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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE IN-SERVICE TESTING PROGRAM AND REQUESTS FOR RELIEF

DONALD C. COOK NUCLEAR PLANT UNITS 1 AND 2

DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

The Code of Federal Regulations, 10 CFR 50.55a(f), requires that in-service testing (IST) of certain ASME 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 pursuant to Subsections (a)(3)(i), (a)(3)(ii), or (f)(6)(i) of 10 CFR 50.55a. In requesting relief, the licensee must demonstrate that: (1) the proposed alternative provides 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 with certain requirements of the applicable Code edition and addenda is impractical for its facility.

These regulations authorize the Commission to grant relief from ASME Code requirements upon making the necessary findings. The NRC staff's findings with respect to granting or not granting the relief requested as part of the licensee's IST program are contained in this Safety Evaluation (SE).

This SE covers relief requests 1-5113-46 (Note 1), 2-5113-41 (Note 1), 1-5144-28 (Notes 3, 4, and 5), and 2-5144-29 (Notes 3, 4, and 5) as described in Indiana Michigan Power Company's letters dated April 9 and November 5, 1991, which supersede all previous submittals. The licensee's program is based on the requirements of Section XI of the ASME Code, 1983 edition through the Summer of 1983 Addenda.

2.0 RELIEF REQUESTS 1-5113-46(NOTE 1) AND 2-5113-41(NOTE 1)

These relief requests concern back flow quarterly testing of check valves ESW-111, -112, -113, -114, -141, -142, -143, and -144, which prevent reverse flow into the header of the opposite ESW train. The licensee requests relief from the requirements of IWV-3520 quarterly testing of closed safety function of these valves.

2.1 Basis For Relief

The closed safety function of these ESW valves cannot be tested in accordance with IWV-3520. There are no external position indicators associated with the

valves and no instrumentation or taps available to verify position closure. In order to determine valve closure, an entire ESW header and safety train, including both emergency diesel generators, must be removed from service. These valves cannot be tested at cold shutdown since with fuel loaded, residual heat removal (RHR) is operating, thus the demand is the greatest for the ESW system, which cannot be removed from service.

2.2 Alternate Tests

The licensee proposes the closed safety function of these valves shall be verified by disassembly at a refueling frequency.

2.3 Evaluation

The licensee proposes to verify the closed safety function by disassembly at a refueling frequency. The licensee's basis for this alternate option is a lack of instrumentation, no external position indicators, and the need to keep these valves in service during normal operation and cold shutdown.

Check valve back flow testing that is acceptable to the staff is described in Generic Letter (GL) 89-04, Attachment 1, Position 3, "Back Flow Testing of Check Valves," which states, "Verification that a Category C valve is in the closed position can be done by visual observation, by an electric signal initiated by a position-indicating device, by observation of appropriate pressure indication in the system, by leak testing or by other positive means." Disassembly and inspection for verifying the closed position of check valves is considered an acceptable option when no other means is available. The NRC encourages consideration of the use of non-intrusive methods for verifying valve disk position. In the letter dated November 5, 1991, the licensee states that testing methods being considered for other valves include non-intrusive methods. The ESW valves should be considered in these efforts.

Based on the possibility that other means exist to verify the valves are closed, relief cannot be granted on a long term basis. However, since the licensee will be required to investigate the suitability of other means, an interim period of time should be allowed for completion of this effort. With the current design, system configuration, and testing methods, it is impractical to verify the closed safety function to Code requirements. The licensee proposed alternative provides reasonable assurance of the operational readiness of the valves in the interim. Immediate imposition of the Code requirements would be an undue burden on the licensee.

2.4 Conclusion

Based on (1) the impracticality of verifying valve closure to Code requirements with the current design, system configuration, and testing methods, (2) the burden on the licensee if Code requirements were immediately imposed, (3) the alternative testing providing reasonable assurance of the operational readiness of the valves for an interim period, and (4) consideration of the time involved in evaluating and implementing

alternative test methods, interim relief for a period of one year on until the next refueling outage, whichever is later, is granted pursuant to 10 CFR 50.55a(f)(6)(i). The staff has determined that granting this relief on an interim basis is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest. In the interim, the licensee should evaluate a means of verifying valve closure other that employing a disassembly and inspection program. If no other means, including non-intrusive methods, can be utilized, specific relief for each individual valve, or group of similar valves, will be required describing the reasons why no other means are available.

3.0 RELIEF REQUESTS 1-5144-28 (NOTES 3, 4 & 5) AND 2-5144-29 (NOTES 3, 4 & 5)

These relief requests concern the verification of the closure capability requirements for check valves CTS-127E, CTS-127W, CTS-131E, CTS-131W, RH-141, and RH-142 for both units. These valves are located in the upper and lower compartment containment supply lines to the spray line headers. The licensee requests relief from IWV-3520 requirements for quarterly testing of the closed safety function of these valves.

3.1 Basis For Relief

The closed safety function of the CTS and RH valves cannot be tested in accordance with IWV-3520. These valves perform an open safety function when containment spray is active and a closed safety function (containment isolation) when containment spray is suspended. The valves are exposed to containment atmosphere on the downstream side and are isolated from system fluid pressure on the upstream side by closed motor operated valves. The valves cannot be part- or full-stroke exercised during power operation, cold shutdown or refueling outages because this would result in spraying the containment. This could cause problems with insulation and components that would be exposed to the spray inside containment. The valves are not equipped with position indicators. The only practical means of verifying the closed safety function of the valves is by disassembling them.

3.2 Alternate Test

The licensee's proposed method of verifying the closed safety function of these valves is by disassembly and inspection on a sampling basis in accordance with NRC Position No. 2 of Attachment 1 to GL-89-04.

3.3 Evaluation

It is impractical to exercise these valves with flow through the containment spray header during normal plant operation, cold shutdown, and refueling outages because it would dampen most of the equipment, structures, and insulation inside containment. This could potentially cause damage and necessitate repairs as well as an extensive clean up operation.

The staff considers valve disassembly and inspection to be a maintenance procedure that is not equivalent to testing. However, this method of

verifying the closed safety function of check valves is considered an acceptable option when no other means are available. Unlike the ESW valves discussed above, the staff considers containment spray header check valves as being among the limited examples of valves for which no other means exist to verify valve closure. The staff position on the use of disassembly and inspection in place of testing has been explained in response to questions 15, 16, and 17 contained in the "Minutes of the Public Meeting on Generic Letter 89-04."

Based on the existing design, system configuration, frequency of valve operation and valve internal environment during normal plant operation, disassembly and inspection in accordance with guidance provided in NRC Position No. 2 of Attachment 1 to GL 89-04 is the only practical option. Position No. 2 requires partial-stroke exercising following valve reassembly. The staff considers the use of another harmless test medium, such as air, to be a satisfactory means of demonstrating partial-stroke exercising.

Modification to design and system configuration would be required to allow verification of the closed safety function of these valves on a quarterly basis during normal operation. The modifications would be costly and an undue burden on the licensee. The licensee's proposal for verifying the closed safety function by disassembly and inspection provides a reasonable alternative to the Code requirements.

3.4 Conclusions

Based on (1) the impracticality of verifying valve closure with the current design, system configuration, frequency of valve operation, valve internal environment, and testing methods, (2) the burden on the licensee if Code requirements were imposed, and (3) the alternative testing providing reasonable assurance of the operational readiness of the valve, relief is granted pursuant to 10 CFR 50.55a(f)(6)(i). The staff has determined that granting this relief is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest.

Principal Contributors: F. Grubelich
W. Dean