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Date: Thu, Jul 14, 2005 5:16 PM  
Subject: SERI comments on DEIS

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Attached are SERI comments on the DEIS NUREG-1817.

George Alan Zinke  
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4/28/05  
NOFR 22155

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CC: "Raj Anand" <RKA@nrc.gov>, "James Wilson" <JHW1@nrc.gov>

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SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS) FOR AN EARLY  
SITE PERMIT (ESP) AT THE GRAND GULF ESP SITE (TAC NO. MC1379)

REFERENCE: Federal Register: April 28, 2005 (Volume 70, Number 81); page 22155-  
22156

System Energy Resources, Inc. (SERI) thanks the NRC staff for its review of the Early Site Permit Application and its issuance of the draft Environmental Impact Statement, NUREG-1817. Attachment 1 contains comments for your consideration.

If you have any questions concerning this submittal, please contact me (601-368-5381).

Sincerely,

A handwritten signature in black ink, appearing to read "George A. Zinke".

George A. Zinke  
Project Manager  
System Energy Resources Inc.

Attachment 1

cc: Mr. R. K. Anand, USNRC/NRR/DRIP/RNRP  
Mr. C. Brandt, PNL  
Mr. W. A. Eaton (ECH)  
Mr. J. H. Wilson, USNRC/NRR/DRIP/RLEP  
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COMMENTS ON NUREG-1817 (ENVIRONMENTAL IMPACT STATEMENT  
for an EARLY SITE PERMIT AT THE GRAND GULF SITE)

No.	DEIS Subsection	DEIS Page	DEIS Line	Comment
1	Exec. Summary	xxiii and xxiv		<p>Page xxiii, Lines 26 through 29, the DEIS states: "The purpose of SERI's requested action, issuance of the ESP, is for the NRC to determine whether the Grand Gulf ESP site is suitable for up to two new nuclear units by resolving certain safety and environmental issues before SERI incurs the substantial additional time and expense of designing and seeking approval to construct such units at the site."</p> <p>Page xxiii, Lines 40 through 42 – "This EIS addresses the potential environmental impacts resulting from construction and operation of up to two new nuclear units at the proposed and alternative sites."</p> <p>Page xxiv, Lines 10 through 12 – "the staff determined and evaluated the potential environmental impact of constructing and operating up to two new nuclear units at the Grand Gulf ESP site."</p> <p>Some of the plant types have more than two reactor units; i.e., IRIS, 6 Reactors, GT-MHR, 8 Reactors, PBMR, 16 Reactors, ACR-700, 4 Reactors. Clarification is needed in the EIS to define what the NRC means by two nuclear units. In a footnote in the SSAR PPE Table 1.3-1: "The values in brackets reflects the values corresponding to a plant that is twice the vendor's specified standard size plant, i.e., two ABWR units, two AP1000 units, six IRIS units, two sets of four GT-MHR modules, two sets of eight PBMR modules and two twin ACR-700 units..."</p> <p>Section 3.0 of the ER states: "...The evaluations of the potential environmental effects of the plant are based on bounding information from the Plant Parameters Envelope (PPE) presented in Table 3.0-1 through Table 3.0-8. A description of the development and intended use of the PPE is provided in Section 1.3 of the Site Safety Analysis Report, Part 2 of this Application for an Early Site Permit."</p> <p>Section 1.3 of the SSAR states: "The light-water-cooled technologies considered include the ABWR (Advanced Boiling Water Reactor), the ESBWR (Economic Simplified Boiling Water Reactor), the AP-1000 (Advanced Passive PWR), the IRIS (International Reactor Innovative and Secure), and the ACR-700 (Advanced CANDU Reactor). The ABWR is a single unit, 4300 MWt, 1500 MWe reactor. The ESBWR is a similar BWR, single unit, 4000 MWt, 1390 MWe. The AP-1000 pressurized-water reactor single unit specifications are 3400 MWt and 1117-1150 MWe."</p>

