RAS 7964

June 9, 2004

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

In the Matter of

System Energy Resources, Inc. (SERI)

(Early Site Permit for Grand Gulf ESP Site)

Docket No. 52-009

REPLY BY PETITIONERS, 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, TO SYSTEM ENERGY RESOURCES, INC.'S AND NRC STAFF'S RESPONSES TO PETITONERS' CONTENTIONS REGARDING EARLY SITE PERMIT APPLICATION FOR SITE OF GRAND GULF NUCLEAR POWER PLANT

I. INTRODUCTION

Pursuant to the Atomic Safety and Licensing Board's ("ASLB's") Initial Prehearing Order of March 8, 2004, as modified by the ASLB's Order of June 3, 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) hereby reply to Answer by System Energy Resources, Inc. to Proposed Contentions (May 28, 2004) (hereinafter "SERI's Response"); and NRC Staff's Response to Petitioners' Contentions Regarding the Early Site Permit Application for the Grand Gulf Site (hereinafter "NRC Staff's Response"). As demonstrated below, SERI and the NRC Staff have failed to demonstrate that Petitioners' contentions are inadmissible.

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II. CONTENTIONS

2. Contentions Regarding Site Safety Analysis

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

Contention 2.1 asserts that the ESP application for Grand Gulf fails to comply with 10 C.F.R. § 52.17 because its safety assessment does not take into account the potential effects on radiological accident consequences of co-locating a new reactor with advanced designs next to an older reactor. Petitioners' Contentions at 2.

According to SERI, Petitioners misinterpret 10 C.F.R. § 52.17(a)(1), which requires that 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. Site characteristics must comply with part 10 of this chapter.

SERI's Response at 10-11. SERI argues that Petitioners err in citing the requirements of 10 C.F.R. § 50.34(a)(1)(ii)(A) through (D) as relevant "radiological consequence evaluation factors." According to SERI, the only radiological consequence evaluation factors in 10 C.F.R. § 50.34(a)(1)(ii) are found in subsections (D)(1) and (2), which Petitioners did not cite. *Id.* at 10. These provisions set exposure limits for any individual located at the boundary of the exclusion area boundary ("EAB") and the low population zone ("LPZ"). In SERI's view, the design of the proposed new reactor need only be evaluated insofar as it relates to SERI's compliance with these dose limits. *Id.*

The regulations themselves do not support SERI's argument. Nothing in the regulations states that the subsection (D)(1) and (2) contain the only radiological consequence evaluation factors in 10 C.FR. § 50.34(a)(1). Moreover, the plain language

of the portions of 10 C.F.R. § 50.34(a)(1) cited by Petitioners specifically references radiological consequences. For instance, subsection (ii) explicitly states that: "[i]t is expected that reactor will reflect through its design, construction and operation an extremely low probability for accidents that could result in the release of *significant quantities of radioactive fission products*." (emphasis added). In subsection (C), the rule also states that the NRC should evaluate the "extent to which the reactor incorporates unique, unusual or enhanced safety features having a significant bearing on the probability or *consequences of accidental releases of radioactive material*." (emphasis added). In subsection (D), the rule specifies that "[s]pecial attention must be directed to plant design features intended to mitigate the *radiological consequences of accidents*." (emphasis added). SERI does not explain, and it is not apparent, why these provisions cannot be read to establish radiological consequence evaluation factors.

The NRC Staff argues that Section 52.17(a)(1) refers to only those radiological consequence evaluation factors that are found in Subpart B of Part 100 as well as 10 C.F.R. § 50.34(a)(1). NRC Staff Response at 10-13. Because the only radiological consequence evaluation factors in Subpart B of Part 100 relate to dose consequences at the EAB and LBP boundary, the NRC Staff contends, no other factors apply. *Id.* If the Commission had intended to restrict the applicable 10 C.F.R. § 50.34(a)(1) criteria to the dose limits in § 50.34(a)(1)(D)(1) and (2), however, it presumably would have used the more explicit phrase "dose limits." By using the more general phrase "radiological dose evaluation criteria," the Commission appears to have intended a broader scope of relevant criteria.

