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

May 24, 2017

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

SUBJECT: RIVER BEND STATION, UNIT 1 – ALTERNATIVE REQUESTS PRR-RBS-2017-1, PRR-RBS-2017-2, AND VRR-RBS-2017-1 FROM THE REQUIREMENTS OF THE ASME CODE FOR THE INSERVICE TESTING FOR THE FOURTH 10-YEAR INTERVAL (CAC NOS. MF9368, MF9369, AND MF9370)

Dear Sir or Madam:

By letter dated February 27, 2017, Entergy Operations, Inc. (the licensee), submitted three relief requests to the U.S. Nuclear Regulatory Commission (NRC) for the use of alternatives to certain inservice test requirements of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) at River Bend Station, Unit 1 (RBS).

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(z)(2), the licensee requested to use the proposed alternative described in PRR-RBS-2017-1 on the basis that complying with the specified requirement would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee also requested to use the proposed alternatives described in PRR-RBS-2017-2 and VRR-RBS-2017-1 pursuant to 10 CFR 50.55a(z)(1) on the basis that the alternative provides an acceptable level of quality and safety.

The NRC staff has reviewed the subject requests and concludes, as set forth in the enclosed safety evaluation, that Entergy Operations, Inc. has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1) and 10 CFR 50.55a(z)(2) for relief requests PRR-RBS-2017-1, PRR-RBS-2017-2, and VRR-RBS-2017-1. Therefore, the NRC staff authorizes the use of the requested alternatives at RBS for the fourth 10-year IST program interval which is scheduled to start on December 2, 2017, and end on December 1, 2027.

All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject requests for relief remain applicable.

If you have any questions, please contact Lisa Regner at 301-415-1906 or via e-mail at Lisa.Regner@nrc.gov.

Sincerely,

Robert J. Pascarelli, 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: Distribution via Listserv

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ALTERNATIVE REQUESTS PRR-RBS-2017-1, PRR-RBS-2017-2, AND VRR-RBS-2017-1

RELATED TO THE INSERVICE TESTING PROGRAM DURING THE

FOURTH 10-YEAR INTERVAL

ENTERGY OPERATIONS, INC

RIVER BEND STATION, UNIT 1

DOCKET NO. 50-458

1.0 INTRODUCTION

By letter dated February 27, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17065A091), Entergy Operations, Inc. (Entergy, the licensee), submitted alternative requests PRR-RBS-2017-1, PRR-RBS-2017-2, and VRR-RBS-2017-1 to the U.S. Nuclear Regulatory Commission (NRC). The licensee requested alternative test plans in lieu of certain inservice testing (IST) requirements of the 2004 Edition through 2006 Addenda of the American Society of Mechanical Engineers (ASME) *Code for Operation and Maintenance of Nuclear Power Plants* (OM Code) for the IST program at River Bend Station, Unit 1 (RBS) during the fourth 10-year IST program interval.

Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(z)(2), the licensee requested to use proposed alternative PRR-RBS-2017-1 since complying with the current ASME OM Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Additionally, pursuant to 10 CFR 50.55a(z)(1), the licensee requested to use proposed alternatives PRR-RBS-2017-2 and VRR-RBS-2017-1 on the basis that the alternatives provide an acceptable level of quality and safety.

2.0 REGULATORY EVALUATION

The regulation under 10 CFR 50.55a(f), "Inservice testing requirements," requires, in part, that IST of certain ASME Code Class 1, 2, and 3 components must meet the requirements of the ASME OM Code and applicable addenda incorporated by reference in the regulations. Exceptions are allowed where alternatives have been authorized by the NRC pursuant to paragraphs 10 CFR 50.55a(z)(1) and 10 CFR 50.55a(z)(2).

In proposing alternative relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of quality and safety per 10 CFR 50.55a(z)(1), or (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety per 10 CFR 50.55a(z)(2). Section 50.55a of 10 CFR allows the NRC to

authorize alternatives from the ASME OM Code requirements upon making the necessary findings.

