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W. G. Hairston, III
Senior Vice President
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the southern electric system

HL-50
0433I
X7GJ17-H110

September 6, 1988

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
NRC BULLETIN 85-03, SUPPLEMENT 1

Gentlemen:

Supplement 1 to NRC Bulletin 85-03, "Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings," dated April 27, 1988, was issued to clarify: 1) which valves are to be included and 2) the meaning of the phrase ". . . inadvertent equipment operations (such as inadvertent valve closures or openings)...". as used in the original bulletin. Supplement 1 also required BWR licensees to review and document the design basis for the operation of safety-related motor- operated valves in the high-pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) systems, considering inadvertent recovery from such mispositionings. Supplement 1 requested a written report be submitted to the NRC within 30 days, providing the information stated above for any valves not already included in the IEB 85-03 program, including maximum opening and closing differential pressure. A schedule for completing the remaining portions of the program (items b through d of the original bulletin) and a final report were also requested.

By letter dated May 27, 1988, Georgia Power Company (GPC) responded to the NRC regarding the subject bulletin supplement. In that response, GPC committed to address inadvertent mispositioning of valves in the HPCI and RCIC systems, as evaluated by the BWR Owners Group (BWROG). The Reference 1 letter documented that a total of nine additional valves should be considered by utilities, such as Georgia Power Company, that participated in the BWROG 85-03 Committee. However, since Plant Hatch-specific calculations of maximum differential pressure for the

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Georgia Power

Supplement 1 valves were dependent on a generic methodology developed by the BWROG, Georgia Power Company deferred its response to the bulletin supplement until the BWROG input was received. The Reference 2 letter formally transmitted this input to GPC.

Enclosure 1 presents the information requested by Supplement 1 on the nine additional valves, including their applicability to the Plant Hatch Bulletin 85-03 program, and a proposed schedule for completion of the program. The maximum expected differential pressure calculations are given in Enclosure 2.

It should be noted that GPC has recently completed the testing on Unit 2 for the original Bulletin 85-03 scope, has started testing on Unit 1, and is in the process of scheduling a meeting with appropriate NRC staff personnel to discuss the GPC program.

If you have any questions in this regard, please contact this office at any time.

Sincerely,

W. G. Hairston

W. G. Hairston, III
Sr. Vice President
Nuclear Operations

GGM/ac

Enclosures:
1. Response to NRC Bulletin 85-03, Supplement 1.
2. Differential Pressure Calculations for Supplement 1 Valves.

References:
1. Letter, R. F. Janecek (BWROG) to J. H. Sniezek (NRC), "IE Bulletin 85-03," dated March 28, 1988.
2. Letter, W. G. Flock (BWROG) to BWROG IEB 85-03 Committee Members, "BWROG Response to IEB 85-03, Supplement 1," dated August 4, 1988.

c: (See next page.)

Georgia Power

c: Georgia Power Company
Mr. H. C. Nix, General Manager - Hatch
Mr. L. T. Gucwa, Manager Licensing and Engineering - Hatch
GO-NORMS

U.S. Nuclear Regulatory Commission, Washington, D.C.
Mr. L. P. Crocker, Licensing Project Manager - Hatch

U.S. Nuclear Regulatory Commission, Region II
Dr. J. N. Grace, Regional Administrator
Mr. J. E. Menning, Senior Resident Inspector - Hatch

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ENCLOSURE 1

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
RESPONSE TO NRC BULLETIN 85-03, SUPPLEMENT 1

NRC Bulletin 85-03, Supplement 1, requested BWR owners to consider the inadvertent mispositioning of valves in the high-pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) systems in determining valve operator setpoints. The BWROG report, Supplement 1 to NEDC-31322, (Reference 1) reviewed and documented the design basis for valve operation and the methodology for determining expected differential pressure. This analysis fulfills item "a" of the bulletin supplement on a generic basis for the nine selected safety-related valves. The valves considered for Plant Hatch are discussed below. Note that two of the nine valves discussed in Reference 1 are in the high-pressure core spray system (HPCS). These two valves will not be considered since Plant Hatch is a BWR/4 class of plant and does not have a HPCS system. Also, the HPCI and RCIC turbine exhaust valves are not motor-operated valves and, therefore, will not be considered.

