



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

MAIN STEAM SAFETY RELIEF VALVE PRESSURE

SENSOR ACTUATION MODIFICATION

GEORGIA POWER COMPANY, ET AL.

EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-321 AND 50-366

1.0 INTRODUCTION

This report provides the basis for acceptance of modifications to the actuation of the main steam safety relief valves at both Hatch units.

1.1 Design Features and Parameters

Several boiling water reactors (BWR), in addition to Plant Hatch, have experienced failures of the main steam safety relief valves to open within the setpoint tolerance. When a valve fails to function within the setpoint tolerance, it is necessary to remove it from service and recalibrate it. These actions infringe on safety margins and result in lost generation.

To reduce the incidence of these setpoint problems, the BWR Owners Group (BWROG) has determined that additional circuitry to activate the Automatic Depressurization System (ADS) solenoid valves is advisable.

Because of the operational problems at Plant Hatch, Georgia Power Company (the licensee) has decided to install an appropriate system at this time.

In order to assure valve operability within acceptable tolerances, the licensee has proposed to install additional pressure transmitters and to use existing spare trip units to control the electrical solenoid operated valves that are used to force the safety relief valves open when it is necessary to reduce reactor pressure at pressures below that required to protect the vessel and its connected piping.

The licensee described the proposed modifications in a January 21, 1992, letter to the NRC. By letter dated April 28, 1992, the licensee provided additional information in response to the NRC staff's request for additional information, dated April 8, 1992.

2.0 EVALUATION

The licensee has proposed to install four new pressure transmitters (two per division). These sensors are identical to safety-related transmitters already in service at Plant Hatch. However, because the relief function is not

required for safety, they will not be included in the Technical Specifications. The use of qualified safety devices for non-safety functions is acceptable.

The licensee has proposed to use four analog trip units, wired in a one-out-of-two-taken-twice logic, to control each group of valves. (A group of valves is all valves having the same relief setpoint.) Each trip unit is identical to those presently used in safety functions and will receive its input from one of the new transmitters. It will be powered from the same division as that which powers the transmitter. As previously stated, the use of safety devices for non-safety functions is acceptable. Furthermore, the failure of any or all of this new equipment to function will not introduce new failure modes nor reduce the likelihood of a valve to function at the desired setpoint.

To reduce the likelihood of a setpoint error opening multiple valves of different groups, all valves having a setpoint above the lowest group will receive two inputs from trip units set at the desired pressure and two from the next lowest group. This design feature, while reducing the likelihood of a technician error causing valve lift at the wrong setting and reducing the number of trip units required, has the disadvantage of increasing the likelihood of equipment failures causing the premature opening of multiple groups. The NRC staff notes that the change, as proposed, satisfies the single failure criterion and considers the other advantages and disadvantages discussed above to be offsetting. Therefore, we find the proposed logic to be acceptable.

Because the hardware for this modification is not in the Technical Specifications, testing will be controlled by procedures to the same requirements as are presently in the Technical Specifications for similar safety equipment. The use of procedures to control the testing of equipment not required for safety is acceptable to the staff.

The use of existing safety-related power supplies to power equipment that is not required for safety, with fused isolation, is within the current licensing basis for Plant Hatch and is, therefore, acceptable. The small increase in the likelihood of non-safety equipment causing a loss of a safety-related power source is not significant and does not change the sequence of events or the consequences of such events. Furthermore, the improved reliability in relief valve operations would compensate for any increase in power supply unreliability.

### 3. CONCLUSION

The proposed changes would enhance the plant operational safety, and are, therefore, acceptable.

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Date: July 24, 1992

REFERENCES:

1. Georgia Power Company's submittal regarding main steam safety relief valve pressure sensor actuation, Dated January 21, 1992
2. NRC staff's request for additional information, Dated April 8, 1992
3. Georgia Power Company's Responses to NRC staff's request for additional information, Dated April 28, 1992