



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

April 16, 2013

Mr. Kevin J. Mulligan
Vice President, Site
Grand Gulf Nuclear Station
Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 39150

SUBJECT: ISSUANCE OF ENVIRONMENTAL SCOPING SUMMARY REPORT
ASSOCIATED WITH THE STAFF'S REVIEW OF THE APPLICATION BY
ENTERGY OPERATIONS, INC., FOR RENEWAL OF THE OPERATING
LICENSE FOR GRAND GULF NUCLEAR STATION (TAC NOS. ME7385 AND
ME7386)

Dear Mr. Mulligan:

The U.S. Nuclear Regulatory Commission (NRC) conducted a scoping process and solicited public comments from December 29, 2011, to February 27, 2012, to determine the scope of the NRC staff's environmental review of the application for renewal of the operating license for Grand Gulf Nuclear Station (GGNS). The scoping process is the first step in the development of a plant-specific supplement to NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants," (GEIS) for GGNS.

As part of the scoping process, the NRC staff held two public environmental scoping meetings in Port Gibson, Mississippi on January 31, 2012, to solicit public input regarding the scope of the review. The NRC staff also received public input via the [regulations.gov](http://www.regulations.gov) Web page. At the conclusion of the scoping process, the NRC staff prepared the enclosed environmental scoping summary report identifying comments received during the scoping period. In accordance with 10 CFR 51.29(b), the NRC staff will send a copy of the scoping summary report to all participants in the scoping process.

The transcripts of the public scoping meetings are available for public inspection in the NRC Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852, or from the NRC's Agencywide Documents Access and Management System (ADAMS). The ADAMS Public Electronic Reading Room is accessible at <http://www.nrc.gov/reading-rm/adams.html>. The transcripts for the afternoon and evening meetings are listed under Accession Numbers ML12037A222 and ML12037A223, respectively. Persons who encounter problems in accessing documents in ADAMS should contact the NRC's PDR reference staff by telephone at 1-800-397-4209 or 301-415-4737 or by e-mail at pdr.resource@nrc.gov.

K. Mulligan

- 2 -

The draft supplement to the GEIS is scheduled to be issued in July 2013. A notice of the availability of the draft document and the procedures for providing comments will be published in the *Federal Register*. If you have any questions concerning the NRC staff's environmental review of the GGNS license renewal application, please contact Mr. David Drucker, Senior Project Manager, at 301-415-6223 or by e-mail at david.drucker@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "D. J. Wrona", with a horizontal line extending to the right.

David J. Wrona, Chief
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-416

Enclosure:
As stated

cc w/encl: Listserv

K. Mulligan

- 2 -

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Sincerely,

/RA/

David J. Wrona, Chief
Projects Branch 2
Division of License Renewal
Office of Nuclear Reactor Regulation

Docket No. 50-416

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As stated

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NAME	DDrucker	IKing	DWrona	MWong	BMizuno	JLubinski
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OFFICE	BC:DLR:RPB2					
NAME	DWrona					
DATE	4/16/13					

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**Environmental Impact Statement
Scoping Process**

Summary Report

**Grand Gulf Nuclear Station
Port Gibson, Mississippi**

April 2013



**U.S. Nuclear Regulatory Commission
Rockville, Maryland**

Introduction

The U.S. Nuclear Regulatory Commission (NRC) received an application from Entergy Operations, Inc. (Entergy), dated October 28, 2011, for renewal of the operating license for Grand Gulf Nuclear Station (GGNS). GGNS is located in Claiborne County, Mississippi. The purpose of this report is to provide a concise summary of the determinations and conclusions reached, including the significant issues identified, as a result of the scoping process in the NRC's environmental review of the GGNS license renewal application.

As part of the application, Entergy submitted an environmental report (ER) (Entergy 2011) prepared in accordance with Title 10 of the *Code of Federal Regulations* (CFR) Part 51 (10 CFR Part 51) which contains the NRC requirements for implementing the National Environmental Policy Act of 1969 (NEPA). The requirements for preparation and submittal of ERs to the NRC are outlined in 10 CFR 51.53(c)(3) and 10 CFR 51.45.

The requirements in Section 51.53(c)(3) were based upon the findings documented in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS) (NRC 1996), (NRC 1999). In the GEIS, the NRC staff identified and evaluated the environmental impacts associated with license renewal. After issuing a draft version of the GEIS, the NRC staff received and considered input from Federal and State agencies, public organizations, and private citizens before developing the final document. As a result of the assessments in the GEIS, a number of impacts were determined to be generic to all nuclear power plants (or, in some cases, to plants having specific characteristics such as a particular type of cooling system). These generic issues were designated as "Category 1" impacts. An applicant for license renewal may adopt the conclusions contained in the GEIS for Category 1 impacts unless there is new and significant information that may cause the conclusions to differ from those of the GEIS. Other impacts that require a site-specific review were designated as "Category 2" impacts and are required to be evaluated in the applicant's ER. The Commission determined that the NRC does not have a role in energy-planning decision-making for existing plants. Therefore, an applicant for license renewal need not provide an analysis of the need for power or the economic costs and benefits of the proposed action.

