



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 20 TO FACILITY OPERATING LICENSE NO. NPF-8

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NO. 2

DUCKET NO. 50-364

INTRODUCTION

By letter dated October 11, 1982, the licensee proposed a one-time Technical Specification change using modified Unit 1 Pressure Isolation Valve (PIV) Technical Specification allowable leakages for the current Unit 2 outage.

DISCUSSION AND EVALUATION

The Unit 1 Technical Specifications allow for leakage rates of 1 to 5 gpm; however, the measured leak rate for any given test can not reduce the difference between the results of the previous test and 5 gpm by more than 50%. The proposed change restricts the maximum leakage on 2" valves to 3 gpm, but retains this same indexing criteria. The original Unit 2 Technical Specification restricts leakage to 1 gpm for each valve, regardless of size.

Conservative leak test criteria were established by the staff as a result of a concern which was brought to light by the Reactor Safety Study, WASH-1400. The study indicated that the failure of two in-series valves which form the interface between high (RCS) and low pressure systems would almost surely result in an intersystem LOCA; and that the probability of such an event was unacceptably high. Frequent independent tests of each valve was considered to be a relatively convenient method of reducing the probability of this type of failure.

The staff developed two sets of allowable leakage criteria, one for new plants (1 gpm) and one for older plants (1-5 gpm with certain restrictions); as it was felt that the newer valves would more easily meet the more stringent 1 gpm criteria.

The 1 to 5 gpm criterion is included in the Farley Unit 1 Technical Specifications together with the 50% indexing provision noted above. This criterion was ordered by the staff about two years ago to be effective for operating reactors. For these older plants, these valves had experienced numerous operating cycles and could not be expected to be in the "like new" condition, although the valves would be expected to fulfill their pressure isolation function.

The staff is currently re-evaluating these criteria; both theoretically and by means of plant surveys. A consultant, EG&G Idaho, has been performing this re-evaluation for the Office of Research. Although the study is not complete, the early recommendations indicate that the staff should consider allowing leak rates in excess of 1 gpm, particularly for larger valves. The basic recommendations are more consistent with the Farley Unit 1 Technical Specification criteria than with those of Unit 2.

Alabama Power Company (APCo) has supported their request by providing actual leakage data accumulated over approximately two years of leak testing these valves for Units 1 and 2 to the two different criteria. APCo provided the following historical data: The Unit 1 valves have been exposed to sixteen tests in past outages and resulted in six failures when the utility had arbitrarily imposed the Unit 2 1 gpm criteria. Personnel radiation exposure was estimated to be 25 rem to meet the 1 gpm criteria, but only 2.5 rem to meet the 1 to 5 gpm criteria. The utility also states that of the valves which failed the 1 gpm criteria and those that failed the 1 to 5 gpm criteria no discernible differences in seating surfaces could be found, and no evidence of impending valve failures were found in any of the valves that failed either criterion.

The Technical Specifications for both Units 1 and 2 require that leakage testing be performed during plant startup so that all valves will be tested after their last disturbance. The licensee routinely leak tests the referenced valves during each cooldown to refueling in an attempt to determine if any pressure isolation valves may require maintenance. This is a precautionary measure voluntarily utilized to increase the probability of successful leak test results during the return to power when the testing is on the scheduler "critical path".

At the request of the staff the licensee provided leak test data measured during cooldown to the current refueling outage which started on October 22, 1982. The presented results indicated that only one of the thirty-five valves tested failed (leakage rate unknown) and 27 of the 35 valves had 0.00 gpm leakage. The remaining valves had leak rates less than 0.5 gpm. The valve which failed will be repaired prior to the return to power.

The staff developed Table 1, attached, as a result of the licensee's request. The values in the table were developed using the Unit 1 Technical Specification 1-5 gpm criteria together with the 50 percent indexing criterion for valves greater than 2" in nominal diameter. For the 2" nominal diameter valves a reduced maximum leakage of 3 gpm proposed by the licensee has been applied.

SUMMARY

Based on our review of the information provided by APCo; in particular the results of the leak tests performed during the shutdown of Unit 2 for the first refueling outage, preliminary recommendations made by the staff consultant, and our expectation that no significant valve degradation would occur during the short period of the current refueling outage; the staff has concluded that the allowable leak rates specified in Table 1 and the attached Technical Specifications are acceptable for the leak testing to be performed on Unit 2 during startup after the current outage.

Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: November 24, 1982

Principal Contributor:
J. Page