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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSIONOFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)

Docket No. 52-009-ESP)

System Energy Resources, Inc.)

ASLBP No. 04-823-03-ESP)

(Early Site Permit for Grand Gulf Site))

October 23, 2006)

**SYSTEM ENERGY RESOURCES, INC.'S BRIEF IN RESPONSE TO THE BOARD'S
ORDER REQUESTING BRIEFINGS ON ENVIRONMENTAL ISSUES**

On October 3, 2006, the Atomic Safety and Licensing Board ("Licensing Board" or "Board") in the above-captioned proceeding issued an order ("Order") requesting, among other things, that System Energy Resources, Inc. ("SERI" or "Applicant") file a brief, limited to twenty pages,¹ addressing: (1) the "federal action" at issue in this proceeding, and whether the National Environmental Policy Act, 42 U.S.C. § 4321 *et seq.* ("NEPA"), applies to this proceeding; (2) whether, given the assumptions and unresolved issues documented in the Nuclear Regulatory Commission ("NRC") Staff's Environmental Impact Statement ("EIS"),² the Board has sufficient information to properly balance the adverse impacts and benefits of the proposed action or to give this project the required "hard look" envisioned by NEPA; (3) whether, and if so how, the Board can conduct the independent assessment and weighing of environmental factors, and the consideration of reasonable alternatives required under 10 C.F.R. § 2.104(b)(3); and (4) how the record of this proceeding demonstrates that the requirements of Section 102(2)(A), (C), and (E) of NEPA and Subpart A of 10 C.F.R. Part 51 have been satisfied

¹ This Brief complies with the twenty-page limit. As authorized by the Order, SERI has included supplemental materials in an Appendix to this Brief, which are not subject to the page limitation. *See* Order at 3.

² NUREG-1817, "Environmental Impact Statement for an Early Site Permit (ESP) at the Grand Gulf ESP Site, Final Report," April 2006.

and, after considering both the final balance among conflicting factors contained in the record of this proceeding and reasonable alternatives, whether the early site permit (“ESP”) should be issued, denied, or appropriately conditioned to protect environmental values.

As discussed below, the Commission has affirmatively determined that issuance of an ESP is a major federal action that can significantly affect the environment, which requires preparation of an EIS under NEPA. Further, given the substantial amount of existing site environmental data supporting the Grand Gulf Nuclear Station (“GGNS”), environmental analyses conducted by SERI in support of the ESP application, confirmatory environmental analyses and site investigations performed by the Staff, together with conservative bounding parameters and assumptions used by SERI and the Staff, the Board has sufficient information to conduct the independent assessment and weighing of environmental factors, and consider reasonable alternatives required under 10 C.F.R. § 2.104(b)(3). Finally, SERI believes the full record of this proceeding constitutes a sufficient basis upon which the Board can make the required environmental determinations as described in the Order.

I. BACKGROUND

Under Subpart A of 10 C.F.R. Part 52, if a person desires to seek early approval for a site for a possible nuclear plant, then the person may apply for an ESP. The ESP process offers the opportunity to resolve key site-related safety, environmental, and emergency preparedness issues well in advance of a decision to build a nuclear power facility. Thus, if granted, an ESP would allow a person to “bank” a site for possible future construction of one or more new nuclear power generation facilities. The ESP is valid for up to twenty years and can be renewed for an additional twenty years.

Under 10 C.F.R. § 52.21, an ESP is a partial construction permit (“CP”) that can be referenced in an application for a combined operating license (“COL”).³ An ESP, however, does *not* authorize the permit holder to construct a nuclear plant. Under 10 C.F.R. § 50.10, a person may not construct or operate a nuclear power plant without a CP, OL, or COL.

Thus, under the Commission’s regulations, an ESP is a possible prelude and an input to a COL proceeding. From a regulatory process perspective, this means that the environmental evaluations conducted at the ESP stage are intended to provide for early resolution of some – but not all – of the environmental issues that would otherwise be evaluated in a COL proceeding.⁴ Therefore, the environmental evaluations performed at the ESP and COL stages would constitute the complete environmental evaluation required by NEPA for a new nuclear plant licensed pursuant to 10 C.F.R. Part 52.

Consistent with this intent, 10 C.F.R. § 52.39 provides that in making findings necessary for issuance of a COL (including any findings required by NEPA), the Commission shall “treat as resolved” (with limited exceptions) those matters resolved at the ESP stage. Specifically, § 52.39(a)(2) provides that issues previously resolved in an ESP proceeding may only be reopened if a contention is admitted alleging that a reactor does not fit within one or more site parameters in the ESP, or a petition is filed alleging that the site does not satisfy the site acceptance criteria of the ESP or that the terms and conditions of the ESP must be modified.

Reflecting the Commission’s clear intent not to revisit previously-resolved issues, the environmental information that a COL applicant must provide is generally limited to

³ Under the 10 C.F.R. Part 50 licensing regime, an applicant for a CP must submit certain information related to the design of the plant, a safety assessment of the site, and an environmental report which assesses the impacts of construction and operation of the plant. 10 C.F.R. § 50.34(a) and 10 C.F.R. § 51.50. Following its review of the application, the NRC Staff prepares an EIS for the CP. *See* 10 C.F.R. § 51.26. Under Subpart C of 10 C.F.R. Part 52, a person may apply for a combined CP and operating license (“OL”), or COL. The COL may be filed with or without the benefit of an ESP. 10 C.F.R. § 52.73.

⁴ *See* Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Reactors, 54 Fed. Reg. 15,372, 15,378 (April 18, 1989).

“information sufficient to demonstrate that the design of the facility falls within the parameters specified in the [ESP], and to resolve any other significant environmental issue not considered in any previous proceeding on the site or the design.”⁵ Similarly, the NRC Staff’s environmental review of a COL application referencing an ESP “must focus on whether the design of the facility falls within the parameters specified in the [ESP] and any other significant environmental issue not considered in any previous proceeding on the site or the design.”⁶ In summary, the only environmental issues that may be considered in a COL proceeding for an application referencing an ESP are (1) any significant changes in impacts attributable to a facility design characteristic that exceeds the design parameters specified in the ESP, and (2) any significant unresolved environmental issues and issues deferred to the COL stage.

Accordingly, environmental documentation submitted by a COL applicant, most likely in the form of an Environmental Report (“ER”) supplement, must: (1) establish that the final nuclear plant design is bounded by the parameters specified in the ESP, or evaluate the environmentally significant effects of any design characteristics that are not bounded;⁷ (2) address any environmental issues that were deferred from the ESP EIS, including any unresolved issues identified in the ESP EIS; and (3) address any new and significant environmental issues that were not previously evaluated in the ESP EIS.

The NRC would then consider this information and, depending on the nature and significance of the new information, document the results of its analysis in an EIS Supplement, limited to the new environmental matters.⁸ To facilitate review at the COL stage, the Staff

⁵ 10 C.F.R. § 52.79(a)(1).

⁶ 10 C.F.R. § 52.89.

⁷ For example, if the plant heat sink cooling water discharge rate exceeded the rate specified in the ESP, then the COL applicant would evaluate the environmental effect of the rate in excess of that specified in the ESP.