On December 29, 2011, the NRC initiated the scoping process by issuing a *Federal Register* notice (76 FR 81996). This notified the public of the NRC staff's intent to prepare a plant-specific supplement to the GEIS regarding the application for renewal of the GGNS operating license. The plant-specific supplement to the GEIS is also referred to as the Supplemental Environmental Impact Statement or SEIS. The SEIS will be prepared in accordance with 10 CFR Part 51.

The scoping process provides an opportunity for public participation to identify issues to be addressed in the SEIS and to highlight public concerns and issues. Consistent with 10 CFR 51.29(a), the notice of intent identified the following objectives of the scoping process:

- Define the proposed action
- Determine the scope of the SEIS and identify significant issues to be analyzed in depth
- Identify and eliminate peripheral issues

- Identify any environmental assessments and other environmental impact statements being prepared that are related to the SEIS
- Identify other environmental review and consultation requirements
- Indicate the schedule for preparation of the SEIS
- Identify any cooperating agencies
- Describe how the SEIS will be prepared

The NRC's proposed action is whether to renew the GGNS operating license for an additional 20 years.

The scope of the SEIS includes an evaluation of the environmental impacts of GGNS license renewal and reasonable alternatives to license renewal. The 'Scoping Comments and Responses' section of this report includes specific issues identified by the comments. The subsequent NRC staff responses explain if the issues will be addressed in the SEIS and, if so, where in the report they will likely be addressed.

Throughout the scoping process, the NRC staff identified and eliminated peripheral issues. This report provides responses to comments that were determined to be out of the scope of the license renewal application environmental review.

The NRC recently granted a license amendment request for an extended power uprate at GGNS. In accordance with 10 CFR 51.21, the NRC prepared an Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI) for this action. The EA was published in the *Federal Register* (77 FR 41814) and can be found at Accession No. ML12167A257.

In order to meet the requirements of Section 7 of the Endangered Species Act, the NRC staff consulted with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service. In order to fulfill its obligations under the National Historic Preservation Act, the NRC staff is consulting with the Advisory Council on Historic Preservation, and the Mississippi and Louisiana State Historic Preservation Offices.

The NRC staff expects to publish the draft SEIS in July 2013.

The NRC staff did not identify any cooperating agencies for this review. The NRC, as an independent regulatory agency, routinely and extensively consults with Federal, State, Tribal, and local entities during development of environmental impact statements and environmental assessments.

The SEIS will be prepared by NRC staff with contract support from Argonne National Laboratory, Pacific Northwest National Laboratory, and the Center for Nuclear Waste Regulatory Analyses.

The NRC invited the applicant; Federal, State, and local government agencies; Tribal governments; local organizations; and individuals to participate in the scoping process by providing oral comments at the scheduled public meetings or by submitting written comments before the end of the scoping comment period on February 27, 2012.

The scoping process included two public meetings which were held on January 31, 2012, at the Port Gibson City Hall, 1005 College Street, Port Gibson, MS 39150. The NRC issued press releases, purchased newspaper advertisements, and distributed flyers locally to advertise these meetings. Thirty-two people attended the meetings. Each session began with NRC staff members providing a brief overview of the license renewal process and the National Environmental Policy Act (NEPA) environmental review process. Following the NRC's prepared statements, the floor was opened for public comments. The official transcripts for both meetings are publicly available at the NRC Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852, or from the NRC's Agencywide Documents Access and Management System (ADAMS). The ADAMS Public Electronic Reading Room is accessible at <http://www.nrc.gov/reading-rm/adams.html>. The transcripts for the afternoon and evening meetings are found at ADAMS Accession Nos. ML12037A222 and ML12037A223, respectively. A summary of the scoping meetings was issued on February 28, 2012, and is found at ADAMS Accession No. ML12044A151. Persons who encounter problems in accessing documents in ADAMS should contact the NRC's PDR Reference staff by telephone at 1-800-397-4209 or 301-415- 4737 or by e-mail at pdr.resource@nrc.gov.

At the conclusion of the scoping period, the NRC staff reviewed the transcripts, meeting notes, and all written material received in order to identify individual comments. The comments received during the scoping process and the NRC staff's responses to those comments are documented in this report.

Table 1 identifies the individuals who provided comments and an accession number to identify the source document of the comments in ADAMS.

