Department of Energy
Washington, DC 20585

February 25, 2011

The Honorable Peter S. Winokur
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004-2901

Dear Mr. Chairman:

In the Defense Nuclear Facilities Safety Board's (Board) letter dated December 2, 2009, the Board requested to be kept apprised of the status of the Peer Review Teams' (PRT) efforts on a quarterly basis through a list of issues developed, their status, and resolution until all issues have been resolved.

The Structural and Equipment PRTs last met in Richland, Washington, in November 2010. These meetings were attended and observed by your staff. The peer review reports for each of the meetings are enclosed. The Structural PRT review included seven comments and two findings associated with the Pretreatment Facility Annex Building. The project is in the process of addressing both of these findings. The Equipment PRT review resulted in no findings and four comments.

The Equipment PRT report and the Structural PRT report are included as enclosures to this letter.

During the visit in November 2010, the Board's staff asked how commodity weights are being considered and tracked in the structural steel design. The inquiry is documented in the Board's request "WTP-10-070 (Commodity Loads)." The response to that inquiry is contained in Bechtel National, Inc.'s CCN: 228219, dated December 6, 2010, which has been made available through the standard mechanisms.

All ongoing activities regarding the PRTs will continue to be communicated through the current process. Based on discussions by staff, we propose that PRT efforts, status, and issue resolution be provided directly to your staff as they occur rather than formally on a quarterly basis. This approach has been discussed with your staff and we agree this will provide more timely communication and will facilitate interaction in this area.

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If you have any further questions, please contact me or Mr. Kenneth G. Picha, Jr., Acting Deputy Assistant Secretary for Safety and Security Program, at (202) 586-5151.

Sincerely,

Inés R. Triay

Inés R. Triay
Assistant Secretary for
Environmental Management

Enclosures

Attachment - A
11-WTP-040

ORP Structural Peer Review Report of the November 1 and 2, 2010 Structural Peer Review Meeting

Pages 9(Including Coversheet)

ORP Structural Peer Review Report
November 2010 Structural Peer Review Meeting

Summary - The DOE Office of River Protection initiated an independent peer review of the structural design and analysis for the HLW and PTF facilities for the WTP project. The review took place at the Richland offices of BNI on November 1 and November 2, 2010 .The review consisted of a sampling of structural design documents released since the April 2010 Structural PRT review; evaluation to identify if the soil-HLW structure interaction analyses using the SASSI software is prone the recent anomalies discovered by users of that code; and an in-depth discussion of the soil-structure interaction analyses of the PT Control Building. As a result seven comments requiring BNI response and two findings were made and are given in the Attachments A and B. In addition, during the review 22 open comments from previous reviews were closed.

1.0 PURPOSE, SCOPE AND APPROACH

1.1 PURPOSE

The purpose the Structural PRT reviews is to provide independent confirmation that the structural design as reflected in the procedures, criteria, guidance, analyses, calculations and drawings are in conformance with DOE Orders and Standards for the safety class assigned to the building structures.

1.2 SCOPE

The ORP Structural Peer Review Team (PRT) and ORP identified the following four objectives for the November review:

1. Review of the PTF Control Building soil-structure interaction analysis.
2. Identify if the soil-structure interaction analyses for HLW using the SASSI software is prone the recent anomalies discovered by users of that code.
3. Review a sampling of structural drawings and design calculations for the design of the HLW structural steel and the PTF structural steel.
4. Review the BNI responses to the PRT comments from previous reviews and where applicable close.

1.3 APPROACH

The approach consisted of reviewing structural calculations and drawings before and during the meetings on November 1 and 2. During the meetings presentations and discussions occurred on the topics identified in Section 2.2. The primary BNI participants in the discussion were Lisa Anderson, Thomas Ma, Kelsey Edwardsen and Farhang Ostadan for ongoing work. Review of the existing structural open items was coordinated with Chuck Mcconnel and Kelsey Edwardsen.

2.0 RESULTS

1. **Review of the PTF Control Building soil-structure interaction analysis.**
   The PTF Control Building is a surface mounted SC-1 structure adjacent to the PTF building. Calculation 24590-PTF-S0C-S15T-00021 Revision A contains the SSI analysis of the PTF Control Building. The PRT reviewed this document before the peer review meeting and asked that knowledgeable engineers involved in the analysis be available at the meeting to respond to

our questions. Lisa Anderson, the author and Thomas Ma the reviewer were present at the meeting. The calculation considered the structure-soil-structure interaction between the PTF building and the PTF Control building as well and the PTF control building as an isolated structure. BNI satisfactorily answered the PRT questions; however, it was apparent that there needs to be better communication between the analysis engineers and the design engineers to assure that the attributes of the analysis models correctly reflect the building design conditions. One example is how the composite beams were intended to be modeled using pinned conditions so that all bending loads would be taken by the concrete slabs and not shared, except for axial load, with the steel beams.