⁸ The Staff has stated that it will prepare an EIS for COL applications, “informed by the EIS prepared at the ESP stage, [using] tiering and incorporation-by-reference whenever it is appropriate to do so.” EIS at 1-4.

indicated in the EIS for this proceeding when and how assumptions and bounding values limit its conclusions on the environmental impacts to a particular resource.⁹ This approach is consistent with NEPA, which requires agencies to take a “hard look” at the environmental effects of their planned actions,¹⁰ and should significant new information arise during review of a new major federal action (*i.e.*, the COL), NEPA requires agencies to prepare a supplemental analysis addressing significant environmental impacts “not already considered.”¹¹

II. ARGUMENT

A. THE GRAND GULF ESP IS A MAJOR FEDERAL ACTION SUBJECT TO NEPA

On October 16, 2003, SERI submitted an application to the NRC for an ESP for property co-located with the GGNS near Port Gibson, Mississippi (the “Application”).¹² As stated in Part 1, Administrative Information, of the Application (“Admin. Info.”), the purpose of the Application is to set aside the proposed site for future energy generation and sale on the wholesale and/or retail energy market.¹³

As required by 10 C.F.R. § 52.17(a)(2) and Part 51, SERI submitted with the Application an ER developed using the format and guidance provided in the “Environmental Standard Review Plan” (NUREG-1555).¹⁴ The ER discusses the existing environment at the site and in the vicinity; summarizes potential environmental impacts of construction and operation and considers mitigation measures; and reviews alternatives.¹⁵ As discussed more fully below, the ER does not assess impacts based on a specific facility design. Rather, the ER considers a

⁹ See EIS at Appendix J.

¹⁰ *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n.21 (1976).

¹¹ See *Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 374 (1989); see also *Natural Res. Def. Council v. U.S. Army Corps of Eng'rs*, 399 F. Supp.2d 386, 404 (S.D.N.Y. 2005) (finding supplemental EIS is required when new federal action would result in a physical change to environment).

¹² The ESP application was subsequently revised by SERI through Revision 3.

¹³ Admin. Info. at 1.1-1.

¹⁴ See *id.* at 2.1-2.

¹⁵ *Id.*

spectrum of possible designs, based upon the plant parameters envelope (“PPE”). The ER reviews the following categories of information regarding interfaces of the site and facilities: (1) comparison of the functional and operational needs of the GGNS ESP facility as they relate to the site’s natural and environmental resources; and (2) direct impact of the ESP facility on the site’s natural and environmental resources during construction and operation.¹⁶

Thus, the major federal action at issue in this proceeding is the issuance, under 10 C.F.R. Part 52, of an ESP for the GGNS ESP site for one or more new nuclear plants with characteristics that fall within the SERI PPE.¹⁷ NEPA requires an EIS for major federal actions that significantly affect the quality of the human environment.¹⁸ Pursuant to 10 C.F.R. § 52.18, an EIS *must* be prepared by the Staff during the review of *any* application for an ESP in accordance with the applicable provisions of Part 51.¹⁹ The Commission, therefore, has affirmatively determined that issuance of an ESP is a major federal action that can significantly affect the environment, which requires preparation of an EIS under NEPA.²⁰ The Staff and the Board are required to comply with NRC regulations.²¹

B. THERE IS SUFFICIENT INFORMATION IN THIS PROCEEDING TO SUPPORT THE BOARD’S “HARD LOOK” AS REQUIRED BY NEPA

As noted previously, and as permitted by 10 C.F.R. Part 52, SERI has not selected a specific reactor type for the GGNS ESP site. To support its application, SERI used available

¹⁶ See *id.* at 2.1-3.

¹⁷ EIS at 1-6 (hereinafter referred to as the “PPE”).

¹⁸ 42 U.S.C. § 4332(C).

¹⁹ See also EIS at 1-1 (stating that NRC is required to prepare an EIS as part of its review of an ESP application); 68 Fed. Reg. 75,656 (stating the Commission’s intent to prepare an EIS for SERI’s ESP application).

²⁰ 10 C.F.R. § 52.18. As discussed previously, the environmental impacts of both construction and operation of a new plant that are considered and resolved at the ESP stage have a legally binding effect on the COL proceeding. Thus, judicial decisions finding no requirement for an assessment of environmental impacts when the proposed action has no effect on the environment are inapplicable. See *Sierra Club v. FERC*, 754 F.2d 1506, 1510 (9th Cir. 1985) (no EIS required because FERC permit merely maintained applicant’s priority of application); *Burbank Anti-Noise Group v. Goldschmidt*, 623 F.2d 115, 116 (9th Cir. 1980) (no EIS required to approve transfer of airport ownership rights because continued operation did not change status quo).

²¹ See 10 C.F.R. § 2.335(a); see also *NLRB v. Kemmerer Vill., Inc.*, 907 F.2d 661, 663 (7th Cir. 1990) (“the [NLRB] is bound by its own rules until it changes them”).

information from several designs that are either currently commercially available or anticipated to be available within the term of the ESP: the Advanced Boiling Water Reactor (“ABWR”), AP1000 Reactor, Pebble Bed Modular Reactor (“PBMR”), Gas Turbine Modular Helium Reactor (“GTMHR”), the Advanced CANDU Reactor (“ACR”), the International Reactor Innovative and Secure (“IRIS”) reactor, and the Economic Simplified Boiling Water Reactor (“ESBWR”). These designs formed the basis for the development of the PPE.²²

The PPE identifies a set of design parameters that are expected to bound the design of a reactor or reactors that might be deployed at the site, and serves as a surrogate for actual facility information.²³ As described more fully below, the use of bounding assumptions is consistent with NEPA. The bounding PPE values, together with substantial existing environmental data for the Grand Gulf ESP site, environmental analyses conducted by SERI in support of the ESP application, additional and confirmatory analyses performed by the Staff, and reasonable Staff assumptions associated with limited unresolved items, provide the Board with sufficient information to conduct the independent assessment and weighing of environmental factors, and the consideration of reasonable alternatives, required by 10 C.F.R. § 2.104(b)(3).

1. The PPE Approach Complies Fully with the Commission’s Regulations and is Sufficient for a NEPA Review

As confirmed by the Staff in the SER, SERI identified appropriate design parameters for inclusion in the PPE through a systematic review of regulatory criteria and guidance, ESP application content requirements, and experience with previous site suitability studies.²⁴ For its environmental analysis, SERI used plant parameters to characterize (1) the functional or

²² SSAR at 1.3-2.

²³ *Id.* at 1.3-1.

²⁴ SER at 1-4. SERI developed the actual plant parameter values by considering the values provided by various reactor vendors and applying appropriate conservatism where required to characterize the surrogate facility. As applicable, SERI selected the *most conservative or limiting* bounding value. *Id.*

operational needs of the plant from the site's natural or environmental resources, (2) the plant's impact on the site and surrounding environs, and (3) the site-imposed requirements on the plant.²⁵ The GGNS ESP plant parameter values listed in Tables 3.0-1 through 3.0-8 of the ER include those bounding values considered in the evaluation of environmental impacts of the facility.

NRC has determined that this type of facility characterization is sufficient to assess the future use of the site from both a safety and environmental perspective.²⁶ Specifically, it supports the long-standing Commission objective of Part 52 to decouple siting from design and provide for early resolution of safety and environmental issues. It also provides COL applicants with essential flexibility to select the best technology available at the time the decision to build is made, and facilitates the COL process by clearly identifying the set of parameters for determining the acceptability of a later, specific design for a particular site.

