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CNRO-2007-00042
November 29, 2007

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Relief Requests for 10 year updates to the120 Month Inservice Testing intervals

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| River Bend Station<br>Docket No. 50-458<br>License No. NPF-47 | Grand Gulf Nuclear Station<br>Docket No. 50-416<br>License No. NPF-29 |
| Arkansas Nuclear One<br>Unit 1<br>Docket Nos. 50-313<br>License Nos. DPR-51 | Waterford 3 Steam Electric<br>Station<br>Docket No. 50-382<br>License No. NPF-38 |

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a(a)(3)(ii), Entergy Operations, Inc. (Entergy) requests alternatives for the Inservice Testing Program. These requests are needed to support the 120 month updates for the upcoming intervals. The request applies to Arkansas Nuclear One - Unit 1, Grand Gulf Nuclear Station, River Bend Station, and Waterford Steam Electric Station, Unit 3. These requests are similar to the requests approved for use for the current interval. The details of the 10 CFR 50.55a requests are provided in the attachment.

Entergy requests approval as soon as practical. The new intervals start on 12-1-2007.

If you have any questions or require additional information, please contact Bill Brice at (601) 368- 5076.

This letter contains no new commitments.

Sincerely,

BSF/WBB/bal

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NRR

Attachment: ASME OM Relief Requests

cc: Mr. W. R. Brian (GGNS)
Mr. T. A. Burke (ECH)
Mr. J. S. Forbes (ECH)
Mr. J. T. Herron (ECH)
Mr. T. G. Mitchell (ANO)
Mr. N. S. Reynolds (W&S)
Mr. L. J. Smith (Wise, Carter)
Mr. J. E. Venable (RBS)
Mr. K. T. Walsh (W-3)

Mr. E. E. Collins, Regional Administrator, RIV
Mr. K. Kalyanam, Project Manager, W-3
Mr. B. K. Vaidya, Project Manager, GGNS, RBS
Mr. A. B. Wang, Project Manager, ANO

**Attachment 1**

**CNRO-2007-00042**

**ASME OM Relief Requests**

| 10 CFR 50.55a Request Number PRR-GGNS-2007-1 | |
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| Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)<br><br>10 CFR 50.55a Request Title: E12 Jockey Pumps Alternative Request | |
| **PLANT/UNIT:** | Grand Gulf Nuclear Station |
| **INTERVAL:** | Third 120 Month Inservice Testing Interval |
| **COMPONENTS AFFECTED:** | E12C003A Residual Heat Removal System Jockey Pump A<br><br>E12C003B Residual Heat Removal System Jockey Pump B<br><br>E12C003C Residual Heat Removal System Jockey Pump C<br><br>(The above pumps are ASME Code Class 2, Centrifugal, Motor Driven, OM Code Category A pumps.) |
| **CODE EDITION AND ADDENDA:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda |
| **REQUIREMENTS:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-3300<br><br>Reference values shall be obtained as follows:<br><br>(a) Initial reference values shall be determined from the results of testing meeting the requirements of ISTB-3100, Preservice Testing, or from the results of the first inservice test.<br><br>(b) New or additional reference values shall be established as required by ISTB-3310, ISTB-3320, or ISTB-6200(c).<br><br>(c) Reference values shall be established only when the pump is known to be operating acceptably.<br><br>(d) Reference values shall be established at a point(s) of operation (reference point) readily duplicated during subsequent tests.<br><br>(e) Reference values shall be established in a region(s) of relatively stable pump flow.<br><br>(1) Reference values shall be established within ± 20% of pump design flow rate for the comprehensive test.<br><br>(2) Reference values shall be established within ± 20% of pump design flow for the Group A and Group B tests, if practicable. If not practicable, the reference point flow rate shall be established at the highest practical |

flow rate.

(f) All subsequent test results shall be compared to these initial reference values or to new reference values established in accordance with ISTB-3310, ISTB-3320, or ISTB-6200(c).

(g) Related conditions that can significantly influence the measurement or determination of the reference value shall be analyzed in accordance with ISTB-6400.

ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB 3510

*(b) Range*

*(1)* The full-scale range of each analog instrument shall be not greater than three times the reference value.

ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB 3510

*(c) Instrument Location.* The sensor location shall be established by the Owner, documented in the plant records (see ISTB-9000), and shall be appropriate for the parameter being measured. The same location shall be used for subsequent tests. Instruments that are position sensitive shall be either permanently mounted, or provision shall be made to duplicate their position during each test.

ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-5121

Group A Test Procedure. Group A 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 OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-5121

*(b)* The resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to its reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.

ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda TABLE ISTB-3000-1 INSERVICE TEST PARAMETERS lists Flow Rate as a required parameter for both Group A and Comprehensive pump

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| | tests. |
| **REASON FOR RELIEF REQUEST:** | Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3)(ii), an alternative is requested when using the requirements of ASME OM Code ISTB (as listed above).<br><br>This alternative is a re-submittal of NRC approved 2nd Interval PRR-E12-01 that was based on the ASME OM Code 1987 Edition with addenda through OMa-1988. This 3rd Interval alternative request is based on the ASME OM Code-2001 Edition with addenda through OMb Code-2003 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.<br><br>These jockey pumps are required to operate whenever their respective LPCI/RHR trains are in the operable condition. As such, the pumps perform continuous duty on a recirculation line and provide makeup as needed.<br><br>Pressure taps exist in the jockey pump suction and discharge piping where pump suction and discharge pressure can be measured for calculation of differential pressure, and throttle valves exist which can be used to set differential pressure equal to the pump's reference value. However, the pump differential pressure information provided is of little use for analyzing the hydraulic condition of the jockey pump without being able to measure flow rate or set flow rate at a known reference value, as required by ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-5121(*b*).<br><br>There are no practical means of measuring the flow rate of these jockey pumps. No flow rate meters, orifices or other measurement devices are installed in the system for measurement of jockey pump flow rate. The installed main LPCI/RHR process flow measurement instrumentation loops, which are discussed below, cannot be used for jockey pump flow measurement. Attempts have been made to use portable ultrasonic flow instruments to measure jockey pump flow rate, but the results have been too variable to be repeatable.<br><br>Flow orifices 1E12-FE-N014A, B, and C, which are installed in the system to measure flow rate of the main LPCI/RHR Pumps 1E12C002A, B, and C, each have a rated maximum flow rate of 10,000 gpm. Each flow instrument loop, which consists of the flow orifice, flow transmitter, flow indicator and signal processing electronics, has an overall loop accuracy of between one and two percent of the maximum measurable flow rate. Even at the lower, more accurate, point, one percent accuracy is equivalent to 100 gpm, which is over 2-1/2 times the jockey pumps' rated flow rate of 40 gpm at 50 psid (UFSAR Section 6.3.2.2.5). |