HPCI System Condensate Storage Tank (CST) Suction Valves

HPCI system CST suction valve F004 is normally open and has an active safety function to close during abnormal events when system suction is transferred from the CST to the suppression pool. The maximum differential pressure (dP) for this event was used to determine the proper valve and operator setpoints for the original bulletin. When considering valve mispositioning, the maximum opening dP must also be considered in determining the valve/operator setpoints. The maximum expected dP is still low (about 35 psid) and only about 5 psi higher than that calculated for the original bulletin. Opening or closing against the maximum expected dP is well within the capabilities of the motor, operator, and valve. The Unit 1 and Unit 2 CST suction valves were already included in Georgia Power Company's (GPC) 85-03 program because of its safety action to close. The program calculations and acceptance values will be modified to include consideration of mispositioning when satisfying items b through d of the original bulletin and bulletin supplement.

RCIC System CST Suction Valves

RCIC system CST suction valve F010 is similar in design and function to the HPCI system CST suction valve discussed above. The maximum expected dP is only slightly higher in the opening direction. GPC's 85-03 program calculations and acceptance values will be modified to include consideration of valve mispositioning when satisfying items b through d of the bulletin.

ENCLOSURE 1 (Continued)

RESPONSE TO NRC BULLETIN 85-03, SUPPLEMENT 1

HPCI System Injection Valve Test Valve

HPCI system injection valve test valve F007 is normally open and is only closed during system maintenance or to perform operability testing of HPCI injection valve F006. Since the valve had no safety function (i.e., it is simply required to remain open during HPCI operation), it was not included in GPC's original program. If mispositioning is considered, the maximum dP is virtually identical to that of HPCI injection valve F006. The Unit 1 and Unit 2 injection valve test valves will be added to GPC's Bulletin 85-03 program. However, hooking up the Limitorque diagnostic equipment to the operator may be difficult because of physical limitations (i.e., no accessibility). Regardless of whether or not the equipment can be used to test the operator, GPC will calculate the valve operator setpoints consistent with the maximum dP due to mispositioning. These setpoints should be very similar to or bounded by those for the HPCI injection valve. Testing at the motor control center (MCC) will be performed to determine the as-found motor running amps and switch settings. These parameters will be compared to those determined during testing of similar valves (e.g., HPCI injection valve F006). A review of the motor, operator, and valve capabilities indicates MOV F007 will be more than adequate to open against the maximum expected dP. (The MOV appears to have been originally sized to open and close against well over 1000 psid.) Only the valve opening is considered in the reposition action per the bulletin supplement, and the torque switches are jumpered out in the open direction of valve travel. However, since the valve is seldom used, GPC reserves the right to remove power to the operator and tag out the valve.

RCIC System Injection Valve Test Valve

RCIC system injection valve test valve F012 is similar in design and function to HPCI valve F007 discussed above. GPC has calculated the maximum dP, considering valve mispositioning, and intends to include the Unit 1 and Unit 2 valves in the Bulletin 85-03 program. Also, if the motor, valve, or operator is undersized, the power to the operator may be removed and the valve tagged out.

RCIC Trip and Throttle Valve

As stated in Reference 1, the function and active safety action of the RCIC trip and throttle valve is to trip closed when required to protect the pump and turbine. Closure of this valve is spring actuated. The RCIC system will not be able to recover immediately from an inadvertent closure of this valve, since the function of the valve is

to shut off the steam supply to the turbine. If the valve trips closed, the dP on opening will be negligible, because prior to resetting the RCIC turbine trip and throttle valve, RCIC system steam admission valve F045 located upstream of the trip and throttle valve would first be closed. This action resets th RCIC system startup logic (i.e., the ramp generator for the RCIC turbine). The RCIC turbine trip and throttle valve above the seat drain upstream of the valve will vent steam trapped between the closed steam admission valv· and the trip and throttle valve to the turbine exhaust line drain pot. This will reduce the dP across the turbine trip and throttle valve to a negligible value prior to valve opening. Therefore, GPC is not planning to include the trip and throttle valve in its Bulletin 85-03 program.

Program Schedule

As stated in the cover letter, GPC has almost completed the testing on Unit 2 for the original Bulletin 85-03 scope. The zero dP testing was completed during the last outage, and selected valves have been tested during system operability tests (at high dP) subsequent to that outage. Testing has started on Unit 1 and will be performed during the upcoming outage scheduled to begin on September 28, 1988. The additional valves discussed above, which are being added to GPC's Bulletin 85-03 program because of the bulletin supplement, will be included in the testing on Unit 1 this fall. The Unit 2 valves added to the program because of the bulletin supplement will be tested during the next Unit 2 maintenance/refueling outage currently scheduled for Spring 1989.