Additionally, the bounding (PPE) approach is sufficient under NEPA for three principal reasons. First, NEPA does not require the NRC to adopt any particular internal decision making process, as long as that process assures a "hard look" at the potential consequences of the proposed action,²⁷ and NEPA's "rule of reason" permits substantial agency discretion in the scope and depth of the NEPA analysis.²⁸ Second, NEPA case law fully supports use of bounding analyses.²⁹ Third, a bounding approach is consistent with Council on Environmental Quality ("CEQ") regulations; 40 C.F.R. § 1502.22 specifies actions an agency must take when

²⁵ SER at 1-4; *see also* EIS at 1-2, 3-2 to -6.

²⁶ *See* SER at 1-4 to -5; Letter, J.E. Lyons (NRC) to R. Simard (NEI), Resolution of Early Site Permit Topic 6 (ESP 6), Use of Plant Parameter Envelope (PPE) Approach, Feb. 5, 2003 (noting that ESP applicants may use the PPE approach as a surrogate for actual facility information to support safety and environmental reviews).

²⁷ *Kleppe*, 427 U.S. at 410 n.21.

²⁸ *See, e.g., Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195 (D.C. Cir. 1991).

²⁹ *See, e.g., NRDC v. NRC*, 685 F.2d 459, 486 (D.C. Cir. 1982) (noting that NEPA permits an agency to consider the *upper bounds* of reasonably foreseeable environmental costs as a method of considering and disclosing uncertainties surrounding environmental effects); *North Slope Borough v. Andrus*, 642 F.2d 589, 605 (D.C. Cir. 1980) (NEPA permits an agency to analyze "worst case" impacts).

incomplete or unavailable information is used in an EIS. The agency must state in the EIS that the information is incomplete or unavailable, state its relevance, provide a summary of existing evidence which is relevant to assessing the environmental impacts, and provide the agency's evaluation of such impacts based on theoretical approaches or generally acceptable research methods.³⁰ The Staff's bounding analysis approach complies with this guidance.

Under the PPE approach, any future design that is demonstrated to be bounded by the PPE is suitable for the site. For safety reviews, this means that the potential designs will be no more demanding from a site suitability and safety perspective than the bounding design parameters of the PPE.³¹ For environmental reviews, this means that environmental impacts of the selected design will not be significantly greater than impacts evaluated using the bounding design parameters of the PPE.³²

2. There are a Limited Number of Unresolved Environmental Issues and They Have Been Appropriately Bounded To Support the NEPA Review

As noted by the Board, there are certain unresolved environmental issues pertaining to construction and operation of the proposed facility. These issues are referenced in EIS Tables 4-3, 5-17, 9-1 and 9-2 and EIS Section 6, and generally pertain to the issues summarized below. SERI asserts that the Staff made reasonable and supportable assumptions regarding these limited unresolved issues in its review of the GGNS ESP. These assumptions are sufficient to support its conclusions and sufficient for the Board to conduct the "hard look" required by NEPA.

Rail Spur: If rail service is required for construction, then a COL application would need to address whether the existing 18-mile now-abandoned rail spur would need to be rebuilt or a new

³⁰ 40 C.F.R. § 1502.22(b). Note that DOE has used bounding analyses in its environmental assessment of the Yucca Mountain Project, which will be reviewed by the NRC. See Final EIS for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-level Radioactive Waste at Yucca Mountain, Nye County, Nevada, DOE/EIS-0250 (Feb. 2002).

³¹ Site Safety Analysis Report ("SSAR") at 1.3-1.

³² *Id.*

rail line constructed. For the ESP, responses to the Staff assumed, based on statements in the ER, that construction material would be barged and trucked to the site, and that rail service would not be restored. The Staff also determined, based on statements in the ER, the Staff's requests for additional information ("RAIs"), and the Staff's independent review, that if rail service were restored, only minimal reconditioning of the abandoned line would be necessary and the land use impacts of restoring rail service would be expected to be SMALL.³³

Transmission System: Existing transmission line rights-of-way would need to be upgraded to accommodate the full capacity of the proposed facility, but the extent of required transmission system upgrades are unknown at the ESP stage. A COL application would need to identify the precise requirements for transmission system upgrades. The Staff determined that, based on statements in the ER and the Staff's independent review, if the existing rights-of-way are determined to be the preferred routing for new transmission lines, then the resulting construction-related land use, terrestrial ecosystems, socioeconomic, and historic and cultural resources impacts would likely be SMALL.³⁴

Groundwater: Additional investigation at the COL stage will be required to assess the ability of the Catahoula aquifer to sustain (from both a quality and quantity perspective) proposed withdrawals during construction and operation of the proposed facility. The Staff determined that, based on statements in the ER and the Staff's independent review, if the proposed withdrawals will have little effect on the aquifer, the environmental effects are likely to be SMALL. SERI believes this is a reasonable and valid assumption. If the aquifer is not capable of supporting the needs of the new and the existing plant without degrading aquifer water

³³ See EIS at 4-3, 4-31.

³⁴ See *id.* at 4-4 to -5, 4-18, 4-32, 4-47.

quality, then other water sources (*e.g.*, the river) could be used in lieu of, or as a supplement to, groundwater.³⁵

Surface Water: The impacts on surface water quality associated with non-radioactive chemical effluent discharges (other than blowdown) during operation of the GGNS ESP facility are unresolved. The Staff stated, however, that such impacts would be SMALL if the discharges were within the limits of the existing GGNS National Pollutant Discharge Eliminating System (“NPDES”) permit. SERI believes this is a reasonable and valid assumption, as all such discharges would be regulated by the Mississippi Department of Environmental Quality.³⁶

Dredge Soils: The potential impacts on land use from the disposition of dredge soil and the use of borrow material will need to be resolved at the COL stage. The Staff determined that, based on statements in the ER and the Staff’s independent review, if such impacts are confined to the proposed ESP facility construction footprint and best management practices are used in the affected areas, the land use impacts are likely to be SMALL.³⁷

EMF: Conclusive scientific evidence on the chronic effects of electro-magnetic fields (“EMF”) is unavailable. The Staff determined, however, that current research does not suggest that the resulting nonradiological health impacts associated with EMF would be significant.³⁸

Gas-Cooled Reactors: Certain environmental issues associated with gas-cooled reactors, including design basis accidents (“DBAs”), severe accidents, fuel transportation, and fuel cycle impacts, remain unresolved because necessary design information likely will not be available until the COL stage. This issue, however, is only relevant to two of the seven reactor designs considered in the ESP application: the GTMHR and the PBMR. If one of these two designs is

³⁵ See *id.* at 4-8 to -9, 5-8, 5-15.

³⁶ See *id.* at 5-14.

³⁷ See *id.* at 4-2 to -3.

³⁸ See *id.* at 5-49 to -50.

chosen, then these issues will be evaluated at the COL stage. Otherwise, impacts of DBAs and severe accidents for light water reactors (“LWRs”) are SMALL.³⁹

Based on the above, SERI asserts that the Staff made reasonable and supportable assumptions regarding these limited unresolved issues sufficient to support its conclusions and sufficient for the Board to conduct its review. Also, several of these issues are unresolved in other ESP proceedings for the same reasons that they are unresolved for the GGNS ESP.⁴⁰ Finally, a COL applicant must establish that the selected nuclear plant design is bounded by the above assumptions in the ESP, or evaluate the environmentally-significant effects of any design features that are not bounded. Therefore, a future facility would not be constructed or operated without full consideration and resolution of the above issues.