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| | The flow orifices are installed in 18-inch NPS piping. Even if the typical operational jockey pump flow rate of 30 to 50 gpm registered on this flow instrumentation, it would not meet the requirements of ASME OM Code-2001 Edition through addenda OMb-2003 ISTB 3510*(b)(1)* and ASME OM Code-2001 Edition through addenda OMb-2003 ISTB-3510*(c)*, since the full-scale ranges of these analog instruments are more than 200 times the probable reference values for these jockey pumps. Under ideal conditions, the jockey pump flows would be just barely detectable at the lower end of the instrument scales, and accurate measurement would be masked by instrument noise and other conditions.<br><br>Additionally, the flow path for each of the jockey pumps in standby operation is through a minimum-flow return line with a flow-limiting orifice plate (1E12-RO-D002A, B or C) which is sized to hold flow rate reasonably constant at about 40 gpm (UFSAR Figure 5.4-19), while providing adequate margin in jockey pump capacity to make up for any leakage from the main LPCI/RHR pump discharge header. Flow rate through this orifice plate cannot be measured, as discussed above, since there are no installed measurement points and portable flow rate instrumentation has not proven adequate. This flow rate also cannot be considered constant and repeatable enough to meet the requirements of ASME OM Code-2001 Edition through addenda OMb-2003 ISTB-3300*(d)*, due to the potential for changes in the main LPCI/RHR discharge header leakage from test to test. |
| **PROPOSED ALTERNATIVE AND BASIS:** | Jockey pump discharge header pressure is continuously monitored, and an annunciator alarms in the Control Room if the discharge header pressure drops below a preset value. This pressure alarm is currently adjusted to 40 psig for the Loop A and B jockey pumps, and 28 psig for the Loop C jockey pump. Based on the pumps' rated capacities (40 gpm at 50 psid, per UFSAR Section 6.3.2.2.5) and the required suppression pool level during power operation (greater than, or equal to, 18 feet 4-1/12 inches and less than, or equal to, 18 feet 9-3/4 inches per Tech Spec LCO 3.6.2.2), these low header pressure annunciators will alarm at approximately 70 percent of the Loop A and B jockey pumps' operating differential pressure, and at approximately 50 percent of the Loop C jockey pump's operating differential pressure.<br><br>Also, GGNS Technical Specification SR 3.5.1.1 requires verification every 31 days that the respective LPCI/RHR headers are filled with water by venting the piping at the high point vents. Such continuous monitoring and monthly venting will provide timely warning if a jockey pump has failed, or that system leakage has exceeded the capacity of the jockey pump. In addition, these pumps are currently being monitored at least once a quarter under the GGNS Vibration Monitoring Program, which is currently not required by any Federal, state or industry requirements. Because rotating equipment faults that can be detected by vibration monitoring will show up any time the equipment is operating, returning these pumps to a fixed set of operating |

conditions is not necessary to detect such faults. The faults themselves, however, are affected by the equipment operating parameters. For example, if the equipment is heavily loaded, fault growth will typically be escalated.

These jockey pumps may be categorized as "smooth running," that is, they are typically running with very low vibration velocities. Each pump's flow rate is normally at or only slightly higher than the flow through the pump's minimum flow return piping. Any additional flow is typically only to make up for leakage from the main LPCI/RHR pump's discharge piping. Under these conditions, these pumps' reference values of vibration velocity are normally less than 0.05 inches per second (IPS).

Limits established in the GGNS Vibration Monitoring Program are not only based on vendor and industry data, but also on changes in vibration levels and in the spectral content of the vibration signals. Unlike ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda ISTB Table-ISTB-5100-1, "Acceptance Criteria," which has fixed Alert and Required Action limits at 2.5 times and 6 times respectively, of the reference values for vibration, the GGNS Vibration Monitoring Program analyzes changes in vibration spectrum or spectral content over time, looks for trends in the changes, and attempts to determine the reasons for the changes. If changes are determined to be from an equipment problem, rather than changes in operating parameters, increased monitoring is established to determine the rate of the trend, and equipment maintenance is scheduled to correct the problem before any vendor or industry recommendations or limits of ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda ISTB are expected to be exceeded.

Hydraulic condition of the jockey pumps will be considered acceptable by continuous monitoring of pump discharge header pressures and verifying adequate header pressures as indicated by the absence of low pressure alarms. Corrective action will be taken if a header low pressure alarm sounds, indicating low header pressure.

Vibration will continue to be measured on these pumps as required by ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda. Differential pressure will be set equal to its' reference value prior to the measurements (Reference values of vibration were taken with the jockey pumps in normal operation with header pressure alarm cleared and flow rate through the jockey pump minimum flow return orifice plate). If a measured vibration velocity exceeds an Alert, or Required Action limit according to ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda ISTB-Table-ISTB-5100-1, "Acceptance Criteria," the required actions of ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda ISTB-6200, "Corrective Action," will be taken.