2. **Identify if the soil-structure interaction analyses for HLW using the SASSI software is prone the recent anomalies discovered by users of that code.**
   Dr. Farhang Ostadan presented results of SASSI modeling approaches on the HLW seismic responses. The adequacy of using the SASSI subtraction method for the soil structure interaction analyses for HLW was evaluated by comparing response spectra between the more rigorous direct (flexible volume) method of analyses and the subtraction method for the frequency range of interest. The response spectra show differences at higher frequencies (15 Hz to 22 Hz) where the subtraction method slightly underestimates the response. At elevations higher in the structure, the subtraction method diverges from the direct method at frequencies higher than about 8 Hz and tends to slightly overestimate the response between 8 Hz to 15 Hz. These differences indicate that the transfer functions for the two approaches diverge at frequencies above about 8 Hz, however, for the HLW; these differences do not appear to result in significant differences in computed seismic demand. It is noted that the input motion for HLW has very little energy at frequencies above about 10 Hz.

   It is recommended that the results presented to the PRT be included in a formal document as part of the basis for accepting the SSI analysis approach used at HLW.

3. **Review a sampling of structural drawings and design calculations for the design of the HLW structural steel and the PTF structural steel.**
   Several calculations and drawings were reviewed and comments are contained in the attachments according to the comment categories delineated in the next section. This resulted in two findings, both associated with meeting requirements in the AISC code.

4. **Review the BNI responses to the PRT comments from previous reviews.**
   The PRT reviewed BNI responses to older PRT comments. Twenty-two open items from previous Structural PRT reviews have been closed and eighteen items remain open. One comment of concern to the PRT, re numbered as ORP -RPT-2009–A011 in the December 2009 PRT report, has been open for some time. This comment is:

   > *Years ago, the PRT reviewed a load path study for the PTF. One of the concerns expressed dealt with the potential collectors or transfers from the floor diaphragms to the tops of the concrete walls. Now that the design of the Elevation 77 and 98 floor diaphragms is being completed, there is no evidence of any added reinforcing bars or non-typical steel beam/embed connections at the top of the shear walls. Please confirm that the load transfers to the tops of the shear walls have been properly addressed.*

BNI responses to this comment, received after the November, 2010 meeting, have been reviewed, but have not been accepted by the PRT. Comment 7 below contains the latest response from the PRT on the BNI submittal to ORP -RPT-2009–A011.

3.0 CONCLUSIONS

- The review did not result in any major findings. The two findings listed in Attachment B are identified with not meeting requirements from the AISC standards.
- The PRT recommends that the presentation material showing the comparison between the SASSI direct method and the SASSI subtraction method be documented and issued as a formal calculation.
- The PRT recommends that communication between the analysis engineers in BNI Fredericksburg Office and the design engineers in Richland and Oakland offices be improved to assure that the attributes of the analysis models correctly reflect the building design conditions.

4.0 REFERENCES

1. 24590-PTF-S0C-S15T-00021, PTF Control Building-SSI Analysis and Generation of Seismic Loads, Rev. A, 5/26/2009/
2. Ostadan Presentation on Effects of Subtraction vs. Direct for HLW.
3. 24590-WTP-DGC-S13T-00142 "HLW Bar Cutting Limitations on Concrete Walls and Slabs, Rev A 7/12/2010
4. 24590-WTP-GPP-CON-3212 "Construction Procedure: Concrete Excavation , Rev. 0
5. 24590-HLW-SSC-S15T-00233 "Justification for not using 1.5 Multi Mode Factor for Selected Simply Supported Beams, Rev. 0
6. 24590-HLW-S0C-S15T-00042 "Glass Former Support and Access Platforms Between EL 58 & EL 103, Rev. A, 9/13/2010
7. 24590-PTF-DGC-S13T-00017, Design of PTF Walls EL 77' to 98' at Col Lines 1-8, B
8. 24590-PTF-DGC-S13T-00028, EL 77' Slab Design for PT Building Bounded by Column Lines 17.1 Thru 24.2
9. 24590-PTF-DGC-S13T- 00029, EL 77' Slab Design for PT Building Bounded by Column Lines 24.2 Thru 31
10. 24590-PTF-SSC-S15T-00207, Structural Analysis and Steel Design of PTF Annex Building
11. 24590-PTF-SS-S15T-01017 Pretreatment Facility Annex Structural Steel Framing Connection Details

Attachment A - Follow- up Items

The seven comments in this appendix require response from BNI as indicated.

