February 26, 2001

Mr. Randall K. Edington
Vice President - Operations
Entergy Operations, Inc.
River Bend Station
P. O. Box 220
St. Francisville, LA 70775

SUBJECT: RIVER BEND STATION, UNIT 1 - REQUEST TO DEFER THE TESTING OF THE REACTOR VESSEL SURVEILLANCE CAPSULE SPECIMENS AND REQUEST TO EXTEND THE DATE FOR REPORTING TESTING RESULTS (TAC NO. MB0250)

Dear Mr. Edington:

By letter dated September 19, 2000, Entergy Operations, Inc. (EOI) submitted a request for Nuclear Regulatory Commission (NRC) review and approval of its proposed deferral of the testing of the reactor pressure vessel (RPV) surveillance capsule specimens and its proposed extension of the submitting of the summary report of the RPV surveillance capsule testing results for the River Bend Station, Unit 1 (RBS). Title 10 of the *Code of Federal Regulations*, Part 50, Appendix H requires the licensee to submit the summary report within one year of capsule withdrawal. However, EOI proposed to defer the testing and to extend the surveillance report due date from March 2001 to September 2002 for a period of one fuel cycle (18 months). EOI's submittal was made in accordance with the NRC guidelines in the letter to the Boiling Water Reactor (BWR) Vessel and Internals Project (BWRVIP), dated May 16, 2000, regarding the BWR integrated surveillance program as reported in BWRVIP-78.

The staff has completed its evaluation of the EOI submittal. Since the concerned RBS capsule had already been withdrawn, the requirements regarding the surveillance capsule withdrawal schedule are not applicable. The focus of the staff's review pertains to the request to defer submission of the surveillance report, which includes the request to defer testing. The information provided by EOI was sufficient for the staff to determine that the proposed deferral of testing and the extension to submit the surveillance report were acceptable. This decision shall not affect EOI's commitment to use the 32 effective full power years pressure-temperature (P-T) limits until they have submitted test results for the first RBS surveillance capsule specimen and received NRC approval of revised P-T limit curves based on this information. The staff's evaluation is contained in the enclosed Safety Evaluation.

Sincerely,

/RA/

Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-458

Enclosure: Safety Evaluation

cc w/encl: See next page

Mr. Randall K. Edington February 26, 2001
Vice President - Operations
Entergy Operations, Inc.
River Bend Station
P. O. Box 220
St. Francisville, LA 70775

SUBJECT: RIVER BEND STATION, UNIT 1 - REQUEST TO DEFER THE TESTING OF THE REACTOR VESSEL SURVEILLANCE CAPSULE SPECIMENS AND REQUEST TO EXTEND THE DATE FOR REPORTING TESTING RESULTS (TAC NO. MB0250)

Dear Mr. Edington:

By letter dated September 19, 2000, Entergy Operations, Inc. (EOI) submitted a request for Nuclear Regulatory Commission (NRC) review and approval of its proposed deferral of the testing of the reactor pressure vessel (RPV) surveillance capsule specimens and its proposed extension of the submitting of the summary report of the RPV surveillance capsule testing results for the River Bend Station, Unit 1 (RBS). Title 10 of the *Code of Federal Regulations*, Part 50, Appendix H requires the licensee to submit the summary report within one year of capsule withdrawal. However, EOI proposed to defer the testing and to extend the surveillance report due date from March 2001 to September 2002 for a period of one fuel cycle (18 months). EOI's submittal was made in accordance with the NRC guidelines in the letter to the Boiling Water Reactor (BWR) Vessel and Internals Project (BWRVIP), dated May 16, 2000, regarding the BWR integrated surveillance program as reported in BWRVIP-78.

The staff has completed its evaluation of the EOI submittal. Since the concerned RBS capsule had already been withdrawn, the requirements regarding the surveillance capsule withdrawal schedule are not applicable. The focus of the staff's review pertains to the request to defer submission of the surveillance report, which includes the request to defer testing. The information provided by EOI was sufficient for the staff to determine that the proposed deferral of testing and the extension to submit the surveillance report were acceptable. This decision shall not affect EOI's commitment to use the 32 effective full power years pressure-temperature (P-T) limits until they have submitted test results for the first RBS surveillance capsule specimen and received NRC approval of revised P-T limit curves based on this information. The staff's evaluation is contained in the enclosed Safety Evaluation.