TABLE 1. Individuals Who Provided Comments during the Scoping Comment Period

Commenter	Affiliation (If Stated)	Comment Source	ADAMS Accession Number
Jan Hillegas	Green Party of Mississippi	Regulations.gov	ML12060A334
Fred Reeves	Mayor of Port Gibson	Evening transcript	ML12037A223
Debra Chambliss	City of Port Gibson	Evening transcript	ML12037A223

Note - No comments were received during the afternoon meeting.

Three attendees provided oral comments at the meetings. One individual, Ms. Jan Hillegas, submitted written comments which encompassed her oral comments. Therefore, only her written comments (ADAMS Accession No. ML12060A334) will be responded to in this report. Ms. Hillegas provided 10 of the 12 comments. Comments that do not specifically identify the commenter were provided by Ms. Hillegas. The formatting of the comment in the source document is not necessarily preserved.

The SEIS will address both Category 1 and 2 issues along with any new information identified as a result of the scoping process. The SEIS will rely on conclusions supported by information in the GEIS for Category 1 issues and will include analysis of Category 2 issues and any new and significant information. The NRC will issue a draft SEIS for public comment. The draft

SEIS comment period will offer the next opportunity for the applicant, interested Federal, State, and local government agencies, Tribal governments, local organizations, and other members of the public to provide input to the NRC's environmental review process. The comments received on the draft SEIS will be considered in the preparation of the final SEIS. The final SEIS, along with the NRC staff's safety evaluation report (SER), will provide much of the basis for the NRC's decision on the Entergy application to renew or not to renew the license of GGNS.

Grand Gulf Nuclear Station Scoping Comments and Responses

1. Seismicity

Comment: In a news release January 31, 2012, for Earthquake Awareness Week, the Mississippi Emergency Management Agency said in part: "The New Madrid seismic zone stretches 40 miles wide and 200 miles long and affects parts of Illinois, Missouri, Ohio, Indiana, Kentucky, Tennessee, Mississippi and Arkansas. Between 1811 and 1812, a series of earthquakes near New Madrid, Missouri were felt as far south as the Mississippi Gulf Coast, according to the U.S. Geological Service. River banks on the Mississippi River caved in as far south as Vicksburg, even though Vicksburg is more than 300 miles from the epicenter." (www.msema.org) Vicksburg is about 200 miles north of the Mississippi Gulf Coast and about 25 miles north of Grand Gulf.

After noting that "The New Madrid seismic zone ... is the most seismically active area of the United States east of the Rockies," the U.S. Geological Survey "estimates the chance of having an earthquake similar to one of the 1811-12 sequence in the next 50 years is about 7 to 10 percent, and the chance of having a magnitude 6 or larger earthquake in 50 years is 25 to 40 percent.... the New Madrid region has high earthquake hazard." (<http://geology.com/usgs/new-madrid-seismic-zone/>)

A U.S. Geological Survey report on Gulf Coast faults summarized that, "the belt of gulf-margin normal faults from Florida through Texas has strikingly low historical seismicity; the stress field and seismogenic potential of the underlying crust are unknown; and, therefore, the ability of the fault belt to generate significant seismic ruptures that could cause damaging ground motion is unclear. [emphasis added] Accordingly, the fault belt is assigned to class B." However, it also noted that, "some of the sparse seismicity in the normal-fault belt may be artificially induced. Earthquakes of m bLg 3.4 and 3.9 in southeastern Texas and M 4.9 in southwestern Alabama may have been induced by extraction of oil and gas or injection of fluids for secondary recovery." (http://geohazards.usgs.gov/cfusion/qfault/qf_web_disp.cfm?qfault_or=1237&qfault_id=2655) [emphasis added] While Claiborne County, where Grand Gulf NS is located, apparently has no oil wells, Jefferson County adjacent to the south has at least 23 major or minor wells, and there are hundreds in other counties of southwest Mississippi.

The NRC's Environmental Review needs to evaluate each of these factors and report all findings.

Response: *The NRC requires all licensees to take seismic activity into account in order to maintain safe operating conditions at all nuclear power plants. The NRC regulatory requirements for seismic activity apply to nuclear power plants operating under an initial license and those operating during the license renewal term.*

Seismic conditions were considered in the original design of nuclear power plants. When new seismic hazard information becomes available, the NRC evaluates the new data to determine if any changes are needed at existing plants regardless of whether or not a plant has renewed its license.

Unrelated to license renewal, the NRC conducted a risk assessment of recent updates to estimates of the seismic hazard in the central and eastern United States. This assessment found that: (1) operating nuclear power plants are safe; (2) some seismic hazard estimates have increased; and, (3) the assessment will continue to its next phase to consider actions to reduce seismic risk at nuclear power plants. This assessment, called Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants," is summarized in NRC Information Notice 2010-18, dated September 2, 2010 (ADAMS Accession No. ML101970221).