C. THE BOARD CAN AND SHOULD CONDUCT AN INDEPENDENT ASSESSMENT AND CONSIDER REASONABLE ALTERNATIVES PURSUANT TO 10 C.F.R. § 2.104(B)(3)

As described in Section II.B above, there is sufficient information in the record of this proceeding to support the Board’s “hard look” as required by NEPA. The Board, therefore, can and should conduct the independent assessment and weighing of environmental factors, and the consideration of reasonable alternatives required under 10 C.F.R. § 2.104(b)(3).

The Commission previously provided guidance to licensing boards as to how they should conduct this review. Specifically, the Commission has stated that “licensing boards must reach their own independent determination on uncontested NEPA ‘baseline’ questions — *i.e.*, whether the NEPA process ‘has been complied with,’ what is the appropriate ‘final balance among conflicting factors,’ and whether the ‘construction permit should be issued, denied or

³⁹ See *id.* at 5-66, 5-79, 6-1, 6-30, Table 5-17.

⁴⁰ See, e.g., NUREG-1815, “Environmental Impact Statement for an Early Site Permit at the Exelon ESP Site, Final Report,” July 2006, at 5-46 to -47 (identical discussion of chronic EMF effects), 5-67, 5-77 to -78 (similar discussion of gas-cooled reactor designs), 4-4 to -5 (addressing similar issues related to transmission lines).

appropriately conditioned.”⁴¹ In conducting these independent assessments, “boards should not second-guess underlying technical or factual findings by the NRC Staff,” unless “the reviewing board found the Staff review to be incomplete or the Staff findings to be insufficiently explained in the record.”⁴² The Commission further directed licensing boards to the U.S. Court of Appeals opinion in *Calvert Cliffs’ Coordinating Committee, Inc. v. AEC*:

The Commission’s regulations provide that in an uncontested proceeding the hearing board shall on its own determine whether the application and the record of the proceeding contain sufficient information, and the review of the application by the Commission’s regulatory staff has been adequate, to support affirmative findings on various nonenvironmental factors. NEPA requires at least as much automatic consideration of environmental factors. In uncontested hearings, the board need not necessarily go over the same ground covered in the detailed [environmental impact] statement. But it must at least examine the statement carefully to determine whether the review . . . by the Commission’s regulatory staff has been adequate. And it must independently consider the final balance among conflicting factors that is struck in the staff’s recommendation.⁴³

Accordingly, the Board should determine whether there is a reasonable basis for a Staff determination, whether the facts underlying a Staff determination are clear, and whether the Staff’s decisions logically flow from those facts and appropriate regulatory guidance.

As described further below, SERI asserts that the complete record of this proceeding, including the ER, the EIS, and both the Staff and SERI answers to the Board’s environmental questions, is sufficient for the Board to make this determination and the findings required under 10 C.F.R. § 2.104(b)(3). Further, in accordance with the Board’s October 11, 2006 Order Revising the Case Schedule, the Board is scheduled to identify specific hearing topics regarding

⁴¹ *Exelon Generation Co., LLC* (Early Site Permit for Clinton ESP Site), CLI-05-17, 62 NRC 5, 45 (2005).

⁴² *Id.*

⁴³ 449 F.2d 1109, 1118 (D.C. Cir. 1971) (footnote and internal quotations omitted).

safety and environmental testimony on November 6, 2006.⁴⁴ SERI believes this provides the Board with an additional opportunity, should it be deemed necessary, to obtain any additional information supportive of the findings required under 10 C.F.R. § 2.104(b)(3).

D. THE RECORD OF THIS PROCEEDING PROVIDES A SUFFICIENT BASIS FOR THE BOARD TO MAKE ITS REQUIRED ENVIRONMENTAL DETERMINATIONS

Regardless of whether a proceeding is contested or uncontested, in accordance with 10 C.F.R. § 2.104(b)(3) and the Notice of Hearing issued in this case, the Licensing Board is required to make the following three NEPA-required determinations.⁴⁵

1. The EIS fully complies with the requirements of Section 102(2)(A),(C), and (E) of NEPA and subpart A of 10 C.F.R. Part 51 (Environmental Finding 1);
2. The EIS appropriately considers and evaluates the environmental factors contained in the record of the proceeding (Environmental Finding 2); and
3. The EIS considers reasonable alternatives (within the constraints of the Commission guidance on this matter), and appropriately determines that the ESP should be issued with the permit conditions identified in Sections 4.4.1 and 4.5.1 of the EIS (Environmental Finding 3).

As described above, the existing record of this proceeding, including the ER, EIS, and the Staff SERI answers to the Board's environmental questions, as well as any further information to be provided to the Board in pre-filed testimony and during the mandatory hearing itself, adequately supports the Board's ability to make all of these determinations. The following paragraphs and the supplemental materials included in the Appendix to this brief provide additional support for these determinations.

⁴⁴ Order (Granting the NRC Staff's Motion for an Extension of Time and Revising Case Schedule), October 11, 2006, at 3.

⁴⁵ See Commission's Notice of Hearing and Opportunity to Intervene, Early Site Permit for the Grand Gulf ESP Site, 69 Fed. Reg. 2,636 (Jan. 16, 2004); Order (Oct. 3, 2006), at 2.

1. The EIS Fully Complies With NEPA Sections 102(2)(A), (C), and (E) and 10 C.F.R. Part 51, Subpart A (Environmental Finding 1)

NEPA Section 102(2)(A). NEPA Section 102(2)(A) requires federal agencies to “utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man’s environment.”⁴⁶ The NRC Staff utilized a systematic, interdisciplinary approach integrating their use of the natural and social sciences in their decision-making regarding environmental impacts as required under NEPA. As shown in Appendix Table 1, SERI’s ER strictly followed the format in NUREG-1555 (Environmental Standard Review Plan), and the NRC’s EIS closely parallels NUREG-1555, thereby ensuring both a systematic and interdisciplinary approach. Furthermore, the NRC Staff’s Proposed Findings of Fact, filed with the Board on August 11, 2006, provided detailed findings of fact summarizing the Staff’s conclusions following its review of the application. Appendix Table 1 provides references to relevant Proposed Findings of Fact for each required item in NUREG-1555. Finally, the Staff utilized the expertise of professional scientists, engineers, and social scientists⁴⁷ and logically documented its conclusions.

NEPA Section 102(2)(C). Section 102(2)(C) of NEPA requires a federal agency to address in its EIS: (1) the environmental impact of the proposed action; (2) any adverse impacts which cannot be avoided should the proposal be implemented; (3) alternatives to the proposed action; (4) the relationship between local short-term uses of man’s environment and the maintenance and enhancement of long-term productivity; and (5) any irreversible and irretrievable commitment of resources which would be involved in the proposed action should it

⁴⁶ 42 U.S.C. § 4332(2)(A).

⁴⁷ See EIS Appendix A.

be implemented.⁴⁸ As shown in Appendix Table 2, the final EIS addresses each of these five requirements. Section 102(2)(C) also requires that an agency “consult with and obtain the comments of any federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved.”⁴⁹ The Staff has complied with this requirement.⁵⁰

NEPA Section 102(2)(E). Section 102(2)(E) of NEPA requires a federal agency to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.”⁵¹ The EIS considers the no action alternative, energy alternatives, plant design alternatives, and alternative sites.⁵² The EIS satisfies the requirements under NEPA with respect to consideration of alternatives.

