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July 10, 1979

Mr. James G. Keppler, Director
Directorate of Inspection and
Enforcement - Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: Zion Station Units 1 and 2
Additional Information on IE
Bulletin No. 79-07, "Seismic Stress
Analysis of Safety-Related Piping"
NRC Docket Nos. 50-295 and 50-304

Reference (a): April 24, 1979 letter from C. Reed to
J. G. Keppler responding to IE Bulletin
No. 79-07

Dear Mr. Keppler:

Per Reference (a), Commonwealth Edison Company responded to IE Bulletin No. 79-07, "Seismic Stress Analysis of Safety-Related Piping," for Zion Station. In early June 1979, the NRC Licensing Staff requested the following additional information with regard to Commonwealth Edison's response in Reference (a):

1. Which Zion piping systems were analyzed by Westinghouse?
2. Summarize the maximum stresses computed using both methods and compare to the allowable stresses.
3. Summarize the support loadings and compare to the allowable for both methods.

In response to IE Bulletin No. 79-07, Westinghouse has performed a complete reanalysis for DBE for the Zion reactor coolant loop. The original analysis utilized an algebraic summation of intramodal responses for the Zion loop. The

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reanalysis used the absolute summation for this combination. Attachment I contains the following additional information (five tables) from this reanalysis:

- 1) Comparison of original and new pipe stresses;
- 2) Comparison of the original and revised stresses as a fraction of allowables; and
- 3) Comparison of the original and new nozzle loads in the primary loop and revised stresses compared to allowables.

From Attachment I it is clear that piping stresses, nozzle loads and stresses and support loads and stresses are essentially identical to those obtained for the original case and are well below allowable values.

Please address any questions you may have concerning this matter to this office.

Very truly yours,



Cordell Reed
Assistant Vice-President

attachment

cc: Director, Division of Reactor
Operations Inspection

ATTACHMENT I

TABLE 1

PIPE STRESSES (SEISMIC ONLY)

<u>LOCATION</u>	<u>STRESSES (KSI)</u>	
	<u>ORIGINAL SEISMIC RUN</u>	<u>REVISED SEISMIC RUN</u>
RPV Outlet	4.3	4.3
SG Inlet Elbow	3.8	3.8
SG Inlet	6.5	6.5
SG Outlet	2.4	2.4
SG Outlet Elbow	1.8	1.8
Crossover Leg Elbow (SG Side)	1.2	1.2
RCP Inlet	1.7	1.7
RCP Outlet	2.0	2.0
Cold Leg Elbow	1.3	1.3
RPV Inlet	1.6	1.6
Cold Leg (Near LSV)	2.6	2.6

NOTE: Allowable seismic DBE piping stresses:

Hot Leg: 7.4 ksi

Crossover Leg: 14.7 ksi

Cold Leg: 14.5 ksi

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TABLE 2

SUPPORT LOADS (SEISMIC ONLY)

<u>Support</u>	<u>Analysis</u>	<u>(kips)</u>			<u>(in-kips)</u>		
		<u>Fx</u>	<u>Fy</u>	<u>Fz</u>	<u>Mx</u>	<u>My</u>	<u>Mz</u>
SG Lower:	Original:	0	418	213	16879	2522	55878
	Revised:	0	417	231	16892	2636	55883
SG Upper:	Original:	931	0	707	0	0	0
	Revised:	931	0	712	0	0	0
RCP:	Original:	20	146	78	3047	2143	3719
	Revised:	21	157	79	3089	2144	3719

TABLE 3

SUPPORT STRESSES

<u>SUPPORT</u>	<u>MAXIMUM STRESS (% OF ALLOWABLE)</u>
1) SG Lower	
A. Lateral Frame	13.
B. Columns	46.
2) SG Upper	19.
3) RCP	
A. Columns	24.
B. Tie Rods	5.
C. Column Support Frame	28.

Allowable based on most highly loaded component of support system.

Deadweight loads included. Values listed are for revised analysis.

TABLE 4

PRIMARY EQUIPMENT NOZZLE LOADS (SEISMIC ONLY)

<u>Nozzle</u>	<u>Analysis</u>	<u>(kips)</u>			<u>(in-kips)</u>		
		<u>Fx</u>	<u>Fy</u>	<u>Fz</u>	<u>Mx</u>	<u>My</u>	<u>Mz</u>
RPVIN	Original:	58	33	63	2607	459	2485
	Revised:	61	33	61	2566	460	2566
RPVON	Original:	147	91	27	1016	3141	7764
	Revised:	158	91	28	1017	3287	7773
SGIN	Original:	158	166	25	2310	2276	12895
	Revised:	166	174	26	2385	2339	12904
SGON	Original:	47	47	32	4208	4577	4137
	Revised:	48	48	32	4205	4578	4277
RCPIN	Original:	33	33	36	2732	3466	2782
	Revised:	33	28	38	2733	3448	2017
RCPON	Original:	68	28	47	4236	594	6187
	Revised:	68	28	52	4671	595	6174
LSV (P & L)	Original:	147	91	27	1016	732	1772
	Revised:	158	91	28	1017	741	1782
LSV (Cold Leg)	Original:	63	28	26	2338	594	5730
	Revised:	63	28	26	2340	595	5734

NOTE: Each load component is the maximum of the x-y or z-y shock.

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TABLE 5

PRIMARY NOZZLE STRESSES

<u>NOZZLE</u>	<u>CALCULATED⁽¹⁾ STRESS INTENSITY</u>	<u>ALLOWABLE STRESS INTENSITY</u>
RPVIN	15.0 ksi	20.9 ksi
RPVON	15.4 ksi	20.9 ksi
SGIN	13.6 ksi	23.2 ksi
SGON	13.5 ksi	23.2 ksi
RCPIN	12.7 ksi	18.4 ksi
RCPON	13.9 ksi	18.4 ksi
LSV (Hot Leg)	14.3 ksi	18.4 ksi
LSV (Cold Leg)	13.8 ksi	18.4 ksi

- (1) Calculated stress intensities are for revised analysis and include internal pressure, deadweight, and seismic loads.