The NRC continues to evaluate and act on the lessons learned from the March 2011 nuclear accident in Japan to ensure that appropriate safety enhancements are implemented at nuclear power plants here in the U.S. This effort has assumed the work of Generic Issue 199. For further information on the NRC's continued response to this accident visit: <http://www.nrc.gov/reactors/operating/ops-experience/japan-info.html>

Insofar as this comment suggests that a seismic event during the period of license renewal could result in environmental impacts, such impacts will be considered in Chapter 5 of the SEIS.

2. Fire

Comment: At the evening meeting in Port Gibson on January 31, 2012, I noted that in past years, there "has been quite [a] small number of fire departments, vehicles, [and] personnel in the county" and asked, "what assurance could people in this community have that ... fire could be put out before it caused a problem?" (Transcript, pp. 31-32) Rich Smith, NRC resident inspector, said that, "the state would bring as many people in as possible or try to mitigate it. As far as the plant itself, they have their procedures and ... they would take the appropriate actions to protect the plant and also protect the public.... What you have is a fire brigade made up of operators that respond ... and then they have agreements with the local fire departments to come and assist them if needed.... there would be ample amount of response from both state and even federal agencies, if necessary, to protect the plant." When I asked about "the status of fire stations and personnel at this time," no one present knew the answer. Please provide an answer to that. And the NRC's Environmental Review needs to evaluate local, state and federal resources available to handle a major fire with high winds, as I asked (Transcript, pp. 33-34), and include an evaluation of that scenario taking place early on a Sunday morning on a holiday weekend and other possible times.

Response: *The NRC requires a robust fire protection program at every nuclear power plant in the United States. The NRC regulatory requirements for fire protection apply to nuclear power plants operating under an initial license and those operating in the license renewal term.*

The regulations pertaining to fire protection at nuclear power plants are found in 10 CFR 50.48, Appendix A to 10 CFR Part 50 General Design Criterion 3, and Appendix R to 10 CFR Part 50. The NRC oversees fire protection at nuclear power plants through its ongoing inspection and oversight which includes systematic quarterly, annual, and triennial fire protection inspections. Inspection reports that discuss the fire brigade at GGNS include the most recent triennial fire inspection report (ADAMS Accession No. ML112650258) and NRC Integrated Inspection Report Number 05000416/2012002 (ADAMS Accession No. ML12125A277).

This comment is not within the scope of license renewal and will not be evaluated further in development of the SEIS.

3. Waste Management

Comment: I did not receive an answer to my question (Transcript, p. 35) about “the approximate square footage or cubic yards” of radioactive waste now on site and “how much more accumulates every year.” Mr. Smith’s answer (Transcript, pp. 36-38) in terms of bundles, canisters, and so on, gave no dimensions. Please provide the dimensions and capacities of the containers and of the stored waste. And the NRC’s Environmental Review needs to calculate and evaluate the onsite storage of spent fuel under current and other possible conditions through at least 2044.

Response: *There are two broad classifications of radioactive waste generated at GGNS: high-level and low-level waste. High-level radioactive waste results primarily from the fuel that has been used in a nuclear power reactor and is “spent” or is no longer efficient in generating power to the reactor to produce electricity. Low-level radioactive waste results from reactor operations and typically consists contaminated protective shoe covers and clothing, wiping rags, mops, filters, reactor water treatment residues, equipment, and tools.*

GGNS does not permanently store low-level radioactive waste on site. As stated on page 3-16 of the applicant’s Environmental Report (ADAMS Accession No. ML11308A234): GGNS transports low level radioactive waste to a licensed processing facility in Tennessee where the wastes are further processed prior to being sent to a facility such as EnergySolutions in Clive, Utah.

GGNS stores its spent nuclear fuel in its spent fuel pool and in dry casks. The spent fuel pool is a strong structure, constructed of steel-reinforced concrete walls with a stainless steel liner, and filled with water. The spent fuel pool is located inside the plant’s protected area. The NRC regularly inspects GGNS’s spent fuel storage program to ensure the safety of the spent fuel stored in the spent fuel pool.

GGNS also stores spent nuclear fuel in NRC approved dry cask canisters made of leak-tight welded and bolted steel. These containers are approximately 16 feet high with an approximate exterior diameter of 6 feet. A canister with spent fuel is placed in a concrete cask forming a dry cask storage system. A typical dry cask storage system is detailed at the following website: <http://www.nrc.gov/waste/spent-fuel-storage/diagram-typical-dry-cask-system.html>. The concrete casks used at GGNS are approximately 20 feet high with an exterior diameter of 11 feet and are stored on a concrete pad within a secure area. The NRC regularly inspects GGNS’s dry cask storage system to ensure it complies with NRC requirements. The latest NRC inspection report of the GGNS ISFSI is available at ADAMS Accession No. ML12303A002.