Even if the NRC Staff were correct that the only relevant radiological consequence evaluation criteria are the ones that are found in both 10 C.F.R. § 50.34(a)(1) and Part 100, the Part 100 criteria do incorporate design considerations to the extent they require consideration of whether a plant design can accommodate "commonly occurring hazards," and "whether the risk of other hazards is very low." 10 C.F.R. 100.20(b). Thus, design considerations are not completely irrelevant, even under 10 C.F.R. Part 100. In fact, as the NRC Staff recognizes, the NRC did not completely separate siting from design issues in promulgating the 1989 amendments to 10 C.F.R. Part 51. NRC Response at 13, note 17.

The NRC Staff also mischaracterizes Petitioners' contention, by claiming that its subject is the design of the proposed reactor. NRC Staff's Response at 11. The purpose of Contention 2.1 is to challenge the appropriateness of SERI's proposal to site a new "advanced" reactor next to the two existing Grand Gulf reactors. The contention does not seek to challenge the adequacy of the new reactor designs proposed by SERI. While the design of the proposed reactor is not directly at issue, the nature of the design proposed by SERI is relevant to the issue of siting: given that advanced reactors are not designed to withstand accidents of the severity that may occur at the current generation of nuclear power plants, it is relevant to question the safety of siting a new advanced reactor next to two reactors of the current generation. *See* Petitioners' Contentions at 6.

Moreover, contrary to the NRC's arguments, the rulemaking histories of 10 C.F.R. Part 100, 10 C.F.R. § 52.17, and 10 C.F.R. § 50.34(a)(1) do not demonstrate that the Commission intended to preclude consideration of the impact of design issues on siting of new nuclear power plants. These rulemaking histories show that the

Commission did not want to consider design issues at the early site permit stage. But they do not show that the Commission intended to completely exclude consideration of how the interaction between the design and the site might affect a siting decision. As discussed in the Staff's response at 13, the Commission did not completely decouple siting issues from design issues.

SERI argues that the contention is speculative, because Petitioners only aver that the control room "may not" adequately protect workers from postulated accidents at nearby reactors of different design, and that electrical equipment "may not" be qualified to withstand accident conditions at nearby reactors of different designs. SERI Response at 11. It is SERI's responsibility to do an appropriate analysis of the suitability of the Grand Gulf site in light of the potential for reactor interaction, not Petitioners'.

SERI also criticizes the declaration of David A. Lochbaum as insufficient to support the contention, on the ground that it is conclusory and fails to provide an analysis. SERI's Response at 12. SERI's criticisms are without merit. As Mr. Lochbaum attests, he is responsible for the facts and technical conclusions presented in the contention. The contention itself provides factual information regarding the differences between the designs of the current generation of nuclear reactors and the designs of advanced reactors, and the ways in which their interaction could have an adverse impact on worker health and safety and adversely affect environmental qualification of electrical equipment. SERI does not demonstrate that these assertions are insufficient to support the contention.

The NRC Staff contends that Petitioners should have provided source terms for accidents at the existing reactors, and described design features of the control rooms of

the proposed reactors. NRC Staff Response at 115-16 Petitioners respectfully submit that the basis they have provided is sufficient to support the contention. Petitioners have asserted, with the support of expert witness David A. Lochbaum, that the design basis accidents ("DBAs") and source terms resulting from DBAs for the proposed reactors are significantly less severe than for the existing operating reactors; and that consequently, the new reactors are designed with fewer features to protect station workers from radiation released during accident conditions. Petitioners' Contentions at 4-5. Significantly, the NRC Staff does not dispute the accuracy of these assertions, which are sufficiently specific and well-supported to demonstrate a genuine and material dispute with the applicant.

The Staff also argues that Petitioners do not provide sufficiently specific support for their claim that electrical equipment at the new reactors may not be qualified to withstand levels of heat or radiation that may be generated by an accident at the existing plant. NRC Staff Response at 16. But the contention specifically states that the proposed new plant is within 570 feet of the Unit 1 containment building, and that a radiological release from Unit 1 could therefore impact the new facility. Petitioners' Contentions at 7, note 2. This assertion is specific, and is also supported by the Declaration of David A. Lochbaum. Therefore, Petitioners have provided a sufficiently specific and well-supported basis for this aspect of the contention.

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

Contention 2.2 asserts that:

> [t]he Site Safety Analysis Report for the Grand Gulf ESP 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.

Petitioners' Contentions at 7.

