



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO INSERVICE TESTING PROGRAM RELIEF REQUEST SI-PRR-1
CAROLINA POWER & LIGHT COMPANY
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NUMBER 50-261

1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a, requires that inservice testing (IST) of certain American Society of Mechanical Engineers (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 (the Code) and applicable addenda, except where alternatives have been authorized or relief has been requested by the licensee and granted by the Commission pursuant to Sections (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In proposing alternatives or 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 difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for its facility. Section 50.55a authorizes the Commission to approve alternatives and to grant relief from ASME Code requirements upon making the necessary findings. NRC guidance contained in Generic Letter (GL) 89-04, "Guidance on Developing Acceptable Inservice Testing Programs," provides alternatives to the Code requirements determined acceptable to the staff. Alternatives that conform with the guidance in GL 89-04 may be implemented without additional NRC approval, but are subject to review during inspections. Further guidance was given in GL 89-04, Supplement 1, and NUREG-1482, "Guidelines for Inservice Testing at Nuclear Power Plants."

The applicable Code used in developing the HBR third 10-year interval IST program was the 1986 edition of ASME Section XI, Subsections IWP and IWV.

2.0 RELIEF REQUEST NUMBER SI-PRR-1

By letter dated April 23, 1996, Carolina Power & Light Company (the licensee) submitted Relief Request SI-PRR-1 proposing an alternate test frequency for its installed spare safety injection (SI) pump "B" at the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR). The licensee has requested relief from the Code test frequency requirements of ASME Section XI, Paragraph IWP 3400, for the installed spare safety injection (SI) pump "B." The licensee has proposed to test this pump after connecting it to an emergency power source and before it is put in service when either the "A" or "C" SI pumps are out of service for maintenance.

2.1 Licensee's Basis for Requesting Relief

The licensee states:

By letter dated December 30, 1988, Carolina Power & Light (CP&L) Company provided the NRC with a pertinent portion of Plant Modification M-958, "Add Auto Start to SI Pump 'B'," which described the modified configuration of SI pump "B." This modification was related to the earlier discovery of a single-failure vulnerability that was a result of the previously existing automatic bus transfer feature associated with the SI pump "B." As a result of this modification, SI pump "B" would be capable of automatically starting after initiation of a SI signal if it were connected to an emergency power source, but without the automatic bus transfer feature. Our intent is to use SI pump "B" as an automatically started pump which can replace SI pump "A" or "C" when either one is out of service for maintenance.

The NRC reviewed the final configuration of SI pump "B," and by letter dated July 26, 1989, found it to be acceptable. The NRC finding was, in part, based on the operability surveillance requirements for SI pump "B" being satisfied prior to being declared operable and used as a replacement for SI pump "A" or "C." The NRC further stipulated that for SI pump "B" to be considered operable, it must satisfy the identical TS [Technical Specification] tests required of SI pumps "A" and "C." Currently, the surveillance requirements of TS Section 4.5.1 are performed for all three SI pumps during each Plant refueling outage.

In accordance with the ASME Code, Section XI, Subsection IWP, "Inservice Testing of Pumps in Nuclear Power Plants," baseline reference values have been established for all SI pumps. During each refueling outage, the appropriate TS-required testing is performed on each pump and test results are compared to the reference values for acceptability. In addition, should it become necessary to declare the spare SI pump operable, the appropriate ASME Code quarterly testing is completed prior to placing the pump in service.

However, to conduct the quarterly testing in accordance with the ASME Code, Paragraph IWP-3400 for the spare pump, it would be necessary to remove power from one of the TS-required pumps that are then in-service, and to connect the spare SI pump to that power source. After completion of the testing, it would again be necessary to remove the power source from the spare pump and to reconnect the power source to the TS-required pump. Since the spare pump, when in the capacity of an installed spare pump, is not credited for any accident mitigation function, there is no gain in quality or safety by performing the quarterly testing in accordance with the ASME Code, Paragraph IWP-3400. Additionally, to perform the testing, it is necessary to temporarily remove one of the TS-required pumps from service in order to provide a power

source for the spare pump. This would require unnecessary entry into TS Section 3.3.1.2.b, which states, "If one safety injection pump becomes inoperable during normal reactor operation, the reactor may remain in operation for a period not to exceed 24 hours." This temporary creation of a single failure vulnerability by removal of an operable SI pump from service, although allowed by TS, is considered to be a hardship without a compensatory increase in the level of quality or safety.

2.2 Alternate Testing

The licensee proposes:

In accordance with the ASME Code Section XI, Paragraph IWP-1000, baseline reference values have been established in appropriate test procedures for determining the operability of the spare SI pump.

During each refueling outage, all SI pumps are tested under full flow conditions and test data is compared to the baseline reference values for acceptability. Should the test data results fall into the "alert" or "required action" ranges of the procedure, corrective action is performed prior to start-up of the plant.

In addition, during normal plant operations, should it become necessary to declare the spare SI pump operable, the quarterly testing in accordance with ASME Code, Paragraph IWP-3400 would be performed prior to declaring it operable, and test results compared to the baseline reference values to determine acceptability, thereby assuring an acceptable level of quality and safety.

2.3 Evaluation

The Code requires that Class 1, 2, and 3 pumps be tested in accordance with the Code test procedure requirements at least once every 3 months. SI pumps "A" and "C" are currently included in the licensee's IST program. The licensee has proposed to designate SI pump "B" as a spare pump which can be connected to an emergency power source and used when either the "A" or "C" SI pump is out of service. The spare SI pump is not credited in any accident mitigation function. All three pumps are tested at full flow conditions in accordance with the licensee's TS. Reference values have been established for the spare SI pump in accordance with ASME Section XI, Paragraph IWP-1000.

The licensee stated that, in order to test the spare SI pump quarterly in accordance with the Code requirements, either SI pump "A" or "C" would have to be taken out of service quarterly to connect the spare pump to the emergency power source. This would result in a hardship without a compensating increase in safety because of the increased unavailability time for one train of SI compared with the limiting condition of operation in the TS in order to perform inservice testing on a spare pump that does not have a primary safety function.

The licensee has proposed to defer quarterly testing of the spare SI pump to refueling outages where TS testing is conducted at full flow. The licensee stated that, if the spare pump was found to be needed, the spare pump would be tested in accordance with the Code requirements prior to being placed in service. In addition, once in service, the spare pump would be subject to the Code test frequency and corrective action requirements. Therefore, the licensee's proposed alternative provides a reasonable assurance of operational readiness.

2.4 Conclusion

The proposed alternative to the Code test frequency requirements of ASME Section XI, Paragraph IWP 3400, for the installed spare safety injection (SI) pump "B," is authorized pursuant to 10 CFR 50.55a (a)(3)(ii) based on the determination that compliance with the specified requirements would result in hardship without a compensating increase in the level of quality and safety.

Principal Reviewer: J. Colaccino, NRR

Date: October 24, 1996