

May 3, 2004

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

Docket No. 52-009

System Energy Resources, Inc. (SERI)

(Early Site Permit for Grand Gulf ESP Site)

**CONTENTIONS OF THE NATIONAL ASSOCIATION FOR THE
ADVANCEMENT OF COLORED PEOPLE-CLAIBORNE COUNTY,
MISSISSIPPI BRANCH, NUCLEAR INFORMATION AND RESOURCE
SERVICE, PUBLIC CITIZEN, AND MISSISSIPPI CHAPTER OF THE SIERRA
CLUB REGARDING EARLY SITE PERMIT APPLICATION
FOR SITE OF GRAND GULF NUCLEAR POWER PLANT**

I. INTRODUCTION

Pursuant to 10 C.F.R. § 2.309 and the Atomic Safety and Licensing Board's ("ASLB's") Initial Prehearing Order of March 8, 2004, Petitioners, the National Association for the Advancement of Colored People Claiborne County, Mississippi Branch ("NAACP"); Nuclear Information and Resource Service ("NIRS"); Public Citizen; and Mississippi Chapter of the Sierra Club (Sierra Club) (hereinafter "Intervenors") Blue Ridge Environmental Defense League ("BREDL"), Nuclear Information and Resource Service ("NIRS") and Public Citizen, hereby submit their contentions regarding System Energy Resources Inc.'s ("SERI's") application for an Early Site Permit ("ESP") that would allow it to build and operate one or more new nuclear power plants on the site of the Grand Gulf Unit 1 nuclear power plant. As demonstrated below, these contentions should be admitted because they satisfy the NRC's admissibility requirements in 10 C.F.R. § 2.309.

II. CONTENTIONS

Below Petitioners present their contentions, which are numbered in accordance with the ASLB's instructions in its March 8, 2004, Initial Prehearing Order. Contentions related to the Site Safety Analysis begin with 2. Contentions relating to environmental issues begin with 3. Contentions relating to emergency planning begin with 4. There are no contentions under the "administrative" or "miscellaneous" categories proposed by the ASLB in its order.

1. Administrative Contentions

Petitioners are not submitting any administrative contentions at this time.

2. Contentions Regarding Site Safety Analysis

Contention 2.1: Failure to provide adequate safety assessment of reactor interaction

Contention: The ESP application for Grand Gulf Unit 1 fails to comply with 10 C.F.R. § 52.17 because its safety assessment does not contain an adequate analysis and evaluation of the major structures, systems, and components of the facility that bear significantly on the acceptability of the site under the radiological consequences evaluation factors identified in 10 C.F.R. § 50.23(a)(1). In particular, the safety assessment does not adequately take into account the potential effects on radiological accident consequences of co-locating new reactors with advanced designs next to an older reactor. The safety assessment should contain a comprehensive evaluation and analysis of the ways in which interaction of the old and new plants under accident conditions may exacerbate the consequences of a radiological accident.

This contention is supported by the Declaration of David A. Lochbaum, Nuclear Safety Engineer, In Support of Petitioners' Contentions (May 3, 2004), copy attached as Exhibit 2.1-1.

Basis: Pursuant to 10 C.F.R. § 52.17, an ESP application must contain:

a description and safety assessment of the site on which the facility is to be located. The assessment must contain an analysis and evaluation of the major structures, systems, and components of the facility that bear significantly on the acceptability of the site under the radiological consequence evaluation factors identified in § 50.34(a)(1) of this chapter.

Pursuant to 10 C.F.R. § 50.34(a)(1)(ii), an ESP application must consider such “radiological consequence evaluation factors” as whether and to what extent “generally accepted engineering standards” are used to design the new plant, whether and to what extent the new reactor design incorporates “unique, unusual, or enhanced safety features having a significant bearing on the probability or consequences” of an accident release of radiation, and plant design features that are “intended to mitigate the radiological consequences of accidents.”¹

¹ Section 50.34(a)(1) has two subsections, (i) and (ii). Subsection (ii) presumably is the relevant provision, because it applies to post-1997 applications for construction permits, design certification, or combined licenses. The relevant portion of Subsection (ii) requires submission of the following information:

(i) A description and safety assessment of the site and a safety assessment of the facility. It is expected that reactors will reflect through their design, construction and operation an extremely low probability for accidents that could result in the release of significant quantities of radioactive fission products. The following power reactor design characteristics and proposed operation will be taken into consideration by the Commission:

(A) Intended use of the reactor including the proposed maximum power level and the nature and inventory of contained radioactive materials;

(B) The extent to which generally accepted engineering standards and applied to the design of the reactor;

The safety assessment for Grand Gulf Unit 1 is deficient because it does not adequately consider the relationship between the design of the proposed new reactors and the design of the existing reactor on the site. The new reactor designs already certified by NRC and those currently under review by NRC are allegedly “safer” and less likely to have an accident involving significant core damage. For instance, the potential reactor designs listed in the application include the AP-1000 pressurized water reactor, the gas-turbine modular helium reactor (“GT-MHR”), and the pebble-bed modular reactor (“PBMR”). ESP Application, Section 1.3.1.3. The vendors of these reactors contend that the designs contain features which lessen the likelihood of an accident, and which also lessen the severity of an accident, should one occur. Consequently, the design basis accidents (“DBAs”) and source terms resulting from DBAs for the proposed reactors are significantly less severe than for the existing operating reactor. Correspondingly, the new reactors are designed with fewer features to protect station workers from radiation released during accident conditions, including loss-of-coolant accidents. An accident at

(C) The extent to which the reactor incorporates unique, unusual or enhanced safety features having a significant bearing on the probability or consequences of accidental release of radioactive materials;

(D) The safety features that are to be engineered into the facility and those barriers that must be breached as a result of an accident before a release of radioactive material to the environment can occur. Special attention must be directed to plant design features intended to mitigate the radiological consequences of accidents. In performing this assessment, an applicant shall assume a fission product release [footnote omitted] from the core into the containment, assuming that the facility is operated at the ultimate power level contemplated. The applicant shall perform an evaluation and analysis of the postulated fission product release, using the expected demonstrable containment leak rate and any fission product cleanup systems intended to mitigate the consequences of the accidents, together with applicable site characteristics, including site meteorology, to evaluate the offsite radiological consequences. Site characteristics must comply with part 100 of this chapter. . . .

the existing reactor could, therefore, have significant adverse effects on the operation of the new reactor.

There are many sites in the United States with more than one operating nuclear power reactor. Many of these multiple-unit sites feature reactors of essentially duplicate design. Some of these multiple-unit sites have reactors of different design, such as the reactors at the Arkansas Nuclear One site supplied by two distinctly different manufacturers. But the reactors at these multiple-unit sites shared the common trait of having the potential for a postulated accident causing significant amounts of radiation to be released. Placing a new reactor design at a site with one or more operating reactors of an earlier vintage creates a more difficult situation.

The interaction of control room designs for older and newer reactors provides an example of this problem. The control room design for the new reactors may be sufficient to adequately protect workers from postulated accidents at that reactor and from postulated accidents at nearby reactors of the same or similar design. But the control room design for the new reactors may not adequately protect workers from postulated accidents at nearby reactors of different design (e.g., the current fleet of operating reactors).

As required by General Design Criterion 19 of Appendix A to Part 50, a control room:

shall be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in a safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident. Equipment at appropriate locations outside the control room shall be provided (1) with a design capability for prompt hot shutdown of

the reactor, including necessary instrumentation and controls to maintain the unit in a safe condition during hot shutdown, and (2) with a potential capability for subsequent cold shutdown of the reactor through the use of suitable procedures.

The reactors operating today, such as Grand Gulf Unit 1, are designed with ventilation systems that maintain the control rooms at higher pressure than outside so that in event of an accident, clean air leaks out of the control room rather than radioactive air leaking in. Some outside air must be drawn in to create the positive pressure inside the control rooms- this outside air passes through charcoal and HEPA filters to remove radioactivity before it reached the operators in the control rooms. Because these existing reactors cannot preclude the occurrence of an accident resulting in significant release of radiation, GDC 19 requires their control rooms be designed to protect workers from exposure to that radiation.