Document No./Title: Ostadan Presentation on Effects of Subtraction vs Direct for HLW				Rev: A	Document Date: 11/01/2010
Reviewer: ORP Structural Review Team: Greg Mertz, Tom Houston					
Item	Section	Page	Comment		
1.		7	A study comparing the response calculated using direct method and subtraction method was presented that showed differences between the results and concluded that these differences were acceptable for HLW design. 1) This study needs to be formalized as a WTP project calculation to document a basis for accepting the existing analysis. 2) A comparison of direct and subtraction transfer functions for each of the nodes with calculated response should be included in the calculation.		

Document No./Title: 24590-WTP-DGC-S13T-00142 "HLW Bar Cutting Limitations on Concrete Walls and Slabs				Rev. 00A	Document Date: 7/10/2010
Reviewer: ORP Structural Review Team: Greg Mertz					
Item	Section	Page	Comment		
2.			24590-WTP-DGC-S13T-00142 uses a 0.9 D/C screen to identify Type A components which may not have bar cuts without prior engineering approval. 24590-WTP-3PS-FA02-T0004 Sections 8.2.4.1 B and C allow up to 20% of the bars in a region to be cut. This is an inconsistency between the two documents Explain how a specification which allows up to 20% of the rebar to be cut is consistent with the 0.9 D/C screen for engineering approval or modify the specifications to contain consistent requirements.		

Document No./Title: 24590-WTP-GPP-CON-3212 "Construction Procedure: Concrete Excavation				Rev: 0	Document Date: 6/6/2005
Reviewer: ORP Structural Review Team: Greg Mertz:					
Item	Section	Page	Comment		
3.		28	24590-WTP-3PS-FA02-T0004 contains rules that allow cutting of rebar without prior engineering approval but does not provide rules that require the consideration of all previous rebar cuts in a given component. 24590-WTP-GPP-CON-3212 Section 3.4.9-c requires a review of the cut rebar field model for impact of previously cut rebar, but looks to the engineering specifications (24590-WTP-3PS-FA02-T0004) for acceptance criteria. The PRT recommends that 24590-WTP-3PS-FA02-T0004 be strengthened to include explicit requirements to consider all previous rebar cuts in a given component.		

Document No./Title: 24590-HLW-SSC-S15T-00233 "Justification for not using 1.5 Multi Mode Factor for Selected Simply Supported Beams			Rev: A	Document Date:11/01/2009
Reviewer: ORP Structural Review Team: Greg Mertz, Fred Loceff				
Item	**Section**	**Page**	**Comment**	
4.			24590-WTP-DC-ST-04-001 Rev 3 "Seismic Analysis and Design Criteria Section 7.2.2.3 states that when the mass in a mode exceeds 75% of the total mass the response is considered as a single mode dominant response and concluded that a multi-mode factor of 1.0 is appropriate. 24590-HLW-SSC-S15T-00233 calculates the mass participation ratio of exactly 0.75 for a two span beam and concludes, based on the SADC that a multi-mode factor of 1.0 is appropriate. 1) What is the technical basis for the 75% mass limit in the SADC? 2) Is the 75% mass participation limit truly a hard limit or is this a judgment based limit that approximates a transition zone between two regimes of behavior? 3) Is the conclusion in 24590-HLW-SSC-S15T-00233 that the multi mode factor for a two span beam is 1.0 reasonable given the actual response of the two span beam? 4) The basis for 75% mass participation assumes a symmetric beam with a support at the center, uniform stiffness and uniform loading. Any variation from this ideal condition will result in a lower percentage of mass participating. Therefore, the use of 1.0 for this condition is problematic to the PRT.	