Based on the determination that compliance with the ASME OM Code

| 10 CFR 50.55a Request Number PRR-GGNS-2007-1 | |
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| | requirements results in a hardship without a compensating increase in the level of quality or safety, this proposed alternative should be granted pursuant to 10 CFR 50.55a(a)(3)(ii). |
| **DURATION:** | Grand Gulf Nuclear Station's 3rd 120-month Inservice Testing Interval (December 1, 2007, through November 30, 2017 based on TAC No. M94454). |
| **PRECEDENTS:** | Use of an alternative for similar requirements was previously granted as PRR-E12-01 for Grand Gulf Nuclear Station's 2nd 120-month Inservice Testing Interval (TAC No. MA0196). |
| **REFERENCES:** | Revision 1 of NUREG-1482, Guidelines for Inservice testing at Nuclear Power Plants, Final Report, Published January 2005<br><br>UFSAR 3.9.3.2.2.1.3, 6.3.2.2.5, 6.7.2.2, UFSAR Figures 5.4-19 and 5.4-35, UFSAR Table 3.9-3b, 6.7-2 |
| **STATUS:** | Submitted for Nuclear Regulatory Commission review. |

| 10 CFR 50.55a Request Number PRR-GGNS-2007-2 | |
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| Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)<br>10 CFR 50.55a Request Title: E21 Jockey Pump Alternative Request | |
| **PLANT/UNIT:** | Grand Gulf Nuclear Station |
| **INTERVAL:** | Third 120 Month Inservice Testing Interval |
| **COMPONENTS AFFECTED:** | E21C002 Low Pressure Core Spray System Jockey Pump<br>(The above pump is an ASME Code Class 2, Centrifugal, Motor Driven, OM Code Category A pump.) |
| **CODE EDITION AND ADDENDA:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda |
| **REQUIREMENTS:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-3300<br>Reference values shall be obtained as follows:<br>(a) Initial reference values shall be determined from the results of testing meeting the requirements of ISTB-3100, Preservice Testing, or from the results of the first inservice test.<br>(b) New or additional reference values shall be established as required by ISTB-3310, ISTB-3320, or ISTB-6200(c).<br>(c) Reference values shall be established only when the pump is known to be operating acceptably.<br>(d) Reference values shall be established at a point(s) of operation (reference point) readily duplicated during subsequent tests.<br>(e) Reference values shall be established in a region(s) of relatively stable pump flow.<br>(1) Reference values shall be established within ± 20% of pump design flow rate for the comprehensive test.<br>(2) Reference values shall be established within ± 20% of pump design flow for the Group A and Group B tests, if practicable. If not practicable, the reference point flow rate shall be established at the highest practical flow rate.<br>(f) All subsequent test results shall be compared to these initial reference values or to new reference values established in accordance with ISTB-3310, ISTB-3320, or ISTB-6200(c).<br>(g) Related conditions that can significantly influence the measurement or determination of the reference value shall be analyzed in accordance with ISTB-6400.<br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB 3510<br>*(b) Range*<br>*(1)* The full-scale range of each analog instrument shall be not greater |

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| | than three times the reference value.<br><br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB 3510<br><br>*(c) Instrument Location.* The sensor location shall be established by the Owner, documented in the plant records (see ISTB-9000), and shall be appropriate for the parameter being measured. The same location shall be used for subsequent tests. Instruments that are position sensitive shall be either permanently mounted, or provision shall be made to duplicate their position during each test.<br><br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-5121<br><br>Group A Test Procedure. Group A 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.<br><br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-5121<br><br>*(b)* The resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to its reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.<br><br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda TABLE ISTB-3000-1 INSERVICE TEST PARAMETERS lists Flow Rate as a required parameter for both Group A and Comprehensive pump tests. |
| **REASON FOR RELIEF REQUEST:** | Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3)(ii), an alternative is requested when using the requirements of ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB (as listed above).<br><br>This alternative is a re-submittal of NRC approved 2nd Interval PRR-E21-01 that was based on the ASME OM Code 1987 Edition with addenda through OMa-1988. This 3rd Interval alternative request is based on the ASME OM Code-2001 Edition with addenda through OMb Code-2003 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.<br><br>This jockey pump is required to operate whenever the LPCS system is in the operable condition. As such, the pump performs continuous duty on a recirculation line and provides makeup as needed.<br><br>Pressure taps exist in the jockey pump suction and discharge piping where pump suction and discharge pressure can be measured for calculation of differential pressure, and a throttle valve exists which can be used to set |

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| | differential pressure equal to the pump's reference value. However, the pump differential pressure information provided is of little use for analyzing the hydraulic condition of the jockey pump without being able to measure flow rate or set flow rate at a known reference value, as required by ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-5121(b).<br><br>There are no practical means of measuring the flow rate of this pump. No flow rate meters, orifices or other measurement devices are installed in the system for measurement of jockey pump flow rate. The installed main process flow measurement instrumentation loop, which is discussed below cannot be used for jockey pump flow measurement. Attempts have been made to use ultrasonic flow instruments to measure jockey pump flow rate, but the results have been too variable to be repeatable.<br><br>Flow orifice 1E21-FE-N002, which is installed in the system to measure flow rate of the main LPCS Pump 1E12C001, has a rated maximum flow rate of 10,000 gpm. The flow instrument loop, which consists of the flow orifice, flow transmitter, flow indicator and signal processing electronics, has an overall loop accuracy of between one and two percent of the maximum measurable flow rate. Even at the lower, more accurate, point, one percent accuracy is equivalent to 100 gpm, which is over 2-1/2 times the jockey pump's rated flow rate of 40 gpm at 45 psid (SAR Section 6.3.2.2.5). The flow orifice is installed in 16-inch NPS piping. Even if the typical operational jockey pump flow rate of 30 to 50 gpm registered on this flow instrumentation, it would not meet the requirements of ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda paragraphs ISTB-3510(b) and ISTB-3510(c), since the full-scale range of this analog instrument is more than 200 times the probable reference values for this jockey pump. Under ideal conditions, the jockey pump flow would be just barely detectable at the lower end of the instrument scale, and accurate measurement would be masked by instrument noise and other conditions.<br><br>Additionally, the flow path for the jockey pump in standby operation is through a minimum-flow return line with a flow restricting orifice plate (1E21-RO-D003) which is sized to hold flow rate reasonably constant at about 40 gpm (SAR Figure 5.4-19), while providing adequate margin in jockey pump capacity to make up for any leakage from the main LPCS pump discharge header. Flow rate through this orifice plate cannot be measured, as discussed above, since there are no installed measurement points and portable flow rate instrumentation has not proven adequate. This flow rate also cannot be considered constant and repeatable enough to meet the requirements of ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-3300, due to the potential for changes in the main LPCS discharge header leakage from test to test. |
| **PROPOSED ALTERNATIVE AND BASIS:** | Jockey pump discharge header pressure is continuously monitored, and an annunciator alarms in the Control Room if the main LPCS discharge header pressure drops below a preset value (currently 32 psig). Based on the jockey |

pump's rated capacity (40 gpm at 45 psid, per UFSAR Section 6.3.2.2.5) and the required suppression pool level during power operation (greater than, or equal to, 18 feet 4-1/12 inches and less than, or equal to, 18 feet 9-3/4 inches per Tech Spec LCO3.6.2.2), this low header pressure annunciator will alarm at approximately 60 percent of the jockey pump's operating differential pressure.