SERI and Staff argue that there is no regulatory requirement to evaluate the suitability of a site for below-grade construction. SERI Response at 13, NRC Response at 19. But NRC regulations do require that site characteristics "must be such that adequate security plans and measures can be developed." 10 C.F.R. § 100.21(f). The question raised by the contention is whether the considerations required under this section reasonably encompass below-grade construction.

SERI appears to interpret 10 C.F.R. § 100.21(f) to require only consideration of whether the site is suitable for compliance with whatever the Commission's existing security regulations might require. SERI's Response at 13. Thus, SERI argues that Petitioners are challenging the regulations. *Id.* But the text of the regulation does not support SERI's interpretation. It does not say that site characteristics must be such that the applicant will be able to comply with NRC security regulations. Instead, Section 100.21(f) is worded more broadly, to require consideration of whether "adequate security plans and measures can be developed." As the Commission observed in *Duke Energy Corporation* (Catawba Nuclear Station, Units 1 and 2), CLI-04-06, __ NRC ___ (February 18, 2004), the concept of what constitutes adequate security is subject to change, depending on the "updated assessments of the terrorist threat." *Id.*, slip op. at 9. Thus, in CLI-04-06, the Commission stated that the security upgrades imposed on all reactor licensees in the spring of 2003 "do not impose immutable requirements." *Id.* Moreover, in light of developments over the past 10 years, including numerous terrorist

attacks on United States facilities at home and abroad, culminating in the World Trade Center and Pentagon bombings, it is reasonable to assume that the threat environment will continue to become more severe. Thus, it is reasonable to evaluate the suitability of the Grand Gulf site in light of general security considerations, such as whether it is suitable for a below-grade containment design.[1]

SERI argues that these considerations should be postponed until the construction permit or combined operating license stage. SERI's Response at 13. To do so, however, would be to ignore the requirement in 10 C.F.R. § 52.17 that such considerations must be made at the ESP stage.

Finally, SERI argues that the issue of terrorist attacks upon a nuclear reactor is beyond the scope of this licensing proceeding. SERI's Response at 14, citing *Carolina Power & Light Co.* (Shearon Harris Nuclear Power Plant, Units 1 & 2), LBP-82-119A, 16 NRC 2069, 2098 (1982); *Siegel v. Atomic Energy Commission v. NRC,* 400 F.2d 778, 783-84 (D.C. Cir. 1968). These cases held that under 10 C.F.R. § 50.13, the NRC need not protect nuclear power plants against airborne enemy attack, including terrorist attack. Since September 11, 2001, however, the Commission has completely changed its position. Thus, in *Private Fuel Storage, L.L.C.,* (Independent Spent Fuel Storage Installation), CLI-02-25 , 56 NRC 340, 356 (2002). As the Commission explained in a footnote:

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[1] The NRC Staff argues that the letter from Edward Teller, cited by Petitioners in support of the prudence of below-grade containments, does not support the contention because Dr. Teller was concerned with the safety of reactors rather than their security. NRC Staff's Response at 22. Dr. Teller's letter reflects his concern about unplanned radiological releases from nuclear plants. Clearly, a terrorist attack could cause such a release. His letter shows that below-grade construction of reactors was considered 50 years ago as one measure for limiting accidental radiological releases from nuclear plants. Thus, it supports the contention.

> The NRC, in conjunction with DOE laboratories, is continuing a major research and engineering effort to evaluate the vulnerabilities and potential effects of a large commercial aircraft impacting a nuclear power plant. This effort also includes consideration of possible additional preventive or mitigative measures to further protect health and safety in the event of a deliberate aircraft crash into a nuclear power plant or spent fuel storage facility. The final results from that analysis are not yet available. If the ongoing research and security review recommends any other security enhancements, the NRC will take the appropriate action.

Id., 56 NRC at 356 note 65. Thus, the Commission now clearly considers that protection of nuclear facilities against terrorist attack is included among its regulatory responsibilities under the Atomic Energy Act.

3. Environmental Contentions

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

In Contention 3.1, Petitioners assert that 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. Both SERI and the NRC Staff oppose the admission of the contention.

