

May 17, 2007

Mr. F. G. Burford  
Acting Director  
Nuclear Safety & Licensing  
Entergy Operations, Inc.  
1340 Echelon Parkway  
Jackson, MS 39213-8298

SUBJECT: RIVER BEND STATION, UNIT 1 - REQUEST FOR ALTERNATIVE RBS-ISI-005,  
RE: EXTENDING THE CURRENT INSERVICE INSPECTION INTERVAL IN  
ACCORDANCE WITH U.S. NUCLEAR REGULATORY COMMISSION  
INFORMATION NOTICE 98-44 (TAC NO. MD3442)

Dear Mr. Burford:

By letter dated November 1, 2006, as supplemented by letter dated February 14, 2007, Entergy Operations, Inc. (Entergy or the licensee), pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(i), submitted Request for Alternative RBS-ISI-005, which would extend the second inservice inspection (ISI) interval for Class 1 and 2 piping welds in Examination Categories B-J, C-F-1, and C-F-2 at River Bend Station, Unit 1 (RBS) to the end of its fifteenth refueling outage currently scheduled for spring 2009.

The Nuclear Regulatory Commission (NRC) staff has reviewed the subject request, and concluded that the proposed alternative provides an acceptable level of quality and safety. Therefore, the NRC staff authorizes the proposed alternatives in accordance with 10 CFR 50.55a(a)(3)(i) and extends the second ISI interval for Class 1 and 2 piping welds in Examination Categories B-J, C-F-1, and C-F-2 at RBS to the end of its fifteenth refueling outage currently scheduled for spring 2009.

The NRC staff's Safety Evaluation is enclosed.

Sincerely,

**/RA/**

Thomas G. Hiltz, Chief  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-458

Enclosure: Safety Evaluation

cc w/encl: See next page

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**ADAMS Accession No.: ML071230040** \*No substantial change from SE Input Memo \*\*Previously concurred

OFFICE	NRR/LPL4/PM	NRR/LPL4/LA	NRR/CPNB/BC	OGC-NLO w/comments	NRR/LPL4/BC
NAME	BVaidya	JBurkhardt	TChan*	BKlukan**	THiltz
DATE	5/16/07	5/16/07	4/24/07	5/15/07	5/17/07

OFFICIAL RECORD COPY

River Bend Station

cc:

Manager, Licensing  
Entergy Operations, Inc.  
River Bend Station  
5485 US Highway 61N  
St. Francisville, LA 70775

Director, Nuclear Safety & Licensing  
Entergy Operations, Inc.  
1340 Echelon Parkway  
Jackson, MS 39213-8298

Louisiana Department of Environmental  
Quality  
Radiological Emergency Planning and  
Response Division  
P.O. Box 4312  
Baton Rouge, LA 70821-4312

Louisiana Department of Environmental  
Quality  
Office of Environmental Compliance  
P.O. Box 4312  
Baton Rouge, LA 70821-4312

Senior Resident Inspector  
P.O. Box 1050  
St. Francisville, LA 70775

President of West Feliciana  
Police Jury  
P.O. Box 1921  
St. Francisville, LA 70775

Regional Administrator, Region IV  
U.S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-8064

Ms. H. Anne Plettinger  
3456 Villa Rose Drive  
Baton Rouge, LA 70806

Executive Vice President and  
Chief Operating Officer  
Entergy Operations, Inc.  
P.O. Box 31995  
Jackson, MS 39286-1995

General Manager Plant Operations  
Entergy Operations, Inc.  
River Bend Station  
5485 US Highway 61N  
St. Francisville, LA 70775

Director, Nuclear Safety Assurance  
Entergy Operations, Inc.  
River Bend Station  
5485 US Highway 61N  
St. Francisville, LA 70775

Vice President, Operations Support  
Entergy Operations, Inc.  
P.O. Box 31995  
Jackson, MS 39286-1995

Mr. Jim Calloway  
Public Utility  
Commission of Texas  
1701 N. Congress Avenue  
Austin, TX 78711-3326

Attorney General  
State of Louisiana  
P.O. Box 94095  
Baton Rouge, LA 70804-9095

Brian Almon  
Public Utility Commission  
William B. Travis Building  
P.O. Box 13326  
1701 North Congress Avenue  
Austin, Texas 78701-3326

Richard Penrod, Senior Environmental  
Scientist/State Liaison Officer  
Office of Environmental Services  
Northwestern State University  
Russell Hall, Room 201  
Natchitoches, LA 71497

Mr. Joseph E. Venable  
Vice President of Operations  
Entergy Operations, Inc.  
River Bend Station  
5485 US Highway 61N  
St. Francisville, LA 70775

November 2006

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR ALTERNATIVE NO. RBS-ISI-005

TO EXTEND CURRENT INSERVICE INSPECTION INTERVAL

ENTERGY OPERATIONS, INC. ET. AL.

