



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO THE INSERVICE TESTING PROGRAM AND REQUESTS FOR RELIEF
SOUTHERN CALIFORNIA EDISON COMPANY
SAN DIEGO GAS AND ELECTRIC COMPANY
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT NO. 1
DOCKET NO. 50-206

1.0 INTRODUCTION

By letter dated December 23, 1991, Southern California Edison Company (SCE) requested relief from two inservice testing (IST) requirements for San Onofre Nuclear Generating Station Unit 1. The relief requests consist of a pump relief request (PRR) and a valve relief request (VRR). The PRR involves inlet pressure measurements at the diesel fuel oil transfer pumps and the salt water cooling pumps. The VRR involves valve stroke time measurements for valves having stroke times greater than ten seconds.

2.0 EVALUATION

2.1 Pump Relief Request

The licensee requested relief from the requirements of the ASME Code, Section XI, Article IWP-3100, to measure inlet pressures at the diesel fuel oil transfer pumps and the salt water cooling pumps.

Licensee's Basis for Requesting Relief: The inlet pressure is determined by the variation normally occurring in tank level/sea level.

These are submerged, vertical shaft, centrifugal pumps. The pump inlet pressure is a result of the head imposed by:

- (1) the pumped fluid storage tanks in the cases of the diesel fuel transfer pumps, and
- (2) the level of sea water in the inlet bay in the case of the salt water cooling pumps.

Measuring inlet pressure to the pumps is not practical in these cases due to the nature and location of the pump inlets. The pumps' suction inlets are located in the bottom of the tank/inlet bay. The suction inlets consist of openings with screens across them at the pump impeller inlet.

Alternate Testing: Calculate inlet pressure using a measurement of the level of fluid over the pump inlet; accounting for the fluid specific gravity, use accepted engineering practices to determine inlet pressure for standard references. Document the calculation for each test in the test records.

Evaluation: These pumps are not equipped with suction pressure instrumentation, therefore, direct suction pressure measurements cannot be taken either prior to pump start or during operation. System modifications would be required to enable direct measurement of suction pressure. These modifications would be a hardship for the licensee due to the costs involved.

During testing, these pumps take suction from reservoirs that are vented to atmosphere, therefore, the pressure at the pump suction is determined by the height of liquid above the pump suction. The primary purpose of the pump suction pressure measurement is to be able to obtain a value for the differential pressure across the pump and to ensure consistent initial test conditions. Maintaining a minimum level in the suction reservoir would also provide assurance that the required suction head is available. Blockage in the pump suction piping would be indicated by pump cavitation and a reduction in pump discharge pressure and flow rate. Calculation of pump suction pressure using a measurement of the level of fluid over the pump inlet and accounting for specific gravity affects should be adequate to monitor pump condition and detect degradation and as such, would provide reasonable assurance of operational readiness provided the suction pressure calculation methods meet the accuracy requirements of the Code.

Based on the determination that requiring the installation of suction pressure instrumentation would result in hardship without a compensating increase in the level of quality and safety, relief is granted pursuant to 10 CFR 50.55a(a)(3)(ii) provided the licensee's suction pressure calculation methods are within the accuracy that would result from using instruments meeting the Code accuracy requirements.

2.2 Valve Relief Request

The licensee requested relief from the requirements of the ASME Code Section XI, Article IWV-3413(c). This section of the code requires that if an increase in valve stroke time of 25% or more from the previous test for valves with stroke times greater than 10 seconds is observed, the test frequency shall be increased to once each month until corrective action is taken, at which time the original test frequency shall be resumed.

Licensee's Basis for Requesting Relief: Comparison of valve stroke times with previous test results often causes needless and inappropriate entries into increased frequency of testing. A one-time test result of low stroke time value can often occur immediately after valve maintenance in which, for example, the stem is lubricated. The next test, after a normal 92 day interval, can result in a return to the normal valve stroke time. If the difference between these two times is more than or equal to 25%, the valve test frequency is currently required to be increased until corrective action is taken. Stroke time differences greater than the allowed value occur frequently, causing valves to be subject to corrective action even when they are functioning properly and normally.

Using a reference or average value stroke time for comparison of test data versus the previous stroke time is a reasonable alternative to Code requirements. While still being in compliance with the Code, a continual increase in valve stroke time over a long period could result in significant valve degradation without the test frequency being increased or corrective action being taken. This is because the test data is compared only to the previous stroke time and each incremental increase in stroke time could be less than that specified in Article IWV-3417(a). Comparing test results to a reasonably derived reference, or, an average stroke time, ensures that such an oversight could not occur, while at the same time eliminating unnecessary corrective action. The reference value of stroke time used for comparison of test data will be established when the valve is known to be in good operating condition.

Alternate Testing: Compare valve stroke time to a REFERENCE STROKE TIME instead of the previous stroke time.

If an increase in stroke time of 25% or more from the REFERENCE STROKE TIME for valves with stroke times greater than 10 seconds is observed, the test frequency shall be increased to once each month until corrective action is taken, at which time the original test frequency shall be resumed.

REFERENCE STROKE TIME is the average stroke time since the last maintenance that could have affected stroke time, or the average of the last three strokes (whichever is greater). The REFERENCE STROKE TIME value used for comparison shall be established when the valve is known to be in good operating condition.

Evaluation: The alternate testing technique proposed by the licensee incorporates provisions specified by the staff during the processing of a similar relief request for San Onofre Units 2 and 3. The staff safety evaluation granting relief for Units 2 and 3 is dated October 2, 1991. Prior to granting the Units 2 and 3 relief request, the staff required the licensee to clearly define the reference value that would be used during the stroke

tests. The definition of reference stroke time included in the Unit 1 relief request is acceptable. Pursuant to 10 CFR 50.55a(a)(3)(i), the requested relief is granted.

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