Because new reactor designs are allegedly safer, the protection for control room operators is less. Assuming the new reactor designs are safer, building one next to an existing reactor means that it will be exposed to radiation released during an accident at Grand Gulf Unit 1. Thus, it is unreasonable to protect the operators in the control room of the new reactor(s) at the Grand Gulf site, but not the operators in the control room of the existing reactor. The applicant has not shown that the workers in the control room of a new plant or plants would be adequately protected from a design basis accident or a severe accident, as required by GDC 19.

Environmental qualification of electrical equipment provides another example of the potentially adverse interaction between old and new plant designs. Pursuant to 10 C.F.R. § 50.49 and General Design Criterion 4 of Appendix A to Part 50, nuclear power plant electrical equipment must be qualified to withstand the severity of accident

conditions that are predicted for that plant design. Because accidents at nuclear plants of relatively new design are not expected to be as severe as accidents than for older plants, electrical equipment in the new plants at the Grand Gulf site may not be qualified to withstand levels of heat or radiation that may be generated by an accident at the existing plant. This should be of concern to the applicant because of the relatively close proximity of the new and existing plants.²

Contention 2.2: Failure to Evaluate Site Suitability for Below-Grade Placement of Reactor Containment

Contention: The Site Safety Analysis Report for the Grand Gulf ESP application is inadequate because it does not evaluate the suitability of the site to locate the reactor containment below grade-level. Below-grade construction is advisable and appropriate, if not necessary, in order to maintain an adequate level of security in the post-9/11 threat environment.

Basis:

a. Legal requirements. Pursuant to 10 C.F.R. § 52.17, an ESP application must contain “a description and safety assessment of the site on which the facility is to be located.” Section 52.17 also requires that site characteristics “must comply with part 100 of this chapter.” Part 100 requirements include the stipulation that: “[s]ite characteristics must be such that adequate security plans and measures can be developed.” 10 C.F.R. § 100.21(f). The site conditions that must be evaluated include “soil and rock stability,

² Section 3.6 of the ESP application for Grand Gulf reports that the proposed new reactor(s) will be 1,200 feet west and 1,000 feet north of Unit 1. A radiological release could therefore impact the new reactor(s).

liquefaction potential, natural and artificial slope stability, cooling water supply, and remote safety-related structure siting.”

b. Rationale for requiring below-grade construction of containments. The applicant should be required to evaluate the Grand Gulf site for below-grade construction of the containment because, as currently designed and constructed, nuclear power plants are unacceptably attractive and vulnerable targets for terrorist attacks and sabotage. The attractiveness of nuclear plants as terrorist targets is well-recognized. In his 2002 State of the Union Address, for example, President Bush stated that nuclear power plants are priority targets for terrorists.

<http://www.cnn.com/2002/ALLPOLITICS/01/29/bush.speech.txt/>. The fact that nuclear plants are still high on Al Qaeda’s target list was recently confirmed by Robert Hutchings, chairman of the National Intelligence Council (which reports to the CIA Director). Reuters, “U.S. Intelligence Official: Qaeda Posed Plane Threat,” New York Times (February 17, 2004), copy attached as Exhibit 2.2-1.

The vulnerability of containment structures and associated irradiated fuel storage ponds to terrorist attack, particularly to aircraft penetration, has also been recognized in NRC documents and press articles. For example, a 1987 NRC-sponsored study found that a 12,500 pound aircraft had a 32% chance of crashing through a 6-foot thick reinforced concrete wall, and an 84% chance of penetrating through a 2-foot thick reinforced concrete wall. NUREG-/CR-5042, Evaluation of External Hazards to Nuclear

Power Plants in the United States (December 1987), relevant excerpts attached as Exhibit 2.2-2.³

A 1982 study by Argonne National Laboratory also concluded that U.S. reactor containments have not been adequately evaluated for effects of explosion and fire from impact associated with penetration by an aircraft. While the study is not available from the NRC's Public Document Room, it was described by the Washington Post in an October 25, 2001 article. Peter Behr, "Nuclear Plants Vulnerability Raised Attack Concerns: 1982 Report on Danger of Jet Crashes Into Reactors Was Open To Public," Washington Post at A4 (October 25, 2001), copy attached as Exhibit 2.2-3. According to the article, Argonne National Laboratory calculated the impact of various commercial aircraft at varying speeds. The study determined that the containment dome would be penetrated at the highest flight speeds. The study also determined that the ignition of a small percentage of the aviation fuel inside the containment dome would have the force of 1,000 pounds of explosives and "could lead to rather violent explosion environment and impose upon the primary containment relatively severe loads." *Id.* As quoted by the Washington Post article, the Argonne study raised the concern that:

Based on the review of past [NRC] licensing experience, it appears that fire and explosion hazards have been treated with much less care than the direct aircraft impact and the resulting structural response.

Therefore, the claim that these fire/explosion effects do not represent a threat to nuclear power plant facilities has not been clearly demonstrated.

Id. Moreover, according to NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants," § 3.5.2 (January 2001), one

³ Notably, a "large" aircraft was defined as weighing 12,500 pounds, even though the report observed that a Boeing B727-200 has a maximum takeoff weight of 209,500 pounds (or roughly the equivalent of 17 "large" aircraft). *Id.*, Table 6.4 at 6-27.

out of two aircraft flying today is large enough to penetrate a 5-foot thick reinforced concrete wall, such as the side of a irradiate fuel storage pond. *Id.* Relevant pages of the report are attached as Exhibit 2.2-4.

The various advanced reactor generation designs that are being considered by SERI in its application were developed before the terrorist attacks of September 11, and before the NRC undertook a comprehensive evaluation of its regulations to evaluate their adequacy to protect against the terrorist threat. Thus, they are not specifically designed to protect against assault by attackers with the level of determination and capability demonstrated by the September 11 terrorist attackers. In fact, the new generation of advanced reactors does not have as robust a containment as the current generation. For example, as a general matter, the containment thickness of the current generation of nuclear power plants is about 2-3 feet.⁴ The containments of the allegedly new “inherently safe” reactor containment building designs are equivalent or even thinner. For example, the Westinghouse AP 600 Advanced Pressurized Water Reactor has a 3-foot thick containment wall of reinforced concrete.⁵

⁴ For example, the containment dome for the existing Grand Gulf reactor, the Clinton nuclear power station in Clinton, and other Boiling Water Reactor Mark III designs are 0.25-inches of steel and 2.5-feet of reinforced concrete. NUREG/CR-1037, Containment Performance Working Group Report at 2-29 (May 1985). Similarly, the thickness of the containment dome of the Davis-Besse reactor, a Pressurized Water Reactor, is 13/16-inch of steel and 2.5-feet thick reinforced concrete. NUREG/CR-5567, PWR Dry Containment Issue Characterization at 8 (August 1990). The thickness of the containment dome at the Surry nuclear power station, also a PWR, is 2.5 feet of reinforced concrete. NUREG/CR-5662, Hydrogen Combustion, Control, and Value-Impact Analysis for PWR Containments at 145 (June 1991).

⁵ Declaration of Paul V. Gunter (May 3, 2004), attached as Exhibit 2.2-5.

c. Viability of below-grade construction

Below-grade construction of nuclear reactor containments is a viable design security measure that would protect the reactor containment from assault by aircraft or other high-power weapons. In fact, consideration of below-grade construction was recommended as a prudent design feature over 50 years ago by Dr. Edward Teller, one of the founders of the U.S. nuclear industry. In a July 23, 1953, letter to the Joint Committee on Atomic Energy, Dr. Teller noted:

[t]he various committees dealing with reactor safety have come to the conclusion that none of the powerful reactors built or suggested up to the present time are absolutely safe. Though the possibility of an accident seems small, a release of the active products in a city or densely populated area would lead to disastrous results. It has been therefore the practice of these committees to recommend the observance of exclusion distances, that is, to exclude the public from areas around reactors, the size of the area varying in appropriate manner with the amount of radioactive poison that the reactor might release. Rigid enforcement of such exclusion distances might hamper future development of reactors to an unreasonable extent. In particular, the danger that a reactor might malfunction and release its radioactive poison differs for different kinds of reactors. It is my opinion that reactors of sufficiently safe types might be developed in the near future. *Apart from the basic construction of the reactor, underground location or particularly thought-fully constructed safety devices might be considered.*

Letter from Dr. Edward Teller to the Honorable Sterling Cole, Chairman of the Joint Committee on Atomic Energy, United States Congress (emphasis added), copy attached as Exhibit 2.2-6.⁶

There is no indication in the ESP application that the applicant considered the suitability of the site for below-grade construction of the reactor containment. While the application evaluates the suitability of the site for construction of a foundation for the facility, suitability for underground construction would require a much more

⁶ Petitioners note that they were unable to obtain a copy of the original letter. The copy that is attached is was retyped and posted on the website of the Nuclear Age Peace Foundation.

sophisticated and in-depth analysis of geological and hydrogeological conditions.

