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SUBJECT: Forwards response to suppl RAI re verification of seismic adequacy of mechanical & electrical equipment

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July 31, 1997
NMP1L 1238

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Subject: *Response to Supplemental Request for Additional Information Regarding Verification of Seismic Adequacy of Mechanical and Electrical Equipment (TAC No. M69461)*

Gentlemen:

Attached are the responses to the additional questions forwarded by the Staff on June 5, 1997, regarding our submittal of March 11, 1996 (NMP1L 1044) and followup information provided in our letter of May 1, 1997 (NMP1L 1215) associated with Unresolved Safety Issue (USI) A-46. For convenience we have reformatted and reproduced each question followed by the Niagara Mohawk response. Several calculations have been included as attachments to address specific questions.

Very truly yours,

John T. Conway
Vice President - Nuclear Engineering

JTC/TWP/cmk
Attachments

A025

xc: Mr. H. J. Miller, NRC Regional Administrator, Region I
Mr. A. W. Dromerick, Acting Director, Project Directorate I-1, NRR
Mr. B. S. Norris, Senior Resident Inspector
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ATTACHMENT A

NINE MILE POINT UNIT 1 (NMP1) RESPONSE TO SUPPLEMENTAL REQUEST FOR ADDITIONAL INFORMATION REGARDING VERIFICATION OF SEISMIC ADEQUACY OF MECHANICAL AND ELECTRICAL EQUIPMENT (TAC NO. M69461)

NOTE: MPR-1600 report is controlled under NMP1 Nuclear Engineering Report NER-1S-012. Any further references will use the NER-1S-012 number.

QUESTION 1:

In report MPR-1600 transmitted by your letter of March 11, 1997, you stated that resolution of all outliers will be completed at the conclusion of refueling outage 15 (RFO15) which is scheduled for 1999. Please elaborate on your decision to defer the resolution of identified outliers and your evaluation in support of the conclusion that the licensing basis for the plant will not be affected by your decision. Specifically, you are requested to provide the justification for assuring operability of the affected systems and components while a number of safety-related components in the safe shutdown path have been identified as outliers--thus rendering their seismic adequacy questionable and their conformance to the licensing basis uncertain.

ANSWER 1:

The Equipment Outlier Description and Resolution Summary, Table 5-3 of report NER-1S-012 lists the equipment outliers identified by using the Generic Implementation Procedure (GIP) methodology. If the outlier required a modification to meet a GIP caveat and/or the NMP1 plant design basis, the equipment was reported as a deviation using the NMP1 Deviation/Event Report (DER). DERs listed in Table 5-3 have an Engineering Supporting Analysis (ESA), which was developed using the guidance of Generic Letter 91-18, to address the operability of plant equipment. Table 5-3 DERs and associated ESAs show the equipment is operable for the NMP1 plant design basis requirements. NMP1 has no operability issues, the licensing basis is met and therefore, NMP1 elected to work the modifications and resolve these outliers over two refueling outages. All identified outliers will be resolved and plant modifications will be completed at the conclusion of RFO15 (spring 1999).

QUESTION 2:

In Table 5-3 of report MPR-1600, many outliers related to cinch anchors were resolved based on calculations and bolt tightness checks. Provide the seismic adequacy evaluations, the details of the calculations, and the findings of the tightness checks for the items with the following designated equipment identification numbers:

a. 210.1-36 (CRAC/Chill Water Circ. Pump #12)
b. 210-01 (CRAC/Emerg. Vent Fan #11)
c. MSIVIR (AP/Main Steam Isolation Valve Instrument Rack)
d. PRC167 (AP/MG Set #167 Proj. Relay Cabinet)
e. 96-04 (EDG 102 Air Start Tank #1)
f. TRANS 167A (AP/600 to 120/208 V Transformer)
g. BB11 (AP/125 V DC Battery Board #11)

Submit for NRC staff's review the report RTR-2661, "Lead Expansion Anchor Load Capacity in Reactor Buildings at the Savannah River Site," dated August 15, 1989, which is referenced in Appendix E to MPR-1600.

