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SORENSEN,G.C. Washington Public Power Supply System
RECIP.NAME RECIPIENT AFFILIATION
SCHWENCER,A. Licensing Branch 2

SUBJECT: Forwards response to revised FSAR Question 110.42 re support design adequacy for archor Group 37 including Procedure 3900-76 "MEB-50 Phase II Study," per NRC 831012 request & SER Confirmatory Issue 7.

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October 28, 1983
G02-83-982

Docket No. 50-397

Director, Nuclear Reactor Regulation
Attention: Mr. A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Schwencer:

Subject: NUCLEAR PROJECT NO. 2
SUPPLY SYSTEM RESPONSE TO
REVISED FSAR QUESTION 110.42

Reference:
(a) Letter, A. Schwencer (NRC) to DW Mazur (SS), dated October 12, 1983, subject, "Revised FSAR Question 110.42"
(b) Letter, G02-83-584, GD Bouchey (SS) to A. Schwencer (NRC), dated June 30, 1983, subject, "Confirmatory Issue No. 7 - Component Supports"
(c) Letter, G02-83-831, GC Sorensen (SS) to A. Schwencer (NRC), dated September 14, 1983, subject, "FSAR Question 110.42"

The Washington Public Power Supply System hereby provides a reply to the revised FSAR Question 110.42 which was submitted as an attachment to reference (a) above. Our reply consists of this letter and two attachments. The initial FSAR Question 110.42 response was provided in Reference (c). The response to FSAR Question 110.40 was provided in Reference (b).

If you have any questions or desire further information, please contact P. L. Powell, Manager, WNP-2 Licensing.

Very truly yours,

for R B Glassmeb

G. C. Sorensen, Acting Manager
Nuclear Safety and Regulatory Program

GCS:PWH:ch

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Attachments:
(1) Response
(2) Supporting Calculation No. 8.16.5037, pages 1-26, 70-80

cc: Mr. R. Auluck - NRC
Mr. W. S. Chin - BPA
Mr. A. D. Toth - NRC Resident Inspector

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Revised FSAR Question 110.42

"The applicant is requested to perform an assessment of its support design adequacy for the anchor group 37 of Reference 2. Specifically, the applicant should provide the final results of its assessment in detail to demonstrate compliance with the staff position described in Mechanical Engineering Branch SER Confirmatory Issue No. 7."

Supply System Response

Anchor group 37 contains two (2) nozzles and 84 large bore supports including six (6) anchors. In addition to the two nozzles, 24 of these supports and the six anchors are thermally rigid. Our response to FSAR Questions 110.40 and the original FSAR Question 110.42 provided summary Phase I load data on anchor group 37 support directions which, by observation, could not accept normal thermal loads in the faulted combination. Those loads have been refined as discussed in the response to FSAR Question 110.43. The results of the Phase II effort have been compared to previously calculated support capacity in the following tabulation:

Hanger Number	Data Point Number	Phase II Faulted Load Combination (2)	Previous Calculated Support Capacity (Less Than Code Allowables)
RHR-600	1329 Fx	4097	6577
-602	1252 Fy	(Support loads were incorporated into RHR-601 since Phase I)	
-601	1252 Fy	6421	12670
-601	1250 Fz	6872	18647
-605	1314 Fx	4133	9224
-358	1020 Fx	5884	12646
-366	4140 Fy	6220	11808
-368	2250 Fz	8250	11701
-267	213 Fx	4117	5737
-268	2102 Fx	2221	7308
-278	6202 Fx	3992	10532
-365	1220 Fx	6928	14436
-408	1245 Fx	3073	5929
-409	246 Fx	1692	3685
-409	246 Fz	3330	4906
-353	1034 Fx	4447	7647
-352	1034 Fz	12182	13882
-249	1345 Fx	6247	9583
-249	1345 Fy	3057	6982
-593	1992 Fx	4294	5139
-594	990 Fz	3809	4465
-597	988 Fx	7630	6635 (1)
-582	1850 Fx	2224	4674
-583	1855 Fz	2140	4537
-266	1215 Fx	4723	11166
-606	1325 Fz	3986	5745
RCIC-116	121 Fx	2362	8693
-116	121 Fy	740	2647
-117	127 Fy	2295	8100

Anchor Number	Data Point Number	Phase II (2) Faulted Load Combination	Previous Calculated Anchor Capacity (Less than Code Allowables)
RHR-975N	188 Fx	3644	5196
	188 Fy	11604	11156
	188 Fz	3515	4797
	188 Mx	22925	30262
	188 My	6340	4417
	188 Mz	23920	39549
RCIC-912N	118 Fx	3070	4378
	118 Fy	1917	2319
	118 Fz	3970	4565
	118 Mx	10671	16087
	118 My	21576	31909
	118 Mz	7461	5596
RHR-958N	3520 Fx	17109	25053
	3520 Fy	10660	9555
	3520 Fz	4536	5523
	3520 Mx	28165	37564
	3520 My	20732	23812
	3520 Mz	75892	96828
RHR-238(1)	201 Fx	4981	5702
(1)	201 Fy	13288	8935
	201 Fz	8849	6869
	201 Mx	55599	51494
	201 My	7631	11636
	201 Mz	37257	39761
RHR-970N(1)	431 Fx	(3)	7619
(1)	431 Fy		26653
	431 Fz		3506
	431 Mx		34530
	431 My		10717
	431 Mz		69833
RHR-410	248 Fx	6078	7441
	248 Fy	19757	6663
	248 Fz	6044	7564
	248 Mx	37744	46110
	248 My	10836	8834
	248 Mz	34946	43374

In summary, the above tabulations demonstrate that all support directions are acceptable when normal thermal loads are included in the faulted load combination. Only one support (RHR-597) and two anchors (RHR-238 and RHR-970N) experienced a Phase II load greater than the existing design load but less than the actual support capacity. Baseplates on all supports have been evaluated to confirm that IE Bulletin 79-02 criteria were met.

In addition, the two nozzles in anchor group 37 (N-3 and N-4 on RHR heat exchanger 1A) have been evaluated using the Phase II loads. As presented in our response to FSAR Question 110.41, equipment nozzles react much the same as anchors with respect to the Phase II load combination. In turn, equipment supports are acceptable if nozzle allowable loads are acceptable. In both nozzle cases the loads were acceptable; nozzlerN-3 is currently included in the scope of an unrelated evaluation using as-built conditions;. that evaluation utilizes thermal loads in the faulted combination.

As-built conditions, including actual weld sizes, were used throughout the anchor group 37 evaluation whenever available.

As requested in the FSAR question, detailed calculations are provided as attachments for the support and two anchors discussed above. Computer analysis referenced in the calculations has not been attached but is available if required.

FOOTNOTES:

(1) See attachment for actual support evaluation confirming adequacy.

(2) Phase II loads are the sume of thermal plus deadweight plus faulted dynamic plus faulted end movemment. Phase II faulted anchor load combinations are the sum of refined faulted loads including thermal from one side and the existing faulted load including thermal from the second side. Fx, Fy, and Fz are loads in pounds; Mx, My, and Mz are moments in footpounds.

(3) Consistent with the existing calculations, and note (2) above, all anchors were evaluated against absolute summations of Phase II loads except RHR-970N which used vector summations.

ATTACHMENT 2

Calculation 8.16.5037, pages 1-26, 70-80