Document No./Title: 24590-PTF-DGC-S13T-00017, Design of PTF Walls EL 77' to 98' at Col Lines 1-8, B-L			Rev: A	Document Date: 2/01/2010
Reviewer: ORP Structural Review Team Loring Wylie				
Item	**Section**	**Page**	**Comment**	
5.		9	Calculations should be logical and not just the manipulation of numbers. Appendix D resolves transverse shear D/C ratios greater than 1.0 in three locations in the wall on line 4 above wall openings and below elevation 98. All have high thermal loads in the range of 700+ kips tension. The LANL white paper, ECN 133337, is used. Using a default ultimate shrinkage strain of 0.00060 (which was average shrinkage in the 1965 SEAOC report) while to our knowledge no shrinkage tests have ever been performed on WTP concrete, results in thermal strain (70°F to 113°F) plus shrinkage strain of 0.0008365 in/in being less than the value 0.00085 from ECN 133337 (i.e., 1.5% less) so thermal can be ignored. Then one looks at the calculations where cut 4:H.3 el 87-98 (N) has a thermal 786 kips tension while cut 4:H.1 el 87-98 (S) at the other end of the spandrel or coupling beam has a thermal 777 kips compression. Is this due to 43°F change in temperature? Logic seems to be lacking. What is causing these high thermal loads? Please explain.	

Document No./Title: 24590-PTF-DGC-S13T-00028 and 24590-PTF-DGC-S13T 00029, EL 77' Slab Design for PT Building			Rev: A	Document Date: 6/10/2010
Reviewer: ORP Structural Review Team: Loring Wyllie				
Item	Section	Page	Comment	
6.	App. D		These two calculations have an Appendix D for Drag Strut Analysis. The approach is to determine the area of drag strut steel required at wall ends and corners and subtract the area of typical reinforcement to determine the additional steel required for the collector. This is not a conservative approach as some (perhaps half) of the typical reinforcement is needed to resist gravity loads. However, the actual additional steel selected seems high enough to make this concern moot. However, the heavier bars extend into the slab 16 feet and all terminate at the same location and extend apparently only a development length into the wall. This is not an appropriate or effective way to detail seismic collector reinforcement. Please revise these bars, make them longer, stagger the cut offs and change the methodology or bars are not counted twice.	

Document No./Title: 24590-PTF-SOC-S15T-00062, PTF Roof Steel Structure Response Spectrum Analysis			Rev: A	Document Date: 9/28/2009
Reviewer: ORP Structural Review Team: Loring Wyllie, Fred Loceff:				
Item	Section	Page	Comment	Disposition
7.	General		Years ago, the PRT reviewed a load path study for the PTF. One of the few concerns expressed dealt with the potential collectors or transfers from the floor diaphragms to the tops of the concrete walls. Now that the design of the Elevation 77 and 98 floor diaphragms is being completed, there is no evidence of any added reinforcing bars or non-typical steel beam/embed connections at the top of the shear walls. Please confirm that the load transfers to the tops of the shear walls have been properly addressed.	PRT response to the November 19, 2010 BNI responses to ORP-RPT-2009-A011. HLW Rebar at Elevation 0' The BNI submittal of November 19 is informative but not complete. At A-15, what did the calculation require? Looking at Detail 1 only those bars that are continuous and cross the "vertical construction joint between El -5 and 0 are effective, I count 7 maximum, not 15 as indicated in the BNI response. Are these bars properly lapped with the #11 wall horizontals to the east of the construction joint? I suspect offset splice which are too short. At Aa-5 in the sketches on page 4, demonstrate that the 4 #11 that extend only 7'-3" are properly lapped with the wall horizontal #11 bars. This appears to be an offset lap splice which does not meet code. (Note, if this code requirement is not met, then this comment will need to be reclassified as a Finding.) Load path in the Slab at Elevation 0 The problem is the typical details where all slab bars hook at all walls and all wall bars hook at all wall intersections. Thus there are no continuous bars between slabs and walls which are perpendicular.

Attachment B - Findings

Finding – An individual item not meeting a committed requirement (e.g., contract, regulation, safety basis, QA program, authorization basis document or procedure.

Document No./Title: - 24590-PTF-SSC-S15T-00207, Structural Analysis and Steel Design of PTF Annex Building				Rev: A	Document Date: 6/13/2010
Reviewer: ORP Structural Review Team: Loring Wyllie					
Item	**Section**	**Page**	**Comment**		
8.		228-330	ORP -RPT-2010–F001 Calculation sheets 328-330 checks the horizontal bracing at the roof. On sheet 330 the compression to flexure interaction uses negative compression (apparently tension) to offset at 1.30 ratio for flexure. This is a misuse of this AISC/ANSI N690-1994 code formula. The y-axis slenderness ratio is very close to the x-axis values and it appears this WT section is overstressed and a design revision is needed. It is noted that the calculation uses AISC LRFD 3rd edition formula for this calculation since neither AISC/ANSI N690-1994 nor AISC 9th edition provide specific formula for lateral torsional buckling.		