Sincerely,
/RA/
Robert A. Gramm, Chief, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-458
Enclosure: Safety Evaluation
cc w/encl: See next page
DISTRIBUTION:
PUBLIC PD4-1 Reading RidsNrrDlpmLpdiv1 (RGramm) KBrockmam, RIV
RidsAcrsAcnwMail Center RidsNrrDlpmLpdiv (S. Richards) RidsOgcRp
RidsNrrPMRMoody RidsNrrLADJohnson GHill (2) SSheng
SMorris, EDO * See SE dated 12/13/00 **See previous concurrence
ACCESSION NUMBER: ML010610402

OFFICE	PM/PDIV-1	LA/PDIV-1	EMCB/SC	OGC	SC/PDIV-1
NAME	RMoody	DJohnson	KWichman*	CMarco**	RGramm
DATE	2/20/01	2/16/01	12/13/00	02/13/01	2/23/01

OFFICIAL RECORD COPY

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST TO DEFER THE TESTING OF REACTOR VESSEL

SURVEILLANCE CAPSULE SPECIMENS AND TO EXTEND

THE DATE FOR REPORTING TESTING RESULTS

RIVER BEND STATION, UNIT 1

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-458

1.0 INTRODUCTION

By letter dated September 19, 2000, Entergy Operations, Inc. (EOI or the licensee) submitted a request for Nuclear Regulatory Commission (NRC) review and approval of its proposed deferral of the testing of the reactor pressure vessel (RPV) surveillance capsule specimens and its proposed extension of the submitting of the summary report of the RPV surveillance capsule testing results for the River Bend Station, Unit 1 (RBS). Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix H, requires the licensee to submit the summary report within one year of capsule withdrawal. However, the licensee proposed to defer the testing and to extend the surveillance report due date from March 2001 to September 2002 for a period of one fuel cycle (18 months). EOI's submittal was made in accordance with the NRC guidelines in the letter to the Boiling Water Reactor (BWR) Vessel and Internals Project (BWRVIP), dated May 16, 2000, regarding the BWR integrated surveillance program (ISP) as reported in BWRVIP-78.

2.0 REGULATORY REQUIREMENTS AND STAFF POSITIONS

Nuclear power plant licensees are required by 10 CFR Part 50, Appendix H, to implement RPV surveillance programs to "monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region...which result from exposure of these materials to neutron irradiation and the thermal environment." Regarding RPV surveillance program design and specimen testing, 10 CFR Part 50, Appendix H, incorporates by reference the editions of the American Society for Testing and Materials (ASTM) Standard Practice E 185, "Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels," through the 1982 edition. Under 10 CFR Part 50, Appendix H, the licensee's RPV surveillance program design and withdrawal schedule is required to meet the requirements of the edition of ASTM E 185 that is current on the issue date of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) to which the RPV was purchased, although later editions may be used, up to and including the 1982 edition. The test procedures and reporting requirements must, however, meet the requirements of the 1982 edition of ASTM E 185, to the

extent practical for the configuration of the specimens in the capsules. The requirements at 10 CFR Part 50, Appendix H, further requires that the licensee submit the summary report within one year of capsule withdrawal.

Additional NRC staff guidance has been published regarding licensee requests to obtain one cycle capsule withdrawal deferrals to support the ISP proposed by the BWRVIP. The ISP proposed by the BWRVIP was designed to integrate and share data from the surveillance programs from all existing BWR reactors in the United States. The BWRVIP noted that, for some licensees, it would be necessary to obtain at least one cycle capsule deferral to support obtaining high quality data from some existing surveillance capsules. In addition, since some existing surveillance capsules would not need to be tested if the ISP were approved by the staff, licensees having such capsules desired to seek deferral of their removal and testing to reduce monetary expenditures and personnel exposure. The NRC staff has noted its general support for the ISP proposal and, by letter to the BWRVIP dated May 16, 2000, identified criteria to be addressed by licensees requesting one cycle capsule deferrals to support the ISP.

