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IPN-85-06

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing

Subject: Indian Point 3 Nuclear Power Plant (IP-3)
Docket No. 50-286
Revision of Results Previously Reported for IE Bulletin
No. 79-07 ("Seismic Stress Analysis of Safety-Related
Piping") - Line 51 of Problem 413

- References:
- 1) Letter from P.J. Early to A.W. Schwencer dated April 10, 1980 (IPN-80-38) entitled: "IE Bulletin 79-07, Final Report".
 - 2) Letter from P.J. Early (then PASNY Assistant Chief Engineer-Projects) to A.W. Schwencer (then Operating Reactors Branch No. 1 Chief) dated May 24, 1979 (IPN-79-27) entitled: "Supplemental Response to IE Bulletin No. 79-07".
 - 3) Letter from A. W. Schwencer to G.T. Berry (then PASNY General Manager and Chief Engineer) dated June 22, 1979 providing NRC acceptance of PASNY's proposed plan for piping reanalysis.
 - 4) Letter from T.T. Martin (NRC Region I Director of Division of Engineering and Technical Programs) to J.C. Brons dated June 15, 1984 transmitting Inspection Report No. 50-286/84-04.
 - 5) Letter from J.C. Brons to T.T. Martin dated July 16, 1984 providing the Authority's response to Inspection Report No. 50-286/84-04.
 - 6) Letter from P.J. Early to A.W. Schwencer dated May 31, 1979 (IPN-79-29) entitled: "Supplemental Response to IE Bulletin No. 79-07".

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Dear Sir:

This letter serves to revise the results previously reported for the IE Bulletin No. 79-07 (IEB 79-07) re-analysis work with respect to Problem 413. Problem 413 encompasses the analysis of safety-related lines 15 and 51 from the discharge of the containment spray pumps to the point where they penetrate the vapor containment (VC) from the Primary Auxiliary Building. For reasons elaborated upon in Attachment A to this letter, three supports associated with line 51 of Problem 413 have been modified due to a recent re-evaluation of this Problem.

As a result of this re-evaluation, the final results of the IEB 79-07 re-analysis effort as reported in Reference 1 are hereby revised to reflect the fact that of the 1059 pipe supports associated with the re-analyzed lines, 820 were found acceptable and a total of 239 have resulted in modifications.

Should you or your staff have any questions regarding this matter, please contact Mr. P. Kokolakis of my staff.

Very truly yours,



Corbin A. McNeill, Jr.
Senior Vice President
Nuclear Generation

cc: Resident Inspector's Office
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ATTACHMENT A TO IPN-85-

The Authority, through its architect-engineer (United Engineers and Constructors - UE&C) had originally analyzed the safety-related lines associated with Problem 413 (i.e., containment spray lines 15 and 51 outside VC) in the early 1970's. These lines were subsequently re-analyzed in 1979-1980 as part of the IEB 79-07 re-analysis effort. The analytic methodology utilized for this latter effort was documented by the Authority in Reference 2 and was approved by members of the NRC staff per Reference 3. Eleven supports were modified for line 51 of Problem 413 as a result of the IEB 79-07 re-analyses.

The IEB 79-07 re-analysis effort conducted for IP-3 was subjected to a special inspection by members of the NRC's Region I staff from February 27 through March 2, 1984. The results of the special inspection identified concerns with respect to certain techniques utilized in the original seismic piping analysis conducted in the early 1970's and maintained for the 1979-1980 IEB 79-07 re-analyses. (See Reference 4). Specifically, these concerns were related to the determination of mass point spacing and cut-off frequency utilized for the IEB 79-07 work. Inspection team members were provided with additional information as well as the results of a number of confirmatory re-analyses recently conducted to address these specific concerns. The results of these confirmatory re-analyses, which were performed for Problems 449 (safety injection lines 56, 145 and 550) and 451 (safety injection lines 60, 189, 277, and 278), are briefly discussed in Reference 5.

Subsequent to the NRC's review of Reference 5, it was agreed that the Authority should re-analyze one or two additional problems using the NRC approved NUPIPE computer code based on a three-dimensional Regulatory Guide 1.92 (RG 1.92) analysis to further demonstrate the adequacy of the IEB 79-07 seismic piping re-analysis effort and to further address the NRC's specific concerns regarding the determination of mass point spacing and cut-off frequency. The problems selected for re-analysis were Problems 547 (safety injection lines 845 and 846) and 413 (containment spray lines 15 and 51 outside VC).

The results of these re-analyses supported the Authority's contention that the analytic methodology and techniques employed for the IEB 79-07 re-analysis effort were conservative. However, during the course of the Authority's RG 1.92 confirmatory re-analysis of Problem 413, it was noted that the input for the analytical data for line 51 omitted a four foot section of piping between nodes (masspoints) 320 and 321 of the piping model. This was an omission in the original analytical model developed in the early 1970's and maintained during the IEB 79-07 re-analysis effort. While this discontinuity was in no way related to the NRC's specific concerns regarding the determination of mass point spacing and cut-off frequency, it was recognized that this discontinuity could impact upon the results previously predicted for line 51 of Problem 413. As such, the Authority corrected the piping model for use in its RG 1.92 confirmatory re-analysis of Problem 413 and also requested UE&C

to re-evaluate this Problem based on the 1979 criteria utilizing the corrected piping model. An investigation was undertaken by UE&C to ascertain the generic significance of the identified discontinuity. From this investigation, it was concluded that the piping model discontinuity was an isolated condition limited to line 51 of Problem 413.

The results of UE&C's recent re-evaluation of line 51 of Problem 413 indicated that two supports (SI-H&R-582-U and 583-U) in the vicinity of the identified discontinuity would require modification to restore the appropriate margins of safety. In addition, during the course of UE&C's re-evaluation, it was determined that support SI-H&R-575-U would also require modification. The modification associated with this support was not due to the new re-analysis loads calculated, but rather was due to the approach previously utilized to verify the adequacy of this particular support. This approach did not appropriately address one component of the support loads. However, the component support loads of other supports of the same generic type and configuration were verified to assure that these loads were appropriately addressed.

A comparison of the results of UE&C's recent re-evaluation of line 51 of Problem 413 with the Authority's RG 1.92 confirmatory re-analysis of this Problem indicates that the analytic methodology and techniques employed for the IEB 79-07 re-analysis effort result in conservative pipe stress and support loads. In fact, the results of the Authority's RG 1.92 confirmatory re-analysis of Problem 413 were consistent with the UE&C re-evaluation results in that both supports SI-H&R-582-U and 583-U were identified as requiring modification. (While support SI-H&R-575-U required modification per the UE&C re-evaluation results, acceptable loads were predicted for this support by the Authority's RG 1.92 confirmatory re-analysis). The noted discrepancies notwithstanding, this comparison further supports the Authority's contention that the analytic methodology and techniques utilized for the IEB 79-07 work were adequate to demonstrate the safety of the plant.

The Authority was notified of the results of UE&C's re-evaluation of line 51 of Problem 413 during the recent IP-3 mid-cycle steam generator tube inspection outage when the plant was in the cold shutdown condition. The Authority promptly notified the IP-3 NRC Project Manager and members of the NRC's Region I staff of the results of UE&C's re-evaluation in accordance with the Reference 6 reporting agreements utilized during the 1979 re-analysis effort. The three supports were modified to restore their appropriate margins of safety prior to returning the unit to service at the completion of the outage.