



Commonwealth Edison

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September 23, 1982

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Zion Station Units 1 and 2
I.E. Bulletin 80-04,
Main Steam Line Break with
Continued Feedwater Addition
NRC Docket Nos. 50-295 and 50-304

- References (a): April 14, 1982, letter from
S. A. Varga to L. O. DelGeorge.
- (b): May 8, 1980, letter from
D. L. Peoples to J. G. Keppler.
- (c): February 8, 1980, letter from
J. G. Keppler to Cordell Reed.

Dear Mr. Denton:

Reference (a) requested additional information regarding Commonwealth Edison's response to the subject I.E. Bulletin. This is to provide Commonwealth Edison's response to that request.

Our response to I.E. Bulletin 80-04 (reference (b)) stated that auxiliary feedwater flow to the affected steam generator would be isolated within 10 minutes and provided justification for that assumption. However, reference (a) contained a request by the Franklin Research Center (FRC) for a re-evaluation of the containment response under the assumption of no operator action to terminate the accident. Commonwealth Edison wishes to express its concern at the nature of such a request. In previous licensing actions for all our nuclear stations, we have taken credit for operator actions which are specified in written operating procedures and reinforced by our license training programs. We would agree that licensees should be prepared to justify their assumptions regarding the times required to accomplish such actions. However, we feel that the assumption of no operator action at any time during the transient is completely unrealistic, and therefore inappropriate as a basis for licensing reviews.

Nevertheless, Commonwealth Edison has undertaken the re-evaluation requested by FRC. The Attachment to this letter contains our responses to the requests of reference (a).

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H. R. Denton

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September 23, 1982

Please address questions regarding this matter to this office.

Very truly yours,

F. G. Lentine

F. G. Lentine
Nuclear Licensing Administrator

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Attachment

5083N

ATTACHMENT

FRC REQUEST

1. When will containment design pressure be exceeded (i.e., number of minutes after the start of a MSLB) if no operator action is taken to terminate the accident? This determination should be made for both throttled AFW flow and runout AFW flow, since a single active failure (e.g., operator error) could cause an improper throttle setting.
2. Provide the magnitude of the peak pressure and the time at which the peak occurs, for both cases of throttled and runout AFW flow.

RESPONSE

As described in reference 1, the valves in the auxiliary feedwater lines are throttled to limit auxiliary feedwater flow to 105 gpm per steam generator. The purpose of limiting the flow is to preclude the possibility of water hammer. This practice has been reviewed in accordance with Recommendation GS-3 of the NRC's Requirements for Auxiliary Feedwater Systems at Zion Station and determined to be acceptable. (References 2, 3, and 4).

The throttling operation is performed during the course of each unit startup. During startup, feedwater flow is initially supplied by the auxiliary feedwater system. Main feedwater flow is gradually introduced as power is increased. When main feedwater flow has been adjusted to meet steam demand and its control system placed in the automatic mode, the auxiliary feedwater pumps are shutdown. As part of the shutdown process, the valves in each of the independent auxiliary feedwater supply headers are throttled to establish 105 gpm flow to each steam generator.

Because the throttling process is a feature of each unit startup and specified in detail in written operating procedures, operator error is considered extremely unlikely. In fact, if the operator were to place the valves in the fully open position at this point in the startup, a unit trip might well occur due to the abrupt change in steam generator water levels. Nevertheless, for the purpose of this evaluation it was assumed that the valves in one of the two auxiliary feedwater headers were mispositioned to allow runout flow. Mispositioning of all eight valves in both headers is not considered credible.

The evaluation performed was based on the Main Steam Line Break (MSLB) accident analysis contained in the Zion FSAR. The FSAR analysis was modified to consider the effect of the continued auxiliary feedwater flow and also by the inclusion of additional conservatism with respect to the heat sources available for steam generation.

The following Table illustrates the sequence of events:

<u>Event</u>	<u>Time (sec)</u>
MSLB at S/G exit nozzle	0
MSIV closure at intact S/G's	10
Auxiliary feedwater flow initiated	30
RCFC initiation (3 of 5)	45
Containment spray initiation (2 of 3)	45
Broken S/G depressurized	85
Steam evolution to containment at maximum possible rate due to vaporization of continued auxiliary feedwater flow.	85 to 2405
Steam evolution rate drops due to decrease in reactor coolant temperature to containment temperature	2405