The first criterion addressed in the staff's May 16, 2000, letter requested that licensees explain how their deferral request is consistent with the ISP plan submitted in topical report BWRVIP-78. Principally, this requested that licensees examine how their surveillance capsules would be used (or not used) under the proposed ISP and confirm that their request for a one cycle deferral would not affect the ability of the ISP to meet its objectives. The second criterion requested that licensees provide a justification as to why the materials property data to be acquired from the capsule in question was not necessary to support safe operation of the facility over the period of the deferral. Several options were given in the staff's letter regarding possible responses to this criterion. Finally, the staff's third and final criterion requested that licensees explain why the dosimetry data to be acquired from the capsule in question was not necessary to support safe operation of the facility over the period of the deferral.

3.0 LICENSEE'S DETERMINATION

In its September 19, 2000, submittal, EOI stated that their reason for requesting this deferral of testing and reporting of the testing results for the RBS surveillance capsule was to support their involvement in the ISP. EOI then addressed, as described below, the three criteria cited in the NRC staff's May 16, 2000, letter.

Regarding the first criterion, EOI noted that according to the scope of the ISP discussed in the BWRVIP-78 report, the surveillance capsules for RBS were to be included in the ISP. The overall limiting material (weld heat 5P6756) of the RBS surveillance capsule was also in the Oyster Creek capsule, which was withdrawn at a fluence similar to the fluence projected for the RBS supplemental surveillance program (SSP) capsule and was completely tested in 2000. Therefore, the Oyster Creek SSP data may be sufficient for monitoring the general irradiation behavior of the limiting weld over the period of the requested deferral. In addition, the ISP withdrawal schedule in the BWRVIP-78 report had not been "optimized" and was, rather, simply based on the current individual plant withdrawal schedules. Due to the relatively small reference temperature shift expected to occur in the RBS capsule, EOI believes that the ISP test matrix may need adjusting. Based on the above, the licensee concluded that there is no negative impact to the ISP by deferring the capsule specimen testing for a cycle, and the RBS RPV would have continued safe operation during the requested deferral.

To address the second criterion, EOI noted that the material test data from the capsule to be deferred was not necessary to ensure continued safe operation of the RBS RPV for two reasons. First, the capsule from the RBS RPV is the first of the scheduled withdrawals. According to Regulatory Guide (RG) 1.99, Revision 2, the information obtained from testing of the specimens can not be used until the second capsule is removed and tested to provide the second datapoint. Second, although the shift in the Charpy value is predicted to be 59 °F for the weld specimen and 28 °F for the plate specimen, the weld specimen would indicate a shift of only 33 °F if the RBS weld specimens more closely reflect the chemistry values for the Oyster Creek surveillance weld of the same heat. In addition, the licensee indicated that RBS will be using pressure-temperature (P-T) limit curves based on 32 effective full power years (EFPY) rather than a lesser EFPY reflecting current conditions. Hence, the data acquired would not be very valuable for either ensuring the integrity of the RBS RPV or for adding data to further the general state of knowledge regarding power reactor embrittlement behavior.

Finally, regarding the third criterion, EOI concluded that the integrity of the RPV remains compliant with existing assessments and requirements for the duration of the extension. This is based on EOI's commitment to use the extremely conservative 32 EFPY P-T curve until they have submitted test results for the first RBS surveillance capsule specimen and received NRC approval of revised P-T limit curves.

EOI also stated that a one-cycle deferral of testing and reporting will not affect the physical changes to the surveillance material's mechanical properties and does not affect any planned use of the data. Further, deferring the testing until the ISP is approved by the NRC and is implemented will ensure consistent test data between all ISP capsules being tested.

For these reasons, EOI concluded that their request to defer testing of the RBS surveillance capsule was justified and consistent with their intent to support the BWRVIP ISP.

4.0 STAFF EVALUATION

The NRC staff has reviewed the information supplied by the licensee and the regulatory requirements and guidance stated in Section 2.0 above. Since the concerned RBS capsule had already been withdrawn, the requirements of ASTM E 185 regarding surveillance capsule withdrawal schedule are no longer applicable here. The focus of the review has shifted to the request to defer submission of the surveillance report, which includes the request to defer testing. The staff has reviewed the response to the three criteria given in the NRC staff's May 16, 2000, letter regarding the one-cycle deferral of RPV surveillance capsule withdrawal and testing for BWRVIP ISP member plants. The staff's conclusions on EOI's technical justifications in meeting these three criteria are given below.