ANSWER 2:

a. Equipment 210.1-36 (CRAC/Chill Water Circ. Pump #12):

Calculation S0.0SEWS210.1-36 contains the GIP Seismic Evaluation Work Sheets (SEWS) performed by the Seismic Review Team (SRT) for chill water circulation pump #12. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except for the anchorage being inadequate in the initial screening. A GIP Outlier Seismic Verification Sheet (OSVS) was completed, declaring this equipment an outlier for lead cinch anchors because cinch anchors are not covered by the GIP. The outlier was resolved by performing a bolt tightness check per GIP, Appendix C.2.3. The results of this tightness check concluded that all anchors were tight. Evaluation of anchors is documented in the SEWS package. Therefore, this outlier is resolved. (See Attachment B.)

b. Equipment 210-01 (CRAC/Emerg. Vent Fan #11):

Calculation S0.0SEWS210-01 contains the GIP SEWS performed by the SRT for emergency vent fan #11. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except for the anchorage being inadequate and seismic interaction effects in the initial screening. A GIP OSVS was completed, declaring this equipment an outlier for lead cinch anchors because cinch anchors are not covered by the GIP. The nearby platform is constructed of scaffolding components that may impact the fan during an earthquake. The cinch anchor outlier was resolved by performing a

ANSWER 2: (Cont'd)

bolt tightness check per GIP, Appendix C.2.3. The results of this tightness check concluded that all anchors were tight. Evaluation of anchors is documented in the SEWS package. The nearby platform was evaluated for seismic loads and new anchors were installed to anchor the platform to the concrete slab so that this potential seismic interaction was eliminated. Therefore, this outlier is resolved. (See Attachment C.)

c. Equipment MSIVIR (AP/Main Steam Isolation Valve Instrument Rack):

Calculation S0.0SEWSMSIVIR contains the GIP SEWS performed by the SRT for the main steam isolation valve instrument rack. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except for the anchorage being inadequate in the initial screening. A GIP OSVS was completed, declaring this equipment an outlier for lead cinch anchors because cinch anchors are not covered by the GIP. The outlier was resolved by performing a bolt tightness check per GIP, Appendix C.2.3. The results of this tightness check concluded that all anchors were tight. Evaluation of anchors is documented in the SEWS package. Therefore, this outlier is resolved. (See Attachment D.)

d. Equipment PRC167 (AP/MG set #167 Protective Relay Cabinet):

Calculation S0.0SEWSCP162 contains the GIP SEWS performed by the SRT for the MG set protective relay cabinet. Cabinets PRC167 and PRC172 are similar and were evaluated using this analysis. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except for the anchorage being inadequate in the initial screening. A GIP OSVS was completed, declaring this equipment an outlier for lead cinch anchors because cinch anchors are not covered by the GIP. These cinch anchors are embedded in concrete and are inaccessible. Other equipment having this type of cinch anchor that was accessible passed the bolt tightness check per GIP, Appendix C.2.3. There is high confidence that the cinch anchors for this cabinet are tight. Evaluation of anchors is documented in the SEWS package. Therefore, this outlier is resolved. (See Attachment E.)

e. Equipment 96-04 (EDG 102 Air Start Tank #1):

Calculation S0.0SEWS9604 contains the GIP SEWS performed by the SRT for the EDG 102 air start tank. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except for the anchorage being inadequate in the initial screening. A GIP OSVS was completed, declaring this equipment an outlier for lead cinch anchors because cinch anchors are not covered by the GIP. The outlier was resolved by performing a bolt tightness check per GIP, Appendix C.2.3. The results of this tightness check concluded that all anchors were tight. Evaluation of anchors is documented in the SEWS package. Therefore, this outlier is resolved. (See Attachment F.)