REFERENCE:

1. Supplement 1 to NEDC-31322, "BWR Owners' Group Report on the Operational Design Basis of Selected Safety-Related Motor-Operated Valves," dated July, 1988.

Georgia Power

ENCLOSURE 2

PLANT HATCH - UNITS 1, 2
NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
DIFFERENTIAL PRESSURE CALCULATIONS FOR SUPPLEMENT 1 VALVES

The Nuclear Regulatory Commission (NRC) issued Supplement 1 to IE8 85-03 on April 27, 1986. The supplement requested BWR owners to consider inadvertent valve mispositioning when determining maximum dP. While BWR high-pressure reactor inventory makeup systems are not required to regain operability following an operator error resulting in inadvertent valve mispositioning, the BWROG agreed to evaluate selected valves, considering inadvertent valve mispositioning. The objective of this calculation is to determine the maximum dP in response to that commitment.

DESIGN CALCULATIONS
E.I. HATCH NUCLEAR PLANT UNIT 1
UNIT 1 HPCI MOTOR OPERATED VALVE
DIFFERENTIAL PRESSURE CALCULATION

PREPARED BY: T. P. Hudson
REVIEWED BY: C. A. Pedersen
CALCULATION No. SNH-86-015

SOUTHERN COMPANY SERVICES
DATE 12/15/86
DATE 12/15/86
SHEET 4 OF 61

SUMMARY TABLE 12/17/86

MPL NUMBER	VALVE DESCRIPTION	VALVE FUNCTION	SAFETY	DP CALCULATION FORMULA	MAXIMUM DP	MAX DP ON	DP (PSID)	SAFETY ON
1E41-F001	TURBINE STEAM SUPPLY VALVE	HPCI TURBINE STEAM ADMISSION VALVE	YES	DP=PRSS	UPSTREAM	OPEN	1080	OPEN
1E41-F002	STEAM SUPPLY INBOARD ISOL VALVE	HPCI STEAM LINE ISOLATION VALVE	YES	DP=PRSS	UPSTREAM	CLOSE	1080	CLOSE
1E41-F003	STEAM SUPPLY OUTBD ISOL VALVE	HPCI STEAM LINE ISOLATION VALVE	YES	DP=PRSS	UPSTREAM	CLOSE	1080	CLOSE (2) cod 8-16-88
* 1E41-F004	PUMP SUCT FRM COND STOR TANK	HPCI CST SUCTION VALVE	YES	DP=PELD+PV+PVEL1	UPSTREAM	CLOSE	29.594	CLOSE
1E41-F006	HPCI PUMP INBD DISCH VALVE	HPCI INJECTION/ISOLATION VALVE	YES	DP=PSOH-PISD-PEL	UPSTREAM	OPEN	433.51	OPEN/CLOSE
1E41-F006	HPCI PUMP INBD DISCH VALVE	HPCI INJECTION/ISOLATION VALVE	YES	DP=PSOH-PISD-PEL+PVEL2	UPSTREAM	CLOSE	441.586	OPEN/CLOSE
* 1E41-F007	HPCI PUMP OUTBD DISCH VALVE	HPCI INJECTION VALVE TEST VALVE	NO	NO SAFETY ACTION	N/A	N/A	N/A	NONE (2) cod 8-16-88
1E41-F008	TEST BYPASS VALVE TO COND STOR	HPCI CST TEST RETURN VALVE	NO	NO SAFETY ACTION	N/A	N/A	N/A	NONE
1E41-F011	REDUNDANT SHUTOFF W/F008	HPCI CST TEST RETURN VALVE	NO	NO SAFETY ACTION	N/A	N/A	N/A	NONE
1E41-F012	PMP MIN FLO BYP TO SUPP POOL	HPCI PUMP MIN FLO BYP ISOL VALVE	YES	DP=PSOH+PELM	UPSTREAM	OPEN	1319.07	OPEN/CLOSE
1E41-F012	PMP MIN FLO BYP TO SUPP POOL	HPCI PUMP MIN FLO BYP ISOL VALVE	YES	DP=PMF+PELM+PVEL3	UPSTREAM	CLOSE	1324.611	OPEN/CLOSE
1E41-F041	PMP SUCT FROM SUPP POOL	HPCI SUPP POOL SUCT ISOL VALVE	YES	DP=PRV-PELS	DOWNSTREAM	OPEN	95.72	OPEN/CLOSE
1E41-F041	PMP SUCT FROM SUPP POOL	HPCI SUPP POOL SUCT ISOL VALVE	YES	DP=PLOC+PLOM1	UPSTREAM	CLOSE	35.93	OPEN/CLOSE
1E41-F042	PMP SUCT FROM SUPP POOL	HPCI SUPP POOL SUCT ISOL VALVE	YES	DP=PRV-PELS	DOWNSTREAM	OPEN	95.72	OPEN/CLOSE
1E41-F042	PMP SUCT FROM SUPP POOL	HPCI SUPP POOL SUCT ISOL VALVE	YES	DP=PLOC+PLOM1	UPSTREAM	CLOSE	35.93	OPEN/CLOSE
1E41-F059	COOLING WATER SUPPLY VALVE	HPCI TURBINE ACCES COOLING WTR VLV	YES	DP=PC+PLOM2	UPSTREAM	OPEN	36.94	OPEN/CLOSE
1E41-F059	COOLING WATER SUPPLY VALVE	HPCI TURBINE ACCES COOLING WTR VLV	YES	DP=PC+PLOM2+PVEL4	UPSTREAM	CLOSE	37.857	OPEN/CLOSE
1E41-F104	GATE VALVE 2 IN MO	HPCI VAC BREAKER LINE ISOL VALVE	YES	DP=PC+PATM	UPSTREAM	CLOSE	30.5	CLOSE
1E41-F111	GATE VALVE 2 IN MO	HPCI VAC BREAKER LINE ISOL VALVE	YES	DP=PC+PATM	UPSTREAM	CLOSE	30.5	CLOSE