SERI does not dispute Petitioners' assertion that a minority and low-income population occupies virtually the entire EPZ. Instead, SERI argues that Petitioners fail to demonstrate that there is some factor unique or peculiar to the community that may result in a disproportionately significant adverse impact on that population. SERI's Response at 23. Similarly, the NRC Staff argues that Petitioners fail to allege that environmental impacts from the proposed reactors will have a significant and disproportionate impact on

the minority or low-income population relative to the general population. NRC Staff's Response at 27. In making these arguments, SERI and the Staff simply ignore the contention, which asserts that the minority population is "unique" in the sense that it lies directly adjacent to the proposed reactors, *i.e,* the most dangerous location relative to the reactors, and is uniquely underequipped and understaffed to respond to an accident at the facility, by virtue of the fact that it has been deprived of tax revenue that it would otherwise have received from SERI.[2] The adverse impacts on the community are significant and disparate in relation both to the general population around the plant. It is also disparate in relation to the impacts of the general populations around other nuclear plants, who generally have more resources to cope with emergencies.[3]

While the NRC Staff's lawyers deny the relevance of the effects of the application of the State of Mississippi's tax code to its environmental justice review or the consideration of other alternative sites, it is notable that the Staff has requested SERI to provide information regarding this issue. *See* Letter from James H. Wilson, NRC, to William A. Eaton, SERI, re: Request for Additional Information Related to the Staff's Review of the Environmental Report for the Grand Gulf Early Site Permit (ESP) Application (TAC No. MC 1379 (May 19, 2004). Question E4.4-3, for example, requests that:

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[2] SERI's argument that Petitioners fail to justify their focus on the ten-mile emergency planning zone ("EPZ") is simply absurd. SERI's Response at 23. As established by NRC regulations in 10 C.F.R. § 50.47, the ten-mile EPZ is the area that is most intensely affected by radiological releases from nuclear power plants, and for which residents must be prepared to respond to a severe radiological emergency.

[3] The Staff argues that Petitioners should have raised their concerns in an emergency planning context. Staff's Response at 32. While Petitioners believe that the conditions in Claiborne County violate the NRC's emergency planning requirements, the point of the contention is that these deficiencies create adverse environmental impacts on the minority community of Claiborne County.

> For the most recent year available, provide a table showing the distribution of Mississippi's in-lieu tax dollars collected under Mississippi Code Section 27-35-309 (3) for Grand Gulf and provided to individual local governments. Show emergency planning dollars and the remaining shares separately for all local governments receiving these dollars. Also note any dollars paid by Entergy to the state of Mississippi for Grand Gulf that may not have been allocated to local governments. Provide a citation for these data.

Id. at 11. Question E9.0-5 requests SERI to:

> Provide tables showing local taxes paid to each local jurisdiction and the proportion these taxes are of those local governments' budgets at the River Bend, FitzPatrick, and Pilgrim plants, for the most recent tax years available.

Id. at 18.

The Staff fails to address any of the factual assertions made by Petitioners regarding the ER's distortion of the racial demographic characteristics of the EPZ. Instead, the Staff argues that (a) such distortions would be irrelevant because if proven they would not entitle Petitioners to any relief; and (b) the ER does acknowledge where minority representation is greater than 50%. NRC Staff's Response at 28. A more accurate description of demographics would have an important effect on the NEPA environmental justice analysis, by ensuring that a comparison of alternative sites was based on accurate facts regarding the Grand Gulf site as compared to other sites.

The same is true with respect to the need for accuracy in the ER's description of economic characteristics of the community. *See* NRC Staff's Response at 28-29. The ER understates the level of poverty in the community directly surrounding the Grand Gulf sites, by comparing it with the poverty level of the State of Mississippi – one of the poorest states in the U.S. But if the ER is to make a reasoned comparison with sites elsewhere across the eastern United States, the degree of poverty in Claiborne County should be compared to the degree of poverty in those other regions.

SERI argues that the ER's failure to describe the environmental impacts of severe accidents on the minority community adjacent to the Grand Gulf site is inconsequential, because (a) severe accident consequences are discussed elsewhere in the ER, and (b) the impacts of severe accidents are not unique to the minority community. In fact, as discussed above, the minority community will bear a uniquely heavy burden if a severe accident occurs at the new reactors, by virtue of its close proximity to the reactor and the fact that it does not have adequate resources to respond in the event of such an accident. Thus, SERI's argument has no merit.