Therefore, Petitioners contend that the applicant has not provided sufficient information within its site safety analysis to permit a finding that the propose site is suitable for new nuclear reactors.

3. Environmental Contentions

Contention 3.1: Inadequate Consideration of Disproportionate Adverse Impacts on Minority and Low-Income Community

Contention: SERI's Environmental Report ("ER"), prepared in support of its Early Site Permit application, does not comply with the National Environmental Policy Act ("NEPA") because it does not adequately consider the adverse and disparate environmental impacts of the proposed nuclear facilities on the predominately African American and low-income community of Claiborne County.

At the outset, while the ER acknowledges the existence of minority and low-income populations within a 50-mile radius around the Grand Gulf site, *see* ER § 2.5.4, the ER understates the levels of minority representation and poverty in Claiborne County, which hosts the Grand Gulf site and which takes up much of the area in the portion of Grand Gulf's 10-mile-radius emergency planning zone that lies on the east side of the Mississippi River. As a result, the ER falsely minimizes the disparity of the adverse impacts on the minority and low-income community of Claiborne County.

The ER also fails to address the environmental impacts of the proposed reactor(s) in light of the "factors peculiar to" the minority and low-income community Claiborne County. *Louisiana Energy Services* (Claiborne Enrichment Center), CLI-98-3, 47 NRC 77, 100 (1998) (hereinafter "CLI-98-3"). For instance, the ER fails to address the fact

that, by virtue of the simple factor of its close proximity to the proposed reactor(s), the minority and low-income community bears the highest risk of injury and illness as a result of severe accidents at the proposed facility. Moreover, the ER fails to address the fact that the Claiborne County government is particularly unprepared to respond to a radiological emergency or a security threat at the proposed reactor(s), as a result of the high level of poverty in the county and the effects of a discriminatory tax policy that sends most of the tax revenue from Grand Gulf out of Claiborne County.

The ER also fails to consider the effect of adding two reactors to the Grand Gulf site on property values and the overall economic health of Claiborne County. By concentrating three nuclear power plants on one site, SERI proposes to create a nuclear sacrifice zone in Claiborne County. The ER should consider the predictable decline in property values and the economic health of the area.

The ER is also deficient because it makes no attempt to evaluate the disparity in distribution of the economic benefits yielded by the proposed reactors. For instance, under current tax law, most of the tax revenue generated by the new reactors will go to the State of Mississippi and county governments other than Claiborne County. Most of the jobs generated by the new reactor(s) will go to people who live outside Claiborne County.

Finally, the ER fails to weigh the costs of the proposed reactor(s) to the minority and low-income community against the benefits to the community, or to examine alternatives that would lessen the impact of the facility and/or distribute the costs and benefits more equitably. These alternatives could include consideration of other sites whose surrounding populations are in a better financial position to absorb the costs of

mounting an effective response to a radiological emergency at the nuclear plant, or arrangements to more equitably distribute the wealth that is generated by the facility.

This contention is supported by the Declaration of Robert Bullard, Ph.D., In Support of Petitioners' Environmental Justice Contention, copy attached as Exhibit 3.1-1. Dr. Bullard has been found by the NRC to be a qualified expert on environmental justice issues. *See Louisiana Energy Services (Claiborne Enrichment Center)*, LBP-97-8, 45 NRC 367, 379 (1997), *affirmed in part and reversed in part*, CLI-98-3, 47 NRC 77 (1998). A copy of Dr. Bullard's declaration is attached as Exhibit 3.1-2.

Basis:

a. Requirements of NEPA. NEPA requires the NRC to fully assess the impacts of the proposed action, including the disparate impacts on a low-income and minority community. CLI-98-6, 47 NRC at 106. The question of whether a proposed NRC action adversely affects minority and low-income communities in a disparate way "lies close to the heart of NEPA." *Id.*, 47 NRC at 106. Adverse impacts that "fall heavily on minority and impoverished citizens call for particularly close scrutiny." *Id.*

In CLI-98-3, the Commission declared that a "disparate impact analysis" is its "principal tool" for advancing environmental justice under NEPA." *Id.*, 47 NRC at 100. As the Commission explained, in a disparate impact analysis, the NRC "identifies and adequately weighs, or mitigates, impacts on low-income and minority communities apparent only by considering factors peculiar to those communities." *Id.*

b. History and demographics of Claiborne County. Located near the Mississippi River just South of the Delta, Claiborne County was among Mississippi's first white settlements. On the eve of the Civil War, the community was dominated by cotton

planters and mercantile traders with slaves outnumbering whites almost five to one. The Civil War and Confederate defeat brought a dramatic short-term reversal of fortune to both planters and slaves. In 1860, there were 3,339 whites, 12,296 enslaved African Americans, and 44 free blacks in the county. Seven years later, blacks had helped the Union army win significant battles, the 13th Amendment had banned slavery, and black voters outnumbered white 1015 to nine.⁷

Well into the 20th century, Claiborne County was shaped by the legacy of slavery and the system of sharecropping that replaced it. As late as 1930, 81 percent of African American workers in Claiborne County were involved in agriculture and the demands of the cotton season shaped every aspect of black life--work, school, housing, food, religion, and recreation.⁸

Segregation continued racial inequality in Claiborne County and the County Seat of Port Gibson. Schools, churches, buses, funeral homes, cemeteries, the theater, civic organizations, and even fundraising drives were segregated. The hospital kept black and white patients apart. Bus stations, the courthouse, cotton gins, gas stations, and doctors either provided separate waiting rooms, bathrooms, and water fountains or excluded African Americans from their facilities. Segregation extended to veteran's organizations, bus driver training, and contests. The county also had a white and a Negro county agent, separate clover tours for white and black farmers, and segregated 4-H clubs. When local businesses sponsored entertainment, they sometimes held separate showings for white

⁷ Emilye Crosby, "A Little Taste of Freedom: the African American Freedom Struggle in Claiborne County, Mississippi" at 7 (August 2003) (hereinafter "A Little Taste of Freedom"), excerpts attached as Exhibit 3.1.-2. A Little Taste of Freedom is a draft manuscript under contract with the University of North Carolina Press.

⁸ *Id.*

and colored, but blacks were often excluded from public spaces and events, including the annual holiday church tour, the Fat Stock show, and the public library. The Port Gibson Reveille almost invariably identified the race of blacks, but not whites. White newsman Fred Powledge writes that "the normal condition, according to the press and most of the rest of white society, was one of whiteness. Blackness was the exception."⁹

Grand Gulf Unit 1 received a construction permit in 1974, and began operating in 1985. NUREG/CR-6577, Supp. 2, ORNL/TM-2003/219, U.S. Nuclear Power Plant Operating Cost and Experience Summaries at 87 (2003). During the years of construction and operation of the nuclear plant, Claiborne County has become progressively more isolated and racially segregated. Between 1970 and 1980, the population of Claiborne County grew from 10,086 to 12,279. Between 1980 and 1990, this growth trend reversed: by 1990, the population had decreased to 11,370. Today, only 11,831 people live in Claiborne County.¹⁰ "White flight" from the County has been a steady trend: in 1980, Claiborne County was 74.5% percent African American; today, it is 84.1 percent African American.¹¹

The presence of the Grand Gulf plant has not pulled Claiborne County out of a relatively high poverty level. In 1980, the poverty rate in the county was 32.9%. The most recently available census data show that in 1999, the County's poverty rate was 32.4%. This level is high in comparison with a poverty rate of 20% for the entire state.