* SEE SUPPLEMENT 1 OF THIS CALCULATION FOR DIFFERENTIAL PRESSURE DUE TO INADVERTENT VALVE POSITIONING. (2) cod 8-16-88

Project	Prepared By	Date
E.I. Hatch Nuclear Plant Unit 1		8-16-88
Subject/Title	Reviewed By	Date
Unit 1 HPCI Motor Operated Valve		8-16-88
Differential Pressure Calculation	Calculation Number SNH-86-015 Supplement 1	Sheet 2 of 8

CRITERIA

1) The criteria, assumptions and formulas given in the General Electric "BWR Owner's Group Report on Operational Design Basis of Selected Safety-Related Motor-Operated Valves, "DRF-E12-00100-75 Supplement 1, are assumed to be correct.

ASSUMPTIONS

1) The elevation of 1E41F004 is conservatively assumed to be 90'- 1".

SUMMARY OF CONCLUSIONS

MPL NUMBER	VALVE DESCRIPTION	SAFETY ACTION	REPOSITION ACTION	MAX DP
E41F004	CST SUCTION	CLOSE	OPEN	34.37
E41F007	INJECTION VALVE TEST	NONE	OPEN	433.51

DESIGN CALCULATIONS
E.I. HATCH NUCLEAR PLANT UNIT 1
UNIT 1 RCIC MOTOR OPERATED VALVE
DIFFERENTIAL PRESSURE CALCULATION

PREPARED BY: C Hooper
REVIEWED BY: [illegible]
CALC No. SMH-86-016
SUMMARY TABLE 09/21/86

SOUTHERN COMPANY SERVICES
DATE 09/21/86
DATE 09/22/86
SHEET 4 OF 53.

