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

SAFETY EVALUATION FOR GRANTING OF RELIEF BY THE OFFICE OF NUCLEAR REACTOR REGULATION RELATED TO INSERVICE TESTING REQUIREMENTS CERTAIN PRESSURE-RETAINING VALVE BODY WELDS AND INTERNAL PRESSURE BOUNDARY SURFACES OF VALVES EXCEEDING FOUR INCHES NOMINAL PIPE SIZE

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS NOS. 1 AND 2

DOCKET NOS. 50-348 AND 50-364

INTRODUCTION

The Technical Specifications for the J. M. Farley Nuclear Power Plant Units 1 and 2 state that inservice examination of ASME B&PV Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the Code and applicable Addenda as required by 10 CFR 50.55a(g) except where specific written relief has been granted by the Commission. The examination program is based upon the requirements of the 1974 Edition and Addenda through the Summer of 1975. Certain requirements of this Edition and Addenda of Section XI are impractical to perform on older plants because of the plants' design, component geometry, materials of construction or the need for extensive temporary modifications and the resultant substantial radiation exposure to plant personnel.

In order to complete the first ten-year inspection interval at Joseph M. Farley Nuclear Plant Units 1 and 2 relief from certain Code inservice inspection requirements is required. 10 CFR 50.55a(g)(6)(i) authorizes the Commission to grant relief from those requirements upon making the necessary findings that the requirements are impractical to perform.

We had reviewed the licensee's first ten-year interval inservice inspection program plan and the requests for relief from certain requirements of the applicable ASME Code edition and addenda. We had provided a number of Safety Evaluations and had granted relief from examination requirements which we had determined to be impractical to perform at the Joseph M. Farley Nuclear Power Plant Units 1 and 2. Our previous actions are included in letters dated December 7, 1979, August 24, 1983, February 10, and March 30, 1984 (one-time relief), and January 10, and December 27, 1985.

By letter dated March 11, 1986, Alabama Power Company (the licensee) requested relief from certain inservice examination requirements of the 1974 Edition through Summer 1975 Addenda of Section XI of the ASME Code at Farley Units 1 & 2. The following is our evaluation of the licensee's requests, supporting information, and alternative examinations or tests, as well as the staff's bases for granting or denying the requests pursuant to 10 CFR 50.55a(g). The reliefs granted remain in effect for the first ten-year inspection interval unless revised or modified prior to the end of the interval.

EVALUATION OF RELIEF REQUESTS

1. Item B6.7, Category B-M-2: RHR Suction Gate Valve

Code Examination Requirement

Table IWB-2600, Item B6.7 and Table IWB-2500, Category B-M-2 of the 1974 Edition through the Summer 1975 Addenda of the ASME Code, Section XI, require visual examination of the internal pressure boundary surface of one valve in each group of valves of the same constructional design, manufacturing method and manufacturer that perform similar functions in the system. This requirement applies to Class 1 valves exceeding four inches in nominal pipe size.

Code Relief Request

Relief is requested from the visual examination of the internal pressure boundary surface of one RHR suction gate valve (Item B6.7, Category B-M-2).

Licensee Basis for Relief

The ASME Code, Section XI, permits the visual examination of the valve internal pressure boundary surface to be performed on the same valve disassembled for the purpose of performing the required volumetric examination of pressure-retaining welds in the valve body. The RHR suction gate valve body is a one piece forging and therefore does not contain pressure-retaining welds. Since the valve does not require disassembly for volumetric weld examination, disassembly of the valve solely for the purpose of visually examining the interior surface is not prudent. Due to the limited operation of the RHR system, degradation of this valve is not anticipated. The valve manufacturer, Copes-Vulcan, Inc., neither recommends nor requires valve disassembly for the performance of routine maintenance or inspections. There is a potential for degradation of the valve seating capability as a result of the complete disassembly required to perform the inspection. This concern was verified during discussions with another utility which experienced leakage in a similar valve following performance of this inspection. In addition, an estimated 0.6 to 1.6 man-rem of radiation exposure will be required to complete the operation.

