

November 20, 2006

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
SYSTEM ENERGY RESOURCES, INC.) Docket No. 52-009-ESP
)
(Early Site Permit for Grand Gulf ESP Site))

NRC STAFF PRE-FILED TESTIMONY CONCERNING HEARING ISSUE F:
CUMULATIVE SITE IMPACTS FOR THE GRAND GULF ESP PROCEEDING

Q.1. Please state your name, occupation, by whom you are employed and your professional qualifications.

A.1. (SK) Stephen Klementowicz. I am employed as a Senior Health Physicist in the Division of License Renewal, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission ("NRC").

A.1. (CB) Charles A. Brandt. I am employed as the Resource and Ecosystems Management Product Line Manager at the Pacific Northwest National Laboratory. I am providing testimony under a technical assistance contract with the staff of the NRC. A statement of my professional qualifications is attached.

Q.2. Please describe your professional responsibilities with regard to the review of the application by System Energy Resources, Inc. ("SERI" or "Applicant"), pursuant to 10 C.F.R. Part 52, Subpart A, for an early site permit ("ESP") for a site within the existing site of the Grand Gulf Nuclear Station ("GGNS") property.

A.2. (SK) As part of the NRC Staff's health and safety review of the SERI ESP application, documented in NUREG-1840, "Safety Evaluation Report for an Early Site Permit (ESP) at the Grand Gulf Site" ("SER"), I reviewed the aspects of the Applicant's Site Safety

Analysis Report that concerned the radioactive waste treatment system and the radiological impacts from routine operation to plant workers, members of the public, and to the environment. I was also part of the NRC Staff's environmental review of the SERI ESP application, documented in NUREG-1817, "Environmental Impact Statement for an Early Site Permit (ESP) at the Grand Gulf ESP Site: Final Report," April 2006 ("FEIS"). I reviewed the aspects of the Applicant's Environmental Report that concerned the radioactive waste treatment system and the radiological impacts from routine operation to plant workers, members of the public, and to the environment.

A.2. (CB) I was the Pacific Northwest National Laboratory Task Manager responsible for the Laboratory's environmental review of SERI's ESP application and preparation of NUREG-1817, the "Environmental Impact Statement for an Early Site Permit (ESP) at the Grand Gulf ESP Site: Final Report," April 2006 ("FEIS"). As part of this function, I assisted the NRC Staff in its analysis of the aspects of the Applicant's Environmental Report that concerned cumulative site impacts.

Q.3. In its November 6, 2006, Order, the Atomic Safety and Licensing Board ("Board") identified certain issues to be addressed in connection with the mandatory hearing. With regard to the NRC Staff's cumulative site impacts analysis, the Board stated its opinion that some issues will have an impact on the site which may be cumulative with respect to the number of plants, including any existing plants on the site. Would you please explain which parameters were, or should have been, evaluated in this regard?

A.3. (SK) The Staff presented information on its evaluation of the projected cumulative impacts of routine radiological discharges from a potential new reactor(s) and existing station to workers, members of the public, and to the environment in response to Q.5 in the testimony on Hearing Issue I.

A.3. (CB) In conducting the cumulative impacts evaluation for the environmental review of SERI's ESP application, the Staff considered the combined effects of the existing GGNS Unit 1 and the proposed GG ESP facility for all environmental issues that had been evaluated for construction, operation, fuel cycle, transportation, and decommissioning. This evaluation focused on issues where potential cumulative impacts could reasonably be expected to occur, including impacts of the existing GGNS Unit 1. Based on this analysis, the Staff identified the following impact issues and associated parameters as relevant to the cumulative impacts analysis:

- Land Use – land conversion to accommodate new workers and services for construction and operation; offsite land use changes resulting from transmission system improvements;
- Air Quality – pollutant emissions resulting from construction; pollutant emissions resulting from operation; heat, water vapor, and drift plumes from cooling tower operation;
- Water Use and Quality – surface water use (on site and from the Mississippi River); groundwater use; surface water quality (on site and in the Mississippi River); groundwater quality;
- Terrestrial Ecosystems – loss of important species and habitats due to construction; loss of important species and habitats from operation;
- Aquatic Ecosystems – loss of important species and habitats due to construction; loss of important species and habitats from operation;
- Socioeconomics – physical impacts; demography, social and economic impacts; infrastructure, and community services;
- Historic and Cultural Resources – cumulative impacts to historic and cultural resources;

- Environmental Justice – unusual resource dependencies or practices or environmental pathways; tax revenues; infrastructure and community services;
- Nonradiological Health – microbial organisms; occupational health; noise and dust emissions; chronic effects of electromagnetic fields;
- Radiological Impacts from Normal Operations – public and occupational radiological doses; radiological emissions;
- Fuel Cycle – fuel use for light-water reactor designs; fuel use for gas cooled designs;
- Transportation – radiological dose to public from unirradiated fuel, spent fuel, and radiological wastes from light-water reactor designs; radiological dose to public from unirradiated fuel, spent fuel, and radiological wastes from gas cooled reactor designs; and
- Decommissioning – radiological dose to workers and public; waste management; water quality; air quality; ecological resources; socioeconomics.

Q.4. In its November 6, 2006, Order, the Board identified certain issues to be addressed in connection with the mandatory hearing. The Board noted that in response to FSER Inquiry No. 2, the Staff indicated that in the FEIS it evaluated the impact of the combined radiological effluent discharges from the existing operating unit and the proposed plant(s). For both the FSER and the FEIS, please identify and discuss all of the issues that have or will contribute to cumulative effects.

A.4. (CB) In conducting the environmental review of SERI's ESP application, the Staff determined a cumulative impact level for each issue and associated parameter(s) (identified previously in response A.3) based upon an appropriate temporal and spatial context. The results of that analysis, including the relevant context for the analysis, are summarized in a table entitled "Summary of Issues for Which Cumulative Effects Were Analyzed," which accompanies this testimony.

Q.5. In its November 6, 2006, Order, the Board identified certain issues to be addressed in connection with the mandatory hearing. With regard to the NRC Staff's cumulative site impacts analysis the Board requested a discussion on whether the impacts of radiological effects should or should not be the only cumulative impact that needs to be considered in order to properly qualify the site. Please address this issue.

A.5. (SK) The only potential cumulative impact that was not required to be evaluated (as discussed in response to Q.5 in the testimony on Hearing Issue B) is the potential impact from inadvertent releases of radioactive liquid on the plant site. The Health Physics Branch of the Division of Inspection and Program Support within NRR is currently developing a plan and schedule to address the recommendations contained in the Lessons Learned Task Force Report (ML) on inadvertent radioactive liquid releases onto a plant site. The report contained several recommendations concerning the need to explore enhanced onsite environmental monitoring to detect the presence of radioactive material that originated from an inadvertent release. At this time, the Staff does not have any regulations and guidance to guide it in an evaluation of potential impacts from inadvertent releases of radioactive liquid on the plant site.

A.5. (CB) As just described in A.3 and A.4, and in the FEIS, radiological effects should not be (and were not) the only component of the cumulative impact analysis used to evaluate the Grand Gulf site. Consideration of only one potential impact (be it radiological effects or any other) would undermine the rigor and reliability of the qualification, because impacts not considered could potentially bias the Staff's analysis in favor of the site. Thus, the Staff considered in a cumulative sense all impacts that had the potential to affect the environment for the duration of the proposed action (construction period plus 40 years of operation). The impacts considered included all of those addressed in the analyses of construction, operation, fuel cycle, transportation, and decommissioning. As noted in the Staff response to Board EIS Inquiry No. 5, the only impact issue that did not receive discussion in the

cumulative impacts section of the FEIS was design basis accidents. This issue was not addressed cumulatively because (1) the purpose of the design basis accident analysis is to compare predicted dose consequences with regulatory limits and guidance pertaining to individual reactors (not collections of reactors), and (2) the likelihood of simultaneous design basis accidents is small.