MPL NUMBER	VALVE DESCRIPTION	VALVE FUNCTION	SAFETY ACT	DP CALCULATION FORMULA	MAX DP DIR	MAXIMUM DP	DP (PSID)	SAFETY
1E51-F007	RCIC STEAM INBOARD ISOL VALVE	RCIC STEAM LINE ISOLATION VALVE	CLOSE	DP=PRSS	CLOSE	UPSTREAM	1080	YES
1E51-F008	RCIC STEAM OUTBOARD ISOL VLV	RCIC STEAM LINE ISOLATION VALVE	CLOSE	DP=PRSS	CLOSE	UPSTREAM	1080	YES
* 1E51-F010	PUMP SUCT FRM COND ST6 TNK	RCIC CST SUCTION ISOLATION VALVE	CLOSE	DP=PELD+PV+PVEL1	CLOSE	UPSTREAM	29.406	YES
* 1E51-F012	RCIC PUMP OUTBOARD DISCH VLV	RCIC INJECTION VALVE TEST VALVE	NONE	NO SAFETY ACTION	N/A	N/A	N/A	NO
1E51-F013	RCIC PUMP INBOARD DISCH VLV	RCIC INJECTION VALVE	OPEN/CLOSE	DP=PRSS+PEL	OPEN/CLOSE	DOWNSTREAM	1115.612	YES
1E51-F019	TEST BYPASS TO COND ST6 TANK	RCIC MINIMUM FLOW BYPASS ISOL VALVE	OPEN/CLOSE	DP=PSDH+PELM	OPEN	UPSTREAM	1305.687	YES
1E51-F019	TEST BYPASS TO COND ST6 TANK	RCIC MINIMUM FLOW BYPASS ISOL VALVE	OPEN/CLOSE	DP=PMF+PELM+PVEL3	CLOSE	UPSTREAM	1307.1232	YES
1E51-F022	TEST BYPASS TO COND ST6 TANK	RCIC CST TEST RETURN VALVE	NONE	NO SAFETY ACTION	N/A	N/A	N/A	NO
1E51-F029	RCIC PMP SUCT VLV FRM SUP POOL	RCIC SUPP POOL SUCTION ISOL VALVE	OPEN/CLOSE	DP=PRV-PELS	OPEN	DOWNSTREAM	95.367	YES
1E51-F029	RCIC PMP SUCT VLV FRM SUP POOL	RCIC SUPP POOL SUCTION ISOL VALVE	OPEN/CLOSE	DP=PLDC+PLDM1	CLOSE	UPSTREAM	36.1	YES
1E51-F031	RCIC PMP SUCT VLV FRM SUP POOL	RCIC SUPP POOL SUCTION ISOL VALVE	OPEN/CLOSE	DP=PRV-PELS	OPEN	DOWNSTREAM	95.367	YES
1E51-F031	RCIC PMP SUCT VLV FRM SUP POOL	RCIC SUPP POOL SUCTION ISOL VALVE	OPEN/CLOSE	DP=PLDC+PLDM1	CLOSE	UPSTREAM	36.1	YES
1E51-F045	TURBINE STEAM SUPPLY VALVE	RCIC STEAM ADMISSION VALVE	OPEN/CLOSE	DP=PRSS	OPEN/CLOSE	UPSTREAM	1080	YES
1E51-F046	COOLING WATER SUPPLY VALVE	RCIC TURBINE ACCESSORY COOL WTR VALVE	OPEN/CLOSE	DP=PSDI+PELC	OPEN	UPSTREAM	288.179	YES
1E51-F046	COOLING WATER SUPPLY VALVE	RCIC TURBINE ACCESSORY COOL WTR VALVE	OPEN/CLOSE	DP=PLDC+PLDM2+PVEL4	CLOSE	UPSTREAM	37.065	YES
1E51-F104	GATE VALVE 1.5 IN MO	RCIC VACUUM BREAKER LINE ISOL VALVE	CLOSE	DP=PC+PATM	CLOSE	UPSTREAM	30.5	YES
1E51-F105	GATE VALVE 2 IN MO	RCIC VACUUM BREAKER LINE ISOL VALVE	CLOSE	DP=PC+PATM	CLOSE	UPSTREAM	30.5	YES

1 CCL 8-16-88

* SEE SUPPLEMENT 1 OF THIS CALCULATION FOR DIFFERENTIAL PRESSURE DUE TO INADVERTENT VALVE POSITIONING.

1 CCL 8-16-88

Project	Prepared By	Date
E.I. Hatch Nuclear Plant Unit 1		8·16·88
Subject/Title	Reviewed By	Date
Unit 1 RCIC Motor Operated Valve		8-16-88
Differential Pressure Calculation	Calculation Number SNH-86-016 Supplement 1	Sheet 2 of 9

CRITERIA

1) The criteria, assumptions and formulas given in the General Electric "BWR Owner's Group Report on Operational Design Basis of Selected Safety-Related Motor-Operated Valves, "DRF-E12-00100-75 Supplement 1, are assumed to be correct.