During each refueling outage, the RHR suction gate valve which is scheduled for inspection is subjected to RCS pressure isolation testing, stroke time measurement and local leakage rate testing in relation to its function as a containment isolation valve as required by the Technical Specifications and IST Program. In the absence of the need for volumetric weld examination or

required maintenance and considering the potential for valve degradation and ALARA considerations, visual examination of the internal pressure boundary surface is unjustified.

Licensee Proposed Alternative Examination

As required by Section XI, IWA-5000, the exterior of this valve body will be visually examined during the RCS hydrostatic test. A visual examination, not to exceed once per interval, will be performed on the internal pressure boundary surface of one RHR suction gate valve as required by Item B6.7 and Category B-M-2 if maintenance or operational problems are encountered which require disassembly and complete removal of the valve internals.

Staff Evaluation and Conclusions

The visual examination is to determine whether unanticipated severe degradation of the casing is occurring due to phenomena such as erosion, corrosion, or cracking. However, previous experience during examinations of valves at other plants has not shown any significant degradation of casings.

The examination requirement for internal surfaces of valves exceeding 4-inch nominal pipe size necessitates complete disassembly of the valves. Disassembly of these valves for the sole purpose of making this visual examination represents an unnecessary exposure to radiation and contamination.

The valves are subjected to a visual examination during system hydrostatic testing. The licensee has committed to perform the Code-required examination on one RHR suction gate valve if one is disassembled for maintenance during this interval.

Based on the staff's evaluation and the licensee's discussion above, Code requirements are impractical. It is further concluded that the alternative examination discussed above will provide necessary added assurance of the RHR suction gate valves' structural reliability. Therefore, the following apply:

(a) Relief should be granted for the visual examination of the interior surfaces of the RHR suction gate valves for the current inspection interval.

(b) The licensee should perform the Code-required examination on one RHR suction gate valve if one is disassembled for maintenance during this interval as proposed.

2. Item B6.7, Category B-M-2: High Head Safety Injection Check Valve

Code Examination Requirements

Table IWB-2600, Item B6.7 and Table IWB-2500, Category B-M-2 of the 1974 Edition through the Summer 1975 Addenda of the ASME Code, Section XI, require visual examination of the internal pressure boundary surface of one valve in each group of valves of the same constructional design, manufacturing method and manufacturer that perform similar functions in the system. This requirement applies to Class 1 valves exceeding four inches in nominal pipe size.

Code Relief Request

Relief is requested from the visual examination of the internal pressure boundary surface of one high head safety injection check valve (Item B6.7, Category B-M-2).

Licensee Basis for Relief

The ASME Code, Section XI, permits the visual examination of the valve internal pressure boundary surface to be performed on the same valve disassembled for the purpose of performing the required volumetric examination of pressure-retaining welds in the valve body. The high head safety injection check valve body is a one piece forging and therefore does not contain pressure-retaining welds. Since the valve does not require disassembly for volumetric weld examination, the disassembly of the valve solely for the purpose of visually examining the interior surface is not prudent. Due to the limited operation of the high head safety injection system, the check valves would usually remain closed; therefore, degradation of these valves is not anticipated. The valve manufacturer, Velan Engineering Company, neither recommends nor requires valve disassembly for the performance of routine maintenance or inspections. In addition, an estimated 0.72 to 1.44 man-rem of radiation exposure will be required to complete the operation.

During each refueling outage, the high head safety injection check valve which is scheduled for inspection is subjected to RCS pressure isolation testing and full stroke exercising as required by the Technical Specification and IST Program. In the absence of the need for volumetric weld examination or required maintenance and considering ALARA commitments, visual examination of the internal pressure boundary surface is unjustified.

Licensee Proposed Alternative Examination

As required by Section XI, IWA-5000, the exterior of this valve body will be visually examined during the RCS hydrostatic test. A visual examination, not to exceed once per interval, will be performed on the internal pressure boundary surface of one high head safety injection check valve as required by Item B6.7 and Category B-M-2 if maintenance or operational problems are encountered which require disassembly and complete removal of the valve internals.

