



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

SUPPLEMENTAL SAFETY EVALUATION  
BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO THE INSERVICE TESTING PROGRAM  
ARKANSAS POWER AND LIGHT COMPANY  
ARKANSAS NUCLEAR ONE, UNIT NO. 2  
DOCKET NO. 50-368

The Code of Federal Regulations, 10 CFR 50.55a(g), requires that inservice testing (IST) of ASME Code Class 1, 2, and 3 pumps and valves be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable addenda, except where specific written relief has been requested by the licensee and granted by the Commission. The Regulations, 10 CFR 50.55a (a)(3)(i), (a)(3)(ii), and (g)(6)(i), authorize the Commission to grant relief from these requirements. In requesting relief, the licensee must demonstrate that (1) the proposed alternatives provide an acceptable level of quality and safety, (2) compliance would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety, or (3) conformance with certain requirements of the applicable Code edition and addenda is impractical for its facility.

The staff issued the Safety Evaluation (SE) of the Arkansas Nuclear One, Unit 2 (ANO-2), inservice testing (IST) program on June 20, 1985. Subsequently, Arkansas Power and Light Company (the licensee) submitted a letter dated September 30, 1985, which contained additional relief requests and comments concerning "certain difficulties/discrepancies noted during [its] review of the SER." The staff, with assistance from its contractor EG&G, Idaho, reviewed the licensee's September 30, 1985 submittal against the requirements of 10 CFR 50.55a, Generic Letter No. 89-04, and the ASME Code, Section XI.

Since this submittal is not the IST program, the relief request it contains should be incorporated in a revision to the IST program. Future relief requests presented for staff review should be in the form of a revision to the IST program.

Item (1).

The licensee stated that none of the diesel generator subsystems are ASME Code Class 1, 2, or 3 and are, therefore, not subject to Section XI. The safety related diesel generator subsystem components are not in the IST program. The utility stated, however, that the diesel generator support systems are tested when the diesel generators are routinely tested in accordance with the Technical Specifications. The staff agrees with the licensee's position on the diesel generator subsystems.

Item (2).

The licensee provided additional clarification for the relief request from the Code requirement to stroke and measure the full-stroke time of the emergency feedwater pump turbine governor valve. The licensee provided the following:

"The governor valve is actuated closed by control oil pressure which is produced by the spinning turbine. It is spring opened. When the EFW pump turbine is not spinning, the governor valve is open and it closes to a regulating position as the turbine comes up to speed increasing the control oil pressure. The operation of the governor valve is tested monthly per Technical Specification 3/4.7.1.2. Should the valve move too slowly (i.e., fail to control the steam flow), the turbine would overspeed. The trip/throttle valve, acting independently, would trip to prevent excessive overspeed. In effect then, the timely operation of the governor valve is tested monthly with each turbine start."

"Since the governor valve is actuated closed with control oil, which in turn is produced by spinning the turbine, there is no practical way to full-stroke the valve. Depending on the inlet steam pressure, pump load, oil temperature, etc., the valve may stroke to different positions with each start. Consequently, stroke times could vary over a fairly wide range."

With the additional information provided in the submittal dated September 30, 1985, the licensee has shown the impracticality of performing the Code testing of the emergency feedwater pump turbine governor valve and has demonstrated the adequacy of proposed alternate testing. Since the staff finds that the alternate monthly testing as required by the Technical Specifications, provides an acceptable level of quality and safety, relief is granted pursuant to 10 CFR 50.55a(a)(3)(i).

Item (3).1.

The licensee indicated that the SE had not addressed the relief request from the Code requirement of IWV-3410(c)(3) to correlate the measured stroke times of power operated valves to the previous stroke time measurement. In the relief request the licensee provided the following basis and alternate testing:

"Maintenance of a running file on previous test stroke times and the inclusion of such as revised criteria, amounts to an undue clerical burden for dubious benefits. Also, the chance for clerical error is greatly increased by such a cumbersome system."

"Valve stroke times will be compared against a set (reference) value arrived at from initial testing and testing following any maintenance pursuant to IWV-3200."

Although comparing the measured stroke times to reference stroke times can be an acceptable alternate test method for power operated valves, the licensee has not provided an appropriate basis for not complying with Code requirements.