ANSWER 2: (Cont'd)

f. Equipment TRANS 167A (AP/600 to 120/208 V Transformer):

Calculation S0.0SEWS167A contains the GIP SEWS performed by the SRT for the 600 to 120/208 volt transformer. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except for the anchorage being inadequate in the initial screening. A GIP OSVS was completed, declaring this equipment an outlier for lead cinch anchors because cinch anchors are not covered by the GIP. The outlier was resolved by performing a bolt tightness check per GIP, Appendix C.2.3. The results of this tightness check concluded that all anchors were tight. Evaluation of anchors is documented in the SEWS package. Therefore, this outlier is resolved. (See Attachment G.)

g. Equipment BB11 (AP/125 V DC Battery Board #11):

Calculation S0.0SEWSBB11 contains the GIP SEWS performed by the SRT for battery board #11. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except for the anchorage being inadequate in the initial screening. A GIP OSVS was completed, declaring this equipment an outlier for lead cinch anchors because cinch anchors are not covered by the GIP. These cinch anchors are embedded in concrete and are inaccessible. Other equipment having this type of cinch anchor that was accessible passed the bolt tightness check per GIP, Appendix C.2.3. There is high confidence that the cinch anchors for this cabinet are tight. Evaluation of anchors is documented in the SEWS package. Therefore, this outlier is resolved. (See Attachment H.)

Report RTR-2661 is enclosed as Attachment I.

QUESTION 3:

Provide the details of the seismic adequacy evaluations and the outlier resolutions for the items with the following designated equipment identification numbers:

a. VB12 (CTRL/125-V-DC VLV Board #12)
b. 1671 (AP/600V Powerboard, Ref. DER 1-95-3101)
c. 1S35 (CTRL/Aux Control Relay Cabinet 1S35, Ref. DER-1-95-3151)
d. 72-03 (SW/Emerg. Service Water Pump #12)

ANSWER 3:

a. Equipment VB12 (CTRL/125 V DC VLV Board #12):

Calculation S0.0SEWSVB12 contains the GIP SEWS performed by the SRT for the DC valve board #12. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except that the in-structure floor response spectrum curve is not enveloped by the 1.5 times GIP Bounding Spectrum curve (Capacity vs. Demand) in the initial screening at all frequencies. A GIP OSVS was completed, declaring this equipment an outlier for Capacity vs. Demand. A seismic cabinet frame analysis will be performed to resolve this outlier. If the frame members are over-stressed, a plant modification will be done to strengthen this frame. As mentioned earlier, the design basis seismic demand was met and an ESA was completed to demonstrate operability.

b. Equipment 1671 (AP/600V Power Board):

Calculation S0.0SEWSPB1671 contains the GIP SEWS performed by the SRT for the power board 1671. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except that the in-structure floor response spectrum curve is not enveloped by the 1.5 times GIP Bounding Spectrum curve (Capacity vs. Demand) at all frequencies, the type of anchorage is not covered by the GIP and the interaction of a fluorescent light tube which may impact this cabinet. A GIP OSVS was completed, declaring this equipment an outlier for the above three caveats. A seismic frame analysis will be performed to resolve this outlier. If the frame members are over-stressed, a plant modification will be done to strengthen this frame. A Design Document Change will be issued to add additional anchors to satisfy the GIP anchorage requirements. Vibration clips will be added to the fluorescent light fixture per the requirements of Work Order #WO 96-00014-00.

Note: In the original NMPC submittal to the NRC dated March 11, 1996, it was reported that PB1671 was an outlier for anchorage and seismic interaction. Further review revealed that this power board is an outlier for seismic capacity vs. demand also. A DER was initiated and an ESA was completed to demonstrate operability of this cabinet.

c. Equipment 1S35 (CTRL/Aux Control Relay Cabinet 1S35):

Calculation S0.0SEWS1S35 contains the GIP SEWS to document the walkdown and evaluations performed by the SRT for the Auxiliary Control Room cabinet 1S35. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except for anchorage being inadequate in the initial screening. A GIP OSVS was completed, declaring this equipment an outlier for anchorage. This cabinet was welded to the embedded steel during RFO14 (spring 1997) (refer to design document change DDC #1S0007 and calculation S6TB261ACP01). Therefore, this outlier is resolved.