Subpart A to Part 51. Subpart A to Part 51 contains a number of requirements related to an EIS for a CP (and by implication, for an ESP). In particular, Part 51 includes several procedural requirements related to the EIS: (1) issuance of a notice of intent to prepare an EIS (§ 51.116); (2) scoping (§§ 51.28 and 51.29), (3) notice and distribution of a draft EIS for public comments (§§ 51.73, 51.74, and 51.117), (4) responding to public comments (§ 51.91), (5) notice and distribution of the final EIS (§§ 51.93 and 51.118), and (6) public availability of EIS (§ 51.120). 10 C.F.R. §§ 51.70, 51.71, and 51.75 and Appendix A to Part 51 also have a number of substantive requirements for an EIS. The most specific criteria are contained in Appendix A, which in general encompass the more general criteria in §§ 51.70, 51.71, and 51.75. The following criteria are contained in Appendix A, supplemented by some additional criteria from

⁴⁸ See 42 U.S.C. § 4332(2)(C).

⁴⁹ *Id.*

⁵⁰ See EIS Appendix B.

⁵¹ 42 U.S.C. § 4332(2)(E).

⁵² See EIS Chapter 8.

Sections 50.71 and 50.75: (1) Cover sheet, (2) Summary, (3) Table of Contents, (4) Purpose of and Need for Action, (5) Alternatives including the proposed action, (6) Affected Environment, (7) Environmental Consequences and Mitigating Actions, including assessment of aquatic impacts and radiological impacts (including the radiological impacts from the fuel cycle as provided in Table S-3 in Part 51), (8) List of Preparers, (9) List of Agencies, Organizations and Persons to Whom Copies of the Statement are Sent, (10) Substantive Comments Received and NRC Staff Responses, including analysis of major points of view, (11) Index, (12) Appendices, (13) Status of compliance, and (14) Recommendations.⁵³ As shown in Appendix Tables 3 and 4, these requirements have been satisfied in this proceeding.

2. The EIS Appropriately Considers and Evaluates Environmental Factors Contained in the Record of this Proceeding (Environmental Finding 2)

Upon acceptance of the Grand Gulf ESP application for docketing, the NRC began the environmental review process described in 10 C.F.R. Part 51 by publishing in the *Federal Register* a Notice of Intent to prepare an EIS and conduct scoping.⁵⁴ The Staff held a public scoping meeting in Port Gibson, Mississippi, on January 21, 2004, and visited the site on July 29, 2003, January 21, 2004, and April 12 and 13, 2004.⁵⁵ Subsequently, and in accordance with NEPA and 10 C.F.R. Part 51, the Staff evaluated the potential environmental impacts of constructing and operating a new nuclear facility at the Grand Gulf ESP site.⁵⁶

During the course of preparing this EIS, the Staff reviewed the ER, consulted with federal, state, tribal, and local agencies, and followed the guidance set forth in RS-002 to conduct

⁵³ 10 C.F.R. § 50.71(d) and (e) require in general that draft EISs include an analysis of the benefits of the proposed action, and a cost-benefit analysis. This general requirement is superseded by the more specific requirement in 10 C.F.R. § 52.18, which permits analysis of the benefits to be deferred from the ESP stage to the COL stage.

⁵⁴ 68 Fed. Reg. 75,656 (Dec. 31, 2003).

⁵⁵ EIS at xxvi.

⁵⁶ *Id.*

an independent review of the issues.⁵⁷ That Review Standard draws from the previously published NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants,” and NUREG-1555, “Environmental Standard Review Plans.” In addition, the NRC considered the public comments related to the environmental review received during the scoping process.⁵⁸ These comments are provided in Appendices D and E of the EIS.

Following the practice the Staff uses in the “Generic Environmental Impact Statement for License Renewal of Nuclear Plants” (NUREG-1437) and supplemental license renewal EISs, environmental issues were evaluated using the three-level standard of significance – SMALL, MODERATE, or LARGE – developed by NRC using guidelines from the CEQ (40 C.F.R. § 1508.27).⁵⁹ Mitigation measures were considered for each environmental issue and are discussed in the appropriate sections.⁶⁰

With respect to the impacts of the Grand Gulf ESP facility, the adverse impacts would be SMALL, with two exceptions.⁶¹ The Staff identified potential LARGE local demographic impacts and MODERATE local impacts on infrastructure and community services, should new workers concentrate in communities immediately surrounding the site.⁶² If such impacts occur, they would likely be offset by expected LARGE tax benefits.⁶³ The Staff also identified potential MODERATE impacts on terrestrial ecosystems, should existing transmission line rights-of-way be insufficient, but this issue is unresolved, and a COL applicant would need to provide additional information on this issue.⁶⁴ Therefore, a balance among the factors contained

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.* at 1-5 to -6.

⁶⁰ *Id.* at 1-6.

⁶¹ *See id.* Tables 4-3 and 5-17.

⁶² *See id.* at 4-34, 4-44, 5-35, 5-42.

⁶³ *See id.* at 4-45, 5-42.

⁶⁴ *Id.* at 4-18.

in the record of the proceeding demonstrates that the Grand Gulf ESP site is suitable from an environmental standpoint for the Grand Gulf ESP facility, and the ESP should be issued with the Permit Conditions as proposed in the EIS in order to preserve the option of using the site for eventual construction and operation of the Grand Gulf ESP facility.⁶⁵

3. The EIS Considers Reasonable Alternatives and Appropriately Determines that the ESP Should be Issued with the Permit Conditions Identified in Sections 4.4.1 and 4.5.1 of the EIS (Environmental Finding 3)

The EIS describes the proposed plant site, the PPE, the environmental impacts of site preparation, plant construction and operation, the fuel cycle, transportation of radioactive materials, accidents, and decommissioning. The EIS discusses the cumulative impacts of the proposed action and examines the impacts of alternatives, including the no-action alternative, energy alternatives (coal, natural gas, oil, wind, solar, hydropower, geothermal, wood waste, municipal solid waste, other biomass-derived fuels, fuel cells, and a combination of alternatives), plant design alternatives, and alternative sites. As described in the EIS, the no-action alternative is not preferable because it would not accomplish the benefits of the ESP (including banking the site for future possible use); there are no reasonable alternative energy sources that are environmentally preferable; and there are no obviously superior sites. Therefore, reasonable alternatives have been considered, the ESP needs no additional conditions to protect environmental values, and the ESP should be issued as recommended in the EIS.⁶⁶

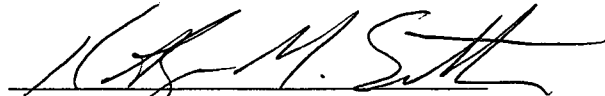
⁶⁵ The Staff's evaluation of environmental impacts (and alternatives described below) relied in part on bounding estimates of environmental impacts, commitments to address certain issues regarding the design, construction, and operation of the facility at the COL stage, and statements of planned compliance with current laws, regulations, and requirements. These items are summarized in EIS Appendix J. Should the requested ESP be issued and later referenced in a COL application, the Staff will verify that the assumptions identified in Appendix J remain applicable. See EIS at 10-9.