RIVER BEND STATION, UNIT 1

DOCKET NO. 50-416

1.0 INTRODUCTION

By letter dated November 1, 2006 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML063120415), as supplemented by letter dated February 14, 2007 (ADAMS Accession Number ML070520353), Entergy Operations, Inc. (Entergy or the licensee), pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(a)(3)(i), requested an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (the ASME Code); the requested alternative (RBS-ISI-005) would extend the second 10-year inservice inspection (ISI) interval for piping at River Bend Station (RBS) by approximately 5 months beyond the 1-year extension allowed by ASME Code, Section XI. The licensee requests to extend the second 10-year ISI interval for RBS to the end of its fifteen refueling outage, currently scheduled for spring 2009, on the basis that the alternative provides an acceptable level of quality and safety. The request does not involve Examination Category B-F piping welds, which are inspected in accordance with Generic Letter 88-01, "NRC [Nuclear Regulatory Commission] Position on Intergranular Stress Corrosion Cracking (IGSCC) in BWR [Boiling-Water Reactor] Austenitic Stainless Steel Piping." The requested extension is approximately 5 months beyond the 1-year extension allowed by ASME Code, Section XI, Subsection IWB-2412(b).

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(g), ISI of ASME Code Class 1, 2, and 3 components shall be performed in accordance with the requirements of Section XI of the ASME Code and applicable edition and addenda, except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Paragraph 50.55a(a)(3) of 10 CFR states, in part, that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, 3 components (including supports) shall meet the requirements, except the design and access provisions and the pre-service

examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection (ISI) of Nuclear Power Plant components," to the extent practical within the limitations of design, geometry, and materials of construction of the components.

The regulations require that inservice examination of components and system pressure test conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The Code of record for the second 10-year ISI interval for RBS is the 1992 Edition with portions of the 1993 Addenda applicable to pressure testing of the ASME Code, Section XI. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

Currently, RBS is in its second 10-year ISI interval. In its submission, as supplemented, the licensee stated that it plans to implement a risk-informed/safety-based ISI (RIS\_B) program during the third inspection period of the current (second) 10-year ISI interval.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Description - Request No. RBS-ISI-005

##### 3.1.1 ASME Code, Section XI Components Affected (As Submitted)

Components/Numbers: Piping Welds

Code Class: 1 and 2

Examination Category: B-J, C-F-1, and C-F-2

Item Numbers: All

Description: Piping Welds

Unit/Inspection Interval and Applicability: River Bend Station (RBS) second (2<sup>nd</sup>)  
10-year interval

##### 3.1.2 Applicable Code Edition and Addenda

ASME Code, Section XI, 1992 Edition with portions of 1993 Addenda applicable to pressure testing. Subsection IWA-2430(d) requirements for component inspected under Program B.

ASME Code, Section XI, Table IWB-2412-1, defines an ISI interval to be 10 years in duration. IWB-2412(b) allows extending the interval for 1 year to coincide with a plant outage.

### 3.1.3 Proposed Alternative (As Submitted)

Pursuant to 10 CFR 50.55a(a)(3)(i), Entergy Operations, Inc. (Entergy) requests authorization to extend the current ISI interval to include an additional refueling outage, which will be the fifteenth refueling outage (RF-15) currently scheduled for spring 2009 [approximately 5 months beyond the Code-allowed 1-year extension] for items in Examination Categories B-J, C-F-I, and C-F-2.

### 3.1.4 Licensee Basis for Alternative (As Submitted)

NRC Information Notice (IN) 98-44, Ten-Year Inservice Inspection Program Update for Licensees that Intend to Implement RI-ISI of Piping (Reference 2), states that the probabilistic risk assessment technology in NRC regulatory activities should be increased to the extent supported by state-of-the-art methods and data and in a manner that complements the NRC's deterministic approach. Basically, this information combined with risk assessment techniques and associated data provides for developing an effective approach to the ISI program. This approach provides an acceptable level of quality and safety, as required by 10 CFR 50.55a(a)(3)(i). IN 98-44 also states that the NRC staff will consider authorizing a delay of up to 2 years in implementing the next 10-year ISI program for piping only in order for the licensee to develop and obtain approval for the risk-informed ISI program for piping.

RBS is currently in the second ISI interval as defined by ASME Section XI Code for Inspection Program B. RBS is planning to submit to the NRC staff a request for alternative to implement a risk-informed/safety-based inservice inspection (RIS\_B) program. Entergy plans to implement the RIS\_B ISI program during RF-15 currently scheduled for the spring 2009. To accomplish this, Entergy requires approval of this request to extend the second ISI interval to the end of RF-15 (approximately 5 months beyond the Code-allowed [1]-year extension).

The RBS RIS\_B process will be based upon ASME Code Case N-716, Alternative Piping Classification and Examination Requirements, Section XI Division 1, which is founded in large part on the RI-ISI process as described in Electric Power Research Institute (EPRI) Topical Report (TR) 112657 [Revision] B-A, "Revised Risk-Informed Inservice Inspection Evaluation Procedure." The associated request for alternative will demonstrate a reduction in risk (or maintains risk neutrality) while substantially reducing worker exposure and undue burden. Because risk-informed ISI programs focus inspections (and inspection methods) on locations potentially susceptible to degradation while considering the consequence of piping failure, a more robust targeted inspection program can be defined.