As reported on page 5 of the GGNS ISFSI Inspection Report 05000416/2012009 (ADAMS Accession No. ML12303A002) dated October 26, 2012: “The current ISFSI pad can hold 40 casks with provisions for four additional spaces to allow for cask unloading, if required. Future plans are to add a second pad that will increase the capacity of the ISFSI to 88 storage locations with 4 spare locations.” Currently, 17 GGNS ISFSI storage locations are occupied. Every other year, GGNS adds five to seven casks to the ISFSI.

The existing license expiration date for GGNS is November 1, 2024. The requested renewal would extend the license expiration date to November 1, 2044. The NRC's safety requirements for the storage of spent nuclear fuel during licensed operations ensures that the expected increase in the volume of spent fuel during the license renewal term can be safely stored on site with small environmental effects.

Determining the square feet, cubic yards, and bundles of GGNS spent fuel is not necessary for the license renewal environmental review decision-making process.

High-level radioactive waste will be addressed in Chapter 6 of the SEIS.

4. Extended Power Uprate

Comment: Mayor Fred Reeves asked "what effect would the current upgrade at Grand Gulf have to do with the process?" (Transcript, p. 39) The only answer he was given was that "The EPU process that [is] currently ongoing is its own independent process. There are aspect[s] of the plant modifications that are going on that could impact our review, but we have processes in place to account for that." (Transcript, pp. 39-40) Please provide Mayor Reeves and me with an actual answer to his question: What effect will the upgrade have on the processing of the application for license renewal? The NRC's Environmental Review needs to evaluate all aspects of the upgraded plant, after it has been operating at the upgraded capacity, before being able to make a credible report on the environmental impacts of consuming more land and water, having more personnel on-site, storing more spent fuel, transporting low-level waste, etc.

Comment from Mayor Reeves: My other question is what effect would the current upgrade at Grand Gulf have to do with the process? Would that have an impact on the process?

Response: *This comment expresses concern that the NRC's license renewal review should consider the impacts of the GGNS extended power uprate (EPU) license amendment request. The NRC granted the EPU license amendment request for GGNS on July 18, 2012 (ADAMS Accession No. ML121210020). In accordance with 10 CFR 51.21, the NRC prepared an Environmental Assessment (EA) with a Finding of No Significant Impact (FONSI) for the EPU. The EA was published in the Federal Register (77 FR 41814) on July 16, 2012, and can be found at ADAMS Accession No. ML12167A257.*

The license renewal environmental review process for GGNS considers environmental impacts based on the reactor power level requested in the EPU license amendment request. The impacts on land use, water, and socioeconomics will be discussed in Chapter 4; and, the impacts on spent fuel, low-level waste, and transportation will be discussed in Chapter 6 of the SEIS.

5. Fukushima Response

Comment: At the Port Gibson meeting, I asked "how far in advance the disaster at Fukushima was predicted" and "how the standards of the Japanese equivalent of the NRC compare with the standards of the US NRC in relation to the various safety and emergency preparedness things that were relevant to Fukushima" (Transcript, pp. 42, 45-46). When no one could answer, I said, "But you are the people who are in charge of figuring out whether Grand Gulf meets US standards.... it seems to me that it's very much within your job description to become familiar with how the standards compare and how the predictability of disasters figures into this

and therefore the preparedness for the expected or the unexpected, all of those things. That's why all of this is so important." (Transcript, p. 46, emphasis added) The NRC's Environmental Review needs to evaluate the relevance to Grand Gulf of US NRC standards for safety and preparedness vis-a-vis Japanese standards in light of the Fukushima challenge and response, including the radioactive water and waste continuing to spill into the Japanese environment a year later.

Response: *The NRC continues to evaluate and act on the lessons learned from the 2011 nuclear accident in Japan to ensure that appropriate safety enhancements are implemented at nuclear power plants here in the U.S. In accordance with Commission direction, the NRC's activities are being led by a steering committee comprised of senior NRC management.*

On March 12, 2012, the NRC issued the first regulatory requirements for the nation's operating reactors based on the lessons learned at Fukushima Daiichi. The NRC issued three orders requiring safety enhancements of operating reactors, construction permit holders, and combined license holders. These orders require nuclear power plants to implement safety enhancements related to (1) mitigation strategies to respond to extreme natural events resulting in the loss of power at plants, (2) ensuring reliable hardened containment vents, and (3) enhancing spent fuel pool instrumentation. The plants are required to promptly begin implementation of the safety enhancements and complete implementation within two refueling outages or by December 31, 2016, whichever comes first. In addition, the NRC issued a request for information, requesting each reactor reevaluate the seismic and flooding hazards at its site using present-day methods and information, conduct walkdowns of its facilities to ensure protection against the hazards in its current design basis, and reevaluate its emergency communications systems and staffing levels.

