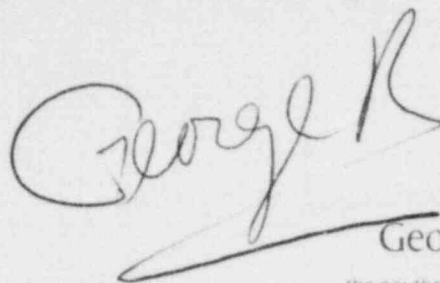


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Georgia Power

the southern electric system

NED-84-072

April 10, 1984

Director of Nuclear Reactor Regulation  
Attention: Mr. John F. Stolz, Chief  
Operating Reactors Branch No. 4  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

NRC DOCKETS 50-321, 50-366  
OPERATING LICENSES DPR-57, NPF-5  
EDWIN I. HATCH NUCLEAR PLANT UNITS 1, 2  
NUREG-0737 ITEM II.E.4.2(7) PURGE AND VENT VALVE ISOLATION

Gentlemen:

The subject NUREG-0737 item requires automatic isolation of containment purge and vent valves on high containment radiation. In an August 31, 1983 letter, Georgia Power Company (GPC) submitted a proposed plan for resolution of this item. The plan involved submittal of a description of the intended modification and implementation during the scheduled 1985 refueling outages. In accordance with the former commitment, GPC submits Enclosure 1, System Description, Containment Purge and Vent Valve High Radiation Isolation.

Please contact this office if there are any questions.

Very truly yours,



L. T. Gucwa

JH/tmw

Enclosure

xc (w/encl): J. T. Beckham, Jr.  
H. C. Nix, Jr.  
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ENCLOSURE 1

EDWIN I. HATCH NUCLEAR PLANT UNITS 1 AND 2

SYSTEM DESCRIPTION

CONTAINMENT PURGE AND VENT VALVE

HIGH RADIATION ISOLATION

## I. INTRODUCTION

NUREG-0737 Item II.E.4.2(7) requires that containment purge and vent valves close automatically on a high containment radiation signal. This requirement has been the subject of considerable debate between the BWR Owners Group and the NRC. The following background information summarizes this discussion and describes the final design criteria which were agreed upon by the Owners Group and the NRC.

### A. INITIAL OWNERS GROUP SUBMITTAL

A generic evaluation of this item was transmitted by T. J. Dente's letter of June 29, 1981. The Owners Group position, which was endorsed by GPC, was that automatic isolation of containment purge and vent valves on a high radiation signal was not necessary. The bases for this conclusion were that: (1) the purge and vent valves are normally closed, (2) there are existing redundant and diverse signals for automatic closure of these valves, (3) various signals would alert operators to manually close the valves, and (4) the radiological consequences of a break which would not automatically isolate these valves are acceptably low.

### B. INITIAL NRC SAFETY EVALUATION

The October 14, 1981 NRC letter to T. J. Dente transmitted a Safety Evaluation in which the Owners Group position was rejected. The Owners Group met with the NRC on November 19, 1981 to obtain clarification of the NRC position. The bases for the NRC position, as expressed at the meeting, were that: (1) the radiation signal would provide additional safety margin, (2) additional redundancy would be provided if one of the existing signals should fail, and (3) there would be additional protection against low rates of reactor coolant leakage which would not result in automatic isolation with the current design. In response to the first two concerns, the Owners Group presented data demonstrating the high reliability of the signals which isolate the purge and vent valves. The third concern was addressed in an additional Owners Group submittal.

C. ADDITIONAL OWNERS GROUP SUBMITTAL

T. J. Dente's letter of June 14, 1982 transmitted an evaluation for a typical plant of the radiological consequences of the limiting reactor coolant system break which would not result in purge and vent valve isolation from existing signals. The result was an off-site thyroid dose of approximately 0.01 Rem. This dose is well below the EPA Protective Action Guide (PAG) limit, which was recommended by the NRC in the November 19, 1981 meeting as the acceptance criterion for this event. It was proposed that plants which may not meet the PAG criterion in this scenerio be allowed to adopt a more restrictive Technical Specification limit for primary coolant iodine concentration during purging and venting so that the acceptance criterion could be satisfied. The Owners Group conclusion was that calculation of the off-site dose and revision of Technical Specifications as necessary to meet the PAG criterion was an acceptable alternative to high radiation isolation of the purge and vent valves.

