than that for which they were qualified. As a consequence, the steam supply to the TDAFWP was isolated at 1250 on January 27th, thereby rendering the TDAFWP inoperable and restoring the two AFW flow paths to operability and permitting Unit 2 to continue operation for the remainder of the 72-hour action statement. Isolation of the TDAFWP steam supply precludes the possibility of a steam line break which could cause an environmental condition in the valve room more harsh than the environment for which the four AFW isolation valves are qualified.

It is currently estimated that construction of a steam barrier in the two pipe tunnels will be completed prior to the expiration of the 72-hour action statement (which expires at 1250 PST on January 30th). The steam barrier will ensure that the environment of the valve room and the area of the tunnels containing the AFW flow transmitters remains mild in the event of a steam line break in the pump building.

In the event that barrier construction cannot be completed within the 72-hour TS action statement time limit, prompt action must be taken on this waiver request to prevent the shutdown required by TS 3.7.1.2.1. This situation could not have been avoided by prior planning.

C. Compensatory Actions Necessary

A fracture mechanics analysis has shown that the steam line leakage would be limited by the crack size. Any such leakage would initially be of insufficient quantity to affect the environmental conditions of the valve room or the region of the pipe tunnel containing the AFW flow transmitters. In order to detect and promptly isolate any such leakage before the leak rate could increase to the point of affecting the valve room environment, the AFW pump building will be monitored at least once per hour for pressure boundary leakage.

In addition, in order to limit the energy input into the pipe tunnels, the two AFWP building exterior doors will be secured in the open position for the duration of the waiver.

D. Preliminary Safety Significance Evaluation:

SCE has completed a preliminary evaluation which concludes that continued operation of Unit 2 without fully satisfying the requirements of TS 3.7.1.2 is of no safety significance. This conclusion is based upon an evaluation which concludes that steam pipe leakage would be apparent prior to a guillotine break. Such a leak would therefore be detectable and isolable prior to creating a harsh environment capable of affecting the operability of components in the AFW valve room or the pipe tunnels. The conclusion that the steam line would leak-before-break is based on a fracture mechanics analysis which shows that for a circumferential crack of about six pipe wall thicknesses, the crack will not propagate. This crack size will pass approximately 200 pounds mass per hour of steam (which is equivalent to approximately 1/2 gallon per minute of condensate) into the AFWP building. The amount of energy released into the AFWP building from the steam leak would not create a harsh environment in the AFW valve room or pipe tunnels.

The Leak-Before-Break (LBB) analysis was performed utilizing the guidance of NUREG-1061 "Evaluation of Potential for Pipe Breaks", Volume 3, Section 5.2. The following exceptions were taken:

1. The steam supply to the TDAFWP has experienced several water slugging transients. The most recent occurrence was identified during inspections of piping system components last year. Although damage was found in a check valve outside the AFWP room, no damage was found in the piping including that within the room. The causes of these transients are understood and corrective actions have been completed to minimize the chances for recurrence as well as more readily indicate when they occur. Therefore, SCE has concluded it is acceptable to apply LBB to this line.
2. As noted above, the leakage detection method utilizes periodic observation by plant staff rather than an automatic leak detection method. It is noted that the calculated leakage level for this line is less than the minimum leakage level that NUREG-1061 would establish for LBB. Although smaller, SCE believes the leakage

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rate is consistent with the use of plant staff to visually verify the piping's integrity.

3. Material properties utilized were taken from the ASME Code minimum values rather than from actual test data. The J-Integral was based on EPRI published data for the piping material (SA 106 GB).

Furthermore, a probabilistic risk assessment was performed using generic HELB frequency values. This assessment concluded that the core damage probability due to a steam line break in the AFW pump room within 48 hours to be very low. Consequently we are not requesting an extension of the 72 hour limit on inoperability of the TDAFWP.

E. Justification for the Duration of the Waiver:

It is requested that the temporary waiver of compliance be effective through 1250 PST on February 1, 1991. This will provide sufficient time to complete construction of the steam barriers which will ensure that the environmental conditions in the valve room and those portions of the pipe tunnels containing the AFW flow transmitters would remain within the environmental qualifications of the components. The modifications to the safety equipment building electrical vault drain holes will be completed prior to admitting steam to the TDAFWP piping.

The duration of this waiver is considered justified since there is negligible safety significance associated with operation as described in Section D, above.

F. Basis for No Significant Hazards Conclusion:

10 CFR 50.92 defines that no significant hazards will occur if operation of the facility in accordance with the temporary waiver of compliance does not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or
2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or
3. Involve a significant reduction in a margin of safety.

The above described compensatory measures provide assurance of a continued capability to supply required quantities of AFW to the steam generators.

It is therefore concluded that operation of the plant in the above described configuration does not involve any significant increase in the probability or consequences of an accident previously evaluated; nor does it create the possibility of a new or different kind of accident from any previously evaluated; nor does it represent a significant reduction in a margin of safety.

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G. Basis for No Irreversible Environmental Consequences:

It has been determined that this temporary waiver of compliance involves no significant increase in the amounts, and no significant change in the types of any effluent that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure.

Accordingly, this temporary waiver of compliance meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c) (9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the granting of the temporary waiver of compliance.

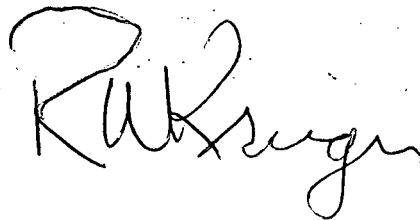
H. Additional information:

During a telephone conference initiated about 1430 PST on January 29th involving SCE, the Resident Inspectors, NRR, and Region V concerning this TS waiver request, there were several NRC questions which require further clarification. The following information is therefore provided concerning the steam line in the AFWP building: 1) The line is associated with a standby system and is not normally subjected to steam flow; therefore, it is not included in the erosion-corrosion program, 2) The line is not subject to inservice non-destructive examination since it is an ASME Code Class 3 line, and 3) The line was successfully hydrostatically tested for four hours at 1365 psig on October 16, 1991 during the last refueling outage.

The San Onofre Nuclear Generating Station Onsite Review Committee has reviewed and approved this Request for Temporary Waiver of Compliance.

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

Sincerely,



cc:

R. P. Zimmerman, USNRC, Region V
C. W. Caldwell, USNRC Senior Resident Inspector
G. Kalman, USNRC Project Manager, Unit 2 and 3