For further information on the NRC's continued response to the Japan Nuclear Accident visit: <http://www.nrc.gov/reactors/operating/ops-experience/japan-info.html>

As applicable, lessons learned from the Japan response will be applied to all operating nuclear power reactors regardless of whether they are undergoing a license renewal application review. These lessons learned will apply to nuclear power reactors operating under an initial license and those operating in the license renewal term.

This comment is not within the scope of license renewal and will not be evaluated further in development of the SEIS.

6. Plant Operation/Flooding

Comment: When I asked at the Port Gibson meeting "about how many occasions or how many days was the level of the Mississippi River above flood stage?" (Transcript, p. 47), Mr. Smith responded with "feet mean sea level" and "buffer," giving numbers from 132 feet to 53 feet. He also claimed that "a flooding event is not in the design base as an accident that is credible that could occur at Grand Gulf that would cause a core-damaging event." (Transcript, pp. 48-52) I would appreciate a clear answer to my first question and to my follow up question: "What was the historically highest level of the river, and then how many more feet would it have had to rise above what it has in 27 years or historically to cause a problem at the plant, and what kind of a problem would be caused by those additional feet[?]" (Transcript, p. 50) The NRC's Environmental Review needs to evaluate the potential for flooding and the possible impacts at the historically highest level of the lower Mississippi River as well as a few feet above that level.

Response: *Operating nuclear power plants were sited in consideration of the hydrologic siting criteria set forth in 10 CFR 100.21, and designed and constructed in accordance with 10 CFR Part 50, Appendix A. These regulations require that plant structures, systems, and components important to safety be designed to withstand the effects of natural phenomena including flooding, without loss of capability to perform safety functions. If new information or operating experience relating to flooding becomes available, the NRC evaluates the new information to determine if any changes are needed at existing plants.*

The words "flood stage" mean the water level of a stream as read by a gauge at a particular location, measured from the level at which a flowing body of water threatens lives, property, or commerce. The location nearest GGNS where flood stage is measured is in Vicksburg, Mississippi. Flood stage at Vicksburg is 43 feet above mean sea level (MSL). The U.S. Geologic Survey reports that flood stage was reached or exceeded at Vicksburg on four occasions from October 2007 through September 2011 (USGS 2012). The U.S. Army Corps of Engineers reports that the highest recorded flood stage at Vicksburg was 57.1 feet MSL and occurred in 2011 (USACE 2012).

GGNS is located in Claiborne County, Mississippi, about 25 miles south-southwest of Vicksburg. The western boundary of GGNS is the Mississippi River. GGNS is about equally divided between the floodplain adjacent to the river and hilly uplands. The floodplain is at elevations of 55 to 75 feet MSL and approximately 1 mile wide. The eastern half of GGNS rises from the flood plain to a hilly upland with ground elevations from about 80 feet to more than 200 feet MSL.

The plant site is located in the uplands at an elevation of 132.5 feet MSL. During the highest recorded flood stage of 57.1 feet MSL at Vicksburg, the river water elevation near GGNS reached approximately 93 feet MSL. The plant site is almost 40 feet above water levels observed near GGNS when the highest flood stage was recorded. In addition, there are levees on the west bank of the river near GGNS with a top elevation of 103 feet MSL. River water rising above 103 feet MSL near GGNS would overtop the levees and flow west, away from the plant site.

Flood protection from events not associated with Mississippi River flooding, such as a heavy rainfall event east of the plant site, are considered during site-specific safety reviews and, more specifically, are addressed on an ongoing basis through the NRC's Reactor Oversight Process and other NRC safety programs, which are separate from the license renewal process. The most recent flood protection inspection results at GGNS are documented in NRC Integrated Inspection Report Number 05000416/2012005 (ADAMS Accession No. ML13042A373).

The NRC regulatory requirements for flood protection apply to nuclear power plants operating under an initial license and those operating in the license renewal term.

This comment is not within the scope of license renewal and will not be evaluated further in development of the SEIS.

7. Emergency Planning/Evacuation Routes

Comment: I asked at the afternoon session (Afternoon Transcript, p. 28) whether the NRC considers it "safe to have an evacuation route that runs ... on the one road back past the plant."

I have raised the same concern several times in the past. The affirmative answer from NRC's Nate Ferrer continues to defy logic, in my opinion. The NRC's Environmental Review needs to evaluate the possible impacts on safe evacuation in scenarios including several dozen children visiting Grand Gulf Military Park, which is near but beyond the nuclear plant on the only road in or out, on a day when hard rains have made dirt or poorly paved roads impassable even on foot. And adequacy of the roads away from the plant, through and out of Port Gibson in case of emergency, needs to be evaluated considering potential numbers of permanent and temporary residents including construction workers, peak tourist numbers for local events, travelers who intend to pass through on local roads or the Natchez Trace Parkway, farm and domestic animals, etc.