⁶⁶ For some matters (such as need for power and the cost-benefit analysis), the Applicant elected not to provide information, as is permitted by 10 C.F.R. § 52.17(a)(2). EIS at 1-3. The ER and EIS also do not address severe accident design mitigation alternatives (SAMDAs). Evaluation of SAMDAs is dependent upon design information that is not available at the ESP stage. In accordance with 10 C.F.R. § 52.18, the EIS also does not discuss those matters. Accordingly, those issues are not resolved for the ESP site.

III. CONCLUSION

For the foregoing reasons, the ESP is a major federal action subject to NEPA; the NEPA review conducted by the NRC Staff has been adequate; the ER and EIS contain sufficient information to support the Environmental Findings and issuance of the ESP; the Grand Gulf ESP site is a suitable location for a nuclear station of the general size and type bounded by the PPE; and the ESP should be issued subject to the terms and conditions specified in the EIS.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'K. M. Sutton', written over a horizontal line.

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**APPENDIX TO SYSTEM ENERGY RESOURCES, INC.'S BRIEF IN
RESPONSE TO THE BOARD'S OCTOBER 3, 2006 ORDER REQUESTING
BRIEFINGS ON ENVIRONMENTAL ISSUES**

Table 1
Comparison of NUREG-1555, ER, EIS, and Staff's Proposed Findings of Fact

| NUREG-1555 | ER Section | EIS Section | Staff's Proposed Findings of Fact¹ |
|--|-------------------|--------------------|--|
| 1.0 Introduction to the Environmental Impact Statement | 1 | 1.0 | 318-23 |
| 1.1 The Proposed Project | 1.1 | 1.2 | 320-23 |
| 1.2 Status of Reviews, Approvals, and Consultations | 1.2 | 1.5 and Appendix G | 359, 407, 636 |
| 2.0 Environmental Description | 2 | 2.0 | 324, 361-63 |
| 2.1 Station Location | 2.1 | 2.1 | 325, 327 |
| 2.2 Land | 2.2 | 2.2 | 326-30 |
| 2.2.1 The Site and Vicinity | 2.2.1 | 2.2.1 | 326-30, 350 |
| 2.2.2 Transmission Corridors and Offsite Areas | 2.2.2 | 2.2.2 | 329-30 |
| 2.2.3 The Region | 2.2.3 | 2.2.3 | 325, 327 |
| 2.3 Water | 2.3 | 2.6 | 343-49 |
| 2.3.1 Hydrology | 2.3.1 | 2.6.1 | 343-45 |
| 2.3.2 Water Use | 2.3.2 | 2.6.2 | 346 |
| 2.3.3 Water Quality | 2.3.3 | 2.6.3 | 347-49 |
| 2.4 Ecology | 2.4 | 2.7 | 350-52 |
| 2.4.1 Terrestrial Ecology | 2.4.1 | 2.7.1 | 351 |
| 2.4.2 Aquatic Ecology | 2.4.2 | 2.7.2 | 352 |
| 2.5 Socioeconomics | 2.5 | 2.8 | 353-60 |
| 2.5.1 Demography | 2.5.1 | 2.8.1 | 353-55 |
| 2.5.2 Community Characteristics | 2.5.2 | 2.8.2 | 355-58 |
| 2.5.3 Historic Properties | 2.5.3 | 2.9 | 359 |
| 2.5.4 Environmental Justice | 2.5.4 | 2.10 | 360 |
| 2.6 Geology | 2.6 | 2.4 | 341 |
| 2.7 Meteorology and Air Quality | 2.7 | 2.3 | 331-40, 423-24 |
| 2.8 Related Federal Project Activities | 2.9 | 2.11 | N/A |
| 3.0 Plant Description | 3 | 3.0 | 364, 382-84 |

¹ References are to the numbered findings in the "Staff's Proposed Findings of Fact and Conclusions of Law in the Mandatory Hearing," as served on the parties and the Board on August 11, 2006. The numbered paragraphs in this document, however, differ from the numbered paragraphs in the same document as published in ADAMS, docket number ML062270394.

Table 1 (Continued)
Comparison of NUREG-1555, ER, EIS, and Staff's Proposed Findings of Fact

| NUREG-1555 | ER Section | EIS Section | Staff's Proposed Findings of Fact |
|--|-------------------|---------------------------------------|--|
| 3.1 External Appearance and Plant Layout | 3.1 | 3.1 | 365 |
| 3.2 Reactor Power Conversion System | 3.2 | N/A – reactor design not yet selected | 366-68 |
| 3.3 Plant Water Use | 3.3 | 3.2.1 | 369-70 |
| 3.3.1 Water Consumption | 3.3.1 | 3.2.1.1 | 369-70 |
| 3.3.2 Water Treatment | 3.3.2 | 3.2.1.2 | 370 |
| 3.4 Cooling System | 3.4 | 3.2.2 | 371-77 |
| 3.4.1 Description and Operational Modes | 3.4.1 | 3.2.2.1 | 371 |
| 3.4.2 Component Descriptions | 3.4.2 | 3.2.2.2 | 372-377 |
| 3.5 Radioactive Waste Management System | 3.5 | 3.2.3 | 378 |
| 3.6 Nonradioactive Waste Systems | 3.6 | 3.2.4 | 379 |
| 3.6.1 Effluents Containing Chemicals or Biocides | 3.6.1 | 3.2.4.1 | 379 |
| 3.6.2 Sanitary System Effluents | 3.6.2 | 3.2.4.2 | 379 |
| 3.6.3 Other Effluents | 3.6.3 | 3.2.4.3 | 379 |
| 3.7 Power Transmission System | 3.7 | 3.3 | 380-81 |
| 3.8 Transportation of Radioactive Materials | 3.8 | 6.2 | 467, 485, 494, 496-98 |
| 4.0 Environmental Impacts of Construction | 4 | 4.0 | 385, 417-419 |
| 4.1 Land-Use Impacts | 4.1 | 4.1 | 386-88, 407-08 |
| 4.1.1 The Site and Vicinity | 4.1.1 | 4.1.1 | 386-87 |
| 4.1.2 Transmission Corridors and Offsite Areas | 4.1.2 | 4.1.2 | 388 |
| 4.1.3 Historic Properties | 4.1.3 | 4.6 | 407-08 |
| 4.2 Water-Related Impacts | 4.2 | 4.3 | 391-93 |
| 4.2.1 Hydrologic Alterations | 4.2.1 | 4.3.1 | 391 |
| 4.2.2 Water-Use Impacts | 4.2.2 | 4.3.2 | 392-93 |
| 4.3 Ecological Impacts | 4.3 | 4.4 | 394-97 |
| 4.3.1 Terrestrial Ecosystems | 4.3.1 | 4.4.1 | 395, 397 |
| 4.3.2 Aquatic Ecosystems | 4.3.2 | 4.4.2 | 396-97 |