D. FINAL NRC SAFETY EVALUATION

The final Owners Group position was not accepted by the NRC. The NRC decision was appealed by the Owners Group in an April 18, 1983 telephone call to R. Mattson. Mr. Mattson agreed to a compromise position which would require isolation of purge and vent valves on high radiation but not necessarily from safety grade instrumentation. The Safety Evaluation transmitted by the NRC letter of May 31, 1983 reflected this compromise and re-affirmed all other aspects of the October 14, 1981 Safety Evaluation.

II. MODIFICATION DESCRIPTION

A. CONTAINMENT PURGE AND INERTING SYSTEM

Figures 1 and 2 provide simplified diagrams of the Primary Containment Purge and Inerting Systems for Hatch Units 1 and 2, respectively. The current Primary Containment Isolation System (PCIS) automatically closes the isolation valves in the presence of a low reactor water level, high drywell pressure, high reactor building radiation, or high refueling floor radiation signal. The "A" isolation signal serves the inboard valves while the "B" isolation signal serves the outboard valves.

B. HIGH RADIATION ISOLATION OF PURGE AND VENT VALVES

The 18 inch containment purge and vent valves will be included in a new isolation group. This group of valves will close automatically on low reactor water level, high drywell pressure high reactor building radiation, high refueling floor radiation, or high containment radiation. The 2 inch purge and vent valves will not isolate on high containment radiation because: (1) the off-site dose resulting from an accident which would not automatically isolate these valves would be insignificant, and (2) the NRC Safety Evaluation of 5/31/83 does not require isolation of lines smaller than 3 inches.

C. HIGH RADIATION ISOLATION SIGNAL

This signal will originate from the high-range containment radiation monitors which were installed in response to NUREG-0737 Item II.F.1.3. Each of the Hatch units was provided with redundant monitors having ranges of 1 to  $10^7$  R/hr gamma radiation. Each channel consists of a detector located inside the primary containment, a readout module with adjustable high radiation alarm in the Main Control Room, and a recorder in the Main Control Room. The high radiation alarm contacts of channel "A" will be added to the control logic for the inboard 18 inch purge and vent valves and the channel "B" alarm contacts will be added to the control logic for the outboard 18 inch purge and vent valves.

D. HIGH RADIATION ISOLATION SETPOINT

The setpoint for the isolation signal will be 100R/hr. This setpoint was calculated such that no accident would produce radiation doses at the site boundary exceeding the PAG limits of 1 Rem whole body and 5 Rem thyroid.

E. ISOLATION LOGIC

Presence of low reactor water level, high drywell pressure, high reactor building radiation, high refueling floor radiation, or high containment radiation signals will result in automatic closure of the 18 inch purge and vent valves. Amber indicating lights for each of the 18 inch purge and vent valves will be provided on the Main Control Room panel and will illuminate upon a high containment radiation isolation. The valves will remain closed until: (1) the containment radiation level drops below the setpoint, (2) the high containment radiation alarm is reset at the readout module, and (3) the isolation logic is reset manually by means of a control switch located on the Main Control Room panel.



F. TECHNICAL SPECIFICATIONS

Technical Specifications will be revised to require that at least one radiation monitor which initiates high radiation isolation be operable at all times except cold shutdowns and refueling outages. If this operability requirement is not met, the plant will be required within 24 hours to either close the purge and vent valves or begin proceeding to cold shutdown.

III. CONCLUDING SUMMARY

The proposed modifications are considered by Georgia Power Company to fulfill the requirements of Item II.E.4.2(7) as clarified by the Owners Group/NRC discussions. The NRC concerns are satisfied as summarized below:

A. ADDITIONAL SAFETY MARGIN

Although the existing containment isolation design ensures off-site doses less than 10 CFR 100 limits, the high containment radiation isolation of purge and vent valves will further limit the consequences of a release through these valves.

B. ADDITIONAL REDUNDANCY

Although existing purge and vent valve isolation signals have been demonstrated to be highly reliable, the containment radiation signal will ensure isolation capability should one of the existing signals fail.

C. PROTECTION FOR SMALL BREAKS

The containment radiation signal will ensure timely closure of the purge and vent valves for low rates of reactor coolant leakage which would not result in isolation from existing signals.