Document No./Title: 24590-PTF-SS-S15T-01017 PRETREATMENT FACILITY ANNEX STRUCTURAL STEEL FRAMING CONNECTION DETAILS				Rev: 0	Document Date: 7/16/2010
Reviewer: ORP Structural Review Team: Loring Wyllie, Fred Loceff:					
Item	**Section**	**Page**	**Comment**		
9.	App. E		ORP -RPT-2010–F002 This drawing contains details the diagonal HSS brace to beam, beam-column and base plates. a. The 2 inch knife plate is welded to the 5/8 inch thick tubes with a ¾ inch fillet weld, which exceeds code limits on fillet weld thickness as specified in 1989 edition of AISC Specification for Structural Steel Buildings, Chapter J; Section J2; Table J2.4. The maximum size fillet weld allowed is ¼ inch. b. What is the tolerance on the knife plate being off center line of the HSS? Verify that the connection with side plates has adequate lateral stiffness to prevent lateral buckling under some eccentricity that may occur within tolerance.		

Attachment - B
11-WTP-040

ORP Equipment Peer Review Report of the November 1 and 2, 2010 Equipment Peer Review Meeting

Pages 6(Including Coversheet)

ORP Equipment Peer Review Report of the November 1 and 2, 2010 Equipment Peer Review Meeting

December 22, 2010

Team Lead: Frederick Loceff, ORP Consultant

Team Members: **George Rawls, Savannah River Laboratory**
Frederick Loceff, ORP Consultant

ORP Equipment Peer Review Report of the November 2010 Peer Review Meeting

Summary – The DOE Office of River Protection initiated an independent peer review of the equipment design and analysis for the HLW and PTF facilities for the WTP project. The review occurred at the Richland offices of BNI on November 1 and November 2, 2010. The review focused on the analysis and design of ASME pressure vessels, specifically on the Plant Wash Vessel (PWD-VSL-00044). Four EQPRT comments were made and are given in Attachments A. In addition, during the review 24 open comments from previous reviews were closed. Because of the importance of equipment and the maturing state of equipment procurement the EQPRT recommended that additional reviews of broader scope in increased frequency be initiated. It is noted that there have only been 2 EQPRT reviews prior to the current limited review.

1.0 PURPOSE, SCOPE AND APPROACH

1.1 Purpose

The purpose the EQPRT reviews is to provide independent confirmation that the structural qualification of SC-1 and SC-2 equipment reflected in the procedures, criteria, guidance, analyses, calculations, testing and drawings are in conformance with DOE Orders and Standards for the safety class assigned to the equipment.

1.2 Scope

The ORP Equipment Peer Review Team (EQPRT) and ORP identified the following four objectives for the November review:

1. Review of the generic procedure for qualification of pressure vessels.
2. Review, in depth, the stress analysis of the PTF Plant Wash Vessel.
3. Review the BNI responses to the EQPRT comments from previous reviews and where applicable close.

1.3 Approach

The approach consisted of reviewing calculations and drawings before and during the meetings on November 1 and 2. During the meetings in-depth discussions occurred on the topics identified in Section 2.2. The primary BNI participants in the discussions were John Julyk and Wade Wilcox. Review of the existing equipment open items was coordinated with Ken Simon and Tom Hughes.

2.0 RESULTS

1. **Review of the generic procedure for qualification of pressure vessels.**
   This procedure is contained in Report 24590-WTP-GPG- M-0061, Rev 0. The EQPRT recommends that the criteria be revised to reference WRC Bulletin 432. The criteria should be revised to state the minimum fatigue strength reduction factor for each weld type that aligns with the current examination criteria. A lower fatigue strength reduction factor value than specified in WRC Bulletin 432 requires specific approval and specification of appropriate NDE techniques during fabrication.