Based on the above, and subject to the following technical evaluation, the NRC staff concludes that regulatory authority exists for the licensee to request and the Commission to authorize the alternative requested by the licensee.

3.0 TECHNICAL EVALUATION

The alternatives discussed below are requested for the fourth 10 year IST interval at RBS, which is scheduled to begin on December 2, 2017, and end on December 1, 2027. The applicable ASME OM Code Edition and Addenda for RBS during the fourth 10-year IST interval is the 2004 Edition through the 2006 Addenda.

3.1 Licensee's Alternative Request PRR-RBS-2017-1

Applicable Code Requirements

ISTB-3540 "Vibration," (b), states that "On vertical line shaft pumps, measurements shall be taken on the upper motor-bearing housing in three approximately orthogonal directions, one of which is the axial direction."

ASME Code Components Affected

Alternative testing is requested for the following pumps:

Table 1

Pump ID	Function	ASME Code Class	ASME OM Code Group
SWP-P2A	Standby Service Water Pump A	3	B
SWP-P2B	Standby Service Water Pump B	3	B
SWP-P2C	Standby Service Water Pump C	3	B
SWP-P2D	Standby Service Water Pump D	3	B

Licensee's Reason for Request

In its letter dated February 27, 2017, the licensee stated, in part:

> This alternative is a re-submittal of NRC approved 2nd Interval PRR-006 that was based on the ASME OM Code 1987 Edition with addenda through OMa-1988. The 3rd Interval alternative request PRR-RBS-2007-1 was based on the ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda. This re-submittal is an alternative based on the ASME OM Code-2004 Edition with addenda through OMb Code-2006 Addenda. There have been no substantive changes to this alternative, to the OM Code requirements or to the basis for use, which would alter the previous NRC Safety Evaluation conclusions.
>
> The Code-required vibration measurements on the upper motor bearing housing on these vertical line shaft pumps are impractical because the standby service water pump motors are totally enclosed, weather-proof induction motors that are

equipped with housing covers which completely enshroud the upper motor bearing housing. The housing cover precludes vibration measurements from being taken directly on the upper bearing housing.

Licensee's Proposed Alternative and Basis for Use

In its letter dated February 27, 2017, the licensee stated, in part:

> Vibration measurements will be taken in three orthogonal directions in a location that provides valid indication of motor vibratory motion in close proximity of the upper motor bearing housing.
>
> On the standby service water pumps the upper bearing measurements will be taken at the lifting lug that is integral to the motor stator housing. The lifting lug is structurally rigid and provides transmissibility of the motor vibratory motion. The vibration measurements will be taken in three orthogonal directions on the lifting lug. This location has demonstrated the ability to provide repeatable vibration data and will provide readings that are at least as representative of pump mechanical condition as those required by the ASME OM Code-2004 Edition with addenda through OMb Code-2006 Addenda. Therefore, application of the ASME OM Code-2004 Edition with addenda through OMb Code-2006 Addenda hydraulic testing criteria along with radial and axial vibration monitoring on the lifting lug should provide adequate data for assessing the condition of the subject pumps and for monitoring for degradation.
>
> The above proposed alternative provides reasonable assurance of the operational readiness since vibration measurements will be taken in three orthogonal directions on the lifting lug. These readings will provide information as to the mechanical integrity of the pumps.

NRC Staff Evaluation

The licensee has proposed an alternative in lieu of the requirements found in the 2004 Edition through 2006 Addenda of the ASME OM Code Section ISTB-3540(b) for vertical line shaft standby service water pumps (SWPs) listed in Table 1, above.

