The Light company Houston Lighting & Power P.O. Box 1700 Houston, Texas 77001 (713) 228-9211

June 2, 1986
ST-HL-AE-1661
File No.: G3.3

Mr. Robert D. Martin
Regional Administrator, Region IV
U. S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

South Texas Project
Units 1 & 2
Docket Nos. STN 50-498, STN 50-499
Response to IE Bulletin 85-03,
"Motor-Operated Valve Common Mode Failures During Plant Transients Due to Improper Switch Settings"

Dear Mr. Martin:

This response to NRC IE Bulletin 85-03 addresses development and implementation of a program to ensure that torque switch settings on certain safety-related motor-operated valves are selected, set, and maintained correctly. The program will allow the valves to accommodate the maximum differential pressures expected on these valves during both normal and abnormal events within the design basis of the South Texas Project.

The valves falling under the scope of IEB 85-03 are listed in Attachment A. Attachment B provides the design basis for each valve, including the maximum differential pressure expected (during both opening and closing the valve) both for the "as purchased" specification and for the safety design basis, and the recommended differential pressures and test conditions for dynamic preoperational testing. Note that the auxiliary feedwater system (AFW) includes two motor operated valves whose function is to admit steam to the AFW turbine to start the turbine driven AFW pump. These valves are not included in the attachments because they are not considered to be within the intended scope of IEB 85-03 for the South Texas Project. Routine testing of these valves is sufficient because test conditions are similar to those that would be present during postulated accident conditions.

Operation of the affected valves is controlled as follows:

1) Operation in the opening direction will be controlled by a limit switch set to remain closed until the valve opens to approximately 95%. The limit switch is connected in series with the parallel combination of a torque switch and a torque bypass limit switch.

86-615

IE31

The torque bypass limit switch in the opening direction will be set to remain closed until the valve is approximately 95% open. This amount of opening has been determined to be sufficient for performance of any safety function required. Also, because of the slow speed of these valves (as compared to the speed discussed in IEB 85-03) and the small mass of the discs, this limit switch setting will preclude the disc from impacting the backseat on the opening stroke.

2) Operation in the closing direction is controlled by both a torque switch and a torque bypass limit switch connected in parallel. The bypass limit switch will be set to remain closed until the valve shuts to approximately 95% closed, during which time opening of the torque switch will not interrupt the closing stroke. After the torque bypass switch has opened, the closing operation continues and is controlled by the torque switch. The torque switch will be set to the valve manufacturer's recommended value.

Torque and limit switches will be set per design requirements and in accordance with approved prerequisite test procedures. Safety-related motor-operated valves will be dynamically tested during preoperational testing. This testing will be completed prior to issuance of the Operating License.

A method will be developed to document and control torque switch settings and tolerances for motor-operated valves. Completion is expected no later than fuel load.

If you should have any questions on this matter, please contact Mr. S. M. Head at (512) 972-8392.

Very truly yours,

J. H. Goldberg

J. H. Goldberg
Group Vice President, Nuclear

PLW/ljm

Attachment: (A) Valve List
(B) IEB 85-03 Valve Data

L3/NRC/x

cc:

Hugh L. Thompson, Jr., Director
Division of PWR Licensing - A
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

N. Prasad Kadambi, Project Manager
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, MD 20814

Claude E. Johnson
Senior Resident Inspector/STP
c/o U.S. Nuclear Regulatory
Commission
P.O. Box 910
Bay City, TX 77414

M.D. Schwarz, Jr., Esquire
Baker & Botts
One Shell Plaza
Houston, TX 77002

J.R. Newman, Esquire
Newman & Holtzinger, P.C.
1615 L Street, N.W.
Washington, DC 20036

Director, Office of Inspection
and Enforcement
U.S. Nuclear Regulatory Commission
Washington, DC 20555

T.V. Shockley/R.L. Range
Central Power & Light Company
P.O. Box 2121
Corpus Christi, TX 78403

H.L. Peterson/G. Pokorny
City of Austin
P.O. Box 1088
Austin, TX 78767

J.B. Poston/A. vonRosenberg
City Public Service Board
P.O. Box 1771
San Antonio, TX 78296

Brian E. Berwick, Esquire
Assistant Attorney General for
the State of Texas
P.O. Box 12548, Capitol Station
Austin, TX 78711

Lanny A. Sinkin
Christic Institute
1324 North Capitol Street
Washington, D.C. 20002

Oreste R. Pirfo, Esquire
Hearing Attorney
Office of the Executive Legal Director
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Charles Bechhoefer, Esquire
Chairman, Atomic Safety &
Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dr. James C. Lamb, III
313 Woodhaven Road
Chapel Hill, NC 27514

Judge Frederick J. Shon
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Citizens for Equitable Utilities, Inc.
c/o Ms. Peggy Buchorn
Route 1, Box 1684
Brazoria, TX 77422

Docketing & Service Section
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, DC 20555
(3 Copies)

Advisory Committee on Reactor Safeguards
U.S. Nuclear Regulatory Commission
1717 H Street
Washington, DC 20555

Revised 5/22/86

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter	)	
	)	
Houston Lighting & Power	)	Docket Nos. 50-498
Company, et al.,	)	50-499
	)	
South Texas Project	)	
Units 1 and 2	)	

AFFIDAVIT

J. H. Goldberg being duly sworn, hereby deposes and says that he is Group Vice President, Nuclear of Houston Lighting & Power Company; that he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached response to NRC IE Bulletin 85-03; is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge and belief.

J. H. Goldberg
Group Vice President, Nuclear

STATE OF TEXAS)
)
COUNTY OF MATAGORDA)

Subscribed and sworn to before me, a Notary Public in and for Matagorda County, Texas this 2nd day of June, 1986.

