EDO Principal Correspondence Control

FROM: DUE: 05/18/06

EDO CONTROL: G20060404
DOC DT: 04/14/06
FINAL REPLY:

Graham B. Wallis, ACRS

TO:

Reyes, EDO

FOR SIGNATURE OF : ** GRN ** CRC NO:

Reyes, EDO

DESC:

Grand Gulf Early Site Permit Application: Evaluation of Transportation Accidents on the Mississippi River

ROUTING:

Reyes
Virgilio
Kane
Silber
Dean
Cyr/Burns
Paperiello,RES
Mallett, RIV
Sosa, OEDO
ACRS File

DATE: 04/18/06

ASSIGNED TO: CONTACT:

NRR Dyer

SPECIAL INSTRUCTIONS OR REMARKS:

Prepare response to ACRS for the signature of the EDO. Add Commissioners and SECY as cc's.

USE SUBJECT LINE IN RESPONSE.

Template: EDO-001

E-RIDS: EDO-01

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

April 14, 2006

Mr. Luis A. Reyes
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

SUBJECT: GRAND GULF EARLY SITE PERMIT APPLICATION: EVALUATION OF TRANSPORTATION ACCIDENTS ON THE MISSISSIPPI RIVER

Dear Mr. Reyes:

During the 531st meeting of the Advisory Committee on Reactor Safeguards, April 5-7, 2006, we met with representatives of the NRC staff and System Energy Resources, Inc. (SERI), the applicant for an early site permit (ESP) for the Grand Gulf site, and discussed the evaluations performed by the applicant and the NRC staff of the hazards posed to the proposed site by transportation accidents on the Mississippi River as well as the proposed changes to the NRC staff's final Safety Evaluation Report. We provided an interim letter on the Grand Gulf ESP application and the draft Safety Evaluation Report on June 14, 2005, and a final letter on December 23, 2005. The Committee reviewed this application to fulfill the requirement of 10 CFR 52.23 that the ACRS report on those portions of an ESP application that concern safety. We also had the benefit of the documents referenced.

In our December 23, 2005, letter concerning the staff's final Safety Evaluation Report for the Grand Gulf early site permit application, we asked for clarification on risks associated with transportation accidents and possible explosions on the Mississippi River, which is approximately 1.8 kilometers from the proposed site. We asked particularly for a more complete explanation of the attenuation of shock waves that was attributed to the location and elevation of the site relative to the river. The staff asked the applicant to provide this clarification.

In response, the applicant adopted an alternative approach to the analysis of accidental explosions during transportation accidents on the river. This approach is centered on the low probability of an explosion that could produce a pressure pulse that exceeded about 7 kPa at the proposed site. To do this, the applicant examined three types of explosions that might occur should there be an accident involving barge traffic on the river:

- explosions contained within a barge
- explosions near a barge that had spilled volatile, combustible cargo so that a vapor cloud developed
- explosions of vapor clouds that drifted toward the proposed site

The staff independently evaluated the probabilities of these three classes of explosions. The staff was careful to use shipment frequencies, accident frequencies, spill frequencies, and the like that could be justified based on data applicable to barge traffic on the Mississippi River. The staff adopted conservative probabilities in those instances where sufficient data were not

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available to justify lower probabilities used in some cases by the applicant. Nevertheless, the staff concluded that the probability of an explosion producing a pressure pulse in excess of 7 kPa at the proposed power plant site was on the order of 10^{-6}/yr. The staff concluded that explosions of such low probability posed negligible risk to power plant facilities that might be located on the proposed site.

We found the staff's analyses of river transportation accidents acceptable and support the staff's proposed changes to the Safety Evaluation Report to describe these analyses.

Sincerely,

Graham B. Wallis

Graham B. Wallis
Chairman

References:

1. Memorandum dated March 27, 2006, from David A. Matthews, NRR/ADRA/DNRL to John T. Larkins, Executive Director, Advisory Committee on Reactor Safeguards, Subject: ACRS Review of the Grand Gulf Early Site Permit Application - Final Safety Evaluation Report Changed Pages.
2. U.S. Nuclear Regulatory Commission, Final Safety Evaluation Report, "Safety Evaluation of Early Site Permit Application in the Matter of System Energy Resources, Inc., a Subsidiary of Entergy Corporation, for the Grand Gulf Early Site Permit Site," October 21, 2005.
3. Letter dated June 14, 2005, from G.B. Wallis, Chairman, ACRS, to L.A. Reyes, Executive Director for Operations, NRC, Subject: Interim Letter: Draft Safety Evaluation Report on Grand Gulf Early Site Permit Application.
4. Letter dated December 23, 2005, from Graham B. Wallis, ACRS, to L.A. Reyes, Executive Director for Operations, NRC, Subject: Early Site Permit Application for the Grand Gulf Site and the Associated Final Safety Evaluation Report.
5. Letter dated February 1, 2006, from L.A. Reyes, Executive Director for Operations, NRC, to Graham B. Wallis, ACRS, Subject: Early Site Permit Application for the Grand Gulf Site and the Associated Final Safety Evaluation Report.
6. System Energy Resources, Inc. (SERI), letter dated February 22, 2006, from George A. Zinke, SERI, to NRC Document Control Desk, Subject: Response to Request for Additional Information Regarding the Grand Gulf Early Site Permit Final Safety Evaluation Report.
7. System Energy Resources, Inc. (SERI), letter dated March 7, 2006, from George A. Zinke, SERI, to NRC Document Control Desk, Subject: Supplemental Information, Response to Request for Additional Information Regarding the Grand Gulf Early Site Permit Final Safety Evaluation Report.
8. Regulatory Guide 1.91, Revision 1, "Evaluations of Explosions Postulated To Occur on Transportation Routes Near Nuclear Power Plants," dated February 1978.