Staff Evaluation and Conclusions

The visual examination is to determine whether unanticipated severe degradation of the casing is occurring due to phenomena such as erosion, corrosion, or cracking. However, previous experience during examinations of valves at other plants has not shown any significant degradation of casings.

The examination requirement for internal surfaces of valves exceeding 4-inch nominal pipe size necessitates complete disassembly of the valves. Disassembly of these valves for the sole purpose of making this visual examination represents an unnecessary exposure to radiation and contamination.

The valves are subjected to a visual examination during system hydrostatic testing. The licensee has committed to perform the Code-required examination on one high head safety injection check valve if one is disassembled for maintenance during this interval.

Based on the staff's evaluation and the licensee's discussion above, Code requirements are impractical. It is further concluded that the alternative examination discussed above will provide necessary added assurance of the high head safety injection check valves' structural reliability. Therefore, the following apply:

(a) Relief should be granted for the visual examination of the interior surfaces of the high head safety injection check valves for the current inspection interval.

(b) The licensee should perform the Code-required examination on one high head safety injection check valve if one is disassembled for maintenance during this interval as proposed.

3. Item B6.7, Category B-M-2: Low Head Safety Injection Check Valve

Code Examination Requirements

Table IWB-2600, Item B6.7 and Table IWB-2500, Category B-M-2 of the 1974 Edition through the Summer 1975 Addenda of the ASME Code, Section XI, require visual examination of the internal pressure boundary surface of one valve in each group of valves of the same constructional design, manufacturing method and manufacturer that perform similar functions in the system. This requirement applies to Class 1 valves exceeding four inches in nominal pipe size.

Code Relief Request

Relief is requested from the visual examination of the internal pressure boundary surface of one low head safety injection check valve (Item B6.7, Category B-M-2).

Licensee Basis for Relief

The ASME Code, Section XI, permits the visual examination of the valve internal pressure boundary surface to be performed on the same valve disassembled for the purpose of performing the required volumetric examination of pressure-retaining welds in the valve body. The low head safety injection check valve body is a one piece forging and therefore does not contain pressure-retaining welds. Since the valve does not require disassembly for volumetric weld examination, the disassembly of the valve solely for the purpose of visually examining the interior surface is not prudent. Due to the limited operation of the low head safety injection system, the check valves would usually remain closed; therefore, degradation of these valves is not anticipated. The valve manufacturer, Velan Engineering Company, neither recommends nor requires valve disassembly for the performance of routine maintenance or inspections. In addition, an estimated 0.72 to 1.44 man-rem of radiation exposure will be required to complete the operation.

During each refueling outage, the low head safety injection check valve which is scheduled for inspection is subjected to RCS pressure isolation testing and full stroke exercising as required by the Technical Specification and IST Program. In the absence of the need for volumetric weld examination or required maintenance and considering ALARA commitments, visual examination of the internal pressure boundary surface is unjustified.

Licensee Proposed Alternative Examination

As required by Section XI, IWA-5000, the exterior of this valve body will be visually examined during the RCS hydrostatic test. A visual examination, not to exceed once per interval, will be performed on the internal pressure boundary surface of one low head safety injection check valve as required by Item B6.7 and Category B-M-2 if maintenance or operational problems are encountered which require disassembly and complete removal of the valve internals.

Staff Evaluation and Conclusions

The visual examination is to determine whether unanticipated severe degradation of the casing is occurring due to phenomena such as erosion, corrosion, or cracking. However, previous experience during examinations of valves at other plants has not shown any significant degradation of casings.

The examination requirement for internal surfaces of valves exceeding 4-inch nominal pipe size necessitates complete disassembly of the valves. Disassembly of these valves for the sole purpose of making this visual examination represents an unnecessary exposure to radiation and contamination.

The valves are subjected to a visual examination during system hydrostatic testing. The licensee has committed to perform the Code-required examination on one low head safety injection check valve if one is disassembled for maintenance during this interval.