⁹ A Little Taste of Freedom at 13.

¹⁰ University of Mississippi Center for Population Studies, "Percent Change for Mississippi Counties 1970, 1980, 1990, and 2000," also found at <http://www.olemiss.edu/depts/sdc/countygro.pdf>.

¹¹ Missouri State Data Center, "Basic Demographic Trend Report, United States Counties: Claiborne County, Mississippi," also found at <http://www.oseda.missouri.edu/mscdc/census/us/trend/counties/S28MS/C20821>.

<http://quickfacts.census.gov/qfd/states/28/28021.html>. 1998 census data show that of the 82 counties in Mississippi, only 11 have a higher poverty level than Claiborne County.

http://www.census.gov/hhes/www/saie/stcty/a98_28.htm. Moreover, the 1999 poverty level in Claiborne County was more than twice the poverty level in the entire U.S. of 12.4%. Bishaw and Iceland, Poverty: 1999, Census 2000 Brief, copy attached as Exhibit 3.1-3. This report can also be found at www.census.gov/prod/2003pubs/c2kbr-19.pdf.

Claiborne County income levels are low in comparison with the state and the rest of the U.S. The 1999 median household income in Claiborne County was \$22,615, compared with a 1999 median household income of \$31,330 in the State of Mississippi, and a 1999 median U.S. income of \$41,994. *See* U.S. census data, <http://quickfacts.census.gov/qfd/states/00000.html>.

c. ER distorts minority and low-income representation. The ER generally concedes that the region surrounding Grand Gulf is “a rural, economically isolated community.” ER § 2.5.4. The ER also acknowledges that 32.4% of Claiborne County residents live in poverty. *Id.* In two major respects, however, the ER presents a distorted picture of the minority and low-income populations that will be most directly affected by the proposed facility, *i.e.*, the residents of Claiborne County. The distortions are significant, because they underplays the significance of racial discrimination and racial isolation with respect to the environmental impacts of the proposed reactor(s).

First, the ER fails to directly acknowledge that a minority community surrounds the Grand Gulf site, and occupies virtually the entire portion of the ten-mile emergency planning zone that lies on the east side of the Mississippi River. According to the ER:

Portions of Mississippi counties and Louisiana parishes in the region with minority populations that met the criteria [for identifying minority populations]

are indicated in Figures 2.5-6 and 2.5-7, respectively. Overall, minority individuals account for approximately 46% of the population within the 50-mile radius (Table 2.5-3).

ER § 2.5.4. Figure 2.5-6 shows that on the State of Mississippi side of the Mississippi River, there is a broad geographical band running northeast to southwest that takes up most of the Mississippi portion of the ten-mile emergency planning zone, for which the minority population is over 50%. Nowhere in the text of the ER is this fact discussed. Moreover, neither the text of the ER nor Figure 2.5-6 acknowledges that the level of minority representation inside the emergency planning zone on the Mississippi side is 84%, much higher than 50%.

Second, in order to identify low-income communities, the ER uses an inappropriate geographic area for comparison. NRC Office Instruction LIC-203, Procedural Guidance for preparing Environmental Assessments and Considering Environmental Issues (2001), defines a “low-income population” as one in which:

1) the low-income population in the census block group or the environmental impact area exceeds 50 percent, or 2) the percentage of households below the poverty level in an environmental impact area is significantly greater (typically 20 percentage points) than the low-income population percentage in the geographic area chosen for the comparative analysis.”

Id. at D-9. Although the ER acknowledges that Claiborne, Copiah, and Jefferson Counties in Mississippi, and Tensas Parish in Louisiana are classified as “persistent poverty counties” by the Rural Economy Division of the U.S. Department of Agriculture, *see* ER § 2.5.4, it identifies only a miniscule area in Jefferson County as a “low-income” community under the NRC’s criteria. ER § 2.5.4 and Figure 2.5-8. SERI apparently made this determination by comparing the poverty level in Claiborne County (32.4%) with the poverty level in the State of Mississippi (19.9%). Because the difference does

not exceed 20%, SERI did not include Claiborne County as a low-income community in Figure 2.5-8.

By choosing Mississippi as the geographic area to be compared with Claiborne County, SERI failed to follow the guidance of LIC-203. LIC-203 states that:

In determining whether a minority or low-income population exists, define the geographic area to use for the comparative analysis. The area used for the comparative analysis is larger and encompasses the entire area of potential impact from the proposed action or all of the environmental impact areas (it is called the geographic area). See Figures 2 and 3 for examples.

When a regulatory action is being considered that involves alternative site considerations, such as an early site or construction permit, then, in addition to determining the individual geographic area for each site as defined above, determine an overall geographic area that encompasses all of the alternative site geographic areas. See Figure 3 for an example.

Id. at D-4 (emphasis added). Thus, in this case early site permit case, SERI should have considered an “overall geographic area” that encompassed the six other nuclear power plant sites that SER considered in its NEPA analysis: Arkansas Nuclear One, James A. Fitzpatrick, Indian Point Energy Center, Pilgrim Nuclear Station, River Bend Nuclear Station, and Waterford-3. ER § 9.3.3.3.¹² Notably, some of these plants (James A. Fitzpatrick, Indian Point Energy Center, Pilgrim Nuclear Station), are in the northeast, where the poverty level is considerably lower than in the South. *See* Bishaw and Iceland, *supra*, at 3.

¹² Even in correctly applying the guidance of LIC-203, Petitioners believe that SERI should have also taken into account the fact that nuclear power plants, nuclear waste dumps, and other toxic facilities tend to be located in geographic regions where the level of poverty and minority representation is relatively high. Thus, for instance, three of the six sites identified above are located in states with a relatively high poverty level in comparison with the rest of the U.S.: Arkansas and Louisiana. Thus, Petitioners consider it more appropriate to use national demographic statistics when evaluating whether a proposed nuclear plant affects a “low-income community.”

d. Disproportionate accident risk.

In Section 5.8.3, the ER provides an extremely brief discussion of “Environmental Justice Impacts.” Under the heading “Potential Human Health Impacts,” SERI asserts that accidents at the new Grand Gulf reactors would pose “no significant adverse health impacts to the public,” because radiological consequences of postulated accidents would “meet the site acceptance criteria of 10 CFR 50.34 and 10 CFR 100 for the exclusion area boundary and low population zone boundary.” ER § 5.8.3.2.2.

SERI’s evaluation of accident impacts on the minority and low-income community that lies adjacent to the Grand Gulf site is inadequate because it only considers design basis accidents, and because it is misleading. SERI states that “[t]he evaluation of postulated accidents is provided in Section 7.1” of the ER. *Id.* In fact, the ER’s evaluation of postulated accidents is discussed in Section 7.1 *and* Section 7.2. Section 7.1 discusses only design basis accidents, whose consequences are presumed to be contained within the site boundary. Section 7.2, which addresses severe accidents, whose radiological consequences are presumed to extend beyond the site boundary. While severe accidents are less likely to occur than design basis accidents, the NRC learned from the Three Mile Island accident and the Chernobyl accident that some types of severe accidents are credible, and therefore their impacts must be considered in a NEPA analysis. *See Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station)*, CLI-90-4, 31 NRC 333 (1990). Moreover, by requiring emergency plans for the ten-mile emergency planning zone around every nuclear reactor, the NRC recognizes that severe accidents are credible and must be planned for. *See* 10 C.F.R. § 50.47.

SERI concedes that the consequences of severe accidents may be extreme, and that therefore it is important to consider the impacts of severe accidents on the environment and their “offsite costs.” *Id.* at 7.2-1. SERI also acknowledges that the primary factors affecting risk in a severe accident are:

the site population (which reflects the number of people potentially at risk to severe accident exposure) and wind direction (which reflects the likelihood of exposure).