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				<p><i>The IRIS is a three module pressurized-water reactor configuration with a total of 3000 MWt and 1005 MWe. And the ACR-700 is a twin unit, 3964 MWt, 1462 MWe, light-water-cooled reactor with a heavy-water moderator. There were two gas-cooled reactor technologies considered in the PPE development. These gas-cooled reactor technologies are the GT-MHR (Gas Turbine-Modular Helium Reactor), and the PBMR (Pebble Bed Modular Reactor). The GT-MHR is a four module, 2400 MWt, 1150 MWe gas-cooled reactor. The PBMR is an eight module, 3200 MWt, 1280 MWe gas-cooled reactor.</i></p> <p>Section 1.3.1.4 of the SSAR says, in the second paragraph: "...For example, for single reactor units, the types considered represented capacities ranging from 160 MWe to 1500 MWe. In order to facilitate comparison between the different plant types in the PPE, the number of units/modules of a specific reactor type was chosen, based on vendors recommended combinations, to approximate 1000 MWe. This resulted in "single-unit plants" with capacities in the range of 1005 MWe to 1500 MWe."</p> <p>SERI recommends the staff consider the phrase "... one or more new nuclear units ..." as being a more accurate description consistent with the ESP application; this would be consistent with the staff's language on page 7-10, line 38.</p>
2		1-4	39	Same comment as comment 1.
3	2.3	2-11	40	NRC states that Vicksburg MS is about 32 km (20 mi) north of the ESP site. On page xxiii (Executive Summary) and pages 1-5 and 2-63, NRC states that Vicksburg is 40 km (25 mi) from the ESP site. On these pages, NRC also states that Port Gibson is 10 km (6 mi) from the ESP site, while in page 2-3, NRC states that Port Gibson is 8 km (5 mi) from the ESP site. Port Gibson is 6 miles southeast of the site, according to Section 2.1 of the ER.
4	3.0	3-1	9-10	<p>Lines 9 &amp; 10 - the NRC says: "...constructing and operating up to two new nuclear units."</p> <p>Some of the plant types have more than two reactor units; i.e., IRIS, 6 Reactors, GT-MHR, 8 Reactors, PBMR, 16 Reactors, ACR-700, 4 Reactors. See comment 1 above.</p>
5	3.1	3-1	25	Line 25 refers to the "reactor building." Line 21 correctly references the "containment."
6	3.2	3-5	10	Line 10 - Some of the plant types have more than two reactor units; i.e., IRIS, 6 Reactors, GT-MHR, 8 Reactors, PBMR, 16 Reactors, ACR-700, 4 Reactors. See comment 1 above.

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No.	DEIS Subsection	DEIS Page	DEIS Line	Comment
7	3.2	3-6	7-8	Lines 7 & 8 - Some of the plant types have more than two reactor units; i.e., IRIS, 6 Reactors, GT-MHR, 8 Reactors, PBMR, 16 Reactors, ACR-700, 4 Reactors. See comment 1 above.
8	3.2	3-6	16	Line 16 - Some of the plant types have more than two reactor units; i.e., IRIS, 6 Reactors, GT-MHR, 8 Reactors, PBMR, 16 Reactors, ACR-700, 4 Reactors. See comment 1 above.
9		3-11	4-10	<p>Text says: "Bounding effluent concentrations were determined, based on a composite of the highest activity content of the individual isotopes from two surrogate AP1000 reactors (6400 MW(t)), three IRIS reactors (3000 MW(t)), one ABWR reactor (3926 MW(t)), one ESBWR reactor (4000 MW(t)), four GT-MHR modules (2400 MW(t)), and eight PBMR modules (3200 MW(t)). Bounding gaseous effluent releases are found in Table 3.0-7 of the Grand Gulf ESP environmental report (SERI 2003c). Bounding liquid effluent releases are found in Table 3.0-8 of the environmental report (SERI 2003c)."</p> <p>This is not completely correct.</p> <p><b>Liquid releases</b> were determined as follows: As several different plant types are under consideration for the proposed site, a composite release that bounds the potential release from two (2) ABWR units, two (2) AP1000 units and four (4) ACR700 plant types was used. Annual average liquid releases for each of these plant types were compared. The most limiting isotopic releases were identified and then included in the composite release. Note: Westinghouse International Reactor Innovative and Secure (IRIS) specific release information was not available. The AP1000 data was assumed to bound the releases from 3 single IRIS units (3000 MWt, 1005 MWe).</p> <p><b>Gaseous releases</b> were determined as follows: The types of reactors from which the bounding parameters were determined, are:</p> <ul style="list-style-type: none"> <li>• Advanced Boiling Water Reactor (ABWR) – 2 units</li> <li>• Advanced Pressurized Water Reactor (AP1000) – 2 units</li> <li>• Gas Turbine-Modular Helium Reactor (GT-MHR) – 8 modules</li> <li>• Advanced Canada Deuterium Uranium (CanDU) Reactor (ACR-700) – 4 units</li> <li>• International Reactor Innovative and Secure (IRIS) – 6 units</li> </ul> <p>The activity of radionuclides released is obtained from a composite of the releases for each</p>

