



Department of Energy

Washington, DC 20585

May 11, 2007

9:17

The Honorable A.J. Eggenberger
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Ave, NW, Suite 700
Washington, DC 20004

Dear Mr. Chairman:

During the last four months, the Office of Environmental Management (EM), the Savannah River Site (SRS), its contractors, and their respective consultants have worked closely with the Defense Nuclear Facilities Safety Board (DNFSB) and staff to expeditiously resolve the issues identified in your January 10, 2007, letter regarding the structural analysis and design of the Salt Waste Processing Facility (SWPF).

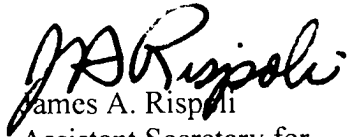
As a result of these constructive efforts, a mutually agreeable and technically sound path forward for the SWPF structural analysis and design has been developed that moves this critically important risk-reduction project closer to final design. Enclosure 1 provides a summary of the resolution approaches for the key areas of concern identified in the January 10, 2007, letter. Enclosure 2 provides a record of documents used in formulating the bases for these agreements.

Our joint efforts to address the SWPF issues in a timely manner demonstrate responsiveness to the Congressional call for improvement in our issue resolution process. These efforts have, to date, been executed internally between EM, SRS, and its contractors, working closely with the DNFSB. In consideration of the numerous stakeholders with a vested interest in the successful deployment of this key risk reduction facility at the SRS, EM requests that the DNFSB acknowledge that the work completed to date and discussed in detail with DNFSB staff on April 30, 2007, addresses the January 10, 2007, concerns sufficiently to proceed with SWPF final analyses and design.



I appreciate the constructive support of the DNFSB and its staff in this important matter and I look forward to your timely response. If you have any comments or questions, please call me at (202) 586-7709 or Dr. Inés R. Triay, Chief Operating Officer for Environmental Management at (202) 586-0738.

Sincerely,


James A. Rispoli
Assistant Secretary for
Environmental Management

Enclosures

cc: M. Whitaker, HS-1.1
J. Allison, SRS
I. Triay, EM-3

Enclosure 1
Issue Resolution Summary
DNFSB January 10, 2007 Letter

Structural Analysis Methodology

- The preliminary design analysis approach that incorporated a lumped-mass model for generating In-structure Response Spectra for the Central Processing Area (CPA), employed a coarse approach to accounting for soil-structure interaction effects, and invoked simplified soil compressibility properties will not be pursued for final design analyses.
- Instead, a more sophisticated and state-of-the-art analytic approach that uses the SASSI computer code will be used to generate both the seismic inertial loads and the In-structure Response Spectra for final design analyses. This revised analytic approach will more accurately account for soil-structure interaction effects, ensure that non-rigid behavior of structural diaphragm elements is properly modeled, and invoke soil compressibility properties consistent with previous analyses performed for facilities at the Savannah River Site (SRS).
- Additionally, the mesh refinement guidance developed for the Hanford Waste Treatment Plant finite element structural models will be applied to the SWPF finite element analyses, and nationally recognized expert consultants will be retained for the duration of the final structural analyses to ensure these analyses are properly executed.
- Also, a Summary Structural Report of sufficient scope and technical content to demonstrate the functional adequacy of the SWPF structural design will be developed.

Structural Design

- Both Parsons' and DOE's nationally recognized expert consultants have performed detailed reviews of the adequacy of the SWPF structural design with regard to demands resulting from both seismic inertial and differential settlement loads. The results and subsequent actions resulting from these reviews have been presented to the DNFSB staff.
- For seismic inertial loads, Parsons' expert consultants recommended several design adjustments to improve the vertical load paths and avoid significant load path discontinuities. All of these recommendations have been accepted by Parsons and incorporated into the SWPF structural design. With these design recommendations implemented, the consensus conclusion is that the SWPF design will be able to conservatively accommodate PC-3 seismic inertial loads.
- For differential settlement loads, Parsons' expert consultants have rigorously assessed the potential demands that could be placed upon the SWPF facility due to seismically induced differential settlements. The results of these assessments demonstrate that increasing the CPA basemat thickness provides a conservative design solution for credible potential settlement profiles.
- The project is implementing an eight-foot thick basemat to provide additional margin to account for the unlikely event that unexpected results are obtained from the final geotechnical analyses. Implementation of the conservative eight-foot thick basemat will allow the project to proceed with confidence in parallel with completion of the final geotechnical analyses. Additionally, at this point in time, the eight-foot thick basemat is expected to be an economical design solution as it facilitates construction efficiency.