SERI attempts to dismiss, as "outside the scope of an ESP proceeding," Petitioners' concerns regarding the disproportionate safety and security risk posed to Claiborne County by virtue of its lack of sufficient resources to respond effectively to a radiological emergency. SERI's Response at 30. According to SERI, underfunding "is not a matter peculiar to any minority group." Similarly, SERI argues that the impacts of the Mississippi tax code on Claiborne County are "not within the purview of the Commission or the Licensing Board." *Id.* SERI misses Petitioners' point that underfunding of the emergency response capability in Claiborne County has left the County vulnerable in the event of a radiological emergency, because of the lack of adequate staffing and equipment. This is a particular and peculiar characteristic of the community that creates a disproportionate adverse impact on the community, requiring consideration under NEPA. Thus, while the Commission may have no authority to change the Mississippi tax code, this does not excuse it from the obligation to consider the implications of that tax code with respect to disparate and adverse environmental impacts on the minority community of Claiborne County.

SERI also argues that Petitioners fail to provide expert or documentary support their claim that the ER should address the adverse affect of new reactors on property values and the economy in Claiborne County. SERI's Response at 33. *See also* NRC Staff's Response at 34. To the contrary, Petitioners' assertions are supported by the expert declaration of Dr. Robert Bullard. *See* Exhibit 3.1-1.

SERI also argues that under the Commission's ruling in *Private Fuel Storage, LLC* (Independent Spent Fuel Storage Installation), CLI-02-20, 56 NRC 147, 153 (2002), the Licensing Board cannot admit Petitioners' claim that the ER is deficient for failing to address the disparity in economic benefits conferred by the project. Whether or not it is part of the environmental justice analysis, the ER should provide complete and accurate information regarding the costs and benefits of the proposed project. These should include the nature and extent of benefits to the surrounding community.

SERI also argues that it is not required to evaluate alternative sites solely on the basis of impacts on minority populations. SERI's Response at 36. Clearly, an alternatives analysis embraces more than that single issue. However, consideration of alternatives is relevant to the NRC's environmental justice analysis. SERI seems to recognize this, by arguing that its site selection process did include environmental justice considerations. SERI's Response at 37. As demonstrated in the contention, however, Petitioners have established a genuine and material factual dispute with regard to the adequacy of SERI's analysis. Accordingly, this aspect of the contention should be admitted.

Contention 3.2: Inadequate Discussion of Severe Accident Impacts

In this contention, Petitioners contend that 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. As SERI acknowledges, the Commission expects ESP applicants to provide an analysis that establishes an upper bound for the environmental effects of a new plant's operation. SERI's Response at 40. Clearly, severe accident consequences fall into this category. SERI attempts to defend its reliance on the analyses in NUREG-1437, the NRC's Generic Environmental Impact Statement for license renewal, and its disregard of the Staff's correspondence demanding a more thorough analysis. SERI's arguments demonstrate only that it has a material dispute with Petitioners regarding the adequacy of its severe accident analysis.

In their contention, Petitioners pointed out that SERI used a "cookie-cutter analysis" of severe accident impacts that is virtually identical to the analysis submitted for the North Anna ESP. Petitioners' Contentions at 30 note 17. It is notable that recently, Dominion abandoned the cookie cutter analysis, and submitted a severe accident analysis that uses source terms for advance reactor designs for the first time. *See* letter from E. Grecheck to NRC re: Dominion Nuclear North Anna, LLC, North Anna Early Site Permit Application, Response to Request for Additional Information Regarding Environmental Portion of ESP Application, Enclosure at 70-82 (May 17, 2004). This submission, which seems to follow the guidance in the NRC's correspondence with NEI

that is cited in Petitioners' contention, provides persuasive evidence that Petitioners have raised a genuine and material dispute with SERI.

Contention 3.3.1: Failure to Evaluate Whether and in What Time Frame Spent Fuel Generated by Proposed Reactors Can Be Safely Disposed Of

Contention 3.3.1 asserts that the ER for the Grand Gulf ESP application is deficient because it fails to discuss the environmental implications of the lack of options for permanent disposal of the spent fuel that will be generated by the proposed new Grand Gulf reactors. Waste Confidence Contentions of the National Association for the Advancement of Colored People et al. Regarding Early Site Permit Application for Site of Grand Gulf Nuclear Power Plant at 2 (May 3, 2004) (hereinafter "Petitoners' Waste Confidence Contentions"). Both SERI and the NRC Staff oppose admission of the contention.

