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September 1, 1981

Mr. A. Schwencer, Chief
Licensing Branch 2
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: LaSalle County Station Units 1 and 2
Supplemental Information Concerning
Containment Leak Chase Channels
NRC Docket Nos. 50-373/374

Reference (1): L. O. DelGeorge letter to A. Schwencer
dated August 10, 1981

Dear Mr. Schwencer:

The purpose of this submittal is to provide the report on the LaSalle County Containment Leak Chase Channels discussed in the telephone conference of August 12, 1981 with Mr. A. Bournia of your staff. This report clarifies the codes used in the design, the load cases evaluated, combinations employed and resultant component stresses. This information supplements that provided in Reference (1) and verifies the conclusion reached therein, that the integrated leak rate test performed at LaSalle County with leak chase channel plugs in is acceptable, and that future tests can be performed in the same manner.

This item remains as an unresolved issue with the regional office of inspection and enforcement pending completion of the review of the attached report by your office. Therefore, it is requested that this matter be given your prompt attention.

If there are any further questions in this regard, please direct them to this office.

Very truly yours,

L. O. DelGeorge
Director of Nuclear Licensing

Enclosure
cc: NRC Resident Inspector - LSCS

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Design Assessment of Suppression Pool Leak Chase Channels

- The liner seams in the suppression pool area are enclosed by 2xlx3/16 stainless steel leak chase channels (ASTM A-276, Type 304) which are attached to the liner by 3/16 inch continuous fillet weld. The loads and load combinations for which the channel and its weld are assessed, applicable codes and acceptance criteria are listed below. Also included is a design margin table for the channel and its weld to the liner.

Loads and Load Combinations

The applicable pool hydrodynamic loads as defined in Section 3 and Table 3.4-1 of the LSCS-DAR are:

1. Safety/Relief Valve (SRV) Actuation Loads:

In addition to the boundary loads, the SRV discharge loads include air bubble drag loads due to:

- a) All Valve, and
- b) Single Valve Second Actuation.

2. Loss-of-Coolant (LOCA) Accident Loads

The LOCA loads considered for this assessment are:

- a) LOCA Water Jet Loads
- b) LOCA Charging Air Bubble Loads
- c) Pool Swell and Fallback Loads
- d) Condensation Oscillation Loads
- e) Chugging Loads
- f) Accident Temperature, and
- g) Jet Impingement Loads

In addition to the pool hydrodynamic loads listed above, the leak chase channel is assessed for the effects of hydrostatic pressure including pool sloshing under seismic events (OBE, SSE).

These loads were combined using the appropriate load combinations from Table 4.3-2 of the LSCS-DAR.

Applicable Code and Acceptance Criteria

The acceptance criteria used for this assessment is the same as outlined in Subsection 4.3.2 of LSCS-DAR. Thus, stresses per 1969 AISC specification are used for load combinations 1 through 3 defined in Table 4.3-2. For load combinations involving

abnormal or extreme environmental loads (combinations 4 through 7a), the stresses are limited to 0.95 fy. The allowable stress used for the weld for all load combinations is 21000 psi.

Margin Factors

Margin factors, defined as the ratio between the allowable stress and the actual stress, were computed for the channel section and its weld to the liner for the governing load combinations of Table 4.3-2.

MARGIN TABLE FOR LEAK CHASE CHANNEL

<u>Load Combination*</u> <u>Equation</u>	<u>Margin Factor</u> <u>for Channel</u>	<u>Margin Factor</u> <u>for Weld</u>
1	11.9	63.70
3	10.4	56.10
4a	1.30	5.50
5a	1.30	5.50
7a	1.30	5.50

*Refer to Table 4.3-2

TABLE 4.3-2

LOCA AND
SRV DESIGN LOAD COMBINATIONS
STRUCTURAL STEEL ELASTIC DESIGN

<u>EQN</u>	<u>LOAD</u> <u>COND</u>	<u>D</u>	<u>L*</u>	<u>F</u>	<u>P_O</u>	<u>T_O</u>	<u>R_O</u>	<u>E_O</u>	<u>E_{SS}</u>	<u>P_B</u>	<u>P_A</u>	<u>T_A</u>	<u>R_A</u>	<u>R_R</u>	<u>SRV**</u>	<u>ADS</u>	<u>ALL</u>	<u>ASYM-</u> <u>MET-</u> <u>RICAL</u>	<u>SINGLE</u>	<u>DESIGN</u> <u>STRESS</u>
1	Normal w/o Temp	1.0	1.0	1.0	1.0	-	-	-	-	-	-	-	-	-	1.0	0	X	X		AISC Allowable
2	Normal w/Temp	1.0	1.0	1.0	1.0	1.0	1.0	-	-	-	-	-	-	-	1.0	0	X	X		AISC Allowable
3	Normal Sev. Env.	1.0	1.0	-	1.0	1.0	1.0	1.0	-	-	-	-	-	-	1.0	0	X	X		AISC Allowable
4	Abnormal	1.0	1.0	1.0	-	-	-	-	-	1.0	-	1.0	1.0	-	1.0	X	0	X		1.6 AISC
4a		1.0	1.0	1.0	-	-	-	-	-	-	1.0	1.0	1.0	-	1.0	0	0	0	X	Allowable ≤ .95 Fy
5	Abnormal Sev. Env.	1.0	1.0	-	-	-	-	1.0	-	1.0	-	1.0	1.0	-	1.0	X	0	X		1.6 AISC
5a		1.0	1.0	-	-	-	-	1.0	-	-	1.0	1.0	1.0	-	1.0	0	0	0	X	Allowable ≤ .95 Fy
6	Normal Ext. Env.	1.0	1.0	-	1.0	1.0	1.0	-	1.0	-	-	-	-	-	1.0	0	X	X		1.6 AISC
																				Allowable ≤ .95 Fy
7	Abnormal Ext. Env.	1.0	1.0	-	-	-	-	-	1.0	1.0	-	1.0	1.0	1.0	1.0	X	0	X		1.6 AISC
7a		1.0	1.0	-	-	-	-	-	1.0	-	1.0	1.0	1.0	1.0	1.0	0	0	0	X	Allowable ≤ .95 Fy

LOAD DESCRIPTION

D	=	Dead Loads	E _{SS}	=	Safe Shutdown Earthquake
L	=	Live Loads	P _B	=	SBA and IBA LOCA Loads
S	=	Stability Loads	T _A	=	Pipe Break Temperature Load
P _O	=	Operating Pressure Differential Load	R _A	=	Pipe Break Temperature Reactions Loads
R _O	=	Operating Pipe Reactions	P _A	=	DBA LOCA Loads
P _V	=	Operating Pressure Loads	R _R	=	Reactions and Jet Forces Due to Pipe Break
SRV	=	Safety/Relief Valve Loads	**	=	Only One SRV Should be Combined at One Time
E _O	=	Operating Basis Earthquake			
*	=	Varies in Magnitude and Intensity			