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# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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August 10, 1998

Mr. Greg Rudy, Manager  
Savannah River Operations Office  
Department of Energy  
P. O. Box A  
Aiken, South Carolina 29802

Dear Mr. Rudy:

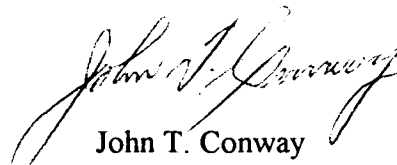
Thank you for your letter of July 21, 1998, related to seismic design and engineering for new construction projects at the Savannah River Site (SRS). The Defense Nuclear Facilities Safety Board (Board) would like to continue technical discussions that lead to improvements to safety. This requires that any missing technical background information needs to be provided to the Board by the Department of Energy (DOE) and the Westinghouse Savannah River Company (WSRC) as expeditiously as possible and thus expedite the discussions. The following paragraphs are comments on the enclosures to your letter.

- **Enclosure 1:** You indicate that the two significant actions that will be taken to incorporate a higher level of seismic safety in new SRS DOE facilities are: (a) the adoption of Uniform Building Code ductile detailing requirements for facilities in Zones 3 and 4, and (b) the adoption of an additional 1.2 load factor to be applied to seismic loads. Although not stated in your letter, one could also include a similar load factor when evaluating seismically induced stresses and strains in slope stability analyses, settlement analyses, and liquefaction analyses. The Board and its staff are available to discuss activities related to improving your site standards, and in particular, the re-evaluation of the load combinations in Engineering Standard WSRC-TM-95-1.
- **Enclosure 2:** The preliminary results of the seismic verification study for the Advanced Packaging and Storage Facilities (APSF), as presented to the Board's staff, are encouraging and appear to indicate that the structure will be robust. We look forward to a future briefing by the WSRC team that performed both the review of the APSF design and then subsequently performed the seismic verification study.
- **Enclosure 3:** We understand that the initial nine site-wide generic seismic issues, as well as the few more issues being developed, are well underway to resolution. Our common objective is to minimize future challenges to the basic assumptions underlying the development of an appropriately generic site ground motion spectrum. This ongoing effort should lead to a technically sound characterization of ground motion for future projects.

In the area of ground motion technology, however, long held positions must be re-evaluated as new research is completed. Unfortunately, given the nature of the problem, new knowledge on characterization of ground motion is bound to arise with time. Uncertainty in the ground motion estimates for the Eastern United States is admittedly greater than that for the Western United States and prudence suggests that this fact be recognized appropriately when decisions are made to provide Design Spectra to design teams. As you appropriately state in your letter, most reactor and non-reactor nuclear facilities are robust structures designed for radiation protection and security such that a reasonable increase in seismic demand will not significantly change design of the facility. It is good engineering practice to exploit this fact and claim that conservative seismic demands have been placed on these structures.

We encourage you to continue your interaction with our staff as necessary.

Sincerely,



John T. Conway  
Chairman

c: Mr. Mark B. Whitaker, Jr.