Response: *Vehicular traffic departing Grand Gulf Military Monument Park is not limited to one road that passes by GGNS. There are three routes away from Grand Gulf Military Monument Park and only one of these passes the north entrance to GGNS.*

Evacuations are performed under the direction of local and State law enforcement officials. Law enforcement officials select the appropriate route for vehicular traffic based in part on local conditions at the time of the evacuation.

Emergency planning is not within the scope of the license renewal as it is addressed as a current licensing issue on an ongoing basis. The NRC regulatory requirements for emergency planning apply to nuclear power plants operating under an initial license and those operating during the license renewal term.

The NRC has regulatory requirements under 10 CFR Part 50 to ensure that licensees have adequate emergency planning and evacuation programs in place in case of an accident/emergency scenario. Such plans are evaluated by the NRC and coordinated with the Federal Emergency Management Agency (FEMA) and local authorities for implementation. Drills and exercises are conducted periodically to verify the adequacy of the plans. Issues identified during such exercises are resolved within the context of the current operating license and are not reevaluated as part of license renewal.

FEMA After Action Reports and Communication Related to Specific Emergency Exercises document the Radiological Emergency Preparedness Program exercises for nuclear power plants. The most recent FEMA report documents a GGNS exercise conducted in November 2011 (ADAMS Accession No. ML12101A230). This report states: "Based on the results of the exercise, the offsite radiological emergency response plans and preparedness for the GGNS and the affected local jurisdictions are deemed adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency".

This comment is not within the scope of license renewal and will not be evaluated further in development of the SEIS.

8. Plant Operations/Performance

Comment: Ms. Debra Chambliss with the City of Port Gibson asked, "over the 27 years that Grand Gulf has been in operation, has there been any environmental or safety issues that the NRC has had to rectify at Grand Gulf?" (Transcript, p. 52) Mr. Smith's response indicated that there have been some "white findings" in his four years at the plant but he gave no particulars.

(Transcript, pp. 53-54) Please tell Ms. Chambliss and me the answer to her question about the 27 years of operation, with dates and summaries of the events or issues and the resolutions. And the NRC's Environmental Review needs to evaluate whether the operator's record for the 27 years shows sufficient attention to detail in prevention of "white findings" or worse that it can safely operate an expanded unit as it further ages over 20 more years beyond 2024, as proposed.

Comment from Ms. Debra Chambliss: My question is, over the 27 years that Grand Gulf has been in operation, has there been any environmental or safety issues that the NRC has had to rectify at Grand Gulf?

Response: *The NRC evaluates plant safety performance by analyzing two distinct inputs: inspection findings resulting from NRC's inspection program and performance indicators (PIs) reported by the licensee. Both inspection findings and PIs are evaluated and given a color designation based on their safety significance. Green inspection findings indicate a deficiency in licensee performance that has very low risk significance and therefore has little or no impact on safety. Green PIs represent acceptable performance and likewise have little or no impact on safety. Both green inspection findings and PIs allow for licensee initiatives to correct performance issues before increased regulatory involvement is warranted. White, yellow, or red inspection findings or PIs each, respectively, represents a greater degree of safety significance and therefore, trigger increased regulatory attention.*

NRC Inspection Findings for each plant are documented in inspection reports and posted on the plant public website along with the PIs. Performance results for GGNS are available at http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/GG1/gg1_chart.html. The NRC addresses any performance issues, as necessary.

Historical snapshots of plant performance since 2000 are available on the [Historical Performance from Previous Quarters](#) page. These include inspection findings and performance indicators.

There is no one location that provides a consolidated history of safety issues since GGNS began operations and this information would not add value to the license renewal environmental review decision-making process. The NRC's environmental review is confined to environmental matters relevant to the extended period of operation requested by the applicant. Operational safety issues are outside the scope of the environmental review.

The NRC assessment of plant safety performance is continuous and applies to nuclear power plants operating under an initial license and those operating during the license renewal term.

As required by NRC regulation 10 CFR 51.45(d), the applicant reported the GGNS status of compliance with environmental regulations from 2006–2010 in Chapter 9 of the Environmental Report (Entergy 2011). Five years provides a data set that covers a broad range of activities that occur at a nuclear power plant, including refueling outages, non-refueling outage years, routine operation, and years where there may be significant maintenance activities. There is no one location that provides a history of GGNS environmental issues since operations began and this information would not add value to the license renewal environmental review decision-making process.

This comment is not within the scope of license renewal and will not be evaluated further in development of the SEIS.