The OM Code recognizes the value of implementing a vibration analysis strategy for monitoring vertical line shaft pumps by requiring measurements to be taken on the upper motor bearing housing in three orthogonal directions, one of which is the axial direction. The licensee proposes to obtain vibration measurements on each of the four standby SWPs at the lifting lug area that is integral to the motor stator housing instead of obtaining data at the upper motor-bearing housing area. This proposed location is due to the fact that the upper motor bearing housing is not accessible due to installation of a protective shroud cover. The NRC staff has determined that obtaining vibration data at the required location represents a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

As stated by the licensee, the lifting lug area of the SWP motor is structurally rigid and provides transmissibility of the motor vibratory motion. Obtaining vibration measurements at the lifting lug area of the motor housing will provide performance data on the upper bearing as well as overall pump and motor assembly. Parameters such as bearing health, pump/motor unbalance, pump/motor looseness, electrical faults, and resonance issues can be monitored. The collected

vibration data at the lifting lug location on the motor coupled with the trending of pump hydraulic performance data provides an acceptable alternative for monitoring component health and provides reasonable assurance that the component is operationally ready.

Conclusion for PRR-RBS-2017-1

As set forth above, the NRC staff determines that the proposed alternative PRR-RBS-2017-1 provides reasonable assurance that the components listed in Table 1 are operationally ready. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(a)(z)(2).

3.2 Licensee's Alternative Request PRR-RBS-2017-2

Applicable Code Requirements

ISTB-5123 "Comprehensive Test Procedure," states in part that "Comprehensive tests shall be conducted with the pump operating at a specified reference point. The test parameters shown in Table ISTB-3000-1 shall be determined and recorded as required by this paragraph."

ASME Code Components Affected

Alternative testing is requested for the following pumps:

Table 2

Pump ID	Function	ASME Code Class	ASME OM Code Group
E12-PC002A	Residual Heat Removal Pump 2A	2	A
E12-PC002B	Residual Heat Removal Pump 2B	2	A
E12-PC002C	Residual Heat Removal Pump 2C	2	B
SFC-P1A	Fuel Pool Cooling Pump A	3	A
SFC-P1B	Fuel Pool Cooling Pump B	3	A
HVK-P1A	Control Building Chilled Water Pump 1A	3	A
HVK-P1B	Control Building Chilled Water Pump 1B	3	A
HVK-P1C	Control Building Chilled Water Pump 1C	3	A
HVK-P1D	Control Building Chilled Water Pump 1D	3	A
SWP-P3A	Control Building Chilled Water Recirc Pump A	3	A
SWP-P3B	Control Building Chilled Water Recirc Pump B	3	A
SWP-P3C	Control Building Chilled Water Recirc Pump C	3	A
SWP-P3D	Control Building Chilled Water Recirc Pump D	3	A
E12-PC003	Residual Heat Removal Pump Discharge Line Fill Pump	2	A
E21-PC002	Low Pressure Core Spray Pump Discharge Line Fill Pump	2	A
E22-PC003	High Pressure Core Spray Pump Discharge Line Fill Pump	2	A
E51-PC003	Reactor Core Isolation Cooling Sub System Fill Pump	2	A
E51-PC001	Reactor Core Isolation Cooling Pump	2	B
E21-PC001	Low Pressure Core Spray Pump	2	B
E22-PC001	High Pressure Core Spray Pump	2	B

Licensee's Reason for Request

In its letter dated February 27, 2017, the licensee stated, in part:

> The ASME OM Code Committee has approved Code Case OMN-18, "Alternative Testing Requirements for Pumps Tested Quarterly with +/- 20% of Design Flow," which allows owners to perform a Group A test in lieu of the Comprehensive Pump Test (CPT) if the Group A test is conducted at +/- 20% of the design flow rate and uses pressure instruments that meet the CPT accuracy requirements (+/- 1/2%). This Code Case was not reviewed for approval in Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code," Revision 1, August 2014. However, the OM Code Case OMN-18 is listed in Draft Regulatory Guide DG-1297 (Proposed Revision 2 to Regulatory Guide 1.192, dated March 2016), "Operation and Maintenance Code Case Applicability, ASME OM Code". River Bend Station is scheduled to enter their 4th 10 Year Interval on December 2, 2017, at which time Revision 2 of Regulatory Guide 1.192 will be approved through Rulemaking (scheduled for March 1, 2017) and River Bend Station will apply the condition for use of OMN-18 as currently listed in DG-1297.
>
> The basis for this change is that a quarterly Group A pump test, performed at the CPT flow rate provides more consistent data for trending than a Group A test in conjunction with a biennial CPT. The increased requirements imposed by the proposed alternative on the parameters to be monitored during every quarterly pump test and the more accurate instruments allow River Bend Station to perform better trending of pump performance data due to the more consistent requirements for each of the quarterly tests. Also, combined with more trending information since the pump is tested quarterly, the overall performance is monitored more consistently.