ANSWER 3: (Cont'd)

d. Equipment 72-03 (SW/Emerg. Service Water Pump #12):

Calculation S0.0SEWS7203 contains the GIP SEWS performed by the SRT for emergency service water pump #12. During the SRT walkdown, all the GIP SEWS questions were answered "YES" except for the casing and impeller shaft not cantilevered more than 20 feet in the initial screening. A GIP OSVS was completed, declaring this equipment an outlier for the cantilever length of the casing and impeller shaft being greater than 20 feet long. Additional calculations were done and concluded the shaft stresses were below allowable stresses for the actual cantilever. Therefore, this outlier is resolved.

QUESTION 4:

On page 36 of Appendix B, "Composite Safe Shutdown Equipment List (SSEL)," to report MPR-1600, line 8101 (AP/Emergency Diesel Generator #102), you indicate that the diesel generator, oil transfer pump, and control panel are on the same skid and are, therefore, evaluated together. Provide the details of the seismic adequacy evaluations for each of these three equipment items.

ANSWER 4:

The diesel generator, oil transfer pump and the control panel are not separately listed in the SSEL contained in report NER-1S-012. These components are mounted on the same skid as their respective diesel generator (#102 and #103) and thus have been evaluated using the "rule-of-the-box" methodology per GIP, Section 3.3.3. The GIP SEWS for diesel generators #102 and #103 performed by the SRT concluded that this equipment is seismically adequate.

QUESTION 5:

On pages 1 and 2 of Appendix B to report MPR-1600, lines 3144-3154, you indicate that since the safety valves are not required to satisfy the Generic Implementation Procedure (GIP) safe shutdown requirements, it is not necessary to perform a seismic evaluation of these valves. Provide justification for this statement.

ANSWER 5:

Per the GIP requirements, the main steam line Electromatic Relief Valves (ERVs) were identified as the primary means to control Reactor Coolant System (RCS) pressure. GIP SEWS for the ERVs concluded that they are seismically adequate and are not an outlier. The reason

ANSWER 5: (Cont'd)

the nine Reactor Vessel Head Safety Relief Valves were not required to satisfy the GIP is as follows: The SSEL equipment required to complete the path for the GIP safe shutdown function contains one of the following "train" numbers. Train 1 is considered the GIP primary train where Train 2 is considered the GIP secondary train. Both Trains 1 and 2 are required by the GIP.

The main steam line ERVs satisfy the GIP requirements for Trains 1 and 2 for RCS pressure. The train for the nine Reactor Vessel Head Safety Relief Valves is designated as 1OP (optional), the first option to either GIP Train 1 or 2. This option 1OP is not required by the GIP as stated in the SSEL Description of Contents, note #36 of report NER-1S-012. Therefore, it is not necessary to perform a seismic evaluation of these nine Reactor Vessel Head Safety Relief Valves, since these valves are not required SSEL equipment.

QUESTION 6:

In your March 11, 1996, letter and in associated report MPR-1600, you state that you committed to implement the GIP-2 including the clarifications, interpretation, and expectations in SSER-2, and to communicate to the NRC staff any significant or programmatic deviations from the GIP-2 guidance. You further state (Section 9) that the submittal confirms that no significant or programmatic deviations from the GIP-2 guidance were made.

Provide the 10 worst-case items (from the safety point of view) that deviate from the GIP-2 guidelines but were categorized as not being significant. Also, provide (1) the definition of "significant deviations" that the walkdown crew used to classify the deviation as significant or insignificant and (2) a justification as to why such a definition is adequate.