2. **Review, in depth, the stress analysis of the PTF Plant Wash Vessel.**
   This analysis is contained in Report 24590-PTF-MVC-PWD-00066, Rev A. The EQPRT review resulted in the three comments contained in Attachment A. Two of the comments are directed towards finite element modeling techniques and the third is asking that the design margins be included in the report.
3. **Review the BNI responses to the EQPRT comments from previous reviews.**
   The PRT reviewed BNI responses to older PRT comments. Twenty-four open items from previous EQPRT reviews have been closed and fourteen items remain open

3.0 CONCLUSIONS

- The review resulted in four comments, none categorized as violations of code requirements or programmatic failures.
- The EQPRT recommends that additional reviews of broader scope of equipment and increased frequency be initiated. Three meetings over a four year period is not adequate to provide meaningful feedback to DOE and BNI on the credibility of equipment qualification.

4.0 REFERENCES

1. 24590-WTP-GPG- M-0061, Vessel Structural Analysis and ASME Section VIII Evaluation, Revision 0, 4/08/2009
2. 24590-PTF-MVC-PWD-00066, Plant Wash Vessel Structural Analysis Stress Analysis with ANSYS, Revision A, 5/25/2010.
3. WRC Bulletin 432, Fatigue Strength Reduction and Stress Concentration Factors for Welds in Pressure Vessels and Piping, June 1998
4. WRC Bulletin 429, 3D Stress Criteria Guidelines for Application, February 1998

Attachment A - Follow- up Items

The four comments in this appendix require response from BNI as indicated.

Document No./Title24590-WTP-GPG- M-0061, Vessel Structural Analysis and ASME Section VIII Evaluation				Rev: 0	Document Date: 4/08/2009
Reviewer: ORP Structural Review Team: George Rawls					
Item	**Section**	**Page**	**Comment**		
1.	9.9.1.2	88	This section of the fatigue evaluation criteria states that stress concentration factors are being applied to calculate the peak stress. The criterion allows for wide latitude in the selection of the stress concentration factor and does not tie the stress concentration factor to the weld type or the nondestructive evaluation method used to accept the weld. Review of several calculations indicated that in practice the Fatigue Strength Reduction Factors from WRC Bulletin 432 are applied in the calculation of peak stress. The EQPRT recommends that the criteria be revised to reference WRC Bulletin 432. The criteria should be revised to state the minimum FSRF for each weld type that aligns with the current examination criteria. A lower fatigue strength reduction factor value than specified in WRC Bulletin 432 requires specific approval and specification of appropriate NDE techniques during fabrication. Note: this comment closes previous comments A-09-WED-AMWTP-RPT-006-A024 and A-09-WED-AMWTP-RPT-006-A031		

Document No./Title: 24590-PTF-MVC-PWD-00066, Plant Wash Vessel Structural Analysis Stress Analysis with ANSYS				Rev. A	Document Date: 5/25/2010
Reviewer: ORP Structural Review Team: George Rawls					
Item	**Section**	**Page**	**Comment**		
2.	5.5	64	This section of the calculation indicates that the welds are modeled as a shared node at the components (i.e. nozzle to shell) interface. Discussion with engineering personnel confirmed that the welds are not specifically modeled. For many shell/ nozzle geometries not modeling the stiffness of the weld provides a valid result. It is questionable that this is the case for all the configurations in the Plant Wash Vessel. The EQPRT analyzed the case of the 10 inch support from the PJM connected to the vessel shell and found a 36% increase in primary plus secondary stress at the toe on the cap weld. The EQPRT recommends that this modeling technique be validated for over a range of nozzle/shell stiffness found in the WTP Vessels.		
3.	5.3	60	The Plant Wash Vessels was modeled using shell element, for the thickness of the components in the vessel this appears appropriate. During the review at Hanford it was determined that several of the internal support where producing out of plane punching shear loads on these shell elements. It is not clear from the data provided on the shell element in the calculation, that this element will provide the correct response to these punching loads. The EQPRT recommends that additional justification of the shell elements be provided to support that they will give the correct response to the out of plane shear loads.		

Document No./Title: 24590-PTF-MVC-PWD-00066, Plant Wash Vessel Structural Analysis Stress Analysis with ANSYS				Rev. A	Document Date: 5/25/2010
Reviewer: ORP Structural Review Team: George Rawls					
Item	**Section**	**Page**	**Comment**		
4.	8	536	The Results and Conclusion Section of the calculation provided no numerical values for design margin on the vessel. The design margins provide important data for future management of the structural integrity of the vessels and control for new loading during the design process. The EQPRT recommends the Design margins be provided for calculation. Design margins should be given for all critical components for each load case.		