



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 18 TO FACILITY OPERATING LICENSE NO. NPF-8

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NO. 2

DUCKET NO. 50-364

Introduction

Farley Unit 2 Technical Specification 3/4.3.4, Turbine Overspeed Protection, specifies periodic surveillance testing of turbine valves to demonstrate valve operability. The surveillance requirements necessitate all turbine stop, governor, reheat stop and reheat intercept valves to be stroked through their complete cycle from their operational position on a weekly basis.

Due to the end of fuel cycle conditions, adherence to this test schedule would impose significant operational difficulties. Therefore, on October 8, 1982, Alabama Power Company submitted a proposed change to the Technical Specifications which would exempt testing as required by surveillance requirements 4.3.4.1.2.a and 4.3.4.1.2.b. This proposed change will only be for the duration of the current fuel cycle which is expected to end in late October 1982. The exemption is expected to waive approximately two turbine valve tests as required by the technical specifications.

Evaluation

Steam enters the high pressure turbine through four throttle valves in series with four governor valves. Steam exits the high pressure turbine, flows through the moisture separator reheaters, and enters the low pressure turbines through four reheat stop valves in series with four reheat intercept valves. The turbine is equipped with an emergency trip system that is designed to close the throttle, governor, reheat stop and reheat intercept valves in the event of turbine overspeed, low bearing oil pressure, low vacuum, or thrust bearing failure. An electric solenoid trip is provided for remote manual trips and various other trips. Turbine trip is effected by three overspeed sensors. The primary overspeed controls is provided by the Digital Electro-Hydraulic Control System which is set to produce a turbine trip at 103% of rated shaft speed. The first backup overspeed protection is provided by a mechanical overspeed mechanism and trips the turbine at 111% of rated shaft speed. The secondary backup overspeed protection is provided by the electro-hydraulic control system if the rated shaft speed exceeds 111.5%. This redundancy in both valves and overspeed protection controls provides high assurance that turbine speed control will be maintained.

End of fuel cycle conditions has resulted with Farley Unit 2 operating with all control rods out of the core along with a boron concentration of approximately 40 ppm. In order to perform the turbine valve tests required by the technical specifications, the unit must be reduced to approximately 85% power. This would require boration to reduce core power followed by deboration to increase power back to 100%.

As the reactor core nears end-of-life, cycling of the nuclear steam supply system imposes operational difficulties in maintaining the axial flux difference within the Technical Specification target band limitation and results in a potential restriction of 50% power for 24 hours. The return to full power following turbine valve tests performed near the end of reactor core life necessitates the processing of significant amounts, approximately 20,000 gallons of reactor coolant. In returning to full power, additional operational difficulties occur from overcoming negative reactivity due to xenon transients.

These power transients and the potential for delays in the return to power from turbine valve tests performed during the end of reactor core life are unnecessary as the turbine valves and overspeed protection system have been demonstrated as highly reliable. Alabama Power Company has reviewed the results of the weekly performances of the Unit 2 turbine valve technical specification surveillance requirement and valve operation during Unit 2 turbine trips and has determined that no turbine valve has failed to close on demand. Additionally, turbine valves on Unit 1, identical models to Unit 2, have never failed to fully close on demand during associated turbine valve test and turbine trips. These results are based on 40 turbine trips and 69 valve tests for Unit 2 and 118 turbine trips and over 90 valve tests for Unit 1. This history of trouble-free valve operation provides added assurance of the dependability of these valves and the redundant overspeed protection systems. In addition to the turbine governor and throttle valves, the main steam isolation valves which are periodically tested, provide another mechanism to terminate steam flow to the turbine.

Summary

We concur with the licensee that additional cycling of the nuclear steam supply system that would result from performing the scheduled turbine valve tests would result in significant operational difficulties at the Farley Unit 2 facility. In addition, we concur with the licensee that the proven reliability of the turbine valves provides an acceptable basis to defer surveillance testing of these valves for the duration of the current fuel cycle. The current fuel cycle is scheduled to end in late October 1982 and approximately two turbine tests will be deleted.

Therefore, based on our review, we conclude that the proposed one-time change to Technical Specification 3/4.3.4 is acceptable.

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: OCT 6 1982

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