ANSWER 6:

Typically, minor deviations from the GIP guidance are noted in the SEWS. These minor deviations are not contained in one centralized location. As described in Section I.1.3 of the GIP, these documents are available on site for audit by the NRC staff. Determinations of whether any deviation was "minor" were made by qualified, experienced engineers who had each completed the appropriate Seismic Qualification Utility Group (SQUG) training courses on the use and application of judgment for resolution of USI A-46. If the deviation was significant, it was identified as an outlier. A review of the SEWS packages identified eight SEWS that contained equipment that have minor deviations that were not declared an outlier. These eight SEWS contain more than the 10 items requested, but are all listed for completeness and for comparison of the equipment listed within each SEWS. These minor deviations are as follows:

ANSWER 6: (Cont'd)

1. The 80-03 SEWS SRT initial screening concluded that the containment spray pump shaft length was less than 20 feet based on a plant walkdown. The SRT also came to this conclusion for the remaining containment spray pumps. A later review of the vendor drawing for these pumps showed the actual pump shafts as being 8 feet long, thus they were less than the maximum 20 foot length allowed by the GIP. Therefore, the GIP caveat is met for these pumps.

2. The 81-03 SEWS SRT initial screening concluded that the core spray pump shaft length was less than 20 feet based on a plant walkdown. The SRT also came to this conclusion for the remaining core spray pumps. A later review of the vendor drawing for these pumps showed the actual pump shaft being 8 feet long, less than the maximum 20 foot length allowed by the GIP. Therefore, the GIP caveat is met for these pumps.

3. The 96-15 SEWS stated the emergency diesel generator 102 air start tank #1 relief valve is mounted on a ¾ inch diameter pipe, not on a 1" diameter pipe as required by the GIP. This small relief valve mounted on a ¾ inch diameter line was judged acceptable by the SRT using engineering judgment. Relief valves noted in SEWS 96-16, 17, 18, 19, 45, 46, 47, and 48 are similar to SEWS 96-15 and were also judged acceptable. Therefore, this GIP caveat is met for these relief valves.

4. The 40-01 SEWS stated the valve operator length for a motor operated valve exceeds the GIP Figure B.8-1 valve operator cantilever length limit, but was judged acceptable by the SRT in the initial screening. Core spray valves 40-02, 40-09, and 40-12 are similar to 40-01 and the SRT judged these valves acceptable. Additional analysis concluded that all valve operators passed the 3g stress analysis. Therefore, this caveat is met for these valves.

5. The 210.1-01A SEWS cooling coil #11 control valve natural frequency was judged to be greater than 20 Hz by the SRT. The Turbine Building 300' in-structure response spectra exceeds the 1.5 x GIP Bounding Spectrum between 9 to 18 Hz. Valve frequency of greater than 20 Hz is outside the exceedence range of 9 to 18 Hz and the SRT concluded the seismic capacity is greater than the seismic demand. Therefore this GIP caveat is met.

6. The Control Room Panel "A" has strip chart recorders. Note #1 of the Panel "A" SEWS concluded that these recorders are well supported by horizontal struts bolted to the "A" panel frame. Therefore, this GIP caveat is met.

ANSWER 6: (Cont'd)

7. The SRT for 70-01 SEWS, Reactor Building Cooling Water Pump #11, concluded the pump natural frequency is estimated to be greater than 20 Hz. The in-structure response spectra at Reactor Building, 298' elevation, exceeds the 1.5 x GIP Bounding Spectrum in the 5-9 Hz range. The SRT concluded the seismic capacity is greater than the seismic demand because the pump frequency is outside the exceedence range. The SRT concluded that Pumps #12 and #13 are similar in that their frequency is greater than 20 Hz. Therefore, this GIP caveat is met for these pumps.

8. The SRT for BC111 SEWS, 24V DC Battery Charger #111, concluded no expansion anchor bolt tightness check is required. BC111 was installed during RFO13 (March 1995) using concrete expansion anchors. The SRT walked down this equipment on July 13, 1995 and judged the adequacy of anchorage installation to be acceptable and that no anchor bolt tightness checks were required. This conclusion was based on the fact that these anchors were installed using current QA controlled requirements. Battery chargers #112, #121 and #122 are similar and the SRT judgment was the same as stated above. Therefore, this GIP caveat is met for these battery chargers.

