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Georgia Power
the southern electric system

United States Nuclear Regulatory Commission
Division of Operating Reactors
Washington, D. C. 20555

NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
EDWIN I. HATCH NUCLEAR PLANT UNITS 1, 2
EFFECT OF A DC POWER SUPPLY FAILURE ON ECCS PERFORMANCE

ATTENTION: Mr. Thomas A. Ippolito, Chief
Operating Reactors Branch #3

Gentlemen:

Enclosed for your review is the Hatch unique analysis report comparing the effects of a DC power failure on ECCS performance with the GE generic analysis.

In each case analyzed the Hatch units matched or was more conservative than the ECCS combinations which caused the increased Peak Cladding Temperature in the GE analysis.

If you have any questions or need additonal information, please contact this office.

Very truly yours,

W. A. Widner

W. A. Widner
Vice President and General Manager
Nuclear Generation

DLT/mb

Enclosure

xc: (all w/encl.)

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EFFECT OF A DC POWER SUPPLY FAILURE ON ECCS PERFORMANCE

Edwin I. Hatch Nuclear Plant

Units 1 and 2

Docket Nos 50-321 and 50-366

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1. Introduction

The Edwin I. Hatch Nuclear Plant Units 1 and 2 DC power supply systems are separated into five (5) systems for each unit. The Diesel Battery B is common to both units, thus a total of nine (9) class 1E battery systems are used for ECCS systems for both units.

This report will discuss the battery systems for one unit which are identical for purposes of this report to the second unit.

The DC power sources for the Edwin I. Hatch Nuclear Plant Unit 1 are divided into the following categories:

Description	Use
Station Battery A (Division I)	ADS - normal supply
	LPCI - Division I-logic and injection valve motive power
	CS - Division I logic
Station Battery B (Division II)	ADS - automatic alternate supply
	LPCI - Division II - logic and injection valve motive power
	CS - Division II logic
	HPCI - logic and motive power
Diesel Battery A (Division I)	Diesel A start
	LPCI - Division I pump breaker control
	CS - Division I pump breaker control
Diesel Battery B (Division B)	Diesel B start
Diesel Battery C (Division II)	Diesel C start
	LPCI - Division II pump breaker control
	CS - Division II pump breaker control

It should also be noted that all the CS and LPCI pumps will be started by either Division I or Division II associated logic systems, thus a loss of Division I CS logic would not prevent the Division I CS pump from starting.

Both units of the Edwin I. Hatch Nuclear Plant are BWR 4 versions of the LPCI modified plants as delineated in the G.E. report "DC Power Source Failure for BWR 3 and BWR 4."

2. Available ECCS Combinations after a Loss of DC Power

The combination of ECCS considering a loss of each DC power source is tabulated below.

DC Source Loss	Remaining ECCS Parameters*
Station Battery A	2CS + HPCI + ADS
Station Battery B	2CS + ADS
Diesel Battery A	1CS + 1LPCI + HPCI + ADS
Diesel Battery B	2CS + 1LPCI + HPCI + ADS
Diesel Battery C	1CS + 1LPCI + HPCI + ADS

* Only considers LPCI flow through unbroken loop.

3. Comparison with G.E. Small Break Analysis

The G.E. analysis states that the combination of 1CS + 1LPCI + ADS gives the highest PCT for the small break analysis. At the Edwin I. Hatch Units the loss of Station Battery B is the only condition when HPCI is lost, thus the remaining combination of 2CS + ADS is more conservative than the G.E. analysis. On the loss of Diesel Battery A or C the combination of 1CS + 1LPCI + HPCI + ADS is also considered more conservative than the G.E. analysis, since HPCI would be available to mitigate the small break accident.

4. Comparison with G.E. Large Break Analysis

Since at the Edwin I. Hatch Units the low pressure coolant injection system injection valve (LPCI-IV) is powered from a DC source, Station Battery A or B, the G.E. analysis for the loss of LPCI-IV applies to these units. This is true in both the loss of Station Battery A or B where 2CS + ADS are remaining after a discharge break.

For the suction line break analysis, the less limiting combination of 1CS + 3LPCI + HPCI + ADS occurs on the loss of Diesel Battery A or C, and the combination of 2CS + 2LPCI + HPCI + ADS as reported in the Appendix K analysis occurs on the loss of Station Battery A or B.

Thus for both discharge and suction breaks the Edwin I. Hatch Units meet the criteria of the G.E. analysis.

5. Comparison with G.E. Loss of ADS Capacity

Each unit of the Edwin I. Hatch Nuclear Plant has seven (7) ADS valves as compared with the five (5) valves considered in the G.E. analysis. It would then take a 43% reduction in ADS capacity to reach the G.E. analyzed 20% reduction or four (4) valves operable, thus the Edwin I. Hatch Units are more conservative than the G.E. analyzed conditions.

6. Conclusions

a. For small break LOCA's the Edwin I. Hatch Units are more conservative than the combination which caused the increased PCT in the G.E. analysis.

b. For large break LOCA's the maximum PCT, which was not affected in the G.E. analysis, is not affected by the Edwin I. Hatch Units because the combinations match the G.E. analyzed combinations.

c. For the loss of ADS capacity the Edwin I. Hatch Units are more conservative due to the number of valves employed at each unit.