ASSUMPTIONS

1) The elevation of 1E51F010 is conservatively assumed to be 89' - 8 7/8".

SUMMARY OF CONCLUSIONS

MPL NUMBER	VALVE DESCRIPTION	SAFETY ACTION	REPOSITION ACTION	MAX DP
E51F010	CST SUCTION	CLOSE	OPEN	34.52
E51F012	INJECTION VALVE TEST	NONE	OPEN	390.66
E51F524	TRIP AND THROTTLE	CLOSE	OPEN	NEGLIGIBLE

DESIGN CALCULATIONS — SOUTHERN COMPANY SERVICES

E.I. HATCH NUCLEAR PLANT UNIT 2 — PREPARED BY: [signature] — DATE 12/18/86

UNIT 2 HPCI MOTOR OPERATED VALVE — REVIEWED BY: [signature] — DATE 12/18/86

DIFFERENTIAL PRESSURE CALCULATION — CALCULATION NUMBER SMH-86-017 — SHEET 6 OF 54

SUMMARY TABLE 12/17/86

MPL NUMBER	VALVE DESCRIPTION	VALVE FUNCTION	SAFETY	DP CALCULATION FORMULA	MAXIMUM DP	MAXIMUM DP	DP (PSID)	SAFETY
2E41-F001	TURBINE STEAM SUPPLY VALVE	HPCI TURBINE STEAM ADMISSION VALVE	OPEN	DP=PRSS	OPEN	UPSTREAM	1090	YES
2E41-F002	STEAM SUPPLY INBOARD ISOL VALVE	HPCI STEAM LINE ISOLATION VALVE	CLOSE	DP=PRSS	CLOSE	UPSTREAM	1090	YES cod 5-1-00
2E41-F003	STEAM SUPPLY OUTBD ISOL VALVE	HPCI STEAM LINE ISOLATION VALVE	CLOSE	DP=PRSS	CLOSE	UPSTREAM	1090	YES (2)
* 2E41-F004	PUMP SUCT FRM COND STOR TANK	HPCI CST SUCTION VALVE	CLOSE	DP=PELD+PV+PVEL1	CLOSE	UPSTREAM	29.814	YES
2E41-F006	HPCI PUMP INBD DISCH VALVE	HPCI INJECTION/ISOLATION VALVE	OPEN/CLOSE	DP=PSDH-PISD-PEL	OPEN	UPSTREAM	418.73	YES
2E41-F006	HPCI PUMP INBD DISCH VALVE	HPCI INJECTION/ISOLATION VALVE	OPEN/CLOSE	DP=PSDH-PISD-PEL+PVEL2	CLOSE	UPSTREAM	426.893	YES (2)
* 2E41-F007	HPCI PUMP OUTBD DISCH VALVE	HPCI INJECTION VALVE TEST VALVE	NONE	NO SAFETY ACTION	N/A	N/A	N/A	NO cod 5-1-00
2E41-F008	TEST BYPASS VALVE TO COND STOR	HPCI CST TEST RETURN VALVE	NONE	NO SAFETY ACTION	N/A	N/A	N/A	NO
2E41-F011	REDUNDANT SHUTOFF W/F008	HPCI CST TEST RETURN VALVE	NONE	NO SAFETY ACTION	N/A	N/A	N/A	NO
2E41-F012	PMP MIN FLO BYP TO SUPP POOL	HPCI PUMP MIN FLO BYP ISOL VALVE	OPEN/CLOSE	DP=PSDH+PELM	OPEN	UPSTREAM	1309.28	YES
2E41-F012	PMP MIN FLO BYP TO SUPP POOL	HPCI PUMP MIN FLO BYP ISOL VALVE	OPEN/CLOSE	DP=PMF+PELM+PVEL3	CLOSE	UPSTREAM	1315.305	YES
2E41-F041	PMP SUCT FROM SUPP POOL	HPCI SUPP POOL SUCT ISOL VALVE	OPEN/CLOSE	DP=PRV-PELS	OPEN	DOWNSTREAM	97.12	YES
2E41-F041	PMP SUCT FROM SUPP POOL	HPCI SUPP POOL SUCT ISOL VALVE	OPEN/CLOSE	DP=PLOC+PLDM1	CLOSE	UPSTREAM	37.06	YES
2E41-F042	PMP SUCT FROM SUPP POOL	HPCI SUPP POOL SUCT ISOL VALVE	OPEN/CLOSE	DP=PRV-PELS	OPEN	DOWNSTREAM	97.12	YES
2E41-F042	PMP SUCT FROM SUPP POOL	HPCI SUPP POOL SUCT ISOL VALVE	OPEN/CLOSE	DP=PLOC+PLDM1	CLOSE	UPSTREAM	37.06	YES
2E41-F059	COOLING WATER SUPPLY VALVE	HPCI TURBINE ACCES COOLING WTR VLV	OPEN/CLOSE	DP=PC+PLDM2	OPEN	UPSTREAM	37.07	YES
2E41-F059	COOLING WATER SUPPLY VALVE	HPCI TURBINE ACCES COOLING WTR VLV	OPEN/CLOSE	DP=PC+PLDM2+PVEL4	CLOSE	UPSTREAM	37.947	YES
2E41-F104	GATE VALVE 2 IN MO	HPCI VAC BREAKER LINE ISOL VALVE	CLOSE	DP=PC+PATM	CLOSE	UPSTREAM	31.6	YES
2E41-F111	GATE VALVE 2 IN MO	HPCI VAC BREAKER LINE ISOL VALVE	CLOSE	DP=PC+PATM (2)	CLOSE	UPSTREAM	31.6	YES

