CLASS 3 VALVES IN CLASS 2 SYSTEMS

Initial Report to NRC: Verbal report to Mr. M. D. Hunt (NRC, Region II) by Mr. W. C. Petty, Jr. (APCo QA Department) on November 7, 1979.

Description of Occurrence: During the quality assurance traveler review of the Farley Unit 2 ASME code systems six discrepancies have been found. A total of 67% of the ASME systems have been reviewed.

Background: To meet ASME Code Class 2 requirements, cast pressure-retaining materials are examined by either radiographic or ultrasonic methods, or a combination of the two methods. This is not a requirement for Class 3 materials and constitutes the difference between Class 2 and Class 3 valves. The Class 3 valves have the same pressure-retaining classification as the specified Class 2 valves. In all cases, the Class 3 valves were located at or near class boundary changes.

The valves involved in this analysis were:

Drawing	Rev.	Location	Valve	System	NCR No.	
D205039, Sheet 4	0	E6	E21V304	CVCS	Q-2-M773	2/12/79
D205039, Sheet 2	0	H8	E21V210	CVCS	Q-2-M779	2/12/79
D205039, Sheet 2	6	D10	E21V381B	CVCS	Q-2-M757	2/12/79
D205038, Sheet 3	0	C6	E13V007A	Cont. Spray	Q-2-M815	9/6/79
D205038, Sheet 3	0	F6	E13V007B	Cont. Spray	Q-2-M815	9/6/79
D205038, Sheet 1	4	B12	P44V505	High Head Safety Inj.	Q-2-M576	2/12/79

Using the above differences between a Class 2 and Class 3 valve, it was hypothesized that the existence of a defect in a Class 3 valve body could, at some time, result in the failure of the valve body, through crack propagation or similar fracture mechanism. The systems were analyzed assuming the valve body failed. This is analogous to a pipe break.

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Analysis of Safety Implications:

A break in the body of valve E21V381B and/or valve P44V505 was assumed. Analysis of the system reveals there are level detectors on the Volume Control Tank and the

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Refueling Water Storage Tank to detect the break. Since the lines are 3/4" lines, any break would not result in immediate run-out of the tank. The valves were not considered to constitute either a significant deficiency or a substantial safety hazard since the leaks could be detected and repaired. Also, additional make-up can be pumped into the tanks.

An assumed break in the bodies of valves E13V007A and/or E13V007B could result in an increase in the iodine concentration within containment since sodium hydroxide could not be placed into the containment spray system through the eductors in the unlikely event of needing containment sprays. This postulated event could cause a rise in iodine concentration above that calculated in Section 15 of the FSAR.

An assumed break in the body of valve E21V210 could result in loss of water from the Volume Control Tank and/or the Refueling Water Storage Tank. As a result of the loss of water the charging pumps might not receive enough water and could possibly fail. Alabama Power Company has been informed by the valve vendor that the valve has sufficient quality assurance records on file to support the upgrading of this valve. When appropriate records are received, this valve will be neither a deficiency or a defect. (See APCo P.O. FNP2-55, Rev. 84, dated 10/11/79). Valve E21V304 also could cause a failure in the charging pump assuming check valve QV188 fails to prevent backflow and valve E21V304 is being replaced.

Assuming the valve body could have an undetected defect leading to failure of the valve body, it has been determined that valves E21V304, E21V210, E13V007A, and E13V007B could have a common deficiency which constitutes a substantial safety hazard and which could have adversely affected the safety of operations of the nuclear power plant at some time during the lifetime of the plant.

This deficiency represents a deficiency found in design, which were it to have remained uncorrected, could have affected adversely the safety of operations of the nuclear power plant at some time during the expected lifetime of the plant.

This deficiency does not constitute a significant breakdown in the quality assurance program conducted in accordance with the requirements of Appendix B. The deficiency appears to be an isolated instance of human error in QA program implementation and is not sufficient in number to indicate a significant breakdown in the QA program.

The deficiency represents a significant deficiency in final design as approved and released for construction such that the design does not conform to the criteria and bases stated in the safety analysis report or construction permit. The deficient valves are correctly shown on drawings as Class 2 valves but are incorrectly shown on bill of material and specifications as Class 3 valves.

The deficiency does not represent a significant deficiency in the construction of or significant damage to a structure, system or component nor is it a significant deviation from performance specifications.

Corrective Action:

Valves will either be replaced or upgraded to Class 2 by obtaining proper documentation from the manufacturer.

Summary and Conclusion:

(1) This deficiency, were it to have remained uncorrected, could possibly have adversely affected the safety of operations of the nuclear power plant at some time during the expected lifetime of the plant.

(2) This deficiency does not represent a significant breakdown of the quality assurance program.

(3) The deficiency represents a deficiency in the final design as approved and released for construction.

(4) The deficiency does not represent a significant deficiency in construction of or significant damages to a component.

(5) The deficiency does not represent a significant deviation from performance specifications of a component.

This deficiency also represents a substantial safety hazard as defined by 10CFR21 and this report also satisfies the reporting requirements of 10CFR21.