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ACCESSION NBR:8303090151 DOC.DATE: 83/03/07 NOTARIZED: NO DOCKET #
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50-362 San Onofre Nuclear Station, Unit 3, Southern Californ 05000362
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KNIGHTON,G.W. Licensing Branch 3

SUBJECT: Responds to 830214 request re auxiliary feedwater pump motor bearing qualification & correction of core protection computer software error.Hardware mod to meet SRP & Branch Technical Position 10-1 criteria described.

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March 7, 1983

Director, Office of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

The purpose of this letter is to respond to your letter of February 14, 1983 requesting information on AFW pump motor bearing qualification and on correction of the CPC software error. The hardware modification to meet Standard Review Plan and Branch Technical Position ASB 10-1 criteria is described along with its schedule for implementation. The schedule for correcting the CPC software error is also discussed.

To improve AFW system reliability, a forced lube oil cooling system will be added to each electric-driven AFW pump motor. The lube oil system will supply additional cooled oil to the babbitt bearings under steam line break conditions. The lube oil will be supplied at a rate such that heat is removed in a quantity sufficient to maintain acceptable bearing temperatures.

The forced lube oil cooling system consists of a skid-mounted oil reservoir, filter, oil pump and a heat exchanger. There will be one skid for each of the two electric-driven AFW pumps. Both the pump and the heat exchanger (active components) will be located outside the AFW pump room with electric power supplied from a highly reliable source. Oil piping will run from the heat exchanger to the top of the electric-driven AFW pump motor bearings. A second oil line will emerge from the bearing sump and pass through a weir box such that excess oil will drain back to the oil reservoir. From the reservoir, the oil piping will run to the oil pump and on to the heat exchanger. The oil lines in the room will be shrouded to prevent oil from spraying on and presenting a fire hazard to the motors. The electric power source for the oil pump will be from a highly reliable source of power. A sketch of the oil system is provided in Enclosure 1.

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Loss of lube oil system piping during normal operation will not affect AFW pump motor operability. The lube oil piping return line leaving the bearing pump will exit the sump at the same elevation as the normal oil level. In the event that the return oil line is lost, the oil will drain down to the normal oil level. Under these conditions, the oil rings will remain submerged and the bearings will be lubricated in the same manner as in the existing system design. Loss of the oil supply line to the bearings will result in a loss of oil reservoir level only, after which the lube oil pump will lose suction. The event will cause a loss of forced cooling but will not effect normal bearing lubrications.

The schedule for implementation calls for a 15 month lead time and a 28 day construction and startup testing period per unit. Construction outage time is estimated at 21 days and startup testing outage time is estimated at 7 days. This modification is scheduled for implementation at the first refueling outage for each unit.

SCE will continue to perform daily visual inspections of the AFW pump turbine steam line until the lube oil cooling system has been implemented. The ultrasonic testing of the steam supply piping described in SCE's letter of July 12, 1982, will not be performed since implementation of the lube oil system renders augmented ISI unnecessary.

Installation of the forced lube oil cooling system will provide cooled lubrication to the pump motor bearings under steam line break conditions. Implementation of this system directly addresses the NRC requirement that the SONGS 2&3 AFW system design be such that the system remain operable following any break in the steam piping as described in the NRC's letter of February 14, 1983.

The forced, cooled lube oil system, would fulfill all regulatory requirements. NRC Regulatory Guide 1.29, Part C requires that all equipment necessary for safe shutdown of the plant be Seismic Category I. The auxiliary feedwater pump motors meet this requirement, without the oil system, for all conditions except HELBA, which Regulatory Guide 1.29 does not address. Complete failure of the oil system would not compromise this capability. Branch Technical Position ASB 3-1, which sets HELBA criteria, states that a pipe break should not be considered coincident with natural phenomenon, i.e., a seismic event. Therefore, the oil system, which is required only for mitigation of HELBA effects, need not be Seismic I.

The lube oil system will be required to function during HELBA only. In the event of a failure in the system during normal plant operation, a small quantity of oil will spill on the auxiliary feedwater equipment room floor or in the chemical feed area. The spill may inconvenience normal plant operations, but would have no other detrimental effects on the plant. As defined in NRC Regulatory Guide 1.26 and restated in FSAR Section 3.2.3.1 Part D, structures, components, and systems complying with this criteria may be Quality Class IV. Thus, the lube oil system will be Quality Class IV.

Notwithstanding, the above commitment which is responsive to the NRC's letter of February 14, 1983 and to license conditions 2.C(25) for Unit 2 and 2.C(20) for Unit 3, SCE continues to believe that implementation of the above modification is unnecessary for the reasons stated in our letter of January 11, 1983. Although we are proceeding with initial engineering and design work, SCE reserves the right to pursue this matter further in future discussions with the NRC staff.

Relative to the discrepancy in the Core Protection Calculator (CPC) software of four Combustion Engineering (CE) plants (Waterford - Unit 3, Arkansas Nuclear One - Unit 2, and San Onofre Units 2 and 3) involving local power density power factors stored in the CPC data base, CE's letter from A. E. Scherer to R. C. DeYoung (NRC) dated August 4, 1982 provided sufficient justification to permit plant operation with the CPC software error. The justification was based on the fact that there is adequate alternate protection provided by the CPC reactor trip logic to permit plant operation. Even though the existing CPC software provides adequate protection, SCE plans to correct the software error for San Onofre Units 2 and 3 at the first refueling outage for each unit. SCE considers the first refueling outage the earliest practical opportunity to correct the error without impairing plant operations.

