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August 31, 1999

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

Subject: River Bend Station
Docket No. 50-458
License No. NPF-47
Second Interval Inservice Testing Program
Request for Approval of Alternative

File No.: G9.5, G1.51

RBG-45097
RBF1-99-0242

Ladies and Gentlemen:

In accordance with the provisions of 10 CFR 50.55a(a)(3)(ii), approval of an alternative to the River Bend Station (RBS) second interval inservice testing program is requested. The proposed alternative, if approved, would allow a one-time extension of the test interval for 20% of the full set of main steam line safety relief valves. Operating Cycle 9 has been shortened from the normal eighteen months to approximately nine months. Accordingly, we propose to delay the set pressure testing to no later than Refueling Outage 10 for the reasons described in the enclosed Valve Relief Request VRR-003. The RBS second interval inservice testing program was submitted in EOI's letter of December 2, 1997 (RBG-44328/RBF1-97-0453). The applicable requirements and justification for the alternative are described in the relief request.

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Currently, Refueling Outage 9 is scheduled to begin on March 4, 2000. To ensure that sufficient time remains in the event NRC disapproves the requested alternative, we request that the NRC's response be received no later than November 30, 1999. At that time, if approval has not been received, plans to perform the set pressure testing must be finalized.

We have determined that there are no commitments in this letter. If NRC approves the alternative, the testing delineated in the relief request will be performed as described. If you have any questions, contact Patricia Campbell at 225-381-4615.

Sincerely,

RJK/PLC
enclosure

cc: (w/enc.)

U. S. Nuclear Regulatory Commission
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Mr. Robert J. Fretz
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REQUEST FOR RELIEF
VRR-003

COMPONENT ID

Main Steam Line Pressure Relief Valves:

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

CODE CLASS

ASME Code Class 1

CATEGORY

ASME Code Category BC

TEST REQUIREMENT:

ASME/ANSI OMa-1988, Part 10, Paragraph 4.3.1, requires that safety and relief valves shall meet the inservice test requirements of Part 1. ASME/ANSI OM-1987, Part 1, Paragraph 1.3.3(b), requires that all valves of each type and manufacture shall be tested within each subsequent 5-year period, with a minimum of 20% of the valves tested within any 24 months. This 20% shall be previously untested valves, if they exist.

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ASME/ANSI OM-1987, Part 1, Paragraph 3.3.1.1, requires the following:

(a) visual examination;
(b) seat tightness determination;
(c) set pressure determination;
(d) determination of compliance with the owner's seat tightness criteria;
(e) determination of electrical characteristics and pressure integrity of solenoid valves(s);
(f) determination of pressure integrity and stroke capability of air actuator;
(g) determination of operation and electrical characteristics of position indicators;
(h) determination of operation and electrical characteristics of bellows alarm switch;* and
(i) determination of actuating pressure of auxiliary actuating devise sensing element, where applicable, and electrical continuity.

*RBS valves do not contain Bellow Alarm Switches; therefore, "h" is not applicable.

ALTERNATE TESTING:

A one-time alternative testing schedule would apply for operating Cycles 9 and 10. Due to a modified core design, Cycle 9 is scheduled to be a nine-month cycle. Cycle 10 is scheduled to be an eighteen-month cycle (RBS normally operates on an eighteen-month cycle). The plant operating time would be approximately 27 months, with the calendar time being approximately 30 months. This is an operating period of approximately three months, or 12.5%, longer than the 24 months period specified in OM Part 1. For each of the Main Steam Line Pressure Relief Valves listed above, the following tests listed in OM Part 1, Paragraph 3.3.1.1, would be performed during both Refueling Outage 9 and Refueling Outage 10:

(a) visual examination;
(e) determination of electrical characteristics and pressure integrity of solenoid valves(s);
(f) (partial) stroke capability of air actuator;
(g) determination of operation and electrical characteristics of position indicators, and
(i) determination of actuating pressure of auxiliary actuating devise sensing element, where applicable, and electrical continuity.