Licensee's Proposed Alternative and Basis for Use

In its letter dated February 27, 2017, the licensee stated, in part:

> River Bend Station proposes that in lieu of the CPT requirements of Table ISTB-3400-1, Group A tests will be performed quarterly within +/- 20 percent of the pump design flow rate, with pressure measuring instrumentation meeting the (+/- 1/2%) instrument accuracy requirements of Table ISTB-3510-1 specified for the biennial Comprehensive Test. In addition, River Bend Station has elected to restrict the upper limit for differential pressure to 6%, in accordance with the proposed Condition imposed within proposed Revision 2 of Regulatory Guide 1.192. The upper end values of the Group A Test Acceptance Ranges for flow and differential pressure (or discharge pressure) will be $1.06Q_r$ and $1.06\Delta P_r$, respectively, as applicable to the pump type. The high values of the Required Action Ranges for flow and differential pressure (or discharge pressure) will be $>1.06Q_r$ and $1.06\Delta P_r$, respectively, as applicable to the pump type. This condition would continue once Revision 2 of Regulatory Guide 1.192 is issued in 2017. River Bend Station will use OMN-18, as published in the 2012 Edition, which is also based on the listing within

proposed Revision 2 of Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code".

Vibration testing will continue to be performed under the proposed modified Group A test and the acceptance criteria for vibration will be the same as required for the Group A tests as shown in Table ISTB-5100-1.

NRC Staff Evaluation

The ASME OM Code requires that for Group A pumps, a Group A test be performed every quarter, and a CPT be performed biennially. The Group A test is performed within ± 20 percent of the pump design flow rate and the pressure instrument accuracy is ± 2 percent, and the upper limit for the "Acceptable Range" and "Required Action Range" for flow rate and differential pressure is 110 percent of the reference values. The CPT is performed within ± 20 percent of the pump design flow rate, the pressure instrument accuracy is ± ½ percent, and the upper limit of the "Acceptable Range" and "Required Action Range" for flow rate and differential pressure is 103 percent of the reference values. Vibration monitoring is performed during Group A tests and the CPTs.

The licensee proposes that for the pumps listed in Table 2, a modified Group A quarterly test will be performed using ASME OM Code Case OMN-18, with modified "Acceptable" and "Required Action" ranges, and the biennial comprehensive test will not be performed. The modified Group A quarterly test would be performed within ± 20 percent of the pump design flow rate, using more accurate pressure instrumentation that is required for a comprehensive test (± ½ percent instead of ± 2 percent). The licensee will use a more limiting upper bound differential pressure (ΔP) value of 106 percent for the "Acceptable Range" in lieu of 110 percent that is normally required by the ASME OM Code for Group A tests. However, the upper bound 106 percent is greater than the upper bound value of 103 percent for the biennial CPT. Using more accurate pressure gauges and a more limiting "Acceptable Range" during modified quarterly Group A test compensates for the elimination of the CPT with its more limiting "Acceptable Range" upper bound value of 103 percent.

