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CP&L

Carolina Power & Light Company

MAY 13 1986

SERIAL: NLS-86-164

PDR

Dr. J. Nelson Grace, Regional Administrator
United States Nuclear Regulatory Commission
Suite 2900
101 Marietta Street, NW
Atlanta, GA 30303

SHEARON HARRIS NUCLEAR POWER PLANT
UNIT NO. 1 - DOCKET NO. 50-400
RESPONSE TO IE BULLETIN NO. 85-03 "MOTOR-OPERATED VALVE COMMON MODE FAILURES DURING PLANT TRANSIENTS DUE TO IMPROPER SWITCH SETTINGS"

Dear Dr. Grace:

Carolina Power & Light Company (CP&L) hereby submits information requested by IE Bulletin No. 85-03, "Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings," dated November 15, 1985. The subject bulletin required that a design basis review be performed and a program be developed and implemented to ensure that switch settings for certain safety-related motor-operated valves (MOV) are properly selected, tested under simulated conditions, and correctly maintained.

This submittal provides the results of CP&L's review, per action a of the bulletin, of the design basis for the operation of the MOVs in the high pressure components of the Safety Injection System and the Auxiliary Feedwater System. In addition, a description of the program and an implementation schedule for completing actions b through d of the bulletin are included. The attached information is formatted such that the specific subheadings correspond to the bulletin item topics.

A final report will be submitted within 60 days of the completion of the IEB 85-03 requirements, but no later than January 15, 1988.

Should you have any questions regarding this submittal, please contact Mr. Arnold Schmich at (919) 836-8759.

Yours very truly,

A. B. Cutter - Vice President
Nuclear Engineering & Licensing

ABC/AWS/pgp (3879AWS)

Attachment

cc: Mr. B. C. Buckley (NRC)
Mr. G. F. Maxwell (NRC-SHNPP)
Dr. J. Nelson Grace (NRC-RII)
Mr. Travis Payne (KUDZU)
Mr. Daniel F. Read (CHANGE/ELP)
Wake County Public Library
Mr. Wells Eddleman
Mr. John D. Runkle
Dr. Richard D. Wilson
Mr. G. O. Bright (ASLB)
Dr. J. H. Carpenter (ASLB)
Mr. J. L. Kelley (ASLB)

A. B. Cutter, having been first duly sworn, did depose and say that the information contained herein is true and correct to the best of his information, knowledge and belief; and the sources of his information are officers, employees, contractors, and agents of Carolina Power & Light Company.

My commission expires: 11/27/89

Ruby R. Morgan
Notary (Seal)

RUBY R. MORGAN Official Copy NOTARY PUBLIC WAKE COUNTY, N.C.

RESPONSE TO NRC IE BULLETIN 85-03

The following sections provide specific detail on each of the IEB 85-03 action items.

A. Design Basis Information

CP&L reviewed the MOV's in the high head portion of the Safety Injection System (SIS) and the Auxiliary Feedwater System (AFS) and identified the valves listed in Table 1 as being subject to the requirements of this bulletin.

The valves in the SIS are those valves which are (1) positioned by the Engineered Safety Features Actuation System (ESFAS) during the cold leg injection phase, (2) actuated to provide an alternate Charging/Safety Injection Pump (CSIP) miniflow path or (3) actuated to provide an alternate high head cold leg injection path. The function of each respective valve is indicated on Table 1 as well as a reference to the applicable FSAR figure.

The valves in the AFS and Main Steam (MS) system listed in Table 1 are those valves which are (1) positioned by ESFAS to actuate the steam driven auxiliary feedwater pump or (2) positioned by the ESFAS to isolate auxiliary feedwater from a faulted steam generator during a main steam line break. The function of each respective valve is indicated on Table 1 as well as a reference to an applicable FSAR figure.

The design differential pressures of Table 1 are based on the design bases for the respective systems. The design bases for these systems are contained in FSAR Sections 6.3 (SIS) and 10.4.9 (AFS). Failure modes and effects analyses for the respective systems are presented in FSAR Tables 6.3.1-1 (SIS) and 10.4.9-2 (AFS).

B. Switch Settings

Torque switch settings have been evaluated in accordance with the requirements of the bulletin for many of the valves listed in Table 1. By July 25, 1986, the torque switch settings will be evaluated in accordance with the requirements of the bulletin. To date, the "original" settings have been found to be satisfactory.

The torque switch bypass and position limit switch selection methodology is under review. This review will be complete by July 1, 1986.

A major review of the MOV thermal overload selection methodology was completed in 1985 in response to the NRC's Independent Design Inspection (Inspection Report 50-400/84-48). The NRC's inspection of CP&L's response to this IDI item was completed in November 1985 (Inspection Report 50-400/85-43). The selection methodology for overloads is completely independent of the torque switch selection methodology; therefore, the thermal overload selection methodology will not be affected by the reevaluation of torque switch settings and subsequent valve tests. Based on the IDI effort and CP&L's responses, CP&L considers the evaluation of thermal overload methodology to be complete.

Since SHNPP is currently awaiting issuance of an Operating License (OL) from the NRC, the bulletin's instructions with respect to declaring the specific valves inoperable do not apply. Following issuance of the OL, valves which are found to be inoperable will be treated in accordance with the applicable Technical Specifications.