SERI and the Staff argue that the language and history of the Waste Confidence rulemaking show that the rulemaking's findings apply to spent fuel generated by any reactor, including advanced reactors. They quote 10 C.F.R. § 51.23, which states that if necessary, spent fuel in "any reactor" can be stored safely and without significant environmental impacts; and that sufficient repository capacity will be available within 30 years beyond the licensed life for operation of "any reactor" to dispose of the commercial high-level waste and spent fuel originating in such reactor and generated up to that time.[4]

[4] The Staff claims that Petitioners attack 10 C.F.R. § 51.23, and that such an attack is barred by operation of 10 C.F.R. § 2.335(a). The Staff misconstrues the contention. Petitioners do not seek to attack the regulation. Rather, Petitioners seek to show that the factual finding of no significant impact codified by Section 51.23 is inapplicable to the proposed ESP application.

Petitioners respectfully submit that SERI and the NRC Staff are in error. While they correctly state that the language of 10 C.F.R. § 51.23 itself is not qualified, the supporting Waste Confidence rulemaking history makes clear that the finding of no significant impact that is embodied in 10 C.F.R. § 51.23 is limited to the spent fuel generated by any *existing* reactor. In the 1984 Waste Confidence Rule, for example, the Commission stated that:

> [i]n its Notice of Proposed Rulemaking, the Commission stated that the 'purpose of this proceeding is solely to assess generally the degree of assurance now available that radioactive waste can be safely disposed of, to determine when such disposal or off-site storage will be available, and to determine whether radioactive waste can be safely stored on-site *past the expiration of existing facility licenses until off-site disposal or storage is available.*'

Final Waste Confidence Rule, 49 Fed. Reg. 34,659 (August 31, 1984) (emphasis added). Thus, Finding 2 stated that:

> [t]he Commission finds reasonable assurance that one or more mined geologic repositories for commercial high-level radioactive waste and spent fuel will be available by the year 2007-09, and that sufficient repository capacity will be available within 30 years beyond expiration of *any* reactor operating license to dispose of *existing commercial high level radioactive waste and spent fuel* originating in such reactor and generated up to that time.

49 Fed. Reg. at 34,659-60 (emphasis added).

Consistent with this limitation, the Commission's evaluation of the adequacy of repository capacity to accommodate spent fuel and high-level commercial nuclear waste was limited to the waste generated by existing reactors. The Commission estimated the amount of spent fuel and other high-level waste that would be generated by the existing generation of nuclear power plants, and compared it to the capacity of two hypothetical repositories that could each hold 100,000 metric tons of high level waste. 49 Fed. Reg. at

36,679.[5] Thus, in the 1984 rule, the phrase "any reactor" clearly meant any existing reactor.

In the 1990 update to the Waste Confidence Rule, the Commission noted several recent developments, including the fact that a number of licensees had requested license renewal. 55 Fed. Reg. at 38,506. Therefore, the Commission changed Finding 2 to address that development, among others:

> [t]he Commission finds 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 to that time.[6]

55 Fed. Reg. at 38,474 (emphasis added). In order to support Finding 2, the Commission evaluated repository capacity in light of anticipated reactor lifetime extensions and license renewals. 55 Fed. Reg. at 38,501. In light of the NWPA's capacity limit on the first repository of 70,000 MTHM, the Commission found that "two repositories will be needed to dispose of all the spent fuel and high-level waste from the current generation of

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[5] At that time, the siting of a second repository was required by the Nuclear Waste Policy Act ("NWPA") of 1982. *See* Waste Confidence Decision Review, 55 Fed. Reg. 38,474, 38,501 (September 18, 1990) (hereinafter "1990 Waste Confidence Review"). The NWPA of 1982 also required DOE to nominate five sites considered suitable for repository development. 1984 Waste Confidence Rule, 40 Fed. Reg. at 34,678. In May 1986, however, DOE indefinitely postponed siting of a second repository, based on (1) "decreasing forecasts of spent fuel discharges," and (2) "estimates that a second repository would not be needed as soon as originally supposed." In 1987, Congress amended the NWPA to terminate all site-specific activities related to a second repository unless specifically authorized by Congress. 1990 Waste Confidence Revision, 55 Fed. Reg. at 38,501.