Id., § 7.2.2, citing NUREG-1437, Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Vol. 1 at 5-20 (May 1996). Yet, nowhere in the ER does SER provide an analysis of the environmental impacts of severe accidents on the minority and low-income community that lies within the ten-mile emergency planning zone around Grand Gulf. Nowhere does the ER address the relationship between the “site population,” the “wind directions,” and the environmental impacts of a severe accident on the minority and low-income community of Claiborne County. Nowhere does the ER address the “offsite costs” of a severe accident to Claiborne County. And nowhere does the ER address the disparity between the impacts of severe accidents on the adjacent minority and low-income community and the impacts on other communities in the area of impact of the proposed Grand Gulf reactor(s). Thus, the ER is grossly inadequate to satisfy the requirements of NEPA and the Commission’s requirements in CLI-98-3.

e. Disproportionate risk due to lack of adequate emergency planning and security resources.

The ER also fails to consider the disproportionate safety and security risk to Claiborne County, due to its lack of economic and material resources to respond to radiological emergencies. The section of the ESP application entitled “Emergency Planning Information” states that the “potential nature of some emergencies may warrant the utilization of offsite individuals, organizations, and agencies.” ESP Application, Part 4, § 3.3.1. Therefore, SERI plans to make “local support services arrangements with offsite groups. According to SERI, support services “encompass such things as medical assistance, fire control, evacuation, ambulance services, and law enforcement.” *Id.*

Thus, SERI plans to depend on local fire control, law enforcement, and health care facilities to assist in responding to any emergency that may occur at the new reactor(s), and thereby attempt to prevent or mitigate the impacts of any radiological accidents that may occur at the new reactor(s).

The ER fails to consider, however, that one of the factors that is “peculiar” to the minority and low-income community of Claiborne County is its profound lack of adequate resources to respond to such an emergency. CLI-98-3, 47 NRC at 100. Each of the major local agencies that are responsible for responding to an emergency at Grand Gulf has major shortages of funding and equipment that seriously impair the agency’s ability to respond to a radiological emergency.

For instance, Claiborne County has only one fire station in operation, although five such stations were originally envisioned for the county. Declaration of A.C. Garner, NAACP Claiborne County, Mississippi Branch, par. 7 (April 28, 2004) (hereinafter

“Garner Declaration”), attached as Exhibit 3.1-4. The only other operable fire station for Claiborne County is located at the Grand Gulf nuclear power plant. *Id.*

The Claiborne County Sheriff’s Department is similarly under-equipped and under-staffed. The Sheriff’s Department plays a critical role in security and emergency response for the Grand Gulf Nuclear Station, and is designated as the first responder for any accident or other emergency that occurs at the plant. Declaration of Joseph C. Davis, President of the NAACP, Claiborne County, Mississippi Branch, par. 5 (April 28, 2004) (hereinafter “Joseph C. Davis Declaration”), attached as Exhibit 3.1-5.¹³ But the County has only nine law enforcement officers, and only two are on patrol for the entire county at night. *Id.*, par. 7. Moreover, there are only ten patrol cars at the sheriff’s Department. *Id.*, par. 8. These resources are insufficient to respond to an emergency at the Grand Gulf plant. *Id.*, pars. 6, 10. *See also* Declaration of Frank Davis in Support of Petitioners’ Contentions Regarding the Grand Gulf Early Site Permit Application, par. 3 (April 29, 2004) (hereinafter “Frank Davis Declaration”), attached as Exhibit 3.1-6.

These deficiencies in the local law enforcement capabilities are particularly significant in light of the current post-9/11 threat environment. As recognized by the Nuclear Energy Institute (NEI), the recent increase in the security threat to nuclear power plants has led to a corresponding and rapid rise in initial response requirements from local law enforcement agencies, namely the Claiborne County Sheriff’s Department.

¹³ *See also* ESP Application, Part 2 -- Site Safety Analysis Report, § 3.1.6.4, which states that:

Given the location of a new facility in relationship to GGNS Unit 1 which has, as part of its security plan, made provisions with local law enforcement agencies, there is high assurance that similar provisions can be made with regard to any new facility, in that the jurisdictions and local law enforcement agencies are the same as for GGNS Unit 1.

Lance Terry, NEI, "Nuclear Power Plant Security," viewgraph presentation to NRC Regulatory Information Conference (March 2003), excerpt attached as Exhibit 3.1-7.

Claiborne County Hospital, the only hospital in the county, is also designated as the first responder in a radiological emergency. Declaration of Wanda C. Fleming, Claiborne County Hospital Administrator, par. 3 (April 27, 2004), attached as Exhibit 3.1-8. *See also* ESP Application, Part 4 -- Emergency Planning Information, § 3.12. The hospital is housed in a 53-year old building with antiquated and deteriorating facilities. Fleming Declaration, par. 4. Constraints on space and finances make it impossible to expand the facility or the base of services offered; or to upgrade vital medical, information and communications equipment, and needed surveillance/security systems. *Id.* In order to provide the most basic services, such as emergency room care, the hospital has had to borrow in excess of half a million dollars. *Id.*, par. 6. The hospital does not have adequate financial resources to effectively prepare for and medically manage a radiological emergency at the existing nuclear power plant, let alone two new reactors. *Id.*, pars. 6 and 7.

To some extent, the lack of adequate resources for the Claiborne County emergency response agencies can be attributed to the general economic condition of the County. But there is a more insidious and unique factor at work in Claiborne County. While every other county in Mississippi that hosts an electricity generating station is allowed to tax that generating station for its own citizens, the Mississippi Tax Code provides that Grand Gulf is to be taxed by the State instead of the county, and that the taxes on the plant are to be shared with 44 other counties in the State of Mississippi and within the electricity distribution of the nuclear power station. *See* Garner Declaration,

par. 5. *See also Burrell v. Mississippi State Tax Commission*, Supreme Court of Mississippi, 536 So.2d 848 (Miss. Sup. Ct. 1988). As a result of this arrangement, Claiborne County receives only 30% of the tax revenue generated by the Grand Gulf nuclear power plant. *Id.*¹⁴

f. Disproportionate adverse economic impacts.

The ER fails to address the effect of construction of two new reactors on property values in the surrounding area. As recognized in CLI-98-3, it is appropriate to evaluate the impacts of new nuclear facilities on property values in a minority and low-income community. 47 NRC at 108-09. As discussed above, the presence of the Grand Gulf nuclear plant has not reduced the relatively high poverty level of Claiborne County for the past twenty-plus years. Moreover, white flight from the County has continued at a steady rate. Under the circumstances, property values are likely to decline if a new hazardous facility is located in the community.

The ER also fails to evaluate the economic impacts on Claiborne County of imposing additional economic burdens on the County for emergency preparedness, without also providing sufficient tax revenue to the County to support those services.

¹⁴ SERI gives out inconsistent information on the amount of tax revenue that is given to Claiborne County. In Section 2.5.2.2., the ER provides a brief description of this somewhat complicated arrangement, stating that Claiborne County receives \$3.04 million and Port Gibson receives \$160,000 out of a \$20 million annual state tax assessment of the Grand Gulf nuclear plant. In a March 15, 2004, letter to Janette Wipper, Entergy CEO Gary J. Taylor stated that “Claiborne County today receives \$8 million in property tax revenue from Grand Gulf.” Letter from Gary J. Taylor, Entergy CEO, to Janette Wipper, Assistant General counsel, NAACP (hereinafter “Taylor Letter”). A copy of the letter is attached as Exhibit 3.1-9. Whether \$3 million or \$8 million, Claiborne County clearly receives only a fraction of the tax revenue generated by the Grand Gulf nuclear plant.

g. Disproportionately low benefits of proposed reactors.

According to the ER, the new reactors would have “[s]everal positive socioeconomic impacts,” including “employment opportunities, both directly and indirectly related to facility operation for workers within the region of the GGNS site, and increased tax revenues.” ER § 5.8.3.2.3. This discussion is deficient because it does not address the fact that most of the tax revenue from the new reactors will go out of the county. It also fails to address the fact that the new plant(s) will create few new jobs for the local community. According to the Taylor Letter, approximately 20% of Grand Gulf’s employees live in Claiborne County. Of that small percentage, Mr. Taylor does not state what percent are African American.