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For the Main Steam Line Pressure Relief Valves listed above, no later than Refueling Outage 10 (currently scheduled for September 2001), a minimum of 20% of the valves will be tested for the following tests listed in OM Part 1, Paragraph 3.3.1.1:

(b) seat tightness determination;
(c) set pressure determination;
(d) determination of compliance with the owner's seat tightness criteria; and
(f) (partial) determination of pressure integrity.

BASIS:

River Bend has sixteen Crosby 8XRX10 main steam Safety Relief Valves (SRVs). The SRVs are the balanced type, spring-loaded, safety valves provided with an auxiliary power-actuated device, which allows opening of the valve even when the pressure is less than the safety-set pressure of the valve.

In the past, undesirable performance of safety relief valves installed in operating Boiling Water Reactors (BWRs) was associated principally with multiple-stage pilot operated SRVs. The newer, power-operated safety valves, such as those installed in the RBS main steam lines, employ significantly fewer moving parts wetted by the steam, and are, therefore, considered an improvement over the multiple-stage pilot operated SRVs used in the industry.

The safety-related functions of the SRVs are as follows:

(1) to open under the spring set pressure (safety mode of operation) when the system static inlet pressure is at or exceeds the setpoint setting within the SRV setpoint tolerance; and
(2) to open and remain open as actuated using the electro-pneumatic actuator that is installed on the valve (relief mode of operation).

These modes of operation satisfy the ASME Code overpressure protection requirements and the Automatic Depressurization System (ADS) requirements of the plant.

Safety Mode:

RBS Technical Specification 3.4.4 requires that five SRVs be operable in the Safety Mode, and an additional four SRVs (other than the five SRVs that satisfy the safety function) must be operable in the Relief Mode. These requirements are only applicable to the capability of the

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SRVs to mechanically open to relieve excess pressure. Analysis results show that with a minimum of five SRVs in the safety mode and four SRVs in the relief mode operable, the ASME Code design limit for the reactor coolant system of 1375 psig is not exceeded.

For overpressure SRV operation (self-actuated or spring lift mode), the spring load establishes the safety valve opening set point pressure. The safety function of the SRV is a backup to the relief mode, as all relief mode settings are below the safety mode set points.

Relief Mode:

The relief mode of operation is initiated when an electrical signal is received at any one of the solenoid valves located on the pneumatic actuator assembly. The solenoid valve(s) opens allowing pressurized air to enter the lower side of the pneumatic cylinder's piston, pushing the piston and rod upwards. This action pulls the lifting nut upward via the lever arm mechanism and opens the valve, allowing inlet steam to discharge through the SRV even if the inlet pressure is equal to zero. All sixteen SRVs are designed to be operated in this mode.

To meet the requirements of OM-1987, Part 1, Paragraph 3.3.1.1, Items (b), (c), (d), and (f) (partial -- determination of pressure integrity), the selected SRVs must be removed and bench tested. Paragraph 3.3.1.1, Items (a), (e), (f) (partial -- stroke capability of air actuator); (g), and (i), where applicable, and with electrical continuity, can be performed with the valve installed in the system and without causing unnecessary challenges to safety systems.

In the past RBS has satisfied testing requirements by installing a full complement of pre-tested valves in place of valves that had been in service. The removed valves are set pressure tested within 12 months of removal from the system in accordance with OM-1987, Part 1, Paragraph 1.3.3.1 (c)(2). The last full replacement was made during Refueling Outage 8, which ended in July 1999.

Refueling Outage 9 is scheduled for March 2000, which will be approximately eight to nine months from the end of Refueling Outage 8. RF10 is currently scheduled for September 2001, which would be approximately 27 months from the end of Refueling Outage 8. If OM-1987, Part 1, Paragraph 3.3.1.1 (b), (c), (d), and partial (f) are not performed during Refueling Outage 9 on four SRVs (16 x 20% = 3.2), the Code requirement to test 20% of the valves within any

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24-month period would be exceeded by approximately 3 months (reference OM Part 1, Paragraph 1.3.3(b)).

