



LOUISIANA
POWER & LIGHT

142 DELARONDE STREET • P.O. BOX 8008
NEW ORLEANS, LOUISIANA 70174-8008 • (504) 366-2345

MIDDLE SOUTH
UTILITIES SYSTEM

August 27, 1984

W3P84-2362
3-A1.01.04

Director of Nuclear Reactor Regulation
Attention: Mr. G.W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: Waterford SES Unit 3
Docket No. 50-382
Shutdown Cooling System (SDCS) Relief Valves

REFERENCES: (1) Letter dated April 18, 1984
from Knighton (NRC) to Leddick (LP&L)
(2) W3P84-1184 dated April 27, 1984

Dear Sir:

In your Reference (1) letter you expressed concern over the possibility of the Waterford 3 SDCS relief valves failing to close. Additionally, because the ASME Code allowed the valves to be capacity certified based solely on manufacturer calculations, you requested test and/or operational data from comparable valves in non-nuclear service.

As noted in our Reference (2) letter, these questions were generic and would be addressed through a CE Owners Group task. This work is now complete. Enclosed please find the requested information.

We trust this information adequately addresses your concerns as to operability of the SDCS relief valves at Waterford 3, and request that your review of this material be included in the next Supplement to the Waterford SER. Should you have any questions or comments on this submittal please contact Mike Meisner at (504) 363-8938.

Yours very truly,

K.W. Cook

Nuclear Support & Licensing Manager

KWC/MJM/ss

Enclosure

cc: E.L. Blake, W.M. Stevenson, J.T. Collins, D.M. Crutchfield, J. Wilson,
L.B. Marsh, F.C. Cherny, G.L. Constable

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Response to the NRC Request for
Additional Information on Shutdown Cooling
System Relief Valve Operability

The following information is provided in response to the NRC request for information which would substantiate operability of the Shutdown Cooling System (SCS) relief valves which are specified for Waterford Unit 3, Palo Verde Units 1-3, Washington Nuclear Project 3 and C-E System 80. Significant data is recorded which demonstrates that these valves will open and close under their anticipated fluid conditions.

Test reports of relief valve testing by the Crosby Valve and Gage Company (Crosby) and Dresser Industries, Inc. (Dresser) provide the requested evidence of operability of the SCS relief valves specified for the identified units. Crosby valves are installed at Waterford 3 and Palo Verde 1-3. Dresser valves are installed at WNP 3. Table 1 presents specific data on these installed and tested valves.

Relief valve operability testing was conducted by Crosby for seismic qualification of two models of relief valves purchased by C-E. The results of these tests demonstrated that the relief valves would operate properly before, during and after application of static loads simulating maximum seismic deflection and maximum pipe loads. The tests were conducted with both steam and water. A Crosby 6R10 JB-56-TD steam service valve was tested with steam with seismic loads applied. This valve is similar to the Crosby 6R10 JO-55 liquid service valve supplied for the three Palo Verde units. The major difference between these two valves is that the test valve was equipped with a bellows. This is not considered significant because no appreciable back pressure was present during testing. A Crosby 4P6 JO-45 liquid service valve was tested with water with both seismic and pipe loads applied. This valve was supplied to TVA for the Yellow Creek units for use in the shutdown cooling system.

The steam tests (Crosby 6R10 JB-56-TD) were conducted at full pressure (490 psig) and demonstrated proper valve operation with stable and consistent valve performance. The water tests (Crosby 4P6 JO-45) were conducted at a reduced pressure of 66 psig with a prorated spring in order to achieve high flow rates through the valve. (The tests facility's centrifugal pump had insufficient capacity at the full set pressure of 435 psig.) The valve was tested with subcooled water at a flowrate approximately 96 percent of the full pressure rated relief capacity. This valve also showed stable and consistent valve performance and proper valve operation. Both Crosby tests demonstrated the valves ability to successfully open, achieve full lift, and reseal.

The Dresser valves for WNP Unit 3 were tested at the factory. These tests were Dresser's standard production tests on each valve it manufactures that is specified for SCS service, which consists of a full flow test using steam. Test data was recorded for the WNP 3 valves which have been specified at 1333 gpm and 435 psig set pressure. The test which was performed at the actual set pressure, successfully demonstrated that the valve will open, achieve full lift and reseal.

Table 1 lists the shutdown cooling system relief valves specified for WNP 3, Waterford 3 and Palo Verde 1, 2, and 3. Included for comparison is the valve model intended for TVA's Yellow Creek units because of the seismic operability tests which had been performed on that valve. These steam and water tests envelope the subcooled water fluid conditions expected in the plants.

The valves which were tested for operability adequately span the size and capacity ranges for the installed valves. Also, since the installed valves are of similar design and operating principle to those tested, C-E considers these operability tests to be applicable.

Based upon these successful valve tests C-E expects the valves to operate correctly providing the required pressure relief capacity and subsequently reclosing under actual service conditions.

TABLE 1

Shutdown Cooling System Relief Valves

<u>Vendor</u>	<u>Model</u>	<u>Inlet</u> <u>(in.)</u>	<u>Outlet</u> <u>(in.)</u>	<u>Orifice</u> <u>Area</u> <u>(in.²)</u>	<u>Set</u> <u>Press.</u> <u>(psig)</u>	<u>Rated</u> <u>Flow</u> <u>(gpm)</u>	<u>Plant</u>
<u>Specified Valves:</u>							
Dresser	1910-30/P/P1	4	6	7.417	435	1333	WNP 3
Crosby	JB-55-w	6	8	11.045	415	3505	Waterford 3
Crosby	J0-55	6	10	16.0	467	4000	Palo Verde 1, 2, 3
<u>Tested Valves:</u>							
					<u>Test</u> <u>Press.</u> <u>(psig)</u>	<u>Test</u> <u>Medium</u>	<u>Test</u> <u>Flow</u> <u>(gpm)</u>
Dresser	1910-30/P/P1	4	6	7.417	435	Steam	(1)
Crosby	J0-45	4	6	6.379	66	Water	1923
Crosby	JB-56	6	10	16.0	490	Steam	(1)

(1) Tested with steam, flow not recorded