QUESTION 7:

Referring to the in-structure response spectra provided in your 120-day-response to the NRC's request in Supplement No. 1 to Generic Letter (GL) 87-02, dated May 22, 1992, the following information is requested:

a. Identify structure(s) having in-structure response spectra (5 percent of critical damping) for elevations within 40-feet above the effective grade, that are higher in amplitude than 1.5 times the Seismic Qualification Utility Group (SQUG) Bounding Spectrum.

b. With respect to the comparison of equipment seismic capacity and seismic demand, indicate which method in Table 4-1 of GIP-2 was used to evaluate the seismic adequacy for equipment installed on the corresponding floors in the structure(s) identified in your response to Item 7.a above. If you have elected to use method A in Table 4-1 of the GIP-2, provide a technical justification for not using the in-structure response spectra provided in your 120-day-response. Some USI A-46 licensees appear to be making an incorrect comparison between their plant's safe shutdown earthquake (SSE) ground motion response spectrum and the SQUG Bounding Spectrum. The SSE ground motion response spectrum for most nuclear power plants is defined at the plant foundation level. The SQUG Bounding Spectrum is defined at the free field ground surface. For plants located at deep soil or rock sites, there may not be a significant difference between the ground motion amplitudes at the foundation level and those at the ground surface. However, for sites where a structure is founded on shallow soil, the amplification for the ground motion from the foundation level to the ground surface may be significant.

QUESTION 7: (Cont'd)

c. For the structure(s) identified in your response to Item 7.a above, provide the in-structure response spectra designated according to the height above the effective grade. If the in-structure response spectra identified in the 120-day-response to Supplement No. 1 to GL 87-02 was not used, provide the response spectra that were actually used to verify the seismic adequacy of equipment within the structures identified in the response to Item 7.a above. Also, provide a comparison of these spectra to 1.5 times the Bounding Spectrum.

ANSWER 7:

Currently, the NRC Staff and representatives of the SQUG Steering Committee are jointly seeking resolution of this issue. However, our response in this letter is based on what NMP1 has used to resolve USI A-46 following the GIP methodology.

a. Structures having in-structure response spectra (5 percent of critical damping) for elevations within 40 feet of the effective grade (243 feet), that are higher in amplitude than 1.5 times the SQUG Bounding Spectrum are identified as follows:

1. El. 242', Reactor Building, Model Node 57
2. El. 274', Reactor Building, Model Node 60
3. El. 259', Reactor Building, Model Node 58
4. El. 261', Turbine Building Extension, Model Node 242
5. El. 281', Reactor Building (Shear Walls), Model Node 67

b. Elevation 242' (RB), elevation 274' (RB), elevation 281' (RB), and elevation 261' (TB Extension) do not have any SSEL equipment located at these elevations. For elevation 259' (RB), with respect to the comparison of equipment seismic capacity and seismic demand, Method A of Table 4-1 (GIP) was used to evaluate seismic adequacy. It should be noted that it is SQUG's position that the GIP methodology, as a whole, has been reviewed by the NRC Staff in Supplementary SER No. 2 dated May 22, 1992, as an acceptable method of demonstrating the seismic adequacy of equipment within its scope. The use of Method A of Table 4-1 is an NRC approved methodology for demonstrating the seismic adequacy of equipment. Also, NMP1 is a facility where the licensing basis documents do not contain the in-structure response spectra. The in-structure response spectra that NMP1 is using for SQUG have been specially developed for resolving USI A-46. Based on the absence of the in-structure response spectra in the licensing basis documents, the use of Method A is an acceptable method as per the position taken by the NRC staff as delineated in the NRC letter to SQUG, dated August 6, 1996. Therefore, instead of using the in-structure response spectra at elevation 259', NMP1 has chosen to use the ground response spectra and compare it to the SQUG bounding spectra in verifying equipment at elevation 259'. As mentioned