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				<p>evaluated plant type. For each radionuclide, the highest release for any proposed plant was used for the source term.</p> <p>Also, the thermal power for the ABWR was assumed to be 4300 MWt (assuming a ~10% power uprate from the nominal 3926 MWt).</p>
10		4-9	1-5	<p><u>Construction Impacts on Wildlife.</u> Specific locations of the power block, cooling towers, intake and discharge, pipelines, and borrow sites are "currently unknown" and "would be determined definitely before the CP or COL phase." SERI requests the staff consider revising the phrase "...before the CP ..." to be consistent with page 4-10, line 25-25 ("...prior to or during ...")</p>
11	4.4.2	4-16	40	<p>Sentence beginning on this line and carrying over to Page 4-17 implies that SERI will be responsible for implementing plans for widening a transmission corridor. A more accurate statement would be "NRC expects that SERI will work with the appropriate State agencies <u>and the transmission line owner to develop ...</u>"</p>
12	4.4.3.1	4-20	25	<p>The discussion of potential impacts to the threatened Louisiana black bear appears to be inconsistent. In the 2<sup>nd</sup> paragraph on page 4-20 the NRC states "<i>In summary, the potential impact to the Louisiana black bear from construction at the Grand Gulf ESP site would be considered negligible.</i>" The preferred habitat for the Louisiana black bear is bottomland hardwood, however, they may use upland forests that are adjacent to the bottomland hardwoods (see page 4-18). This discussion does not specifically include transmission line corridors, although, they are mentioned in the introduction to Section 4.4.3 (page 4-16). On page 5-25 (section 5.4.3.1) the NRC states in the discussion of potential impacts to the Louisiana black bear, "<i>Thus, the potential effect from operation of one or more cooling towers for the Grand Gulf ESP facility would be expected to be negligible. The Louisiana black bear would not be expected to be affected by transmission line operation and right-of-way maintenance.</i>" In section 7.4, the NRC describes the potential cumulative impacts to the Louisiana black bear (Page 7-5, 2<sup>nd</sup> paragraph, line 15). They state "<i>However, such an impact would be unlikely, given the relatively small amount of bottomland forested wetland that would be disturbed (22ha[55ac]). Nonetheless, because of the relatively large amount of forest (mostly upland) that would be disturbed by possible expansion of the GGNS Unit 1 power transmission corridors (427 ha [1056 ac]), the staff concludes that the overall contribution of construction to cumulative losses of important species and habitats in the region would be moderate.</i>" This conclusion does not follow directly from the preceding arguments. There is no information on the size of the trees in either the bottomland or</p>