[6] The 1990 version of Finding No. 2 also reflects the Commission's decreased certainty regarding the timing of the opening of a second repository, in light of Congress' decision to suspend the siting process for a second repository. 55 Fed. Reg. at 38,494. *See also* note 5, *supra.* In contrast to the 1984 finding that "one or more" repositories would be available between 2007-09, the 1990 finding states that "at least one" repository will be available in the first quarter of the 21st century.

reactors" unless Congress lifts the 70,000 MTHM limit. 55 Fed. Reg. at 38,502. *Id.* The Commission did not say that it anticipated receipt of applications for licensing of a new generation of reactors; nor did it evaluate the additional quantity of spent fuel and high-level waste that would be generated by a new generation of nuclear reactors.

SERI and the NRC Staff attribute significance to a statement in the 1990 Waste Confidence Review that:

> [t]he availability of a second repository would permit spent fuel to be shipped offsite well within 30 years after expiration of these reactors' OLs. The same would be true of the spent fuel discharged from any new generation of reactor designs.

55 Fed. Reg. at 38,504. This statement must be evaluated in the context in which it was made. With respect to Finding 2, the Commission posed the rhetorical question:

> Is there sufficient uncertainty in total spent fuel projections (*e.g.*, from extension-of-life license amendments, renewal of operating licenses for an additional 20 to 30 years, or a new generation of reactor designs) that this Waste Confidence review should consider the institutional uncertainties arising from having to restart a second repository program?

55 Fed. Reg. at 38,501. In response to that question, the Commission engaged in a discussion of what would be the earliest date a second repository would be needed in order to accommodate the spent fuel and high-level waste generated by the current generation of nuclear power plants, including renewed licenses:

> License renewals would have the effect of increasing requirements for spent fuel storage. The Commission understands that some utilities are currently planning to seek renewals for 30 years. Assuming for the sake of establishing a conservative upper bound that the Commission does grant 30-year license renewals, the total operating life of some reactors would be 70 years, so that the spent fuel initially generated in them would have to be stored for about 100 years if a repository were not available until 30 years after the expiration of their last OLs.
>
> Even under the conservative bounding assumption of 30-year license renewals for all reactors, however, if a repository were available within the first quarter of the twenty-first century, the oldest spent fuel could be shipped off the sites of all

> currently operating reactors well before the spent fuel initially generated in them reached the age of 100 years. Thus, a second repository, or additional capacity at the first, would be needed only to accommodate the additional quantity of spent fuel generated during the later years of those reactors' operating lives. The availability of a second repository would permit spent fuel to be shipped offsite well within 30 years after expiration of these reactors' OLs. The same would be true of the spent fuel discharged from any new generation of reactor designs.
>
> *In sum, although some uncertainty in total spent fuel projections does arise from such developments as utilities' planning renewal of OLs for an additional 20 to 30 years, the Commission believes that this Waste Confidence review need not at this time consider the institutional uncertainties arising from having to restart a second repository program.* Even if work on the second repository program is not begun until 2010 as contemplated under current law, there is sufficient assurance that a second repository will be available in a timeframe that would not constrain the removal of spent fuel from any reactor within 30 years of its licensed life for operation.

55 Fed. Reg. at 38,504 (emphasis added). Thus, the Commission's concern in this discussion was the earliest date when a second repository might be needed, not the capacity of the repositories to accommodate spent fuel or high level waste. The Commission mentioned spent fuel from advanced reactors as the most extreme example of a circumstance in which the timing of the availability of a second repository would come into play. The Commission did not provide any information or express any opinion regarding the capacity of a first or second repository to accommodate the spent fuel or high-level waste generated by a new generation of reactors. Nor did the Commission make any other mention of advanced reactors in the 1990 Federal Register notice.[7]

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[7] It should also be noted that if the combined capacity of a first or second repository is insufficient to accommodate advanced reactor spent fuel and high-level radioactive waste, then the timing of the availability of a second repository would be irrelevant. Similarly irrelevant would be the Commission's expression of confidence in the 1990 Waste Confidence Review that if the need for a second repository were established, Congress would provide "the needed institutional support and funding." *See* 55 Fed. Reg. at 38,502. If the capacity of the first two repositories for advanced reactor spent fuel and high level waste cannot be established, then the Commission would need to evaluate the timing and feasibility of opening a third repository.