Also, GGNS Technical Specification SR 3.5.1.1 requires verification every 31 days that the main LPCS discharge header is filled with water by venting the piping at the high point vent. Such continuous monitoring and monthly venting will provide timely warning if the jockey pump has failed, or that system leakage has exceeded the capacity of the jockey pump.

In addition, the pump is currently being monitored at least once a quarter under the GGNS Vibration Monitoring Program, which is currently not required by any Federal, state or industry requirements. Because rotating equipment faults that can be detected by vibration monitoring will show up any time the equipment is operating, returning the pump to a fixed set of operating conditions is not necessary to detect such faults. The faults themselves however, are affected by the equipment operating parameters. For example, if the equipment is heavily loaded, fault growth will typically be escalated.

This jockey pump may be categorized as "smooth running," that is, it is typically running with very low vibration velocities. The pump's flow rate is normally at or only slightly higher than the flow through the pump's minimum flow return piping. Any additional flow is typically only to make up for leakage from the main LPCS pump's discharge piping. Under these conditions, the pump's reference values of vibration velocity are normally less than 0.05 inches per second (IPS).

Limits established in the GGNS Vibration Monitoring Program are not only based on vendor and industry data but also on changes in vibration levels and in the spectral content of the vibration signals. Unlike ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda, ISTB Table-ISTB-5100-1, "Acceptance Criteria," which has fixed Alert and Required Action limits at 2.5 times and 6 times, respectively, of the reference values, the GGNS Vibration Monitoring Program analyzes changes in vibration spectrum or spectral content over time, looks for trends in the changes, and attempts to determine the reasons for the changes. If changes are determined to be from an equipment problem, rather than changes in operating parameters, increased monitoring is established to determine the rate of the trend and equipment maintenance is scheduled to correct the problem before any vendor or industry recommendations or limits of ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda ISTB are expected to be exceeded.

Hydraulic condition of the jockey pump will be considered acceptable by continuing to monitor the pump discharge header pressure and verifying adequate header pressures as indicated by the absence of low pressure alarm. Corrective action will be taken if header low pressure alarm sounds,

| 10 CFR 50.55a Request Number PRR-GGNS-2007-2 | |
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| | indicating low header pressure.<br><br>Vibration will continue to be measured on this pump as required by ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda. Differential pressure will be set equal to its' reference value prior to the measurements (Reference values of vibration were taken with the jockey pump in normal operation with header pressure alarm cleared and flow rate through the jockey pump minimum flow return orifice plate). If a measured vibration velocity exceeds an Alert, or Required Action limit according to ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda ISTB-Table-ISTB-5100-1, "Acceptance Criteria," the required actions of ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda ISTB-6200, "Corrective Action," will be taken.<br><br>Based on the determination that compliance with the ASME OM Code requirements results in a hardship without a compensating increase in the level of quality or safety, this proposed alternative should be granted pursuant to 10 CFR 50.55a(a)(3)(ii). |
| **DURATION:** | Grand Gulf Nuclear Station's 3rd 120-month Inservice Testing Interval (December 1, 2007, through November 30, 2017 based on TAC No. M94454). |
| **PRECEDENTS:** | Use of an alternative for similar requirements was previously granted as PRR-E21-01 for Grand Gulf Nuclear Station's 2nd 120-month Inservice Testing Interval (TAC No. MA0196). |
| **REFERENCES:** | Revision 1 of NUREG-1482, Guidelines for Inservice testing at Nuclear Power Plants, Final Report, Published January 2005<br><br>UFSAR 6.3.2.2.5, 9A.5.3.4, UFSAR Figures 5.4-19 and 5.4-36, UFSAR Table 3.9-3b, 6.3-10, 9A.1 |
| **STATUS:** | Submitted for Nuclear Regulatory Commission review. |

| 10 CFR 50.55a Request Number PRR-GGNS-2007-3 | |
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| Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)<br><br>10 CFR 50.55a Request Title: E22 Jockey Pump Alternative Request | |
| **PLANT/UNIT:** | Grand Gulf Nuclear Station |
| **INTERVAL:** | Third 120 Month Inservice Testing Interval |
| **COMPONENTS AFFECTED:** | E22C003 High Pressure Core Spray System Jockey Pump<br><br>(The above pump is an ASME Code Class 2, Centrifugal, Motor Driven, OM Code Category A pump.) |
| **CODE EDITION AND ADDENDA:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda |
| **REQUIREMENTS:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-3300<br><br>Reference values shall be obtained as follows:<br><br>(a) Initial reference values shall be determined from the results of testing meeting the requirements of ISTB-3100, Preservice Testing, or from the results of the first inservice test.<br><br>(b) New or additional reference values shall be established as required by ISTB-3310, ISTB-3320, or ISTB-6200(c).<br><br>(c) Reference values shall be established only when the pump is known to be operating acceptably.<br><br>(d) Reference values shall be established at a point(s) of operation (reference point) readily duplicated during subsequent tests.<br><br>(e) Reference values shall be established in a region(s) of relatively stable pump flow.<br><br>(1) Reference values shall be established within ± 20% of pump design flow rate for the comprehensive test.<br><br>(2) Reference values shall be established within ± 20% of pump design flow for the Group A and Group B tests, if practicable. If not practicable, the reference point flow rate shall be established at the highest practical flow rate.<br><br>(f) All subsequent test results shall be compared to these initial reference values or to new reference values established in accordance with ISTB-3310, ISTB-3320, or ISTB-6200(c). |