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				upland forests. The Louisiana black bear dens in trees, primarily bald cypress and tupelo gum, with visible cavities, having a diameter at breast height of 3 feet and occurring along rivers, lakes streams, bayous, sloughs, or other water bodies (page 4-19). It appears that additional information was taken into account when reaching the conclusion of moderate cumulative impacts that may not be included in the document.
13	4.9.2	4-46	1	The DEIS states that the maximum total body dose due to gaseous releases from GGNS Unit 1 are 0.13 mrem/qtr (0.0013 mSv/qtr) whereas the ESP ER (Section 4.5.4) states that the dose from gaseous releases is 1.32E-01 mrem/yr.
14				DELETED
15		5-27	21-23	Sentence implies that SERI will be responsible for implementing plans for maintenance of a transmission corridor. Sentence should state "The NRC expects that SERI will work with the appropriate Federal and State agencies <u>and the transmission line owner/operator</u> to develop ..."
16		5-42	10	Some of the plant types have more than two reactor units; i.e., IRIS, 6 Reactors, GT-MHR, 8 Reactors, PBMR, 16 Reactors, ACR-700, 4 Reactors. See comment 1 above.
17		5-48	31	Addresses one unit, similar comment as comment 1; i.e., some of the evaluated plant types included multiple reactor units.
18		5-49	9	Same as comment 1.
19	5.9.2.2	5-49	13-16	The DEIS states "Other parameters used as input to the GASPAR II program (including milk, meat, and vegetable production rates, meteorological data, population data, and consumption factors) are found in Tables 5.4-3 through 5.4-5 of the SERI environmental report (SERI 2003c)." Should reference Tables 5.4-3 through 5.4-7.

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20	5.9.2.2	5-49	26	The values in Table 5-6 are from Revision 0 of the SERI dose calculation vs. Rev. 3 (which incorporated X/Q values based on 2002-2003 met data). In most cases, the listed doses are conservative; however, the site boundary dose increased by ~90% instead of 14% as stated in the section directly above Table 5-6. The doses for all other locations decreased as stated in the text above Table 5-6. There also are some rounding errors in Table 5-6.
21		5-50	27	Same as comment 1.
22		5-50	39	Same as comment 1.
23	5.9.2.2	5-51		Table 5-7 uses values from Revision 0 of the SERI dose calculation instead of Revision 2. Some of the listed values are higher and others are lower than the current results.
24	5.9.3.2	5-51	30	The population dose listed in this section (5.43 person-rem/yr) does not agree with initial submittal results; however, as stated in this section, the revised population doses using 2002-2003 meteorological data and population distributions from the environmental report resulted in lower population doses. Therefore, general conclusion given in this section is valid.
25		5-55	4	Same as comment 1.
26	5.9.5.3	5-55	10	The results given in Table 5-9 do not agree with latest SERI submittal; however, the dose rates listed for gaseous effluents are conservative relative to the latest results. The dose rates due to liquid effluents agree with latest SERI submittal. The total dose/Unit for Heron should be 1.95 instead of 1.96. Some of the total doses listed for Two Units do not reflect multiplying the single unit values by two (possible rounding or consideration of significant figures not shown).
27	5.13	5-85	17	Scott, M.J. 2004. This accession number leads to NUREG 1817 (this document), not the Scott, 2004 reference. The Scott, 2004 reference was located by doing a word search on the title. The reference was included in a more general reference: <i>Enclosed copies of Information at the PNNL gathered and referenced in the Grand Gulf Early Site Permit Environmental Impact Statement</i> . Accession Number: ML050350147.
28	7.6	7-9	32 - 38	This paragraph implies that "historical and cultural resources" could make a detectable contribution to the cumulative effect. However, Lines 13 – 19 on Page 7-9 states that the proposed units would not add to the cumulative impacts to historical and cultural resources beyond that identified in Sections 4.6 and 5.6, which were also considered SMALL. It appears that maybe "historical and cultural resources" should be deleted from Line 35.
29		7-10	39	<u>Cumulative Impacts</u> . The "duration of the proposed action" is listed as "from 2030 to 2070." Since this section is summarizing impact conclusions for both construction and operation, the initiating time could/should precede 2030. It may be better to use the phrase "(construction period plus 40 years of operation)" rather than trying to encompass calendar years.