Claiborne County has been an economically depressed area for some time. Economic and job opportunities have always been scarce in the county, particularly for African Americans. In 1968, the county’s biggest employer, the Box Factory, closed and by 1970, the county’s traditional jobs in farming and the timber industry had all but disappeared. In 1979, black per capita income of \$9,570 was still less than half white per capita income of \$22,146. By 1989, there were only 590 manufacturing jobs and 13.6 percent of the county’s labor force was out of work. The vast majority of those, 93 percent, were black. The reality was even worse because these numbers did not include people who had given up looking for work.¹⁵

The Grand Gulf Nuclear Power Plant, which began operation in July 1985, was promoted as the answer to this dire economic situation, promising jobs and tax revenue. This promise turned out to be ephemeral. After Grand Gulf opened, the State of

¹⁵ A Little Taste of Freedom at 211.

Mississippi took away most of the tax revenue from the County. As discussed above, only 20% of Grand Gulf's employees live in Claiborne County. The ER should take a "hard look" at this disparity in economic benefits.

f. Failure to adequately weigh alternatives. Once the ER has provided a sufficiently detailed description of the environmental impacts of the proposed new reactor(s) on the surrounding minority and low-income community, SERI must evaluate reasonable alternatives that would avoid or mitigate those impacts. 10 C.F.R. § 51.45(b)(3). While SERI has provided an evaluation of alternative sites and energy supply sources in Chapter 9, it has not taken environmental justice issues into account in weighing these alternatives. SERI must conduct a new evaluation of alternatives in consideration of their environmental impacts on low-income and minority communities, including the no-action alternative, alternative sites, alternatives for reducing the off-site impacts of severe accidents, and alternatives for distributing the benefits of the new plant(s) more equitably.¹⁶

Contention 3.2: Inadequate Discussion of Severe Accident Impacts

Contention: The ER's discussion of severe accident is inadequate, because it relies on the findings and conclusions of NUREG-1437, Vol. 1, the Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants (1996) ("NUREG-1437), without providing specific design information that would justify the applicability of the NUREG.

¹⁶ As discussed in Contention 3.2 below, however, Petitioners do not believe that SERI has provided enough information to make a thorough analysis of the environmental impacts of severe accidents at the proposed new Grand Gulf reactors.

Basis: As required by NEPA and NRC Staff guidance, Section 7.2 of the ER for the Grand Gulf site provides an analysis of environmental impacts of severe accidents at the proposed new nuclear reactor(s). *See* NUREG-1555, Environmental Standard Review Plan (1999); Draft Review Standard RS-002, “Processing Applications for Early Site Permits” at 11 (2003), Accession No. ML032340334 (hereinafter “RS-002”). SERI’s analysis is deficient, however, because it incorporates the findings and conclusions of NUREG-1437, without justifying the applicability of the NUREG.

In correspondence with the Nuclear Energy Institute (“NEI”), the NRC Staff has set limits on the use of NUREG-1437 to support or substitute for the severe accident analysis required of an ESP application. In early 2003, NEI wrote to the NRC, suggesting parameters for permitting reliance on NUREG-1437. Letter from Dr. Ronald L. Simard, NEI, to James E. Lyons, re: Resolution of Generic Topic ESP-10 (Use of License Renewal Generic Environmental Impact Statement (NUREG-1437) for Early Site Permits) (February 6, 2003) (hereinafter “Simard Letter”), copy attached as Exhibit 3.2-1. In responding to the Simard Letter, the NRC made it clear that ESP applicants could not make unqualified reliance on NUREG-1437, cautioning that:

the process suggested in Items 2, 3, and 4 [of the Simard Letter], and the concluding remarks of your letter implies that the ESP applicant can adopt the conclusions of the GEIS in its application without detailed knowledge of the design and operational characteristics of a facility that may be built on the proposed site. The GEIS documents the staff’s evaluation of the environmental impacts of LWR reactors of known design, locations, and operating experiences. The analysis results documented in the GEIS may not be representative of the environmental impacts of a facility that could be built on the site proposed in an ESP application. Therefore, although the environmental impacts of the construction and operation of a nuclear facility located on the proposed site may be similar to those identified in the GEIS, it is incumbent on the ESP applicant to justify its conclusion regarding these impacts.

The NRC does believe that there may be useful insights in the GEIS that an ESP applicant can consider for its purposes in developing its environmental report, but, as stated above, the burden for justifying relevance and demonstrating completeness rests entirely with the applicant. In addition, the NRC retains the prerogative to utilize well-established NEPA techniques, such as tiering, cooperation and adoption, where the NRC believes that it is appropriate.

Letter from James E. Lyons, NRC, to Dr. Ronald L. Simard, NEI, re: Resolution of Early Site Permit Topic 10 (ESP-10), Use of License Renewal Generic Environmental Impact Statement (NUREG-1437) for Early Site Permits (April 1, 2003) (hereinafter “Lyons Letter I”), copy attached as Exhibit 3.2-2. In a subsequent letter, Mr. Lyons Letter further clarified that:

[t]he NRC will perform its review on severe accident environmental impacts in accordance with ESRP Section 7.2. If specific plant design information is available (e.g., a detailed design with a Level 3 PRA), then this information would be used in the evaluation. However, even in the absence of a detailed plant design (e.g., the specific reactor type or technology is undecided), a severe accident impacts analysis is technically feasible at the ESP stage using a PPE approach and the existing guidance in ESRP [Early Site Review Plan] Section 7.2. Such a approach could involve characterizing the spectrum of credible releases from candidate future plant designs, in terms of representative source terms and their respective frequencies, and using these release characteristics in conjunction with site-specific population and meteorology to determine site-specific risk impacts for the surrogate design. Release characteristics could be developed through a survey of severe accident analyses for previously certified ALWRs and/or operating reactors. Risk impacts could be assessed using the same metrics as in previous plant-specific and generic EISs, such as NUREG-0974, “Limerick 1 and 1 Operating License” and NUREG-1437. These metrics include population dose, early and latent fatalities, and economic costs. The metrics would be used to determine the acceptability of the proposed site at the ESP stage.

Letter from James E. Lyons, NRC, to Dr. Ronald L. Simard, NEI, re: Response to Letter on Early Site Permit Topic 12 (EP-12, NEPA Consideration of Severe Accident Issues at 2 (June 25, 2003) (hereinafter “Lyons II Letter”), attached as Exhibit 3.2-3.

Contrary to the guidance of the Lyons I Letter and the Lyons II Letter, the ER for the Grand Gulf site fails to justify the use of NUREG-1437 as a surrogate for a severe

accident analysis for the proposed new Grand Gulf reactor(s). Section 7.2.2, which purports to address the “Applicability of Existing Generic Severe Accident Studies,” makes only broad generalizations in support of the applicability of NUREG-1437, related to the characteristics of the site, whether regulatory controls can be assumed to work, and whether plant lifetime has an effect on risk. It is not possible to find any characterization of “the spectrum of credible releases from candidate future plant designs, in terms of representative source terms and their respective frequencies,” or the use of “release characteristics in conjunction with site-specific population and meteorology to determine site-specific risk impacts for the surrogate design.” *See* Lyons II Letter at 2. Nor does the ER show that SERI has developed “[r]elease characteristics . . . through a survey of severe accident analyses for previously certified ALWRs and/or operating reactors,” or assessed risk impacts “using the same metrics as in previous plant-specific and generic EISs, such as NUREG-0974, “Limerick 1 and 1 Operating License” and NUREG-1437.”¹⁷

The ER simply makes no attempt to analyze the potential for severe accidents with respect to any of the advanced designs proposed by SERI. There is no indication in the ER that the design information used for NUREG-1437 would be applicable to the advanced designs proposed by SERI, or that the behavior of those advanced reactors under severe accident conditions would be the same or similar. Accordingly, SERI’s severe accident analysis is fatally deficient.

¹⁷ In fact, Section 7.2.2 of the Grand Gulf ER appears to be a cookie-cutter discussion, as it duplicates, almost word-for-word, the discussion of severe accidents in Section 7.2.1 of the ER for the North Anna ESP application.

4. Emergency Planning Contentions

Contention 4.1: Emergency Planning Deficiencies

Contention: SERI's ESP application is inadequate because it fails fully to identify "physical characteristics unique to the proposed site, such as egress limitations from the area surrounding the site that could pose a significant impediment to the development of emergency plans." 10 C.F.R. § 52.17(b)(1). In particular, Part 4 of the ESP application, entitled "Emergency Planning Information," fails to identify the significant impediment to the development of emergency plans posed by the gross inadequacies in offsite emergency response facilities, including the Claiborne County Sheriff's Department, the Claiborne County Fire Department, and the Claiborne County Hospital.