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| | (g) Related conditions that can significantly influence the measurement or determination of the reference value shall be analyzed in accordance with ISTB-6400.<br><br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB 3510<br><br>*(b) Range*<br><br>*(1)* The full-scale range of each analog instrument shall be not greater than three times the reference value.<br><br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB 3510<br><br>*(c) Instrument Location.* The sensor location shall be established by the Owner, documented in the plant records (see ISTB-9000), and shall be appropriate for the parameter being measured. The same location shall be used for subsequent tests. Instruments that are position sensitive shall be either permanently mounted, or provision shall be made to duplicate their position during each test.<br><br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-5121<br><br>Group A Test Procedure. Group A 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.<br><br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-5121<br><br>*(b)* The resistance of the system shall be varied until the flow rate equals the reference point. The differential pressure shall then be determined and compared to its reference value. Alternatively, the flow rate shall be varied until the differential pressure equals the reference point and the flow rate determined and compared to the reference flow rate value.<br><br>ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda TABLE ISTB-3000-1 INSERVICE TEST PARAMETERS lists Flow Rate as a required parameter for both Group A and Comprehensive pump tests. |
| **REASON FOR RELIEF REQUEST:** | Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3)(ii), an alternative is requested when using the requirements of ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB (as listed above). |

This alternative is a re-submittal of NRC approved 2nd Interval PRR-E22-01 that was based on the ASME OM Code 1987 Edition with addenda through OMa-1988. This 3rd Interval alternative request is based on the ASME OM Code-2001 Edition with addenda through OMb Code-2003 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.

This jockey pump is required to operate whenever the HPCS system is in the operable condition. As such, the pump performs continuous duty on a recirculation line and provides makeup as needed.

Pressure taps exist in the jockey pump suction and discharge piping where pump suction and discharge pressure can be measured for calculation of differential pressure, and a throttle valve exists which can be used to set differential pressure equal to the pump's reference value. However, the pump differential pressure information provided is of little use for analyzing the hydraulic condition of the jockey pump without being able to measure flow rate or set flow rate at a known reference value, as required by ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-5121(b).

There are no practical means of measuring the flow rate of this pump. No flow rate meters, orifices or other measurement devices are installed in the system for measurement of jockey pump flow rate. The installed main process flow measurement instrumentation loop, which is discussed below, cannot be used for jockey pump flow measurement. Attempts have been made to use ultrasonic flow instruments to measure jockey pump flow rate, but the results have been inconsistent and unrepeatable.

Flow orifice 1E22-FE-N007, which is installed in the system to measure flow rate of the main HPCS Pump 1E22C001, has a rated maximum flow rate of 10,000 gpm. The flow instrument loop, which consists of the flow orifice, flow transmitter, flow indicator and signal processing electronics, has an overall loop accuracy of between one and two percent of the maximum measurable flow rate. Even at the lower, more accurate, point, one percent accuracy is equivalent to 100 gpm, which is over 2-1/2 times the jockey pump's rated flow rate of 40 gpm at 45 psid (UFSAR Section 6.3.2.2.5). The flow orifice is installed in 16-inch NPS piping. Even if the typical operational jockey pump flow rate of 30 to 50 gpm registered on this flow instrumentation, it would not meet the requirements of ASME OM Code-2001 Edition through addenda OMb-2003 ISTB 3510*(b)(1)* and ASME OM Code-2001 Edition through addenda OMb-2003 ISTB-3510*(c)*, since the full-scale range of this analog instrument is more than 200 times the probable reference value for this jockey pump. Under ideal conditions, the jockey pump flow would be just barely detectable at the lower end of the instrument scale, and accurate measurement would be masked by instrument noise and other variables.

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| | Additionally, the flow path for the jockey pump in standby operation is through a minimum-flow return line with a flow restricting orifice plate (1E22-RO-D003) which is sized to hold flow rate reasonably constant at about 40 gpm (UFSAR Figure 5.4-19), while providing adequate margin in jockey pump capacity to make up for any leakage from the main HPCS pump discharge header. Flow rate through this orifice plate cannot be measured, as discussed above, since there are no installed measurement points and portable flow rate instrumentation has not proven adequate. This flow rate also cannot be considered constant and repeatable enough to meet the requirements of ASME OM Code-2001 Edition through addenda OMb-2003 ISTB-3300*(d)*, due to the potential for changes in the main HPCS discharge header leakage from test to test. |
| **PROPOSED ALTERNATIVE AND BASIS:** | Jockey pump discharge header pressure is continuously monitored, and an annunciator alarms in the Control Room if the discharge header pressure drops below a preset value (currently 28 psig). Based on the pump's rated capacity (40 gpm at 45 psid, per UFSAR Section 6.3.2.2.5), and the required suppression pool level during power operation (greater than, or equal to, 18 feet 4-1/12 inches and less than, or equal to, 18 feet 9-3/4 inches per Tech Spec LCO 3.6.2.2), this low header pressure annunciator will alarm at approximately 55 percent of the jockey pump's operating differential pressure.<br><br>Also, GGNS Technical Specification SR 3.5.1.1 requires verification every 31 days that the respective header is filled with water by venting the piping at the high point vents. Such continuous monitoring and monthly venting will provide timely warning if the jockey pump has failed, or that system leakage has exceeded the capacity of the jockey pump.<br><br>In addition, the pump is currently being monitored at least once a quarter under the GGNS Vibration Monitoring Program, which is currently not required by any Federal, state or industry requirements. Because rotating equipment faults that can be detected by vibration monitoring will show up any time the equipment is operating, returning the pump to a fixed set of operating conditions is not necessary to detect such faults. The faults themselves however, are affected by the equipment operating parameters. For example, if the equipment is heavily loaded, fault growth will typically be escalated.<br><br>This jockey pump may be categorized as "smooth running," that is, it is typically running with very low vibration velocities. The pump's flow rate is normally at or only slightly higher than the flow through the pump's minimum flow return piping. Any additional flow is typically only to make up for leakage from the main HPCS pump's discharge piping. Under these conditions, the pump's reference values of vibration velocity are normally less than 0.05 inches per second (IPS).<br><br>Limits established in the GGNS Vibration Monitoring Program are not only |