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30	8.2.2.1	8-8	36	4 <sup>th</sup> paragraph. The last sentence of this paragraph states: "There are no mandatory Class I Federal areas in Mississippi." It does not say anything about Louisiana. The Grand Gulf ESP site is just across the Mississippi River from Louisiana, thus the presence of mandatory Class I Federal areas in Louisiana should be addressed.
31	8.2.2.1	8-10	10-22	1 <sup>st</sup> paragraph. The information presented in this section, and primarily in this paragraph, could lead one to conclude that construction and operation of a coal fired power plant would lead to a HIGH impact on land use, rather than a moderate as stated in the DEIS.
32	8.5.1.2	8-39	40	Recommend that "River Bend Units 1 and 2" be changed to "River Bend Station" since there is only one unit on-site.
33	8.5.1.4	8-45	31	Recommend that "River Bend Units 1 and 2" be changed to "River Bend Station" since there is only one unit on-site.
34	8.5.2.3	8-59	11 - 12	Recommend changing "Massachusetts Department of Environmental Protection" to "Environmental Protection Agency" since the EPA issues the NPDES Permit and administers the NPDES Program. The state agency does not currently have authorization for the NPDES Program.
35		10-7	20-23	<u>Commitment of Resources.</u> "Because the proposed action therefore does not involve commitment of resources, a complete assessment of irreversible and irretrievable commitments of resources would be performed at the CP or COL stage if SERI is granted an ESP and later applies for a CP or COL." See also Ln. 30-31 ("The actual estimate of construction materials would be performed at the CP or COL stage when the reactor design is selected.")  The staff appears to ignore SERI's ER Table 10.1-1 which addresses this issue. SERI urges the staff to conduct an evaluation based on ER data.

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36		10-8	16-21	<p><u>Relationship Between Short-Term Uses and Long-Term Productivity.</u> The staff appears to ignore SERI's ER Section 10.3 which addresses this issue: "In accordance with 10 CFR 52.18, an EIS for an ESP does not need to include an assessment of the benefits of the proposed action. Therefore, an assessment of the evaluation of the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity for the construction and operation of a new nuclear unit would be performed at the CP or COL stage should SERI be granted an ESP and later seek a CP or COL."</p> <p>SERI urges the staff to conduct an evaluation based on ER data.</p>
37	App. I	I-1 and others		<p>Appendix I is referenced from numerous locations in the DEIS text, for example, Sections 1.1.3, 1.2, etc. Appendix I is understood from the discussion in these DEIS sections to contain parameter values used as surrogate for proposed facility for the purposes of evaluating environmental impact in the Application's Environmental Report. However, Appendix I incorrectly presents PPE values from the Application's SSAR (SSAR Tables 1.3-1 and 1.3-2).</p> <p>It is noted that the ER references SSAR 1.3 for general discussion of the PPE concept. It is also recognized that the listings of PPE values supporting safety analyses (SSAR Table 1.3-1, etc.) are similar but not the same as those use for evaluating environmental impacts. The correct (PPE) listings of parameters used for the ER's evaluation of environmental impacts, as discussed in ER Section 3.0, are provided in ER Tables 3.0-1 through 3.0-8. Therefore, Appendix I should present the ER Tables 3.0-1 through 3.0-8 (and Table 3.0-9, if the Staff intended to also include PPE definitions).</p>
38	App. I	I-4, 7, 8		<p>In addition, Appendix I apparently includes some editorial errors in that SSAR Table 1.4-1 is incorrectly reproduced in this appendix. This SSAR table, dealing with compliance to Regulatory Guides, is not relevant and should be deleted from this appendix.</p>