OMN-18 was published in the 2009 Edition of the ASME OM Code. This edition of the ASME OM Code has not yet been incorporated by reference into 10 CFR 50.55a, and OMN-18 has not been incorporated into Regulatory Guide 1.192. However, the NRC staff has reviewed OMN-18, and currently has no concerns with its usage, providing that the upper end values of the Group A test "Acceptable Ranges" for flow (Q) and ΔP are 106 percent Q_r and 106 percent ΔP_r, respectively, and the high values of the "Required Action Ranges" for flow and differential pressure are not greater than 106 percent Q_r and 106 percent ΔP_r, respectively. The NRC staff considers the proposed alternative acceptable because all of the tests will be performed with pressure gauges with ± ½ percent accuracy. The elimination of the CPT, with its more limiting "Acceptable Range" upper bound of 103 percent ΔP_r, is compensated for by using more accurate pressure gauges on every quarterly test. Regular testing with more accurate instrumentation and tighter acceptance criteria will provide for better trending of pump performance. Therefore, the NRC finds that the proposed alternative provides an acceptable level of quality and safety for testing and acceptance criteria for the pumps listed in Table 2, above.

Conclusion for PRR-RBS-2017-2

As set forth in Section 3.2, the NRC staff determines that the proposed alternative PRR-RBS-2017-2 provides an acceptable level of quality and safety for components listed in Table 2. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1).

3.3 Licensee's Alternative Request VRR-RBS-2017-1

Applicable Code Requirements

ASME OM Code, Mandatory Appendix I, paragraph I-1320(a), "5-Year Test Interval," specifies that "Class 1 pressure relief valves shall be tested at least once every 5 years, starting with initial electric power generation. No maximum limit is specified for the number of valves to be tested within each interval; however, a minimum of 20% of the valves from each valve group shall be tested within any 24-month interval. This 20% shall consist of valves that have not been tested during the current 5-year interval, if they exist. The test interval for any individual valve shall not exceed 5 years."

ASME Code Components Affected

The licensee requested using alternative testing for the following Class 1, Crosby Model HB-65-DF Main Steam Safety/Relief Valves (SRVs):

Table 3			
B21-RVF041A	B21-RVF041B	B21-RVF041C	B21-RVF041D
B21-RVF041F	B21-RVF041G	B21-RVF041L	B21-RVF047A
B21-RVF047B	B21-RVF047C	B21-RVF047D	B21-RVF047F
B21-RVF051B	B21-RVF051C	B21-RVF051D	B21-RVF051G

Licensee's Reason for Request

The licensee stated, in part, in its letter dated February 27, 2017:

> The Main Steam Safety/Relief (MSSR) System provides Reactor Pressure Vessel (RPV) overpressure protection and automatic depressurization of the Nuclear System by opening the Safety/Relief Valves (SRVs).
>
> ...
>
> The Crosby Model HB-65-DF SRVs have shown exemplary test history at RBS, as [discussed below]. However, given the current 24-month operating cycle for RBS, Entergy Operation Incorporated (EOI) is required to remove and test fifty percent of the SRVs every refueling outage (i.e. eight of 16), so that all valves are removed and tested every two refueling outages. This ensures compliance with the ASME OM Code requirements for testing Class 1 pressure relief valves within a 5-year interval. Approval of extending the test interval to 6 years with a grace period of 6 months would reduce the minimum number of SRVs tested at RBS over three refueling outages by eight.

The ASME Code committees have developed Code Case OMN-17, "Alternative Rules for Testing ASME Class 1 Pressure Relief/Safety Valves," which was published via ASME OM Code-2009 Edition. This Code Case has not been approved for use in US NRC Regulatory Guide 1.192, "Operation and Maintenance Code Case Acceptability, ASME OM Code, Revision 1, dated August 2014. The Code Case allows the Owner to extend the test frequencies for Class 1 pressure relief valves to a 72-month (6-year) test interval providing all the requirements of the Code Case are satisfied. The Code applicability specified in the Code Case is, in part, ASME OM Code 2001 Edition through the 2006 Addenda of Appendix I, Section I-1320. This is consistent with the Interval Code of record for RBS. RBS currently meets or exceeds all the requirements specified in Code Case OMN-17. The Code Case OMN-17, is listed in the Draft Regulatory Guide DG-1297 *(Proposed Revision 2 to Regulatory Guide 1.192, dated March 2016),* and is listed in Table 1, Acceptable OM Code Cases, and as per 10 CFR 50.55a licensees or applicants are to implement the most recent version of a Code Case. River Bend is using OMN-17, as published in the 2012 Edition of the ASME OM Code.