In summary, SCE is (1) committing to implement a forced lube oil cooling system to environmentally qualify the AFW pump motors, (2) committing to install the forced lube oil cooling system during the first refueling outage for each unit, (3) providing a detailed description of the forced lube oil system as described above and (4) committing to correct the error in the CPC software at the first refueling outage for each unit. The SONGS 2/3 FSAR will be amended to incorporate the forced lube oil cooling system in conjunction with the next regularly scheduled amendment.

Very truly yours,

Enclosure

cc: Mr. H. Rood, Project Manager
Licensing Branch No. 3

Mr. R. H. Engelken, Regional Administrator, Region V
Office of Inspection and Enforcement

CALCULATION SHEET

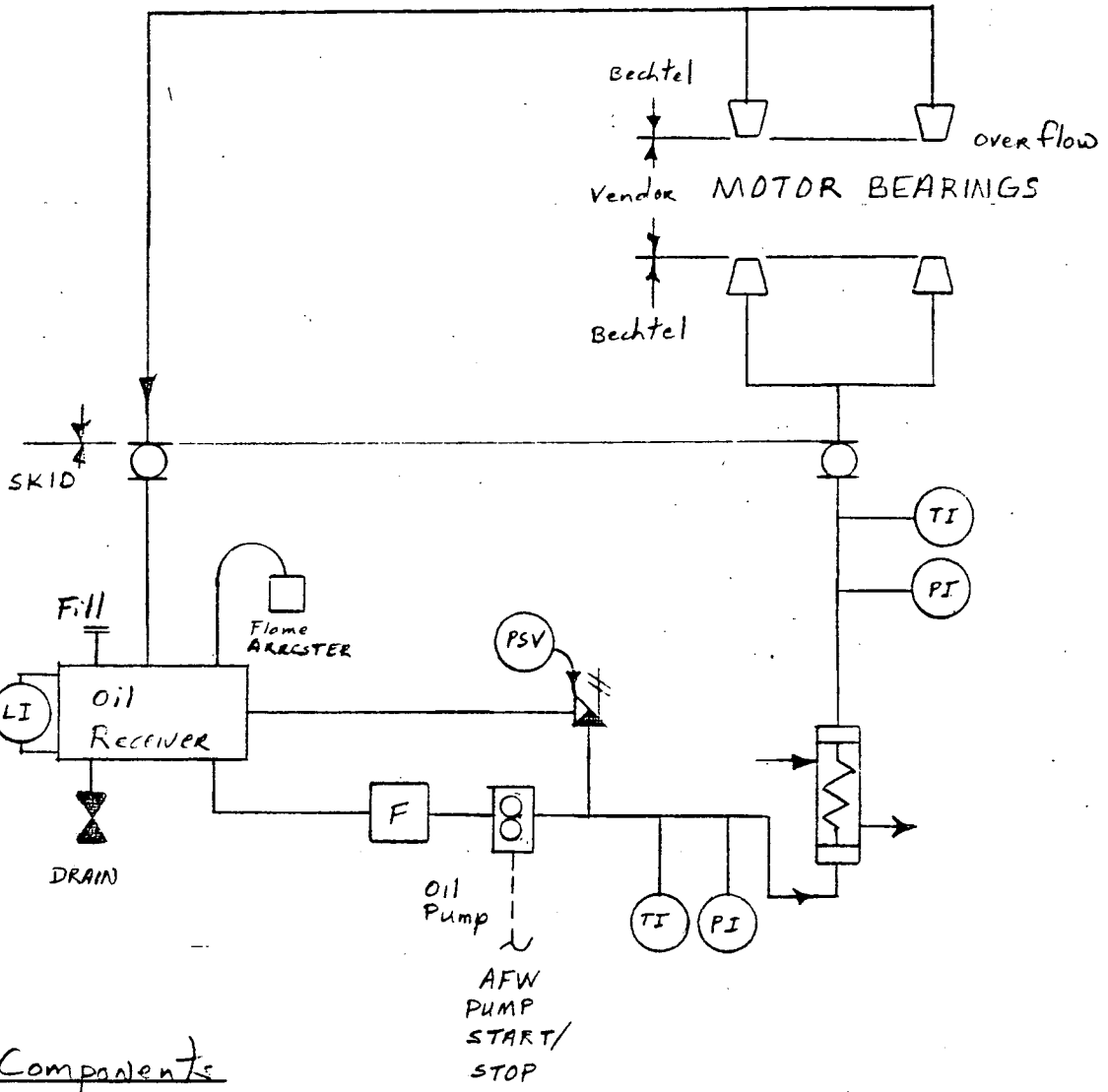
ENCLOSURE (1)

CALC. NO.

SIGNATURE _____ DATE _____ CHECKED _____ DATE _____

PROJECT _____ JOB NO. _____

SUBJECT Forced-Cooled Lube Oil Sys. Schematic SHEET _____ OF _____ SHEETS



Components

Oil Receiver
Heat Exchanger
Filter
Oil Pump
Piping
Valves
Instruments

Oil Flow — 1.33 gpm
Temps.: oil to cooler 150°F
oil from cooler 130°F
Press. delivery at bearings
= 12 psig