NOTARY PUBLIC STATE OF TEXAS

Beverly J. Fite
Notary Public in and for the
State of Texas

My commission expires:

BEVERLY J. FITE
Notary Public, State of Texas
My Commission Expires 10/7/88

L3/NRC/x

ATTACHMENT A
ST-HL-AE-1661
PAGE 1 OF 1

Attachment A

Valve List

The valves falling within the scope of IE Bulletin 85-03 are as follows:

1. High Head Safety Injection System

XSI-0004A, XSI-0004B, XSI-0004C — HHSI Pump Discharge Valve

XSI-0006A, XSI-0006B, XSI-0006C — HHSI to Cold Leg

XSI-0008A, XSI-0008B, XSI-0008C — HHSI to Hot Leg

SI-0011A, SI-0011B, SI-0011C — HHSI Pump Min. Flow Valve

SI-0012A, SI-0012B, SI-0012C

2. Aux. Feedwater System

AF-0019 AFW Pump (Turbine Driven) Discharge to Steam Generator

AF-0048, AF-0065, AF-0085 — AFW Pump (Motor Driven) Discharge to Steam Generator

AF-FV7526 AFW Flow Control (Turbine Driven Train)

AF-FV7523, AF-FV7524, AF-FV7525 — AFW Flow Control (Motor Driven Train)

ATTACHMENT B
ST-HL-AE-1661
PAGE 1 OF 3

Attachment B

IEB 85-03 Valve Data

Valve				
Function	HHSI Pump Disch.	HHSI to Cold Leg	HHSI to Hot Leg	HHSI Pump Min Flow
Valve #	XSI-0004A	XSI-0006A	XSI-0008A	SI-0011A
Manufacturer	West.	West.	West.	Kerotest
Type	Gate	Gate	Gate	PMD Globe
Model	6GM77FHA	6GM78FNB	6GM78FNB	9909MO
Size, inches	6	6	6	2
Rating, PSIG	1750	2500	2500	2485
Valve Operator				
Manufacturer	Limitorque	Limitorque	Limitorque	Limitorque
Model	SB-1	SB-1	SB-1	SMB-00-10
Motor RPM	3600	3600	3600	1700(8)
Stroke Time, sec	15	15	15	10
Max △ P, as purchased				
To Open, psi	1500	2750	2750	2485
To Close, psi	1000	1000	1000	2485
Max △ P, Safety Design Basis				
To Open, psi	0(4)	20	10	0(4)
To Close, psi	38	20	10	1730
Recommended Preoperational Test △ P				
To Open, psi	0(3)	0(3)	0(3)	0
To Close, psi	0(3)	0(3)	0(3)	0(5)
Data also applied to Valve Numbers	XSI-0004B XSI-0004C	XSI-0006B XSI-0006C	XSI-0008B XSI-0008C	SI-0011B SI-0011C SI-0012A SI-0012B SI-0012C

Attachment B

IEB 85-03 Valve Data
(Continued)

Valve				
Function	AFW to S/G Isol. Valve	AFW to S/G Isol. Valve	AFW Flow Control (1)	AFW Flow Control
Valve #	AF-0019	AF-0048	AF-FV-7526	AF-FV-7523
Manufacturer	Rockwell	Rockwell	Valtek	Valtek
Type	Stop-Check	Stop-Check	Globe	Globe
Model	D85-32184	D85-32185	Channelstream	Channelstream
Size, inches	4	4	4	4
Rating, PSIG	2700	1800	2700	1800
Valve Operator				
Manufacturer	Limitorque	Limitorque	Limitorque	Limitorque
Model	SMB-2-40	SMB-2-60	SMB-0-10	SMB-0-10
Motor RPM	1900 (2)	1800	1900 (2)(8)	1800 (8)
Stroke time, sec	60	45	55	45 (8)
Max Δ P, as purchased				
To Open, psi	2700	1800	2700	1680
To Close, psi	2700	1800	2700	1680
Max Δ P, Safety Design Basis				
To Open, psi	1925	1570	1925	1570
To Close, psi	2010	1660	2010	1660
Recommended Test Δ P				
To Open, psi	1925 (6)	1570	1925 (6)	1570
To Close, psi	1925 (6)(7)	1570 (7)	1925 (6)(7)	1570 (7)
Data also applied to Valve Numbers		AF-0065 AF-0085		AF-FV-7524 AF-FV-7525

NOTES

1. Turbine Driven Pump Train

2. DC Motor

3. It is not practical to establish the safety design basis differential pressure for stroke testing. It is acceptable to test with no ΔP established because the safety design basis differential pressures are negligible in comparison to the as purchased capability of the operator.

4. There is no safety design basis requirement for valve movement in this direction.

5. The only practical method of closing this valve under the safety design basis differential pressure would be to close the valve while the HHSI pump is running. There are no suitable alternative flow paths available. Running the 1000 HP HHSI pump with no flow would run an unacceptable risk of damaging or degrading the pump.

6. The test is performed at the actual AFW pump discharge pressure on minimum flow recirculation through the automatic recirculation valve with the steam generator pressure near 85 PSIG. The actual AFW pump discharge pressure could be up to 20% less than this value because of the actual turbine governor's characteristics.

7. The exception to testing at less than the maximum safety design basis differential pressure is acceptable for the following reasons:

   a. The safety design basis ΔP is based on a secondary line break.

   b. There are two alternative ways to stop the flow to a faulted steam generator:

      1. Stop the pump, or

      2. Close the other valve.

   c. The safety design basis differential pressure is less than the as purchased capability of the operator.

8. This is based on preliminary information available at time of submittal.