Table 1 (Continued)
Comparison of NUREG-1555, ER, EIS, and Staff's Proposed Findings of Fact

| NUREG-1555 | ER Section | EIS Section | Staff's Proposed Findings of Fact |
|--|-------------------|---|--|
| 4.4 Socioeconomic Impacts | 4.4 | 4.5 | 398-406, 411 |
| 4.4.1 Physical Impacts | 4.4.1 | 4.5.1 | 398-400 |
| 4.4.2 Social and Economic Impacts | 4.4.2 | 4.5.3 | 401-05 |
| 4.4.3 Environmental Justice Impacts | 4.4.3 | 4.7 | 409-11 |
| 4.5 Radiation Exposure to Construction Workers | 4.5 | 4.9 | 413-16 |
| 4.6 Measures and Controls to Limit Adverse Impacts During Construction | 4.6 | 4.10 | Discussed as applicable in 385-419 |
| 5.0 Environmental Impacts of Station Operation | 5 | 5.0 | 420, 464-66 |
| 5.1 Land-Use Impacts | 5.1 | 5.1 | 421-22, 443 |
| 5.1.1 The Site and Vicinity | 5.1.1 | 5.1.1 | 421 |
| 5.1.2 Transmission Corridors and Offsite Areas | 5.1.2 | 5.1.2 | 422 |
| 5.1.3 Historic Properties | 5.1.3 | 5.6 | 443 |
| 5.2 Water-Related Impacts | 5.2 | 5.3 | 425-30 |
| 5.2.1 Hydrologic Alterations and Plant Water Supply | 5.2.1 | 5.3.1 | 425-30 |
| 5.2.2 Water-Use Impacts | 5.2.2 | 5.3.2 | 426-30 |
| 5.3 Cooling System Impacts | 5.3 | No separate section. Covered under various subsections as indicated below | 428-29, 432-33 |
| 5.3.1 Intake System | 5.3.1 | 5.4.2.1 | 426, 433, 435-36 |
| 5.3.1.1 Hydrodynamic Descriptions and Physical Impacts | 5.3.1.1 | Covered in sections 5.3 and 5.4 | 433, 436 |
| 5.3.1.2 Aquatic Ecosystems | 5.3.1.2 | 5.4.2 | 433, 435-36 |
| 5.3.2 Discharge System | 5.3.2 | 5.4.2.2 | 437 |
| 5.3.2.1 Thermal Description and Physical Impacts | 5.3.2.1 | Covered in sections 5.3 and 5.4 | 437 |
| 5.3.2.2 Aquatic Ecosystems | 5.3.2.2 | 5.4.2 | 433, 435, 437 |

Table 1 (Continued)
Comparison of NUREG-1555, ER, EIS, and Staff's Proposed Findings of Fact

| NUREG-1555 | ER Section | EIS Section | Staff's Proposed Findings of Fact |
|---|-------------------|--|--|
| 5.3.3 Heat-Discharge System | 5.3.3 | Covered under various subsections as indicated below | 432, 437 |
| 5.3.3.1 Heat Dissipation to the Atmosphere | 5.3.3.1 | 5.2.1 | 432, 437-38 |
| 5.3.3.2 Terrestrial Ecosystems | 5.3.3.2 | 5.4.1 | 433-34 |
| 5.3.4 Impacts to Members of the Public | 5.3.4 | 5.4.1, 5.8.1, 5.8.2 | 447-48 |
| 5.4 Radiological Impacts of Normal Operation | 5.4 | 5.9 | 449-52 |
| 5.4.1 Exposure Pathways | 5.4.1 | 5.9.1 | 449 |
| 5.4.2 Radiation Doses to Members of the Public | 5.4.2 | 5.9.2 | 449 |
| 5.4.3 Impacts to Members of the Public | 5.4.3 | 5.9.3 | 449 |
| 5.4.4 Impacts to Biota Other than Members of the Public | 5.4.4 | 5.9.5 | 451 |
| 5.5 Environmental Impacts of Waste | 5.5 | Covered under various subsections as indicated below | 447, 485 |
| 5.5.1 Nonradioactive-Waste-System Impacts | 5.5.1 | None; but see Section 5.8 | 447 |
| 5.5.2 Mixed Waste Impacts | 5.5.2 | Addressed in Sections 6.1 and 6.2 | 485 |
| 5.6 Transmission System Impacts | 5.6 | Covered under various subsections as indicated below and Section 5.2.3 | 431, 433-34, 438, 448 |
| 5.6.1 Terrestrial Ecosystems | 5.6 | 5.4.1.5, 5.4.1.6, 5.4.1.7, 5.4.1.8 | 434, 438 |
| 5.6.2 Aquatic Ecosystems | 5.6 | 5.4.2.4 | 434, 438 |
| 5.6.3 Impacts to Members of the Public | 5.6 | 5.8.3, 5.8.4 | 447-48 |
| 5.7 Uranium Fuel Cycle Impacts | 5.7 | 6.1 | 467-84, 496-98 |
| 5.8 Socioeconomic Impacts | 5.8 | 5.5 | 439-42 |
| 5.8.1 Physical Impacts of Station Operation | 5.8.1 | 5.5.1 | 439 |

Table 1 (Continued)
Comparison of NUREG-1555, ER, EIS, and Staff's Proposed Findings of Fact

| NUREG-1555 | ER Section | EIS Section | Staff's Proposed Findings of Fact |
|---|-------------------|--|--|
| 5.8.2 Social and Economic Impacts of Station Operation | 5.8.2 | 5.5.3 | 440-42 |
| 5.8.3 Environmental Justice Impacts | 5.8.3 | 5.7 | 444-46 |
| 5.9 Decommissioning | 5.9 | 6.3 | 467, 495-98 |
| 5.10 Measures and Controls to Limit Adverse Impacts During Operation | 5.10 | 5.11 | Discussed as applicable in 420-466 |
| 6.0 Environmental Measurements and Monitoring Programs | 6 | Covered under various subsections as indicated below | 333, 338-39, 345, 347-49, 396-97, 452, 455 |
| 6.1 Thermal Monitoring | 6.1 | 2.6.3.3 | 347 |
| 6.2 Radiological Monitoring | 6.2 | 5.9.6 | 342, 452 |
| 6.3 Hydrological Monitoring | 6.3 | 2.6.1.3 | 345, 347-49 |
| 6.4 Meteorological Monitoring | 6.4 | 2.3.3 | 333, 338-39, 455 |
| 6.5 Ecological Monitoring | 6.5 | Covered under various subsections as indicated below | 396-97 |
| 6.5.1 Terrestrial Ecology and Land Use | 6.5.1 to 6.5.4 | 2.7.1.3 | 396-97 |
| 6.5.2 Aquatic Ecology | 6.5.2 to 6.5.4 | 2.7.2.3 | 396-97 |
| 6.6 Chemical Monitoring | 6.6 | 2.6.3.4 | 348 |
| 6.7 Summary of Monitoring Programs | 6.7 | Covered under various subsections as indicated above | None; see above |
| 7.0 Environmental Impacts of Postulated Accidents Involving Radioactive Materials | 7 | 5.10 | 453-63 |
| 7.1 Design Basis Accidents | 7.1 | 5.10.1 | 453-58 |
| 7.2 Severe Accidents | 7.2 | 5.10.2 | 459-63 |
| 7.3 Severe Accident Mitigation Alternatives | 7.3 | N/A – addressed by design certification | N/A |
| 7.4 Transportation Accidents | 7.4 | 6.2.1.2, 6.2.2.2 | 467, 485, 490-92, 494, 496-98 |
| 8.0 Need for Power | 8 | N/A – deferred until COL proceeding | N/A |