ANSWER 7: (Cont'd)

earlier, this issue is under discussion between the NRC and the SQUG Steering Committee.

c. The answer to Question 7.a identified five structures where the in-structure response spectra was higher in amplitude compared to 1.5 times the SQUG Bounding Spectrum. The answer to 7.b identified that four of the five structures do not have any SSE located at those elevations. Only the Reactor Building, elevation 259', has SSE required by the GIP. The in-structure response spectra at elevation 259' was not used for evaluating the seismic adequacy of SSE at this elevation. However, based on GIP Method 4.A, the ground response spectra was used to evaluate the seismic adequacy of SSE at Reactor Building, elevation 259'.

The plot of in-structure response spectra for Reactor Building, elevation 259' and its comparison to 1.5 times the GIP Bounding Spectrum is enclosed as Attachment J. The NMP1 ground response spectra that was used to qualify SSE at elevation 259' and its comparison to the GIP Bounding Spectrum is also enclosed as Attachment J.

QUESTION 8:

Table 5-2 of report MPR-1600 indicates that a cutout cover-plate size of a motor control center (equipment identification no. PB1671) exceeds the GIP maximum dimension. However, you accepted it as a "standard GE unit whose structural adequacy is judged acceptable." The use of the term "judged" is vague and this judgment needs to be justified. Provide an analysis or test result that demonstrates equipment item PB1671 is seismically adequate.

ANSWER 8:

The GIP SEWS for PB1671, Question 7, asks whether the cutouts in the lower half are less than 6 in. wide and 12 in. high. The initial SEWS documented that the actual cutout sizes were unknown and that engineering judgment was used as mentioned above. A subsequent walkdown confirmed that the 10.5 in. by 16 in. plate at both ends of PB1671 covers two 5 in. by 5 in. cutouts and one 2 in. by 10 in. cutout. These cutouts are less than the specified maximum size allowed by the GIP. Therefore, the previous SRT judgment is considered acceptable based on subsequent walkdown. This GIP caveat is met.

QUESTION 9:

Table 6-1 of report MPR-1600 provides only brief descriptions and resolutions for the tank and heat exchanger outliers. Provide the detailed descriptions and calculations for the tanks and heat exchangers with identification numbers 60-09, 82-43, 96-35, and 305-125.

ANSWER 9:

The detailed descriptions and calculations for the tanks and heat exchangers are enclosed as Attachments K through N.

The list of these calculations follows:

Calculation S0.0SEWS6009, "Screening Evaluation Work Sheets for Emergency Condensate Makeup Tank 60-09" (Attachment K)

Calculation S20.6-YD-TANK01, "EDG Fuel Oil Tank Replacement" (Attachment L)

Calculation S0.0SEWS9635, "Screening Evaluation Work Sheets for Tank 96-35" (Attachment M) (This calculation refers to the calculation for tank 96-04, which is included as Attachment F)

Calculation S0.0SEWS305125, "Screening Evaluation Work Sheets for Hydraulic Control Units 305-125" (Attachment N)

QUESTION 10:

In Item 9 above, if you used the seismic margin methodology described in the report EPRI NP-6041 for the tank evaluations, you should describe the extent to which the method was used in the NMP1 A-46 program. Since this methodology is known to yield analytical results that are not as conservative as those obtained by following the GIP-2 guidelines, it is generally not acceptable for the USI A-46 program. Therefore, for each deviation from the GIP-2 guidelines, in situations where the margin methodology is utilized, identify the nature and the extent of the deviation, and provide the justification for its acceptance.

ANSWER 10:

NMP1 did not use this method as we did not have any flat bottom tanks in the evaluation scope.

QUESTION 11:

Section 7 of report MPR-1600 states that a total of eight worst-case limited analytical reviews (LARs) for the cable and conduit raceways were selected. Provide the list of those eight cases. Indicate whether the LARs include a review for the hanger supports. Provide the analysis for the cast iron inserts for the resolution of CB-TB-261.