All SRVs are located in the upper elevations of the RBS Drywell. The major contributors to radiation exposure are the Main Steam Lines, including the SRVs, and the High Pressure/Low Pressure Core Spray lines passing through the area. Removal of an installed SRV and installation of a replacement SRV requires installation of scaffolding, removal of insulation and various appurtenances on the SRV, and unbolting the SRV. Once unbolted, the SRV is maneuvered from its location and lowered to the grade elevation and transported through the drywell and containment equipment hatches. Each SRV weighs approximately 3000 pounds, and due to its size, a crew of five to seven personnel is necessary to safely move each valve.

Entergy has evaluated the historical cumulative radiation exposure at RBS for removal and replacement of SRVs from the last five RBS refueling outages. The work evolutions necessary to remove and replace these valves each refueling outage, which includes the removal and replacement of eight SRVs, are conducted under equivalent radiological conditions and with the same personnel requirements.

Based on this data, Entergy has concluded that the expected cumulative radiation exposure to remove and replace a single SRV would be approximately 0.594 person-rem [roentgen equivalent man]. ...Therefore, absent the requested relief, replacement of eight incremental SRVs would result in approximately 4.752 additional person-rem over three refueling outages.

Proposed Alternate and Basis for Use

In its letter dated February 27, 2017, the licensee stated, in part:

As an alternative to the Code required 5-year test interval per Appendix I, paragraph I-1320(a), RBS proposes that the Class 1 pressure relief valves be tested at least once every three refueling cycles (approximately 6 years/72 months) with a minimum of 20% of the valves tested within any 24-month interval. This 20% would consist of valves that have not been tested during the

current 72-month interval, if they exist. The test interval for any individual valve would not exceed 72 months except that a 6-month grace period is allowed to coincide with refueling outages to accommodate extended shutdown periods.

After as-found set pressure testing, the valves shall be disassembled and inspected to verify that parts are free of defects resulting from time-related degradation or service induced wear. As-left set pressure testing shall be performed following maintenance and prior to returning the valve to service. Each valve shall have been disassembled and inspected prior to the start of the 72 month interval. Disassembly and inspection performed prior to the implementation of Code Case OMN-17 may be used.

The relief valve testing and maintenance cycle at RBS consists of removal of the SRV complement requiring testing and transportation to an off-site test facility. Upon receipt at the off-site facility the valves are subject to an as-found inspection, seat leakage and set pressure testing. Prior to the return of a complement of SRVs for installation in the plant, the valves are disassembled and inspected to verify that internal surfaces and parts are free from defects or service induced wear prior to the start of the next test interval. During this process, anomalies or damage are identified and resolved. Damaged or worn parts, springs, gaskets and seals are replaced as necessary. The valve seats are lapped, if necessary. Following reassembly, the valve's set pressure is recertified with an acceptance criterion of ±1%. This existing process is in accordance with ASME OM Code Case OMN-17, Paragraphs (d) and (e).

RBS has reviewed the as-found set pressure test results for all of the SRVs tested since 2008. RBS has had only one as-found test failure since 2008 that exceeded the as-found acceptance criteria (+3%, -5%). The one as-found failure was in the negative (or conservative) direction.

...

RBS submits that the proposed alternative of increasing the test interval for the Class 1 pressure relief valves from 5 years to 3 fuel cycles (approximately 6 years/72 months) would continue to provide an acceptable level of quality and safety while restoring the operational and maintenance flexibility that was lost when the 24-month fuel cycle created the unintended consequences of more frequent testing.