Based on the staff's evaluation and the licensee's discussion above, Code requirements are impractical. It is further concluded that the alternative examination discussed above will provide necessary added assurance of the low head safety injection check valves' structural reliability. Therefore, the following apply:

(a) Relief should be granted for the visual examination of the interior surfaces of the low head safety injection check valves for the current inspection interval.

(b) The licensee should perform the Code-required examination on one low head safety injection check valve if one is disassembled for maintenance during this interval as proposed.

4. Item B6.7, Category B-M-2: Pressurizer Safety Valve

Code Examination Requirements

Table IWB-2600, Item B6.7 and Table IWB-2500, Category B-M-2 of the 1974 Edition through the Summer 1975 Addenda of the ASME Code, Section XI, require visual examination of the internal pressure boundary surface of one valve in each group of valves of the same constructional design, manufacturing method and manufacturer that perform similar functions in the system. This requirement applies to Class 1 valves exceeding four inches in nominal pipe size.

Code Relief Request

Relief is requested from the visual examination of the internal pressure boundary surface of one pressurizer safety valve (Item B6.7, Category B-M-2).

Licensee Basis for Relief

The ASME Code, Section XI, permits the visual examination of the valve internal pressure boundary surface to be performed on the same valve disassembled for the purpose of performing the required volumetric examination of pressure-retaining welds in the valve body. The pressurizer safety valve body is a one piece forging and therefore does not contain pressure-retaining welds. Since the valve does not require disassembly for volumetric weld examination, disassembly of the valve solely for the purpose of visually examining the interior surface is not prudent. Because operation of this valve would not be expected during normal plant operation, degradation of the valve is not anticipated. The valve manufacturer, Crosby Valve and Gage Company, neither recommends nor requires valve disassembly for the performance of routine maintenance or inspections. In addition, an estimated 10.8 to 45.0 man-rem of radiation exposure will be required to complete the operation.

This pressurizer safety valve is subjected to periodic lift setpoint tests in accordance with the Technical Specification and IST Program. In the absence of the need for volumetric weld examination or required maintenance and considering ALARA commitments, visual examination of the internal pressure boundary surface is unjustified.

Licensee Proposed Alternative Examination

As required by Section XI, IWA-5000, the exterior of this valve body will be visually examined during the RCS hydrostatic test. A visual examination, not to exceed once per interval, will be performed on the internal pressure boundary surface of one pressurizer safety valve as required by Item B6.7 and Category B-M-2 if maintenance or operational problems are encountered which require disassembly and complete removal of the valve internals.

Staff Evaluation and Conclusions

The visual examination is to determine whether unanticipated severe degradation of the casing is occurring due to phenomena such as erosion, corrosion, or cracking. However, previous experience during examinations of valves at other plants has not shown any significant degradation of casings.

The examination requirement for internal surfaces of valves exceeding 4-inch nominal pipe size necessitates complete disassembly of the valves. Disassembly of these valves for the sole purpose of making this visual examination represents an unnecessary exposure to radiation and contamination.

The valves are subjected to a visual examination during system hydrostatic testing. The licensee has committed to perform the Code-required examination on one pressurizer safety valve if one is disassembled for maintenance during this interval.

Based on the staff's evaluation and the licensee's discussion above, Code requirements are impractical. It is further concluded that the alternative examination discussed above will provide necessary added assurance of the pressurizer safety valves' structural reliability. Therefore, the following apply:

(a) Relief should be granted for the visual examination of the interior surfaces of the pressurizer safety valves for the current inspection interval.

(b) The licensee should perform the Code-required examination on one pressurizer safety valve if one is disassembled for maintenance during this interval as proposed.

SUMMARY AND CONCLUSION

Based on the review, the staff concludes that relief granted from the examination and testing requirements and alternate methods imposed through this document give reasonable assurance of the component pressure boundary and support structural integrity, that granting relief where the Code requirements are impractical is authorized by law and will not endanger life or property, or the common defense and security, and is otherwise in the public interest considering the burden that could result if they were imposed on the facility.

DATE:

PRINCIPAL CONTRIBUTOR:

S. Lee