Basis: NRC regulations at 10 C.F.R. § 52.17(b)(1) require that an ESP application:

must identify physical characteristics unique to the proposed site, such as egress limitations from the area surrounding the site, that could pose a significant impediment to the development of emergency plans.

Correspondingly, before approving an ESP application, the NRC must make a determination that "there is no significant impediment to the development of emergency plans." 10 C.F.R. § 52.19. In addition, in order to issue an ESP, the presiding officer must make a determination that:

a reactor, or reactors, having characteristics that fall within the parameters for the site can be constructed and operated without undue risk to the health and safety of the public.

10 C.F.R. § 52.21.

In Section 3.1.1.5 of Part 4 of the ESP, SERI asserts that Claiborne County and Tensas Parish in Louisiana are the local government jurisdictions within the proposed

new facility's plume exposure emergency planning zone, and that they have developed emergency plans. SERI also states that state and local government agencies have expressed "willingness to support development of emergency plans for the proposed new facility." *Id.*, § 3.1.1.

While local officials may be willing to develop emergency plans for the new reactors, it is clear that they lack sufficient resources to develop effective emergency plans. As discussed above in Contention 3.1, the Claiborne County Sheriff's Department, fire department, and hospital, have grossly insufficient resources and personnel to respond to a radiological emergency at Grand Gulf. *See* paragraph (e) of the basis of Contention 3.1, which is hereby adopted and incorporated by reference. SERI has failed to account for this significant impediment to the development of emergency plans. Under the circumstances, the ASLB has no basis for a finding that the proposed new reactor(s) can be operated without undue risk to the health and safety of the public, as required by 10 C.F.R. § 52.21.

III. CONCLUSION

For the foregoing reasons, the ASLB should admit Petitioners' contentions.
Respectfully submitted,

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May 3, 2004

May 3, 2004

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

Docket No. 52-009

System Energy Resources, Inc. (SERI)

(Early Site Permit for Grand Gulf ESP Site)

**WASTE CONFIDENCE CONTENTIONS
OF THE NATIONAL ASSOCIATION FOR THE ADVANCEMENT OF
COLORED PEOPLE-CLAIBORNE COUNTY, MISSISSIPPI BRANCH,
NUCLEAR INFORMATION AND RESOURCE SERVICE, PUBLIC CITIZEN,
AND MISSISSIPPI CHAPTER OF THE SIERRA CLUB REGARDING EARLY
SITE PERMIT APPLICATION
FOR SITE OF GRAND GULF NUCLEAR POWER PLANT**

I. INTRODUCTION

Petitioners, the National Association for the Advancement of Colored People Claiborne County, Mississippi Branch (“NAACP”); Nuclear Information and Resource Service (“NIRS”); Public Citizen; and Mississippi Chapter of the Sierra Club (Sierra Club) (hereinafter “Intervenors”) Blue Ridge Environmental Defense League (“BREDL”), Nuclear Information and Resource Service (“NIRS”) and Public Citizen, hereby request leave to file two environmental contentions out of time, approximately one hour after expiration of the Atomic Safety and Licensing Board’s 5 p.m. deadline for electronic filing of contentions in this proceeding. The contentions are virtually identical to contentions that NIRS and Public Citizen have submitted in the North Anna and Clinton ESP proceedings. The omission of the contention from Petitioners’ original set of contentions was an oversight.

A hard copy of the contentions and their exhibits will be served tonight by Federal Express.

II. CONTENTION

Contention 3.2.1: Failure to Evaluate Whether and in What Time Frame Spent Fuel Generated by Proposed Reactors Can Be Safely Disposed Of

Contention: The ER for the Grand Gulf ESP is deficient because it fails to discuss the environmental implications of the lack of options for permanent disposal of the irradiated (*i.e.*, “spent”) fuel that will be generated by the proposed reactors if they are built and operated. Nor has the NRC made an assessment on which SERI can rely regarding the degree of assurance now available that radioactive waste generated by the proposed reactors “can be safely disposed of [and] when such disposal or off-site storage will be available.” Final Waste Confidence Decision, 49 Fed. Reg. 34,658 (August 31, 1984), citing *State of Minnesota v. NRC*, 602 F.2d 412 (D.C. Cir. 1979). Accordingly, the ER fails to provide a sufficient discussion of the environmental impacts of the proposed new nuclear reactors.

Basis: The ER for the proposed new reactors does not contain any discussion of the environmental implications of the lack of options for permanent disposal of the irradiated fuel to be generated by two new reactors on the Grand Gulf Anna site. Therefore, it is fatally deficient. *State of Minnesota v. NRC*, 602 F.2d at 416-17.

While SERI may have intended to rely on the NRC’s Waste Confidence decision, issued in 1984 and most recently amended in 1999, that decision is inapplicable because it concerns plants that are currently operating, not new plants. The second finding of the Waste Confidence Decision, as amended in 1999, is that the Commission has:

reasonable assurance that at least one mined geologic repository will be available within the first quarter of the twenty-first century, and that sufficient repository capacity will be available within 30 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of any reactor to dispose of the commercial high-level radioactive waste and spent fuel originating in such reactor and generated up until that time. (This finding revised the finding in the original decision that a mined geologic repository would be available by the years 2007 to 2009).

Waste Confidence Decision Review: Status, 64 Fed. Reg. 68,005, 68,006 (December 6, 1999). Clearly, the Commission's finding applies to any existing reactor, including reactors whose licenses are revised or renewed. The Commission gives no indication that it has confidence that repository space can be found for spent fuel and other high-level radioactive waste from new reactors licensed after December of 1999.

Moreover, the revised second finding in the 1999 Waste Confidence review statement conspicuously fails to assert confidence in the likelihood that more than one repository will be licensed. In fact, the Commission has backtracked on its original 1984 "Nuclear Waste Confidence Decision," in which the Commission expressed confidence that "one or more" repositories would open between 2007 and 2009. Waste Confidence Decision, 49 Fed. Reg. at 34,673. The 1999 Status Report states merely that "at least one" repository will open by 2025. 64 Fed. Reg. at 68,006.

It is also clear that the inventory of spent fuel and other high-level radioactive waste being generated by the *current* generation of nuclear reactors is far greater than what can be accommodated in the single repository in which the Commission places its confidence, Yucca Mountain, Nevada. The proposed Yucca Mountain repository can only accept 63,000 metric tons of commercial high-level radioactive waste and irradiated

nuclear fuel, at least until a second national repository became operational.¹ Even assuming only 40 years of operations with no operating license renewals and no new nuclear reactors, the U.S. Department of Energy (DOE) has known since at least the mid-1990's – that is, since before the most recent (1999) NRC review of its “Nuclear Waste Confidence Decision” -- that by the year 2030 or so, well over 80,000 metric tons of irradiated nuclear fuel generated at commercial nuclear reactors will exist in the U.S. U.S. Nuclear Waste Technical Review Board (“NWTRB”) “Disposal and Storage of Spent Nuclear Fuel: Finding the Right Balance,” Figure 2 at page 11 (March 1996), copy attached as Exhibit 3.2.1-1. This is significantly in excess of the “disposal” capacity at Yucca Mountain.

NRC's now-routine approval of 20 year license extensions to old commercial nuclear reactors will only increase the quantity of high-level radioactive waste that exceeds the capacity limits at the proposed Yucca Mountain, Nevada repository. In its

¹ Under the Nuclear Waste Policy Act (“NWPA”), 63,000 metric tons is the legal limit for commercial waste storage that can be “disposed of” at Yucca Mountain, Nevada, at least until a second repository is operational elsewhere in the U.S. As the NWPA states at Section 114(d):

The [NRC] decision approving the first such application [for a license to open and operate a repository] shall prohibit the emplacement in the first repository of a quantity of spent fuel containing in excess of 70,000 metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation...”