Geotechnical Report Delay

- To expedite geotechnical design information for liquefaction and dynamic differential settlement, DOE directed Washington Savannah River Company to conduct geotechnical engineering analyses for SWPF using existing Savannah River Site methodologies.
- The conservative design solution (an eight-foot thick basemat) being pursued effectively decouples the viability of the structure from the final results of the geotechnical analyses. The preliminary geotechnical results indicate that this design solution is conservative and the consensus expert conclusion, supported by thorough sensitivity analyses, is that sufficient margin is available to account for any unexpected changes that may manifest themselves in the final geotechnical analyses.
- The final SWPF structural design will incorporate the results of the final geotechnical analyses to confirm the adequacy and conservatism of the design solution.

Quality Assurance

- Parsons has taken broad and timely action to: 1) identify the causes leading to the deficiencies, 2) determine the extent of condition, 3) explore the potential for related systemic problems, 4) establish corrective actions for the immediate issues and the broader cultural issues, and 5) ensure the effectiveness of corrective actions taken.
- Parsons has established a Senior Review Board (SRB) process to bring proper and timely management attention to the resolution of identified issues. Both DOE and DNFSB staff have been participating in the process since its inception. Parsons has also fostered a cultural shift that emphasizes and rewards problem recognition and reporting.
- The SRB process, as applied to the quality assurance issues referenced in the January 10, 2007 letter, included the formation and execution of a thorough independent review that drew upon industry quality assurance experts. Once the issues were clearly understood, a Corrective Action Development team of Subject Matter Experts was chartered to develop appropriate corrective actions.
- Quality assurance issues, identified through this process, including those in the January 10, 2007 letter, have been thoroughly addressed and appropriate corrective actions are in place and being executed. Additionally, the implementation of DOE O 414.1C and NQA-1 as project requirements and the broad cultural changes being implemented will significantly strengthen the project quality assurance program efficacy.
- On May 7, 2007, Parsons and DOE-SRS personnel commenced a comprehensive two week assessment of the NQA-1 program to ensure the program is operating in an effective and compliant manner. Additionally, DOE-HQ will be performing a QA Assessment of the SWPF project in July 2007.

Enclosure 2
Issue Resolution References

1. 30043-SDC#'s 1, 2, 3, *SWPF Review – Task Reports 3 “Dynamic Response of the Lumped Mass Model”, 5 “Conceptual Load Path Assessment”, and 6 “Structural Calculations Review”*, Parsons/Carl J. Constantino & Associates, March 1, 2007.
2. 30043-SDC# 3, *SWPF Review – Task Report 5 “Conceptual Load Path Assessment” Supplement*, Parsons/Carl J. Constantino & Associates, March 4, 2007.
3. SWPF-07-005, *Adequacy of the GTStrudl Model for Structural Design*, Department of Energy Review Report, March 9, 2007.
4. SPD-07-170, *LWO-2007-0019 - WSRC SWPF Preliminary Geotechnical Information*, WSRC, March 9, 2007.
5. *(Draft)SWPF Dynamic Settlement Analysis Plan*, WSRC, March 23, 2007.
6. 00-700-05073, *Review of Finite Element Model and Structural Design Calculations*, Parsons Response to SWPF-07-005, April 6, 2007.
7. 30030-SDC# 229, *(Draft) Geotechnical Engineering Report: Geotechnical Investigation Phase II Salt Waste Processing Facility*, Parsons/Shannon & Wilson, April 20, 2007.
8. 30043 SDC# 5, *Effects of Seismically Induced Differential Settlement on the SWPF Facility*, Carl J. Constantino & Associates, April 20, 2007.
9. 30043 SDC# 6, *SWPF Analysis Plan for Seismic Demands*, Parsons/Carl J. Constantino & Associates, April 23, 2007.
10. K-ESR-G-00011, *(Draft) Static Modulus of Subgrade Reaction for Large Structures at Savannah River Site*, WSRC, May 2007.
11. K-CLC-J-00014, Rev. 0, *Two Dimensional Analysis of Select Soft Zones at the Salt Waste Processing Facility (SWPF)*, WSRC, May 3, 2007.
12. 30043 SDC# 7, *Effects of Seismically Induced Differential Settlement on the SWPF Facility_ Supplemental Analyses*, Parsons/Carl J. Constantino & Associates, May 6, 2007.
13. 00-700-05131, *Meeting Minutes: DNFSB Seismic Issues Meeting-3/26&27/07*, Parsons, March 26/27, 2007.
14. 00-700-05274, *Meeting Minutes: DNFSB Seismic Issues Meeting-4/30/07*, Parsons, April 30, 2007.
15. *Weekly Teleconference Agendas, Activity Status Tables, and Meeting Minutes*, Parsons, February 2 – May 4, 2007.