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| | based on vendor and industry data but also on changes in vibration levels and in the spectral content of the vibration signals. Unlike ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda, ISTB Table-ISTB-5100-1, "Acceptance Criteria," which has fixed Alert and Required Action limits at 2.5 times and 6 times, respectively, of the reference values, the GGNS Vibration Monitoring Program analyzes changes in vibration spectrum or spectral content over time, looks for trends in the changes, and attempts to determine the reasons for the changes. If changes are determined to be from an equipment problem, rather than changes in operating parameters, increased monitoring is established to determine the rate of the trend and equipment maintenance is scheduled to correct the problem before any vendor or industry recommendations or limits of ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda ISTB are expected to be exceeded.<br><br>Hydraulic condition of the jockey pump will be considered acceptable by continuing to monitor the pump discharge header pressure and verifying adequate header pressures as indicated by the absence of low pressure alarm. Corrective action will be taken if header low pressure alarm sounds, indicating low header pressure.<br><br>Vibration will continue to be measured on this pump as required by ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda. Differential pressure will be set equal to its reference value prior to the measurements. (Reference values of vibration were taken with the jockey pump in normal operation with header pressure alarm cleared and flow rate through the jockey pump minimum flow return orifice plate). If a measured vibration velocity exceeds an Alert or Required Action limit according to ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda, ISTB-Table-ISTB-5100-1, "Acceptance Criteria," the required actions of ASME OM Code-2001 Edition through addenda OMb Code-2003 Addenda ISTB-6200, "Corrective Action," will be taken.<br><br>Based on the determination that compliance with the ASME OM Code requirements results in a hardship without a compensating increase in the level of quality or safety, this proposed alternative should be granted pursuant to 10 CFR 50.55a(a)(3)(ii). |
| **DURATION:** | Grand Gulf Nuclear Station's 3rd 120-month Inservice Testing Interval (December 1, 2007, through November 30, 2017 based on TAC No. M94454). |
| **PRECEDENTS:** | Use of an alternative for similar requirements was previously granted as PRR-E22-01 for Grand Gulf Nuclear Station's 2nd 120-month Inservice Testing Interval (TAC No. MA0196). |
| **REFERENCES:** | Revision 1 of NUREG-1482, Guidelines for Inservice testing at Nuclear Power Plants, Final Report, Published January 2005 |

| 10 CFR 50.55a Request Number PRR-GGNS-2007-3 | |
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| | UFSAR 6.3.2.2.5, 9A.5.5.4, UFSAR Figures 5.4-19 and 5.4-36, UFSAR Table 3.9-3b, 9A.1 |
| **STATUS:** | Submitted for Nuclear Regulatory Commission review. |

| 10 CFR 50.55a Request Number VRR-ANO1-2007-1 | |
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| Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)<br><br>10 CFR 50.55a Request Title: PSV-1617 Alternative Request | |
| **PLANT/UNIT:** | Arkansas Nuclear One Unit 1 |
| **INTERVAL:** | Fourth 120 Month Inservice Testing Interval |
| **COMPONENTS AFFECTED:** | Valve: PSV-1617<br><br>System: Reactor Building Spray<br><br>Relief valve PSV-1617 has an active open safety function to relieve over-pressure and vacuum conditions in the sodium hydroxide storage tank. Note that, although the tank vent valve AV-10 is normally open to perform these functions, PSV-1617 is considered to be the primary and most reliable mechanism for performing this function.<br><br>(The above valve is an ASME Code Class 3, OM Code Category C relief valve.) |
| **CODE EDITION AND ADDENDA:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda |
| **REQUIREMENTS:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda, Appendix I, Paragraph I-8200:<br><br>"Seat Tightness Testing. Seat tightness testing shall be performed in accordance with the Owner's valve test procedure." |
| **REASON FOR RELIEF REQUEST:** | Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3)(ii), an alternative is requested when using the requirements of ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda (as listed above).<br><br>This alternative is a re-submittal of NRC approved 3rd Interval Relief Request-9 that was based on the ASME OM Code 1987 Edition with addenda through OMa-1988 Addenda. This 3rd Interval alternative request is based on the ASME OM Code-2001 Edition with addenda through OMb Code-2003 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.<br><br>This alternative is to eliminate the requirement related to seat tightness testing of vacuum relief devices. The seat leakage testing of this valve produces no useful information since the valve has no significant safety function in the closed position. |

| 10 CFR 50.55a Request Number VRR-ANO1-2007-1 | |
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| **PROPOSED ALTERNATIVE AND BASIS:** | Seat leakage testing of this vacuum breaker valve will not be performed.<br><br>This vacuum breaker valve has no significant safety function in the closed position. Furthermore, seat leakage is irrelevant since, in effect, the valve is normally bypassed by a line with a normally-open valve.<br><br>Based on the determination that compliance with the ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda requirements results in a hardship without a compensating increase in the level of quality or safety, this proposed alternative should be granted pursuant to 10 CFR 50.55a(a)(3)(ii). |
| **DURATION:** | Arkansas Nuclear One Unit 1's 4th 120-month Inservice Testing Interval (December 2, 2007 through December 1, 2017 based on TAC No. MA0275). |
| **PRECEDENTS:** | Use of an alternative for similar requirements was previously granted for Arkansas Nuclear One Unit 1's 3rd 120-month Inservice Testing Interval (TAC No. MA0275). |
| **REFERENCES:** | TAC No. MA0275 related correspondences: September 26, 2000 (NRC); October 29, 1999 (EOI); October 9, 1998 (NRC); December 1, 1997 (EOI) |
| **STATUS:** | Submitted for Nuclear Regulatory Commission review. |