Accordingly, SERI's and the Staff's arguments that the findings of the Waste Confidence Rule are broad enough to encompass fuel generated by advanced reactors finds no support in the history of the Waste Confidence Rulemaking. Neither the 1984 Waste Confidence Rule nor the 1990 Waste Confidence Decision Review contains any analysis of the capacity of a first or second repository to accommodate spent fuel or high level radioactive waste generated by a new generation of advanced reactors.[8]

In the absence of such an analysis, it must be concluded that the Waste Confidence rulemaking does not apply to this proceeding. Therefore, the NRC cannot rely on the finding embodied in 10 C.F.R. § 51.23 to preclude consideration of the environmental impacts of extended onsite storage of spent fuel and other high-level radioactive waste generated by the proposed Grand Gulf advanced reactors. Under 10 C.F.R. §§ 51.45 and 52.18 and the applicable provisions of 10 C.F.R. Part 51, the NRC must evaluate the environmental impacts of extended spent fuel storage on the Grand Gulf site. This is a site-related environmental impact and therefore must be evaluated at the ESP stage, rather than being postponed until the construction permit or operating license stage. The Commission may choose whether to evaluate the environmental impacts of extended spent fuel storage at the Grand Gulf site in this licensing proceeding or in a generic rulemaking; but in order to comply with NEPA and the Commission's implementing regulations, it must do so before the Grand Gulf ESP is issued. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989) (NEPA requires federal agencies to examine the environmental consequences of their actions *before* taking those

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[8] The Commission issued a status report in 1999, but it did not change any of the findings of the 1990 review. Waste Confidence Decision Review, 64 Fed. Reg. 68,005 (December 16, 1999).

actions, in order to ensure "that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast").

Contention 3.3.1: Even if the Waste Confidence Decision Applies to This Proceeding, It Should Be Reconsidered.

In Contention 3.3.1, Petitioners assert that 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 continued validity, *i.e,* the increased threat of terrorist attacks against U.S. facilities. Petitioners' Contentions at 20. Both SERI and the Staff oppose admission of the contention, on the ground that Petitioners are mounting an impermissible challenge to an NRC regulation. Their characterization of Petitioners' contention and the governing law is incorrect. Petitioners are invoking the Commission's statement that it will undertake a comprehensive review of the Waste Confidence findings "if significant and pertinent unexpected events occur raising substantial doubt about the continuing validity of the Waste Confidence findings." Petitioners' Contentions at 21, citing Waste Confidence Decision Review: Status, 64 Fed. Reg. 68,005, 68,007 (December 6, 1999). The Commission's statement is consistent with the requirement of the National Environmental Policy Act that where aspects of a proposed action are addressed by a previously prepared EIS, a new EIS must be issued if there remains "major federal action" to occur, and if there is new information showing that the remaining action will affect the quality of the human environment "in a significant manner or to a significant extent not already considered." *Marsh v. Oregon Natural Resources Council,* 490 U.S. 360, 374 (1989).

4. Emergency Planning Contentions

Contention 4.1: Emergency Planning Deficiencies

Contention 4.1 asserts that 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.

Both SERI and the NRC Staff oppose the admission of this contention, on the ground that Section 52.17(b)(1) extends to physical characteristics of the site, which do not include the community's resources. Petitioners respectfully submit that the physical characteristics of the site include the physical, human-made infrastructure of the area, such as roads, institutions, and equipment. These are physical characteristics which may impede egress from the site, or which could pose significant impediments to the development of emergency plans. 10 C.F.R. § 52.17(b)(1). Therefore, they should be considered.

III. CONCLUSION

For the foregoing reasons, SERI and the Staff have failed to demonstrate that Petitioners' contentions are inadmissible. Therefore, the ASLB should admit them.

Respectfully submitted,

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June 9, 2004

CERTIFICATE OF SERVICE

I hereby certify that on June 9, 2004, copies of the foregoing Reply by NAACEP et al to SERI's and NRC Staff's Responses to Petitioners' Contentions Regarding Grand Gulf ESP Application were served on the following by e-mail and/or first-class mail, as indicated below:

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