Inconvenience cannot be used as a justification to obtain relief from a Code requirement. Also, the licensee did not describe the proposed alternate testing and acceptance criteria in sufficient detail. For example, establishing an increased testing frequency for possibly degraded valves has not been addressed. Therefore, this relief cannot be granted.

Item (3).2.

The licensee requested clarification from the staff regarding valves that are tested on a cold shutdown testing frequency as discussed in Section 3.2 of the SE. The licensee felt that certain valves that fall in this category were not addressed in the SE and that one valve that was addressed should not be included. Valve 2CV-4823-2 in Section 3.2 of the SE is a typographical error and should be 2CV-4873-1. Valve 2CV-4823-2 is exercised quarterly and a cold shutdown justification need not be provided. Valve 2CV-4873-1 is exercised during cold shutdowns and a cold shutdown justification must be provided in the IST program.

Valves 2CV-4916-2 and 2CVC-49 were inadvertently omitted from the SE and should have been included in the discussion with valves 2CV-4920, 2CV-4921, and 2CVC-58 in Section 3.2 of the SE (page 8 under Chemical and Volume Control). These valves are exercised during cold shutdowns and a cold shutdown justification must be provided in the IST program.

Valves 2CV-1480-2 and 2CV-1481-1 were discussed in the March 11, 1980 IST working meeting and were left as an open item for the licensee to provide a justification why they cannot be exercised quarterly. In the correspondence dated October 29, 1980, the licensee stated that "2CV-1480 and 2CV-1481 cannot be tested during power operations because of the possibility of unit shutdown due to a loss of service water flow." The licensee must provide a cold shutdown justification in the IST program for these valves and provide a more detailed technical basis than that submitted on October 29, 1980. The basis should address specific equipment that would lose cooling water flow and the consequence of losing cooling water flow.

Item (3).3

The utility requested clarification for the omission of valve 2CV-4873-1 from the discussions of valves that are tested on a cold shutdown testing frequency in Section 3.2 of the SE. As discussed in Item (3).2., this omission is a typographical error.

Item (3).4.

In the September 30, 1985, submittal, the utility requested relief from the quarterly exercising requirements of the Code for valve 2CV-5038-1 and proposed to exercise this valve during cold shutdowns. In the submittal, the licensee stated that there is a control room pressure indication for the low pressure side, between valves 2CV-5038-1 and 2CV-5085-2. Exercising 2CV-5038-1 quarterly should not result in an overpressurization of the low pressure injection system if the two valves (2CV-5084-1 and 2CV-5086-2), between 2CV-5038-1 and the RCS, can be verified closed by the pressure indicator. Therefore, the relief request from the Code requirement to quarterly exercise 2CV-5038-1 is denied.

Further, the alternate leak testing described in the September 30, 1985 letter would not detect degradation of individual valves and therefore is not equivalent to the Code requirement. For example, under the alternate leak testing proposed by the licensee, the failure of 2CV-5086-2 could go undetected as long as 2CV-5084-1 is leak tight. Also, the licensee has not addressed the impracticality of meeting the Code requirements. Therefore, the relief from the Code leak testing requirements cannot be granted for valves 2CV-5084-1 and 2CV-5086-1.

The valve 2CV-5038-1 does not appear to perform a pressure boundary isolation function because two upstream valves, 2CV-5084-1 and 2CV-5086-1, are identified as pressure boundary isolation valves and only two valves are required to protect a low pressure system from being overpressurized by a high pressure system. Also, it is on Class 2 piping, outside the Class 1-to-Class 2 interface. The leak tight integrity of this valve appears to be not safety related. Thus, a relief request is not necessary.

Item (3).5.

The utility requested clarification concerning certain category A/E valves in the IST program.

Section 3.14.1 of the SE addresses a relief request for valve 2SA-69. This is a typographical error and the proper valve number is 2SA-68. There is no valve 2SA-69 in the IST program.

The licensee requested relief from the Code requirement of checking the position of valves 2FP-35 and 2FP-36 quarterly and each time the valves are cycled and proposed to check the positions of these valves during refueling outages and after the valves are cycled. The justification for not complying with the Code requirements is that the valves are located inside containment and ALARA reasons make checking the positions quarterly undesirable.