C. Valve Testing

To the extent practicable, each valve listed in Table 1 will be subjected to a test to verify that the valve successfully cycles when the design differential pressure exits. The testing will be conducted using the respective systems in alignments that duplicate the configurations assumed for the design bases. Since the design differential pressures are typically selected based on very conservative assumptions, it may be impossible to achieve the design differential pressures using installed equipment. Several examples have been identified to date. The examples include:

1. AFS Valves 1AF-137, 1AF-143, and 1AF-149 cannot be tested at the design differential pressure because these valves isolate the steam driven auxiliary feedwater pump discharge flow from a faulted (depressurized) steam generator. Since the pump relies on steam pressure from the steam generators, the design differential pressure cannot be duplicated for these three valves.

2. The Volume Control Tank (VCT) discharge valves to the CSIP suction header have design differential pressures (Δp) for opening and closing of 100 psid. The maximum pressure which can be maintained in the VCT is 75 psig due to a VCT relief valve setting. During valve actuation, pressure is opposed by the static head from the Refueling Water Storage Tank (RWST) such that the test Δp is less than 75 psi.

3. The RWST suction valves to the CSIP suction header cannot be tested at the design Δp because the tank is an atmospheric tank and the maximum head against the closed valves is approximately 35 psig.

For those valves in Table 1 which are not tested at the design Δp additional justification for demonstrating the acceptability of the switch settings will be provided.

The completion schedule for this testing is as follows: the testing for SIS valves will be completed prior to fuel load (July 25, 1986) and the testing for the AFS valves will be completed during the startup test program and will be completed prior to January 1, 1987.

D. Control of Switch Settings

The current control for MOV switch settings is via the use of generic procedures and the implementation of the switch settings which are engraved in the limit switch compartment covers for the MOV's. As discussed in Section B above, these settings are the correct switch settings. However, CP&L is evaluating the need for additional administrative controls. This evaluation and implementation of the necessary procedures will be completed by November 1, 1986.

E.&F. Schedule and Final Report

As noted in the introduction, this submittal provides a response which completes the requirements for a submittal 180 days after the issuance of Bulletin 85-03. This response provides CP&L's proposed schedule for the remaining items and a commitment for a final report in accordance with the requirements of the bulletin. The final report will provide the data as discussed above in a tabular format as recommended by the bulletin.

TABLE 1
MOV DESIGN DATA

CP&L SFD No.	(Ebasco) FSAR Valve No.	Westinghouse Valve No.	FSAR Figure No.	Valve Function	Design Basis Open/Close (psid)
1CS-165	2CSL520	LCV115C	9.3.4-3	Isolate CSIP Suction from VCT	100/100
1CS-166	2CSL521	LCV114E	9.3.4-3	Isolate CSIP Suction from VCT	100/100
1CS-196	2CSV602	8109B	9.3.4-3	CSIP Miniflow Isolation (B)	2750/2750
1CS-210	2CSV601	8109C	9.3.4-3	CSIP Miniflow Isolation (C)	2750/2750
1CS-182	2CSV600	8109A	9.3.4-3	CSIP Miniflow Isolation (A)	2750/2750
1CS-214	2CSV585	8106	9.3.4-3	CSIP Miniflow Isolation Common	2750/2750
1CS-291	2CSL523	LCV115B	9.3.4-3	CSIP Suction from RWST	200/200
1CS-292	2CSL522	LCV115D	9.3.4-3	CSIP Suction from RWST	200/200
1SI-1	2SIV503	8803A	6.3.2-1	BIT Inlet Isolation	2750/0
1SI-2	2SIV504	8803B	6.3.2-1	BIT Inlet Isolation	2750/0
1SI-3	2SIV506	8801A	6.3.2-1	BIT Outlet	2750/0
1SI-4	2SIV505	8801B	6.3.2-1	BIT Outlet	2750/0
1AF-55	2AFV10	NA	10.1.0-3	Motor Driven AFP to S/G A Isolation	1321/1321
1AF-74	2AFV23	NA	10.1.0-3	Motor Driven AFP to S/G C Isolation	1321/1321
1AF-93	2AFV19	NA	10.1.0-3	Motor Driven AFP to S/G B Isolation	1321/1321
1AF-137	2AFV116	NA	10.1.0-3	AFP 1X to S/G A Isolation	1233/1233
AF-143	2AFV117	NA	10.1.0-3	AFP 1X to S/G B Isolation	1233/1233

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CP&L ID No.	(Ebasco) FSAR Valve No.	Westinghouse Valve No.	FSAR Valve Figure No.	Design Basis Function	Open/Close (psid)
1AF-149	2AFV118	NA	10.1.0-3	AFP 1X to S/G C Isolation	1233/1233
1MS-70	2MSV8	NA	10.1.0-1	AFP Turbine Steam Supply from S/G C	1185/0
1MS-72	2MSV9	NA	10.1.0-1	AFP Turbine Steam Supply from S/G B	1185/0
AFP Trip & Throttle Valve	NA	NA	10.1.0-1	AFP 1X Turbine Trip & Throttle Valve	1185/0
1CS-745	2CSV758	8489B	Note 1	CSIP Auxiliary Miniflow	2750/2750
1CS-746	2CSV757	8490A	Note 1	CSIP Auxiliary Miniflow	2750/2750
1CS-752	2CSV759	8490B	Note 1	CSIP Auxiliary Miniflow	2750/2750
1CS-753	2CSV760	8489A	Note 1	CSIP Auxiliary Miniflow	2750/2750
1CS-235	2CSV609	8108	9.3.4-3	Charging Line Isolation	2750/2750
1CS-238	2CSV610	8107	9.3.4-3	Charging Line Isolation	2750/2750
1SI-52	2SIV502	8885	6.3.2-1	High Head Alternate Cold Leg Injection	2750/2750

Note 1 - These valves are not currently shown in the FSAR - an FSAR figure update per Amendment No. 27 will include these valves.

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