## 3.2 Evaluation

The NRC staff has reviewed the relief request alternative RBS-ISI-005 submitted in the licensee's letter dated November 1, 2006, as supplemented by letter dated February 14, 2007, for the third period of the second 10-year ISI interval of RBS pertaining to Class 1 and 2 piping welds in Examination Categories B-J, C-F-1, and C-F-2. The licensee requested approval to extend its ISI interval for piping to the end of RBS's fifteenth refueling outage (RF-15), currently

scheduled for spring 2009. The requested extension would extend approximately 5 months beyond the 1-year extension allowed by ASME Code, Section XI, Subsection IWA-2430(d).

NRC IN 98-44, "Ten-Year Inservice Inspection (ISI) Program Update for Licensees that Intend to Implement Risk-Informed ISI of Piping," states that for licensees who intend to implement an RI-ISI program for piping per the guidance provided in IN 98-44, the staff will consider authorizing a delay of up to 2 years in the ISI interval for piping, so as to provide adequate time for the licensee to develop and obtain approval for the Risk-Informed ISI program regarding piping. RBS's second 10-year ISI interval began December 1997 and ends November 2007. With the requested extension, the second interval would end following the completion of RBS's fifteenth refueling outage (RF-15), which is currently scheduled for the spring 2009 (approximately 5 months beyond the Code-allowed 1-year extension). RBS is currently in the third period of the second ISI interval. RBS has stated that it is planning to submit to the NRC staff, a request to implement a risk-informed/safety-based inservice inspection (RIS\_B) program, to be implemented during RF-15. The RBS's RIS\_B program will be based on Code Case N-716, which is similar to the RI-ISI process as described in the NRC-approved EPRI TR-112657, Revision B-A. It is expected that the alternative will demonstrate a reduction in risk (or maintain risk neutrality) while substantially reducing worker exposure and undue inspection burden. The RIS\_B program will be designed to focus its inspections on locations that are potentially susceptible to degradation, while also considering the consequences of piping failure.

The licensee stated that by the end of the last refueling outage (RF-13), 75 percent of the piping weld examinations required by ASME Section XI had been completed in the second ISI interval for Examination Categories B-F, B-J, C-F-1, and C-F-2. Therefore, RBS has met the minimum requirement specified in Table IWB-2412-1. If alternative RBS-ISI-005 is approved, the remaining percentage of the inspection locations necessary to ensure the 100 percent completion of examinations will be selected for examination per the RIS\_B process in the third period of the ISI interval, and performed during RF-15. In the case that the licensee's proposed RIS\_B program using Code Case N-716 is not approved, the licensee plans to submit a different request for alternative to establish a risk-informed program based on EPRI TR-112657 and ASME Code Case N-578. The third 10-year ISI interval will include examination of the 100 percent of the inspection locations selected for examination per an approved RIS\_B Program. Furthermore, the licensee will continue to perform required augmented inspection programs as committed to the staff in various correspondence. Augmented inspections pertaining to intergranular stress-corrosion cracking are scheduled to be performed during RF-14.

The NRC staff concludes that extending RBS's second 10-year ISI interval to the end of its RF-15, so as to provide adequate time for the licensee to develop and obtain approval for the Risk-Informed ISI program regarding piping, will provide an acceptable level of quality and safety because:

1. A significant percentage of the required examinations for the second 10-year ISI interval have been completed and no problems thus far have been identified.
2. Piping weld examinations will be performed in the third period of the interval regardless of whether the licensee's to-be-requested RIS\_B program is approved by the NRC staff.

3. The requested extension is consistent with the criteria identified in IN 98-44.
4. The delay requested in alternative RBS-ISI-005 will be a one-time occurrence, for the purpose of developing a Risk-Informed ISI program for piping as outlined above, and should not affect future ISI intervals.

#### 4.0 CONCLUSION

Based on the information provided in the licensee's relief request for alternative RBS-ISI-005, dated November 1, 2006, as supplemented by letter dated February 14, 2007, and in light of the licensee's planned request for alternative RIS\_B program, based on ASME Code Case N-716, the NRC staff has determined that extending RBS's second 10-year ISI interval to include an additional refueling outage (approximately 5 months beyond the Code-allowed 1-year extension) would provide an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the NRC staff authorizes the licensee to extend RBS's second (current) 10-year ISI interval for piping in Examination Categories B-J, C-F-1, and C-F-2 to the end of its fifteenth refueling outage, currently scheduled for spring 2009.

All other requirements of the ASME Code, Section XI, for which relief was not specifically requested and authorized herein by the NRC staff, remain applicable, including third-party review by the Authorized Nuclear Inspector.

#### 5.0 REFERENCES

1. ASME Code, Section XI, 1992 Edition with portions of 1993 Addenda.
2. NRC IN 98-44, "Ten-Year Inservice Inspection (ISI) Program Update for Licensees that Intend to Implement Risk-Informed ISI of Piping."

Principal Contributors: A. Keim, CPNB

Date: May 17, 2007