NRC Staff Evaluation

The RBS SRVs are ASME Code Class 1 pressure relief valves that provide overpressure protection for the reactor coolant pressure boundary to prevent unacceptable radioactive release and exposure to plant personnel. ASME OM Code, Mandatory Appendix I requires that Class 1 pressure relief valves be tested at least once every 5 years. However, Mandatory Appendix I does not require that pressure relief valves be disassembled and inspected prior to the start of the 5-year test interval. In lieu of the 5-year test interval, the licensee proposed to implement ASME OM Code Case OMN-17, which allows a test interval of 6 years plus a 6-month grace period. The ASME Committee on OM developed Code Case OMN-17 and published it in the 2009 Edition of the ASME OM Code. ASME OM Code Case OMN-17 imposes a special maintenance requirement to disassemble and inspect each pressure

relief/safety valve to verify that parts are free from defects resulting from time-related degradation or service-induced wear, prior to the start of the extended test interval and at each required test during the interval. The purpose of this maintenance requirement is to reduce the potential for pressure relief valve set-point drift.

ASME OM Code Case OMN-17 has not yet been added to RG 1.192, or included in 10 CFR 50.55a by reference. However, the NRC has allowed licensees to use ASME OM Code Case OMN-17, provided all requirements in the Code Case are met. Consistent with the special maintenance requirement in ASME OM Code Case OMN-17, each SRV at RBS will be disassembled and inspected to verify that internal surfaces and parts are free from defects or service induced wear, prior to the start of the next test interval. This maintenance will also help to reduce the potential for setpoint drift, and increase the reliability of these SRVs to perform their design requirement functions. Consistent with the special maintenance requirement in ASME OM Code Case OMN-17, critical components will be inspected for wear and defects. This process is consistent with ASME OM Code Case OMN-17 paragraphs (d) and (e).

Furthermore, ASME OM Code Case OMN-17 is performance-based, in that it requires that the SRVs be tested more frequently if test failures occur. For example, ASME OM Code Case OMN-17 requires that two additional valves be tested when a valve in the initial test group exceeds the set pressure acceptance criteria. All remaining valves in the group are required to be tested if one of the additional valves tested exceeds its set pressure acceptance criteria.

Additionally, a review of recent setpoint testing results shows that RBS has had only one as-found test failure since 2008 that exceeded the as-found acceptance criteria (+3 percent -5 percent) and this failure was in the negative (or conservative) direction.

Based on the historical performance of the setpoint testing of the SRVs at RBS and the proposed disassembly and inspection of the SRVs prior to use, the NRC staff finds that implementation of ASME OM Code Case OMN-17 for the testing of the RBS SRVs listed in Table 3, above, in lieu of the requirements of the 2004 Edition through the 2006 Addenda, Mandatory Appendix I, Section 1320 of the ASME OM Code, provides an acceptable level of quality and safety.

Conclusion for VRR-RBS-2017-1

As set forth in Section 3.3, the NRC staff determines that the alternative testing for the SRVs in Table 3, proposed by relief request VRR-RBS-2017-1, provides an acceptable level of quality and safety. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(z)(1).

4.0 CONCLUSION

As set forth above, the NRC staff determines that the alternatives provided by relief requests PRR-RBS-2017-1, PRR-RBS-2017-2, and VRR-RBS-2017-1 adequately address the regulatory requirements in 10 CFR 50.55a(z)(1) and (2). Therefore, the NRC staff authorizes the proposed alternative requests for the fourth 10-Year IST interval at RBS, which is currently scheduled to start on December 2, 2017 and end on December 1, 2027.

All other ASME OM Code requirements for which relief was not specifically requested and approved in the subject requests remain applicable.

Principal Contributors: M. Farnan, NRR
J. Billerbeck, NRR

Date: May 24, 2017

SUBJECT: RIVER BEND STATION, UNIT 1 – ALTERNATIVE REQUESTS PRR-RBS-2017-1, PRR-RBS-2017-2, AND VRR-RBS-2017-1 FROM THE REQUIREMENTS OF THE ASME CODE FOR THE INSERVICE TESTING FOR THE FOURTH 10-YEAR INTERVAL (CAC NOS. MF9368, MF9369, AND MF9370) DATED MAY 24, 2017

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