Valves 2FP-35 and 2FP-36 are Category A/E and as such are required to be tested to the requirements of both IWV-3400 and 3700. IWV-3400 requires Category A valves to be exercised quarterly and leak rate tested once every two years and IWV-3700 requires the valve position to be checked each time the valves are cycled. The licensee requested relief from the quarterly exercising requirements because the valves are normally locked closed and are not required to change position for accident mitigation.

The requirement to check the position of valves 2FP-35 and 2FP-36 quarterly is considered to be burdensome because the valves are inside the containment and a containment entry would be required to either reposition the valves or to check their position. Also, a quarterly position check is not a requirement of the Code for Category E valves. The staff's position is that quarterly position checks need not be performed; however, the valve position must be verified each time the valves are cycled.

Based on the determination that compliance with the Code requirement would result in hardship without a compensating increase in the level of quality and safety, relief from the quarterly position checks for valves 2FP-35 and 2FP-36 is granted pursuant to 10 CFR 50.55a(a)(3)(ii).

Item (3).6.

The licensee provided additional clarification with regard to the relief request from the Code requirement to measure the flow rate for the service water pumps. The licensee stated that it had not proposed to test the pumps at shutoff head, but instead measure pump differential pressure with the normal service water loads on line for the monthly test and measure individual cooler flow rates with portable flow instruments during each refueling outage.

The 1974 Edition of the Code permits measuring only differential pressure in a fixed resistance flow path since the differential pressure measurement in fixed resistance flow path would be indicative of pump hydraulic condition. However, in the variable flow path that the licensee has proposed to use, measurement of differential pressure without measuring pump flow rate would not provide adequate information about pump hydraulic condition or degradation. The relief cannot be granted as requested for the service water pump flow rate measurements since the proposed alternate testing will not provide an acceptable means of determining pump hydraulic condition or detecting pump degradation. Flow would have to be measured in accordance with Code requirements.

Item (3).7.

The Arkansas Power and Light Company provided comments about differences in valve categories between the IST program and the SE. These valve categories were reviewed and it was determined that the categories identified in the AP&L comments column are the proper categories for these valves. The categories of simple check valves 2EFW-2A, 2EFW-2B, 2SI-7A, 2SI-7B, 2MS-39A, and 2MS-39B should be changed to "C" in the SE.

Item (3).8.

The licensee requested relief from the leak rate testing requirements of Section XI for valves 2SI-16A, 2SI-16B, 2SI-16C, and 2SI-16D and proposed monitoring the leakage through these valves by observing the SIT pressure and level as well as RCS leak rate. This alternate testing is not acceptable since the licensee's proposal does not provide an indication of individual valve leakage as required by IWR-3420. One of the valves in the series could fail in the open position and not be detected by the proposed testing. The relief from the Code leak testing requirement is, therefore, denied.

Item (3).9.

The licensee requested relief from the leak rate testing requirements of Section XI for valves 2SI-27A, 2SI-27B, 2SI-28A, and 2SI-28B and proposed monitoring the



leakage through these valves by observing header pressure upstream of both series valves. This alternate testing is not acceptable since the licensee's proposal does not provide an indication of individual valve leakage as required by IWV-3420. One of the series valves could fail in the open position and not be detected by the proposed testing. The relief from the Code leak testing requirement is, therefore, denied.

Item (3).10.

The Arkansas Power and Light Company requested that the staff evaluate a relief request from the Code requirement to measure the pump differential pressure for the charging pumps and proposed to measure pump flow rate as a means of determining pump hydraulic performance. The utility stated that the charging pumps are positive displacement pumps whose differential pressure is dependant on the RCS pressure.

The discharge pressure of a positive displacement pump is determined by the RCS pressure and has no bearing on the pump hydraulic condition. To require measuring the differential pressure of the charging pumps would be burdensome because this parameter provides no useful information for evaluating a positive displacement

pump. Measuring pump flow rate during testing should provide an indication of pump hydraulic condition and degradation. Therefore, pursuant to 50.55a(a)(3)(i), the requested relief is granted. The alternative test method provides acceptable level of quality and safety.

This granting of relief from the Code testing requirement pursuant to 10 CFR 50.55a(a)(3)(i) and (ii) is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Dated: November 15, 1989

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