ANSWER 11:

The list of the eight LARs follows:

LAR No. LOCATION

1. Reactor Building Elevation 261', north corridor
2. Reactor Building Elevation 261', west corridor
3. Reactor Building Elevation 261', Auxiliary Control Room above panels 1S34 and 1S35
4. Turbine Building Elevation 277', south corridor AA-6 to AA-7
5. Turbine Building Elevation 261', column AA-9
6. Turbine Building Elevation 250', Cable Spreading Room
7. Turbine Building Elevation 261', H-J and 12-13
8. Turbine Building Elevation 277', east of truck bay

The LARs evaluated the cable tray supports noted above. This evaluation considered the anchorage to the building structure, the support's vertical and horizontal members and their connections.

NER-1S-012, Table 7.1, "Raceway Outlier Description and Resolution," identified the cast iron insert anchorage as a GIP outlier. There is no outlier number assigned in this table as this type of anchorage is common to several cable tray supports in the Reactor Building. Table 7-1 cable tray outlier CB-TB-261 is not an outlier for cast iron inserts. However, LAR #1 evaluated a cable tray support having cast iron inserts as its anchorage. Calculation S0.0SQUGLAR1 provides the evaluation for a worse case cable tray support anchored with cast iron inserts. This calculation concluded the cable tray support meets the GIP requirements. (See Attachment O.)

QUESTION 12:

Discuss the issue described in NRC Information Notice 95-49 regarding Thermo-Lag panels--in particular, the issue regarding seismic resistance capability of the cable tray and its support when appropriate weight and models of the Thermo-Lag are included in your LARs.

ANSWER 12:

NMP1 letter NMP1L 0801, dated February 10, 1994, "Request for Additional Information Regarding Generic Letter 92-08, "Thermo-Lag 330-1 Fire Barriers", Section I.B.2.a states NMP1 has no cable tray fire barriers constructed of TSI Thermo-Lag 330-1 material. SRT walkdowns of cable tray and conduit raceways and their supports found no evidence of this material attached to these cable tray or conduit raceways and their supports.

LIST OF ADDITIONAL ATTACHMENTS

Attachment B:	Calculation S0.0SEWS210.1-36, "Screening Evaluation Work Sheets for Pump 210.1-36"
Attachment C:	Calculation S0.0SEWS210-01, "Screening Evaluation Work Sheets for Fan 210-01"
Attachment D:	Calculation S0.0SEWSMSIVIR, "Screening Evaluation Work Sheets for the Main Steam Isolation Valve Instrument Rack (MSIVIR)"
Attachment E:	Calculation S0.0 SEWSCP162, "Screening Evaluation Work Sheets for Panel CP162"
Attachment F:	Calculation S0.0SEWS96-04, "Screening Evaluation Work Sheets for Tank 96-04"
Attachment G:	Calculation S0.0SEWS167A, "Screening Evaluation Work Sheets for Transformer 167A"
Attachment H:	Calculation S0.0SEWSBB11, "Screening Evaluation Work Sheets for Battery Board #11"
Attachment I:	Report RTR-2661, "Lead Expansion Anchor Load Capacity in Reactor Buildings at the Savannah River Site"
Attachment J:	In-Structure Response Spectra for Reactor Building 259' vs. 1.5 Times the GIP Bounding Spectrum NMP1 Bounding Spectrum vs. SSE Plot
Attachment K:	Calculation S0.0SEWS6009, "Screening Evaluation Work Sheets for Emergency Condensate Makeup Tank 60-09"
Attachment L:	Calculation S20.6-YD-TANK01, "EDG Fuel Oil Tank Replacement"
Attachment M:	Calculation S0.0SEWS9635, "Screening Evaluation Work Sheets for Tank 96-35"
Attachment N:	Calculation S0.0SEWS305125, "Screening Evaluation Work Sheets for Hydraulic Control Units 305-125"
Attachment O:	Calculation S0.0SQUGLAR1, "Limited Analytical Review of Cable Tray Support"