* SEE SUPPLEMENT 1 OF THIS CALCULATION FOR DIFFERENTIAL PRESSURE DUE TO INADVERTENT VALVE POSITIONING.

Project	Prepared By	Date
E.I. Hatch Nuclear Plant Unit 2		9-16-88
Subject/Title	Reviewed By	Date
Unit 2 HPCI Motor Operated Valve		9-16-88
Differential Pressure Calculation	Calculation Number SNH-86-017 Supplement 1	Sheet 2 of 8

CRITERIA

1) The criteria, assumptions and formulas given in the General Electric "BWR Owner's Group Report on Operational Design Basis of Selected Safety-Related Motor-Operated Valves, "DRF-E12-00100-75 Supplement 1, are assumed to be correct.

ASSUMPTIONS

1) The elevation of 2E41F004 is conservatively assumed to be 92' - 8".

SUMMARY OF CONCLUSIONS

MPL NUMBER	VALVE DESCRIPTION	SAFETY ACTION	REPOSITION ACTION	MAX DP
2E41F004	CST SUCTION	CLOSE	OPEN	33.47
2E41F007	INJECTION VALVE TEST	NONE	OPEN	418.67

DESIGN CALCULATIONS — SOUTHERN COMPANY SERVICES

E.I. HATCH NUCLEAR PLANT UNIT 2 — PREPARED BY: C Loren — DATE 09/21/86

UNIT 2 RCIC MOTOR OPERATED VALVE — REVIEWED BY: T B Hudson — DATE 09/21/86

DIFFERENTIAL PRESSURE CALCULATION — CALCULATION NUMBER SNH-86-018 — SHEET 4 OF 52.