9. Extended Power Uprate/Process

Comment: I asked about the date of the announcement of what turns out to have been a “license amendment request” (Transcript, p. 61) to increase the capacity of Grand Gulf, which was granted without general public knowledge and the expansion is now under construction. Please provide the date of that request and the steps in the process between the filing of the request and the commencement of expansion, including any required public notices, meetings or comment periods, and whether those included any news releases in addition to *Federal Register* publication or legal ads. The NRC’s Environmental Review needs to evaluate all aspects of the impacts of the additional capacity on Grand Gulf, the Mississippi River, and all people and properties possibly affected by any catastrophic events at the expanded plant.

Response: *This comment incorrectly asserts that an extended power uprate (EPU) license amendment request to increase the maximum reactor core power operating limit at GGNS was granted on or before February 27, 2012. This comment was received on February 27, 2012, and at that time a decision to grant or deny the EPU request had not been made.*

Entergy Operations, Inc., et al., submitted an EPU license amendment request (ADAMS Accession No. ML1002660403) on September 8, 2010, supplemented by 47 letters, dated from November 18, 2010 to June 12, 2012.

The NRC published a Notice of Consideration of Issuance of Amendments to Facility Operating Licenses, Proposed No Significant Hazards Consideration Determination, and Opportunity for a Hearing in the Federal Register (76 FR 1464) on January 11, 2011, regarding the GGNS EPU license amendment request with a 60-day public comment period. The NRC made a proposed determination that the GGNS EPU amendment request involved no significant hazards consideration. Under the NRC regulations in 10 CFR 50.92, this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. No comments were received on this notice.

In addition, in accordance with 10 CFR 51.21, the NRC prepared a draft Environmental Assessment (EA) with a preliminary Finding of No Significant Impact (FONSI) for the proposed action. The draft EA was published in the Federal Register (77 FR 27804) with a 30-day public comment period that ended on June 11, 2012. No comments were received on this draft EA. The final EA was published in the Federal Register (77 FR 41814) on July 16, 2012, and can be found at ADAMS Accession No. ML12167A257. The EPU license amendment request was granted on July 18, 2012, and can be found at ADAMS Accession No. ML121210020.

The license renewal environmental review process for GGNS considers environmental impacts based on the reactor power level requested in the EPU license amendment request. The environmental impacts on GGNS and vicinity will be discussed in Chapter 4 and the environmental impacts of postulated accidents will be discussed in Chapter 5 and Appendix F.

10. Plant Operations/Steam Dryer

Comment: Please tell me the actions to date and any proposed or possible actions of the NRC staff regarding its recent discovery of “errors in GE Hitachi’s modeling of its ESBWR nuclear reactor design ... steam dryer ... when reviewing an application by Entergy to increase the power output of Grand Gulf nuclear plant.” NRC staff was to have met with GEH on January 31. (www.platts.com/RSSFeedDetailedNews/RSSFeed/ElectricPower/3908606) Please also tell me the staff’s evaluation of the potential consequences of the flawed design – which presumably had been reviewed extensively and approved by both GEH and Entergy – if the NRC staff had not in fact discovered the error and the flawed steam dryer had been installed at Grand Gulf and was operational. The NRC’s Environmental Review needs to evaluate how such design flaws got to the late stage of development without discovery, whether the design processes are sufficiently safe for other critical components, what corrective actions are needed to identify other possibly flawed designs in installed components, and the range of potential problems of any flawed designs.

Response: *This comment is concerned with the review of the steam dryer design associated with the Economic Simplified Boiling-Water Reactor (ESBWR) and its potential impact at GGNS. In its Extended Power Uprate (EPU) license amendment request for GGNS, Entergy referenced a generic General Electric Hitachi (GEH) steam dryer evaluation methodology (Plant Based Load evaluation (PBLE) methodology) that was reviewed and approved by the NRC as part of the ESBWR review. The discovery of errors in this methodology resulted in NRC revisiting its review of the GEH PBLE methodology. It also resulted in Entergy submitting a plant-specific application of the GEH PBLE methodology for the GGNS replacement steam dryer rather than relying on the generic review performed earlier. The NRC staff evaluation of the structural integrity of the GGNS replacement steam dryer addressed all of the issues identified from the errors discovered in the steam dryer evaluation methodology. The NRC staff has concluded that the GGNS replacement steam dryer has adequate safety margin at projected EPU conditions. In addition, the GGNS replacement steam dryer has been instrumented to verify the methodologies used in the evaluation during power ascension. The EPU license amendment request was granted on July 18, 2012, and can be found at ADAMS Accession No. ML121210020.*

The NRC’s environmental review is confined to environmental matters relevant to the extended period of operation requested by the applicant. Replacement steam dryer design issues are addressed through ongoing licensing activities.

This comment is not within the scope of license renewal and will not be evaluated further in development of the SEIS.