42 U.S.C. § 10134(d). By long-established DOE policy, the first 70,000 metric tons of irradiated nuclear fuel and solidified high-level radioactive waste “disposed of” at Yucca Mountain, Nevada would include 90% commercial nuclear reactor waste, and 10% DOE waste from the nuclear weapons production complex and nuclear energy research activities. 90% of 70,000 metric tons means that only 63,000 metric tons of commercial irradiated nuclear fuel could be “disposed of” at Yucca Mountain, Nevada, at least until a second national repository is operational in the United States. *See* Yucca Mountain EIS at A-1.

“Final Environmental Impact Statement for a Repository for Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada,” (Feb. 2002) (hereinafter “Yucca Mountain EIS”), DOE predicted the generation of over 105,000 metric tons of commercial irradiated nuclear fuel by the year 2046. *Id.*, Table A-8, page A-16. While NRC’s standard license extension term is 20 years, the DOE prediction assumed that the term of license extensions would be only 10 years. DOE also assumed no new commercial nuclear reactors in the U.S. Thus, the high-level waste and spent fuel generated by the *current* generation of reactors will far exceed the capacity of the single repository that the NRC has identified as feasible and likely.²

Accordingly, the spent fuel and other high-level radioactive wastes generated at the proposed new reactors could not be “disposed of” at Yucca Mountain unless and until a second national repository is operating. But the Commission has not expressed confidence that a second repository will open. Any spent fuel or other high-level radioactive waste generated after the year 2011 or so (after 63,000 metric tons of commercial irradiated nuclear fuel has been generated) would have nowhere to go, would lack “disposal” space at a repository, unless and until a second repository is opened and

² Experience also shows that the NRC has been overly optimistic about the opening of the first repository. It took from 1982 (the year the Nuclear Waste Policy Act was passed) until 2002 – 20 full years -- just for the DOE to recommend Yucca Mountain as “suitable” for repository development (a recommendation, by the way, that is being challenged in federal court by the State of Nevada). Although DOE still predicts the Yucca Mountain repository will open by the year 2010, the U.S. General Accounting Office (GAO) has reported that a repository at Yucca Mountain, Nevada probably could not open to receive waste shipments till 2015. GAO-02-191, “Nuclear Waste: Technical, Schedule, and Cost Uncertainties of the Yucca Mountain Repository Project” (December, 2001). Even this date is doubtful, given the serious technical criticism of DOE’s current repository design. *See, e.g.*, U.S. NWTRB, “Technical Report on Localized Corrosion” (November 25, 2003). In addition, several legal challenges have been filed against the Yucca Mountain repository and the proposed standards for operation.

operating in the U.S. somewhere other than Yucca Mountain, Nevada – a process that could very well take many decades, based on the experience of trying to open the first repository at Yucca Mountain, Nevada.

Moreover, Congress has not given the NRC any basis for assuming that a second repository will be opened. Section 161(b) of the NWPA provides that: “[t]he Secretary [of Energy] shall report to the President and to Congress on or after January 1, 2007, but not later than January 1, 2010, on the need for a second repository.” 42 U.S.C. § 10172a(b). Section 161(a) also states that: “The Secretary [of Energy] may not conduct site-specific activities with respect to a second repository unless Congress has specifically authorized and appropriated funds for such activities.” 42 U.S.C. § 10172a(a). The Secretary of Energy has not made a finding that a second repository is needed, nor has Congress specifically authorized or appropriated funds for site-specific activities.

The Commission’s failure to express confidence that a second repository will be opened any time soon also implicates the third and fourth findings of the Waste Confidence Decision, *i.e.*, that spent fuel and other high-level radioactive waste can be safely stored at reactor sites for up to 30 years. 64 Fed. Reg. at 68,006. If the Commission has no confidence that a repository will open at some reasonable time in the future, it must be assumed that spent fuel may sit at the reactor site for an indefinite period of time. The environmental impacts of such indefinite storage must be evaluated before an Early Site Permit can be granted.

Contention 3.2.1: Even if the Waste Confidence Decision Applies to This Proceeding, It Should be Reconsidered.

Contention: Even if the Waste Confidence Decision applies to this proceeding, it should be reconsidered, in light of significant and pertinent unexpected events that raise substantial doubt about its continuing validity, *i.e.*, the increased threat of terrorist attacks against U.S. facilities.

Basis: In its 1999 “Nuclear Waste Confidence Decision” revision, NRC stated “the Commission would consider undertaking a comprehensive reevaluation of the Waste Confidence findings...if significant and pertinent unexpected events occur raising substantial doubt about the continuing validity of the Waste Confidence findings.” 64 Fed. Reg. at 68,007. Clearly, the catastrophic terrorist attacks upon the United States on September 11th, 2001 constituted significant and pertinent unexpected events that raise substantial doubts about the continuing validity of the third and fourth findings of the revised Waste Confidence Decision. These findings are:

3. The Commission finds reasonable assurance that high-level radioactive waste and spent fuel will be managed in a safe manner until sufficient repository capacity is available to assure the safe disposal of all high-level waste and spent fuel (This finding is identical to the finding in the original Waste Confidence Decision in 1984).
4. The Commission finds reasonable assurance that, if necessary, spent fuel can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed life for operation (which may include the term of a revised or renewed license) of that reactor at its spent fuel storage basin, or at either onsite or offsite independent spent fuel storage installations. (This finding is basically identical to that in the original Waste Confidence Decision with the addition of the consideration of license renewal and spent fuel storage 30 years beyond the licensed life for operation of a reactor).

64 Fed. Reg. at 68,006. The terrorist threat to irradiated nuclear fuel and high-level radioactive waste – whether it is being stored on-site at commercial reactors in storage pools or dry casks; stored in away-from-reactor Independent Spent Fuel Storage Installations; or transported by truck, train, or barge between nuclear plants and off-site

interim storage facilities – demands an evaluation of whether (a) it is appropriate to store spent fuel and other highly radioactive waste for 30 years or more pending availability of a permanent repository, and (b) whether nuclear power should be phased out as quickly as possible as a matter of environmental protection, national security, public safety, and common defense.

The homeland security risks posed by indefinite temporary storage of spent fuel have been recognized by Energy Secretary Spencer Abraham:

Yucca Mountain is an important component of homeland security. More than 161 million people live within 75 miles of one or more nuclear waste sites, all of which were intended to be temporary. We believe that today these sites are safe, but *prudence demands we consolidate this waste from widely dispersed, above-ground sites into a deep underground location that can be better protected.*

Statement of Spencer Abraham, Secretary of Energy, Before the Energy and Natural Resources Committee, U.S. Senate (May 16, 2002), copy attached as Exhibit 3.2.1-2 (emphasis added). It is undisputed that neither fuel storage pools nor dry storage facilities are designed to withstand the type of determined and sophisticated attack that was carried out on September 11, 2001.

To protect against and mitigate the impacts of terrorist attacks, the NRC has developed a system to maintain a constant state of alert, undertaken a comprehensive review of the adequacy of its safety and security regulations, and upgraded its security requirements for all operating nuclear facilities in the United States. Clearly, under NEPA it is also appropriate to consider whether the Commission continues to have a basis for expressing confidence that stored spent fuel and other high-level radioactive waste is safe from a terrorist attack.

Petitioners are aware that the Commission has ruled that environmental impacts of terrorist attacks are not cognizable under NEPA. *See, e.g., Pacific Gas & Electric Co.* (Diablo Canyon Independent Spent Fuel Storage Installation), CLI-03-01, 57 NRC 1 (2003); *Private Fuel Storage, L.L.C.* (Independent Fuel Storage Installation), CLI-02-25, 56 NRC 340 (2002). Petitioners request that the Commission reconsider this policy, in light of (a) the obvious attractiveness and vulnerability of spent fuel to terrorist attack, (b), the Secretary of Energy's recognition of the relationship between homeland security and assured capacity for timely spent fuel disposal; and (c) the Commission's explicit statement in the Waste Confidence status review that it would undertake a comprehensive reevaluation of the Waste Confidence findings if "significant and pertinent unexpected events" occur raising substantial doubt about the continuing validity of the Waste Confidence findings. Clearly, that condition is met here.

III. CONCLUSION

For the foregoing reasons, the ASLB should admit Petitioners' contentions.

Respectfully submitted,

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May 3, 2004