SUMMARY TABLE 09/21/86

MPL NUMBER	VALVE DESCRIPTION	VALVE FUNCTION	SAFETY	DP CALCULATION FORMULA	MAXIMUM DP	MAXIMUM DP	DP (PSID)	SAFETY
2E51-F007	RCIC STEAM INBOARD ISOL VALVE	RCIC STEAM LINE ISOLATION VALVE	CLOSE	DP=PRSS	CLOSE	UPSTREAM	1090	YES
2E51-F008	RCIC STEAM OUTBOARD ISOL VLV	RCIC STEAM LINE ISOLATION VALVE	CLOSE	DP=PRSS	CLOSE	UPSTREAM	1090	YES
* 2E51-F010	PUMP SUCT FRM COND STG TNK	RCIC CST SUCTION ISOLATION VALVE	CLOSE	DP=PELD+PV+PVEL1	CLOSE	UPSTREAM	29.621	YES
* 2E51-F012	RCIC PUMP OUTBOARD DISCH VLV	RCIC INJECTION VALVE TEST VALVE	NONE	NO SAFETY ACTION	N/A	N/A	N/A	NO
2E51-F013	RCIC PUMP INBOARD DISCH VLV	RCIC INJECTION VALVE	OPEN/CLOSE	DP=PRSS+PEL	OPEN/CLOSE	DOWNSTREAM	1125.612	YES
2E51-F019	TEST BYPASS TO COND STG TANK	RCIC MINIMUM FLOW BYPASS ISOL VALVE	OPEN/CLOSE	DP=PSOH+PELM	OPEN	UPSTREAM	1330.173	YES
2E51-F019	TEST BYPASS TO COND STG TANK	RCIC MINIMUM FLOW BYPASS ISOL VALVE	OPEN/CLOSE	DP=PMF+PELM+PVEL3	CLOSE	UPSTREAM	1333.883641	YES
2E51-F022	TEST BYPASS TO COND STG TANK	RCIC CST TEST RETURN VALVE	NONE	NO SAFETY ACTION	N/A	N/A	N/A	NO
2E51-F029	RCIC PMP SUCT VLV FRM SUP POOL	RCIC SUPP POOL SUCTION ISOL VALVE	OPEN/CLOSE	DP=PRV-PELS	OPEN	DOWNSTREAM	95.6	YES
2E51-F029	RCIC PMP SUCT VLV FRM SUP POOL	RCIC SUPP POOL SUCTION ISOL VALVE	OPEN/CLOSE	DP=PLOC+PLDM1	CLOSE	UPSTREAM	37.317	YES
2E51-F031	RCIC PMP SUCT VLV FRM SUP POOL	RCIC SUPP POOL SUCTION ISOL VALVE	OPEN/CLOSE	DP=PRV-PELS	OPEN	DOWNSTREAM	95.6	YES
2E51-F031	RCIC PMP SUCT VLV FRM SUP POOL	RCIC SUPP POOL SUCTION ISOL VALVE	OPEN/CLOSE	DP=PLOC+PLDM1	CLOSE	UPSTREAM	37.317	YES
2E51-F045	TURBINE STEAM SUPPLY VALVE	RCIC STEAM ADMISSION VALVE	OPEN/CLOSE	DP=PRSS	OPEN/CLOSE	UPSTREAM	1090	YES
2E51-F046	COOLING WATER SUPPLY VALVE	RCIC TURBINE ACCESSORY COOL WTR VALVE	OPEN/CLOSE	DP=PSOI+PELC	OPEN	UPSTREAM	291.974	YES
2E51-F046	COOLING WATER SUPPLY VALVE	RCIC TURBINE ACCESSORY COOL WTR VALVE	OPEN/CLOSE	DP=PLOC+PLDM2+PVEL4	CLOSE	UPSTREAM	37.381729	YES
2E51-F104	GATE VALVE 1.5 IN MO	RCIC VACUUM BREAKER LINE ISOL VALVE	CLOSE	DP=PC+PATM	CLOSE	UPSTREAM	31.6	YES
2E51-F105	GATE VALVE 2 IN MO	RCIC VACUUM BREAKER LINE ISOL VALVE	CLOSE	DP=PC+PATM	CLOSE	UPSTREAM	31.6	YES
2E51-F119	LSTB VALVE	RCIC STEAM ADMISSION BYPASS VALVE	CLOSE	DP=PRSS	CLOSE	UPSTREAM	1090	YES

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* SEE SUPPLEMENT 1 OF THIS CALCULATION FOR DIFFERENTIAL PRESSURE DUE TO INADVERTENT VALVE POSITIONING.

Project	Prepared By	Date
E.I. Hatch Nuclear Plant Unit 2	[signature]	8-16-88
Subject/Title	Reviewed By	Date
Unit 2 RCIC Motor Operated Valve	[signature]	9-16-88
Differential Pressure Calculation	Calculation Number SNH-88-018 Supplement 1	Sheet 2 of 9

CRITERIA

1) The criteria, assumptions and formulas given in the General Electric "BWR Owner's Group Report on Operational Design Basis of Selected Safety-Related Motor-Operated Valves, "DRF-E12-00100-75 Supplement 1, are assumed to be correct.

SUMMARY OF CONCLUSIONS

MPL NUMBER	VALVE DESCRIPTION	SAFETY ACTION	REPOSITION ACTION	MAX DP
2E51F010	CST SUCTION	CLOSE	OPEN	34.62
2E51F012	INJECTION VALVE TEST	NONE	OPEN	409.93
2E51F524	TRIP AND THROTTLE	CLOSE	OPEN	NEGLIGIBLE