Table 1 (Continued)
Comparison of NUREG-1555, ER, EIS, and Staff's Proposed Findings of Fact

| NUREG-1555 | ER Section | EIS Section | Staff's Proposed Findings of Fact |
|--|-------------------------------------|--|--|
| 8.1 Description of Power System | N/A – deferred until COL proceeding | N/A – deferred until COL proceeding | N/A |
| 8.2 Power Demand | N/A – deferred until COL proceeding | N/A – deferred until COL proceeding | N/A |
| 8.2.1 Power and Energy Requirements | N/A – deferred until COL proceeding | N/A – deferred until COL proceeding | N/A |
| 8.2.2 Factors Affecting Growth of Demand | N/A – deferred until COL proceeding | N/A – deferred until COL proceeding | N/A |
| 8.3 Power Supply | N/A – deferred until COL proceeding | N/A – deferred until COL proceeding | N/A |
| 8.4 Assessment of Need for Power | N/A – deferred until COL proceeding | N/A – deferred until COL proceeding | N/A |
| 9.0 Alternatives to the Proposed Action | 9 | 8.0 | 522 |
| 9.1 No-Action Alternative | 9.1.2 | 8.1 | 525 |
| 9.2 Energy Alternatives | 9.2 | 8.2 | 526-51 |
| 9.2.1 Alternatives Not Requiring New Generating Capacity | 9.2.1 | 8.2.1 | 526-32 |
| 9.2.2 Alternatives Requiring New Generating Capacity | 9.2.2 | 8.2.2, 8.2.3, 8.2.4 | 533-51 |
| 9.2.3 Assessment of Alternative Energy Sources and Systems | 9.2.3 | 8.2.5 | 533-51 |
| 9.3 Alternative Sites | 9.3 | 8.4, 8.5, 9.0 | 557-621 |
| 9.4 Alternative Plant and Transmission Systems | 9.4 | 8.3 | 552-56 |
| 9.4.1 Heat Dissipation Systems | 9.4.1 | 8.3.1 | 552-53 |
| 9.4.2 Circulating Water Systems | 9.4.2 | 8.3.2 | 552, 554-56 |
| 9.4.3 Transmission Systems | 9.4.3 | N/A – Precise route for transmission system upgrades to be identified at COL Stage | N/A |
| 10.0 Environmental Consequences of the Proposed Action | 10 | 10.0 | 622 |

Table 1 (Continued)

Comparison of NUREG-1555, ER, EIS, and Staff's Proposed Findings of Fact

| NUREG-1555 | ER Section | EIS Section | Staff's Proposed Findings of Fact |
|---|-------------------------------------|-------------------------------------|--|
| 10.1 Unavoidable Adverse Environmental Impacts | 10.1 | 10.1 | 623-25 |
| 10.2 Irreversible and Irretrievable Commitments of Resources | 10.2 | 10.2 | 626 |
| 10.3 Relationship Between Short Term Uses and Long Term Productivity of the Human Environment | 10.3 | 10.3 | 627 |
| 10.4 Benefit-Cost Balance | 10.4 | N/A - deferred until COL proceeding | N/A |
| 10.4.1 Benefits | N/A - deferred until COL proceeding | N/A - deferred until COL proceeding | N/A |
| 10.4.2 Costs | N/A - deferred until COL proceeding | N/A - deferred until COL proceeding | N/A |
| 10.4.3 Summary | N/A - deferred until COL proceeding | N/A - deferred until COL proceeding | N/A |

Table 2
Comparison of EIS against NEPA Section 102(C)

| NEPA Section 102(C) | EIS Section |
|--|--|
| (1) the environmental impact of the proposed action | 4 – Construction Impacts 5 – Operational Impacts 6 – Impacts of Fuel Cycle, Transportation, and Decommissioning 7 and 10.4 – Cumulative Impacts |
| (2) any adverse impacts which cannot be avoided should the proposal be implemented | 10.1 – Unavoidable Adverse Environmental Impacts |
| (3) alternatives to the proposed action | 8.1 – No-Action Alternative 8.2 – Energy Alternatives 8.3 – System Design Alternatives 8.5, 8.6, and 9 – Alternative Sites |
| (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity | 10.3 – Relationship between Short-Term Uses and Long-Term Productivity of the Human Environment |
| (5) any irreversible and irretrievable commitment of resources which would be involved in the proposed action should it be implemented | 10.2 – Irreversible and Irretrievable Commitments of Resources |

Table 3
Comparison of EIS against Procedural Requirements in Part 51

| Part 51 Procedural Requirement | Conformance to Requirement |
|--|---|
| (1) issuance of a notice of intent to prepare an EIS (§ 51.116) | 68 Fed. Reg. 75,656 (December 31, 2003) |
| (2) scoping (§§ 51.28 and 51.29) | EIS Appendix D |
| (3) notice and distribution of a draft EIS for public comments (§§ 51.73, 51.74, and 51.117) | 70 Fed. Reg. 22,155 (April 28, 2005) |
| (4) responding to public comments (§ 51.91) | EIS Appendix E |
| (5) notice and distribution of the final EIS (§§ 51.93 and 51.118) | 71 Fed. Reg. 18,369 (April 11, 2006) |
| public availability of EIS (§ 51.120) | The draft EIS was publicly available, as discussed in the EIS, pp. E-1 to -2. The final EIS is publicly available at: http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1817/index.html |

Table 4
Comparison of EIS against Substantive Requirements in Part 51

| Substantive Requirement | Conformance to Requirement |
|--|--|
| (1) Cover sheet | EIS, pp. i – iii; 71 Fed. Reg. 18,369 (April 11, 2006) |
| (2) Summary | EIS Executive Summary |
| (3) Table of Contents | EIS, pp. v – xvi |
| (4) Purpose of and Need for Action | EIS Section 1.3 |
| (5) Alternatives including the proposed action | EIS Sections 8 and 9 |
| (6) Affected Environment | EIS Section 2 |
| (7) Environmental Consequences and Mitigating Actions | EIS Sections 4, 5, 6, 7, and 10.1 – 10.3; including an assessment of aquatic impacts in Sections 4.3 and 5.3 and radiological impacts in Sections 4.9, 5.9, 5.10, and 6, and fuel cycle impacts from Table S-3 in EIS Table 6-1. |
| (8) List of Preparers | EIS Appendix A |
| (9) List of Agencies, Organizations and Persons to Whom Copies of the Statement are Sent | See EIS Appendices B and E |
| (10) Substantive Comments Received and NRC Staff Responses | EIS Appendix E |
| (11) Index | See Table of Contents |
| (12) Appendices | EIS Appendices A-J |
| (13) Status of compliance | EIS Section 1.5 and Appendices F and G |
| (14) Recommendations | EIS Section 10.5 |

I-WA/2640214.3

**UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION**

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

| | | |
|---|---|-------------------------|
| In the matter of |) | |
| |) | |
| SYSTEM ENERGY RESOURCES, INC. |) | Docket No. 52-009-ESP |
| |) | |
| (Early Site Permit for Grand Gulf ESP Site) |) | ASLBP No. 04-823-03-ESP |

CERTIFICATE OF SERVICE

I hereby certify that copies of "System Energy Resources Inc.'s Brief in Response to the Board's Order Requesting Briefings on Environmental Issues" in the above captioned proceeding have been served as shown below by deposit in the United States Mail, first class, this 23rd day of October, 2006. Additional service has also been made this same day by electronic mail as shown below.

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Mail Stop: T-3F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
(E-mail: DAW1@nrc.gov)

A handwritten signature in cursive script, reading "Paul Bessette". The signature is written in black ink and is positioned above a horizontal line.

Paul M. Bessette
Counsel for System Energy Resources, Inc.