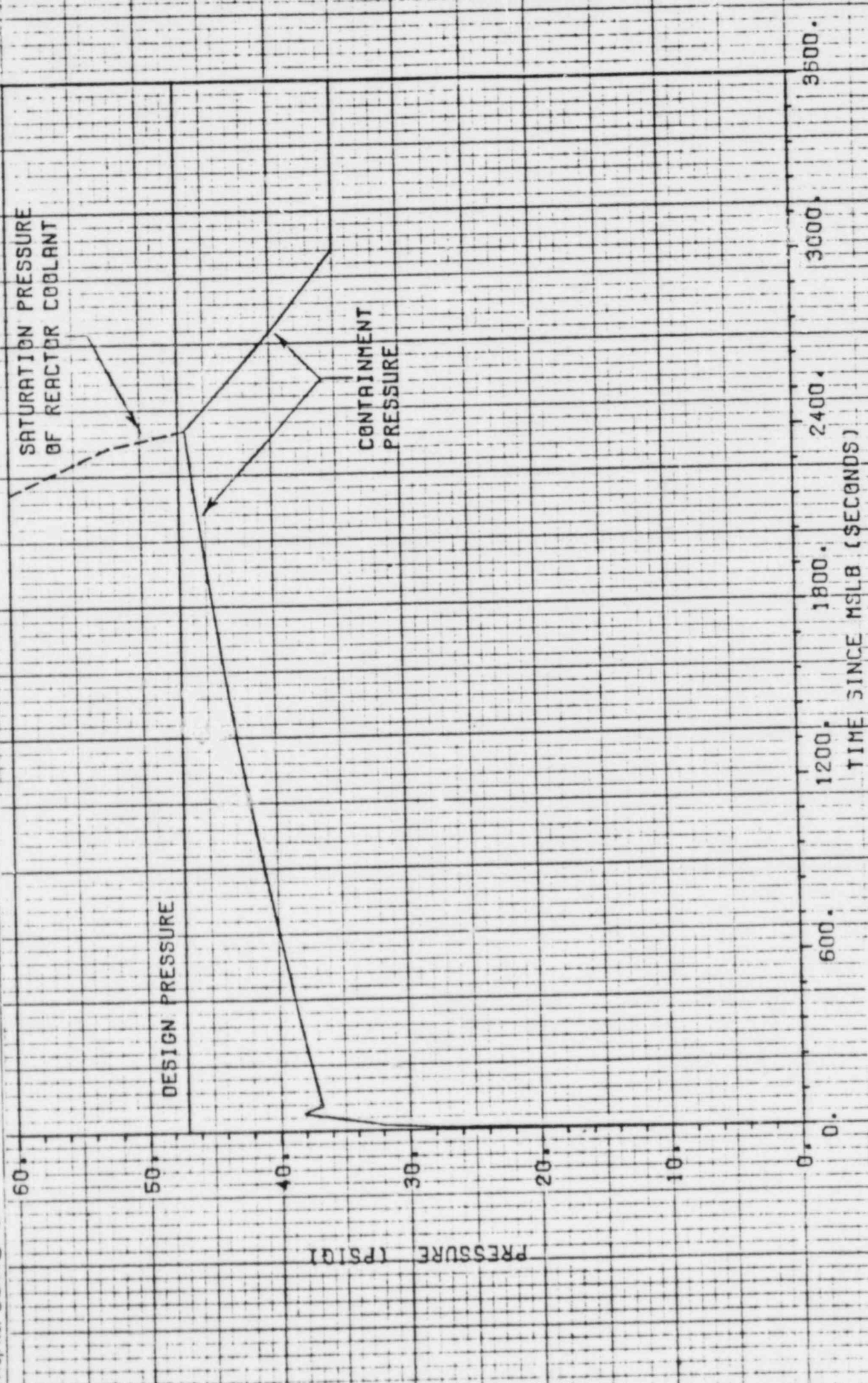
The containment pressure response is shown in the attached Figure. The containment pressure reaches a maximum value of 46.5 psig at 2405 sec., which is below the containment design pressure of 47 psig.

It should be emphasized that this result is conservative, due to the conservative assumptions regarding the heat sources available for steam generation, minimum containment safeguards capability, and the times required for component actuation. It should also be noted that in the Zion Probabilistic Safety Study, the actual containment pressure capability was determined to be 149 psig. (reference 5)

REFERENCES

1. May 8, 1980, letter from D. L. Peoples to J. G. Keppler.
2. September 18, 1979, letter from D. G. Eisenhut to Cordell Reed.
3. October 19, 1979, letter from D. L. Peoples to D. G. Eisenhut.
4. March 18, 1980, letter from W. F. Naughton to D. G. Eisenhut.
5. September 8, 1981, letter from L. O. DelGeorge to H. R. Denton.

Client COMMONWEALTH EDISON Co.
 Project ZION
 Proj. No. 6323-00 Equip. No. _____
 Reviewed by _____ Date _____
 Approved by _____ Date _____



CONTAINMENT PRESSURE RESPONSE FAILING A MSLB