First, the deferral of the testing and the reporting of the first RBS capsule is acceptable within the BWRVIP ISP plan. The submittal indicated that some modifications to the withdrawal schedule proposed as part of the ISP are expected because the ISP withdrawal schedule in the BWRVIP-78 report had not been optimized and was simply based on the current individual plant withdrawal schedules. In addition, the ISP is intended to improve the quality of data acquired to assess the embrittlement of BWR RPVs. Deferring the testing of the first RBS capsule until it can be part of the ISP so that consistent test data could be expected for all specimens from ISP capsules certainly would not affect the ability of the ISP to meet its objectives. EOI listed the availability of the Oyster Creek SSP data as one of the bases for the

extension request. The staff did not consider it because the plant-specific applicability of the SSP data to RBS has yet to be established by EOI.

As to the second criterion, the staff noted that the capsule from the RBS RPV is the first of the scheduled withdrawals and, consequently, in accordance with RG 1.99, Revision 2, the materials property data obtained from the testing of the capsule specimens can not be used to predict the amount of embrittlement for the RBS RPV materials. Based on this, the staff determined that the materials property data to be acquired from the capsule in question was not necessary to support safe operation of the facility over the period of the deferral. The staff does not accept the licensee's argument using the shifts in the Charpy values for the capsule specimens. The NRC guidance regarding specimen shifts provides justification for deferral of capsule withdrawal when the specimens' shifts are not predicted to be larger than the scatter of the trend curves of RG 1.99, Revision 2. Since the capsule had already been withdrawn, and the shifts of specimens, to be determined by testing, will remain the same in the deferral period, this guidance is no longer applicable.

For the third criterion, EOI's commitment to use the extremely conservative 32 EFPY P-T curve provided appropriate justification that the dosimetry data to be acquired from the capsule in question was not necessary to support safe operation of the facility over the period of the deferral. This commitment, which was part of EOI's power uprate submittal dated May 8, 2000, to address the staff concerns over the deficiencies in the RBS RPV fluence calculation methodology, is considered to be adequate for the Unit to operate to at least 16 EFPY according to the Safety Evaluation Report dated October 6, 2000. Since RBS has currently been operating for approximately 11 EFPY and one-cycle deferral will not put the Unit beyond 16 EFPY, the staff agrees with the licensee's conclusion that the integrity of the RPV remains compliant with existing assessments and requirements for the duration of the extension.

Further, the RBS capsule contains both iron and copper dosimetry wires with a half-life of approximately 1 year and 5.3 years. They can be accurately evaluated within 4 to 5 half-lives of its removal, i.e., 4 to 5 years for the iron dosimetry wires. Therefore, the staff concluded that the one-cycle deferral of the testing would not cause reduction in the accuracy of the dosimetry evaluation.

5.0 CONCLUSION

The NRC staff has concluded that EOI has conducted evaluations in accordance with the three criteria in the letter dated May 16, 2000, to the BWRVIP for licensees requesting one cycle deferral of their capsule removal and testing to support the BWRVIP ISP. Based on these evaluations, the staff further concluded that the proposed one cycle deferral of the testing of the first RBS surveillance capsule and the extension of the due date from March 2001 to September 2002 to submit the testing results is acceptable. This decision shall not affect EOI's commitment to use the 32 EFPY P-T limits until they have submitted test results for the first RBS surveillance capsule specimen and received NRC approval of revised P-T limit curves based on this information.

Principal Contributor: S. Sheng

Date: February 26, 2001

cc:

Winston & Strawn
1400 L Street, N.W.
Washington, DC 20005-3502

Manager - Licensing
Entergy Operations, Inc.
River Bend Station
P. O. Box 220
St. Francisville, LA 70775

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 1000
Arlington, TX 76011

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

Administrator
Louisiana Radiation Protection Division
P. O. Box 82135
Baton Rouge, LA 70884-2135

Wise, Carter, Child & Caraway
P. O. Box 651
Jackson, MS 39205

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

General Manager - Plant Operations
Entergy Operations, Inc.
River Bend Station
P. O. Box 220
St. Francisville, LA 70775

Director - Nuclear Safety
Entergy Operations, Inc.
River Bend Station
P. O. Box 220
St. Francisville, LA 70775

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

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