Additionally, RBS has submitted a request to the NRC to approve a Power Uprate of approximately 5% (reference letter dated July 30, 1999). As part of the implementation of the full uprated power, the SRVs must be modified with set point adjustments. Pending NRC approval, the implementation of the full power uprate for RBS will be prior to startup from Refueling Outage 10. As part of the request for power uprate, a change in the set points for the SRVs and a change in the tolerance for the set points are proposed. A set pressure tolerance of +/- 3%, with valves reset within +/- 1%, was proposed. The current tolerance is +0%, -2%.

The alternative testing will extend the "20% of the valves within any 24-month period" to "20% of the valves within any 30 months" for Cycles 9 and 10 only. No later than during Refueling Outage 10, the OM Part 1 requirement to set point test 20% of the valves will be met (specific items of Paragraph 3.3.1.1 are listed above).

The only way to meet all of the testing requirements would be to remove and test SRVs that were installed for only eight to nine months, or approximately one half of a normal operating cycle. Removing SRVs and shipping them to a test facility is difficult and costly in terms, not only of the resources involved in removing the valves, shipping them, reinstalling the valves or installing pre-tested replacements, but the possible extension to a planned short refueling outage after a short operating cycle. This is an unnecessary burden in light of the history of the set pressure testing of these valves.

The attached table gives the results of the set pressure testing for the SRVs installed during Cycles 5, 6, and 7 (Cycle 8 SRVs have not yet been tested). As shown, of the 48 tests, only four of the set points were higher that the acceptance criteria, and only one of these four was higher than 1% above the specified set point. While several set points were found below the –2% acceptance criteria, the safety significance of lifting at a lower pressure is low because the primary function of the valves is to protect the reactor coolant system from overpressure. The data support the premise that the longer period of time (approximately three months) would not tend to cause the set points to drift to a value significantly above the acceptance criteria. Additionally, analysis has been completed that supports an increase in the set point tolerance of the valves as part of the power uprate project (see discussion above). As such, even a drift up to 3% above the set point would have no impact on public health and safety.

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With all of this supporting basis, compliance with the current OM Part 1 schedule of 24 months for set pressure testing at least 20% of the currently installed SRVs, versus performing the testing after approximately 27 months of operation, would impose an unecessary hardship and burden without a compensating increase in the level of quality and safety. The alternate testing proposed above will provide assurance that public health and safety are not compromised. Accordingly, the alternate testing proposed above is requested pursuant to 10 CFR 50.55a(a)(3)(ii).

REFERENCES:

1. ASME Section XI, 1989 Edition (no addenda)
2 ASME/ANSI Oma-1998, Part 10
3. ASME/ANSI OM-1987, Part 1
4. RBS USAR Section 5.2, Integrity of Reactor Coolant Pressure Boundary
5. Crosby Instruction Manual for HB-65-DF, Safety Relief Valve [Pub. I-11070]
6. RBS Tech. Spec. 3.4.4, Safety/Relief Valves (S/RVs)
7. RBS TRM, TR3.3.6.4, Relief and Low-Low Set (LLS) Instrumentation
8. RBS Letter RBG-45077 (RBF1-99-0215), "License Amendment Request 99-15, Changes to Technical Specifications for Power Uprate of River Bend Station," dated July 30, 1999.

APPROVAL:

Pending NRC Approval

ATTACHMENT:

Safety Relief Valve Testing History

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Attachment

Safety	Relief	Valve	Testing	History	
Valve No	Serial No	Date	Name Plate SP	As Rec SP	Pass/Fail SP
B21-RVF041L	N63800-00-0112	4/26/95	1165	1136	Failed (-2.5%)
B21-RVF051B	N63800-00-0123	4/20/95	1190	1194	Failed (+0.34%)
B21-RVF051G	N63800-00-0121	4/24/95	1190	1168	Pass
B21-RVF051C	N63800-00-0120	4/19/95	1190	1173	Pass
B21-RVF041G	N63800-00-0111	4/25/95	1165	1146	Pass
B21-RVF041C	N63800-00-0109	4/22/95	1165	1151	Pass
B21-RVF041B	N63800-00-0107	4/27/95	1165	1176	Failed (+0.94%)
B21-RVF041D	N63800-00-0106	4/25/95	1165	1152	Pass
B21-RVF047B	N63800-00-0100	4/24/95	1180	1158	Pass
B21-RVF047C	N63800-00-0098	4/22/95	1180	1149	Failed (-2.63%)
B21-RVF047A	N63800-00-0097	4/26/95	1180	1152	Failed (-2.37%)
B21-RVF047F	N63800-00-0095	4/26/95	1180	1153	Failed (-2.3%)
B21-RVF047D	N63800-00-0081	4/25/95	1180	1179	Pass
B21-RVF051D	N63800-00-0047	4/26/95	1190	1182	Pass
B21-RVF041A	N63800-00-0040	4/23/95	1165	1146	Pass
B21-RVF041F	N63800-00-0039	4/23/95	1165	1165	Pass
B21-RVF041A	N63800-02-0033	4/21/97	1165	1184	Failed (+1.63%)
B21-RVF041B	N63800-02-0034	5/7/97	1165	1154	Pass
B21-RVF041C	N63800-02-0035	4/28/97	1165	1139	Failed (-2.23%)
B21-RVF041D	N63800-02-0036	5/8/97	1165	1175	Failed (+0.86%)
B21-RVF041F	N63800-02-0037	5/2/97	1165	1160	Pass
B21-RVF041G	N63800-02-0038	4/25/97	1165	1125	Failed (-3.43%)
B21-RVF041L	N63800-02-0110	5/7/97	1165	1144	Pass
B21-RVF047A	N63800-02-0041	4/23/97	1180	1143	Failed (-3.13%)
B21-RVF047B	N63800-02-0042	4/24/97	1180	1142	Failed (-3.2%)
B21-RVF047C	N63800-02-0043	4/28/97	1180	1152	Failed (-2.37)
B21-RVF047D	N63800-02-0044	4/30/97	1180	1142	Failed (-3.22%)
B21-RVF047F	N63800-02-0045	4/29/97	1180	1132	Failed (-4.0%)
B21-RVF051B	N63800-02-0046	4/26/97	1190	1149	Failed (-3.44%)
B21-RVF051C	N63800-02-0115	4/30/97	1190	1179	Pass
B21-RVF051D	N63800-02-0117	4/22/97	1190	1161	Failed (-2.44%)
B21-RVF051G	N63800-02-0118	5/2/97	1190	1167	Pass
B21-RVF041F	N63800-02-0039	8/26/98	1165	1153	Pass
B21-RVF041A	N63800-00-0040	8/26/98	1165	1150	Pass
B21-RVF051D	N63800-00-0047	8/28/98	1190	1177	Pass

Safety	Relief	Valve	Testing	History	
Valve No	Serial No	Date	Name Plate SP	As Rec SP	Pass/Fail SP
B21-RVF047D	N63800-00-0081	8/29/98	1180	1153	Failed (-2.29%)
B21-RVF047F	N63800-00-0095	8/21/98	1180	1155	Failed (-2.1%)
B21-RVF047A	N63800-00-0097	8/24/98	1180	1157	Pass
B21-RVF047C	N63800-00-0098	8/28/98	1180	1164	Pass
B21-RVF047B	N63800-00-0100	8/25/98	1180	1152	Failed (-2.4%)
B21-RVF041D	N63800-00-0106	8/19/98	1165	1137	Failed (-2.4%)
B21-RVF041B	N63800-00-0107	8/18/98	1165	1125	Failed (-3.4%)
B21-RVF041C	N63800-00-0109	8/31/98	1165	1154	Pass
B21-RVF041G	N63800-00-0111	8/20/98	1165	1147	Pass
B21-RVF041L	N63800-00-0112	8/29/98	1165	1140	Failed (-2.1%)
B21-RVF051C	N63800-00-0120	8/27/98	1190	1141	Failed (-4.1%)
B21-RVF051G	N63800-00-0121	8/19/98	1190	1183	Passed
B21-RVF051B	N63800-00-0123	8/27/98	1190	1160	Failed (-2.5%)