| 10 CFR 50.55a Request Number PRR-ANO1-2007-1 | |
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| Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)<br><br>10 CFR 50.55a Request Title: P-4A, P-4B, P-4C Alternative Request | |
| **PLANT/UNIT:** | Arkansas Nuclear One Unit 1 |
| **INTERVAL:** | Fourth 120 Month Inservice Testing Interval |
| **COMPONENTS AFFECTED:** | Pumps: P-4A, P-4B, P-4C<br><br>System: Service Water<br><br>Under emergency conditions these vertical line-shaft pumps provide an assured source of cooling water and the ultimate heat sink to various safety related and safe shutdown components. In addition, they provide cooling water to non-safety related plant components during normal plant operation. |
| **CODE EDITION AND ADDENDA:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda |
| **REQUIREMENTS:** | ISTB-5221 and ISTB-5223<br><br>"Group A and 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.". |
| **REASON FOR RELIEF REQUEST:** | Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3)(ii), an alternative is requested when using the requirements of ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda (as listed above).<br><br>This alternative is a re-submittal of NRC approved Third Interval Relief Request-6 that was based on the ASME OM Code 1987 Edition with addenda through OMa-1988. This Fourth Interval alternative request is based on the ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda. The proposed relief is in accordance with Code Case OMN-16. The only substantive change to this alternative versus Relief Request-6 is the requirement to have at least one data point for each 20% of the maximum pump curve range. This change would not alter the previous NRC Safety Evaluation conclusions.<br><br>The service water system provides a continuous supply of cooling water to the two safety-related (essential) service water headers as well as the non-essential header related to main turbine generator and other plant support auxiliaries. During normal plant operation at power the heat removal demands of the service water system require the operation of at least two and frequently three pumps. After the system operation reaches a degree of stability, perturbation of flow to any of the on-line heat exchangers could |

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| | have a severe adverse impact on plant operation with the potential for unacceptable flow and temperature transients. This situation precludes flow adjustments on specific heat loads and certainly throttling of pump or header isolation valves. As such, returning the system operating parameters to a prescribed unique reference value (either flow or differential pressure) is impractical and could result in an unreasonable and unwarranted risk to plant operation with little or no apparent gain in plant safety or reliability. |
| **PROPOSED ALTERNATIVE AND BASIS:** | Following maintenance activities and when the pump is know to be operating acceptably the reference curve will be either reconfirmed or a new curve created as follows:<br><br>a. The subject flow rate will be varied over a specified range with the pump operating at or near its design basis flow rate. Per SAR Table 9-8 a service water pump design capacity is 6500 gpm. This specified range, approximately 4000 gpm to 7500 gpm, will be beyond the theoretical "flat" portion of the pump performance curve.<br><br>b. At least five (5) points over the test range, corresponding differential pressure and flow rate measurements will be recorded after flow stability is achieved at each point (minimum 2 minutes run time). The points will include at least one point below 5200 gpm, one point between 5200 gpm to 6500 gpm, and one point greater than 6500 gpm. Instruments used for obtaining pump performance data will satisfy the accuracy and range requirements as set fourth in ISTB-3500.<br><br>c. The recorded curve data will be plotted graphically or electronically and an equivalent pump curve will be derived.<br><br>Individual acceptance criteria will be developed for each pump as follows:<br><br>a. For the Type A test, an acceptable range of operation will be established when pump differential pressure, corresponding to a specific flow rate, deviates by no more than 0.95 times the reference value for the lower limit and 1.10 times the reference value for the upper limit. For the Comprehensive test, an acceptable range of operation will be established when pump differential pressure, corresponding to a specific flow rate, deviates by no more than 0.95 times the reference value for the lower limit and 1.03 times the reference value for the upper limit.<br><br>b. For the Type A test and the Comprehensive test, an alert range of operation will be established when pump differential pressure, corresponding to a specific flow rate, falls between 0.95 times the reference value to 0.93 times the reference value.<br><br>c. Each of the pump's acceptance criteria curves shall be compared to the applicable and corresponding requirements for these pumps as set fourth in the ANO-1 Technical Specifications, Safety Evaluation Report, and Safety Analysis Report. This review will ensure that a pump cannot be declared operable if it is operating outside the requirements of any of these documents.<br><br>d. In the event that a pump's operational parameters fall outside of these stated ranges (Type A test: 0.93 times the reference value for the lower range and 1.1 times the reference value for the upper range) or |

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| | greater than 1.03 times the reference value for the Comprehensive test in what is know as the "required action range", appropriate corrective actions will be implemented in accordance with ISTB-6200 (b).<br><br>e. The acceptance criteria for pump/motor vibration will be derived from Table ISTB-5121-1 based on reference values measured during typical pump operation, e.g., between approximately 4000 gpm and 7500 gpm. A curve of vibration levels versus flow rate is not required to be developed since vibration levels are essentially the same over the flow rates of interest.<br><br>Each of these pumps will be Type A and Comprehensive tested as follows: With the subject pump operating at a condition based on system demands, measurements for pump flow rate, differential pressure, and vibration will be recorded. Should any of the pump's operating points fall outside the plotted areas of acceptability, the appropriate corrective action as prescribed in ISTB-6200 will be applied.<br><br>Based on the determination that compliance with the ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda requirements results in a hardship without a compensating increase in the level of quality or safety, this proposed alternative should be granted pursuant to 10 CFR 50.55a(a)(3)(ii). |
| **DURATION:** | Arkansas Nuclear One Unit 1's Fourth 120-month Inservice Testing Interval (December 2, 2007 through December 1, 2017 based on TAC No. MA0275). |
| **PRECEDENTS:** | Use of an alternative for similar requirements was previously granted for Arkansas Nuclear One Unit 1's Third 120-month Inservice Testing Interval (TAC No. MA0275). |
| **REFERENCES:** | TAC No. MA0275 related correspondences: September 26, 2000 (NRC); October 29, 1999 (EOI); October 9, 1998 (NRC); December 1, 1997 (EOI) |
| **STATUS:** | Submitted for Nuclear Regulatory Commission review. |

| 10 CFR 50.55a Request Number PRR-RBS-2007-1 | |
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| Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)<br><br>10 CFR 50.55a Request Title: Service Water Pumps Alternative Request | |
| **PLANT/UNIT:** | River Bend Station |
| **INTERVAL:** | Third 120 Month Inservice Testing Interval |
| **COMPONENTS AFFECTED:** | SWP-P2A Standby Service Water Pump A<br><br>SWP-P2B Standby Service Water Pump B<br><br>SWP-P2C Standby Service Water Pump C<br><br>SWP-P2D Standby Service Water Pump D<br><br>(The above pumps are ASME Code Class 3, Vertical Line Shaft, Motor Driven, OM Code Category A pumps.) |
| **CODE EDITION AND ADDENDA:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda |
| **REQUIREMENTS:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB-3540(b) requires that vibration measurements on vertical line shaft pumps be taken on the upper motor-bearing housing in three orthogonal directions, one of which is in the axial direction. |
| **REASON FOR RELIEF REQUEST:** | Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3)(ii), an alternative is requested when using the requirements of ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB (as listed above).<br><br>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. This 3rd Interval alternative request is based on the ASME OM Code-2001 Edition with addenda through OMb Code-2003 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.<br><br>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. |

| 10 CFR 50.55a Request Number PRR-RBS-2007-1 | |
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| Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(ii)<br><br>10 CFR 50.55a Request Title: Service Water Pumps Alternative Request | |
| **PROPOSED ALTERNATIVE AND BASIS:** | 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.<br><br>On the standby service water pumps the upper measurements will be taken on a 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-2001 Edition with addenda through OMb Code-2003 Addenda. Therefore, application of the ASME OM Code-2001 Edition with addenda through OMb Code-2003 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.<br><br>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<br><br>Based on the determination that compliance with the ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda requirements results in a hardship without a compensating increase in the level of quality or safety, this proposed alternative should be granted pursuant to 10 CFR 50.55a(a)(3)(ii). |
| **DURATION:** | River Bend Station's 3rd 120-month Inservice Testing Interval (December 2, 2007, through December 1, 2017 based on TAC No. M97705). |
| **PRECEDENTS:** | Use of an alternative for similar requirements was previously granted as PRR-006 for River Bend's 2nd 120-month Inservice Testing Interval (TAC No. M97705). |
| **REFERENCES:** | USAR 9.2.7, Technical Specification 5.5.6 |
| **STATUS:** | Submitted for Nuclear Regulatory Commission review. |

| 10 CFR 50.55a Request Number PRR-WF3-2007-1 | |
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| Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(i)<br><br>10 CFR 50.55a Request Title: Instrument Range Alternative Request | |
| **PLANT/UNIT:** | Waterford Steam Electric Station Unit 3 |
| **INTERVAL:** | Third 120 Month Inservice Testing Interval |
| **COMPONENTS AFFECTED:** | CVC-MPMP-0001A, Charging Pump A<br><br>CVC-MPMP-0001A/B, Charging Pump AB<br><br>CVC-MPMP-0001B, Charging Pump B<br><br>(The above are ASME Code Class 2, Positive Displacement, Motor Driven, OM Code Category A pumps.) |
| **CODE EDITION AND ADDENDA:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda |
| **REQUIREMENTS:** | ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda Subsection ISTB-3510<br><br>(b) Range<br><br>(1) The full-scale range of each analog instrument shall be not greater than three times the reference value.<br><br>(The above requirement is the same as that provided in the ASME OM Code-1998 Edition with addenda through OMb Code-2000 Addenda, which is discussed in Revision 1 of NUREG 1482, Section 5.5.1.) |
| **REASON FOR RELIEF REQUEST:** | Pursuant to 10 CFR 50.55a, "Codes and Standards", paragraph (a)(3)(i), an alternative is requested when using the requirement of ASME OM Code ISTB-3510(b)(1).<br><br>This alternative is a re-submittal of NRC approved 2nd Interval PRR – 01 that was based on the ASME OM Code 1987 Edition with addenda through OMa-1988 Addenda. This 3rd Interval alternative request is based on the ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda. There have been no substantive changes to this alternative, to the OM Code requirements or to the basis for use, which we believe would alter the previous NRC Safety Evaluation conclusions.<br><br>The Charging Pumps' discharge flow indicator does not comply with this requirement. Each of the three pumps produces a flow of 44 gpm. The flow gage has a full-scale range of 150 gpm in order to accommodate three-pump flow, such as during safety injection operations. The full-scale range is approximately 3.4 times the reference value. |

| 10 CFR 50.55a Request Number PRR-WF3-2007-1 | |
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| **PROPOSED ALTERNATIVE AND BASIS:** | The existing, installed flow indicator will be used for the Group A and Comprehensive pump testing per ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda ISTB requirements.<br><br>According to Revision 1 of NUREG 1482, Section 5.5.1, when the range of a permanently installed analog instrument is greater than three times the reference value, but the accuracy of the instrument is more conservative than that required by the Code, the staff may grant approval to use an alternative when the combination of the range and accuracy yields a reading that is at least equivalent to that achieved using instruments that meet the Code requirements (i.e., up to ± 6.0 %).<br><br>The accuracy of the instrument used for measuring charging pump discharge flow is ± 0.7 %. This accuracy is more conservative than the ± 2.0 % required by Subsection ISTB 3510 of the ASME OM Code-2001 Edition with addenda through OMb Code-2003 Addenda.<br><br>The combination of range and accuracy for the charging pump discharge flow instrument is 2.39% which is more conservative than the combined range and accuracy of instruments that meet the minimum code requirements (i.e. up to ± 6%). An alternative is requested in accordance with Revision 1 of NUREG-1482 section 5.5.1 (Range and Accuracy of Analog Instruments).<br><br>Based on the determination that the alternative provides an acceptable level of quality and safety, this proposed alternative should be granted pursuant to 10 CFR 50.55a(a)(3)(i). |
| **DURATION:** | 3rd 120-month interval Pump and Valve Inservice Testing Plan (December 1, 2007, through November 30, 2017 based on TAC NO. M94473). |
| **PRECEDENTS:** | Relief from this requirement was previously granted as PRR-01 during Waterford's second 120 month Inservice Testing Interval (TAC NO. MA0264). |
| **REFERENCES:** | Revision 1 of NUREG-1482, Guidelines for Inservice testing at Nuclear Power Plants, Final Report, Published January 2005 |
| **STATUS:** | Submitted for Nuclear Regulatory Commission review. |