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CP-201700886
TXX-17090

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Ref: 10 CFR 50.55a(z)(2)

10/30/2017

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT
DOCKET NOS. 50-445 AND 50-446
RELIEF REQUEST 1/2B3-2 FOR THE UNIT 1 AND UNIT 2 THIRD TEN YEAR INSERVICE INSPECTION INTERVAL
(2007 EDITION OF ASME CODE, SECTION XI, 2008 ADDENDA
UNIT 1 THIRD INTERVAL END DATE: AUGUST 12, 2020
UNIT 2 THIRD INTERVAL END DATE: AUGUST 2, 2024)

Dear Sir or Madam:

In accordance with the requirements of 10 CFR 50.55a(z)(2), Vistra Operations Company LLC ("VistraOpCo"), hereby submits Relief Request 1/2B3-2 for Comanche Peak Nuclear Power Plant Units 1 and 2 (herein referred to as CPNPP) for the third ten year inservice inspection interval (see Enclosure). The third interval of the CPNPP ISI program complies with the ASME Boiler and Pressure Vessel Code Section XI, 2007 Edition with 2008 addenda.

NRC approval of the enclosed relief request is requested on the basis that hardship and unusual difficulty exists in establishing a system configuration that will subject selected Class 1 components to Reactor Coolant System (RCS) pressure during the system pressure test as required by IWB-5220 without a compensating increase in the level of quality and safety. VistraOpCo is proposing an alternative to perform the examination of selected Class 1 piping and valves at plant conditions other than those required by IWB-5220.

The details of the 10 CFR 50.55a(z)(2) relief request are enclosed. VistraOpCo requests verbal approval of this relief request by October 31, 2017, to support CPNPP Unit 1 (currently in a refueling outage) and CPNPP Unit 2 (currently at 100% reactor power).

A047
NRR

This communication contains no new licensing basis commitments regarding CPNPP Units 1 and 2.

Should you have questions concerning this submittal, please contact Jack C. Hicks at 254-897-6725, or e-mail at jack.hicks@luminant.com.

Sincerely,

Steven K. Sewell

Enclosure Relief Request 1/2B3-2 Request for Relief for Alternative Requirements for Pressure Retaining Boundary During System Leakage Test In Accordance With 10 CFR 50.55a(z)(2)

c - Kriss Kennedy, Region IV
Margaret W. O'Banion, NRR
Siva Lingam, NRR
Resident Inspectors, Comanche Peak
Brandon Kneupper, ANII, Comanche Peak

ENCLOSURE TO TXX-17090

Relief Request 1/2B3-2
Request for Relief for Alternative Requirements for Pressure Retaining Boundary During System Leakage Test In Accordance with 10 CFR 50.55a(z)(2)

Request for Relief from Alternative Requirements for Pressure Retaining Boundary during System Leakage Test in Accordance with 10 CFR 50.55a(z)(2)

1. ASME Code Component(s) Affected

Code Class:	1
Reference:	IWB-2500, Table IWB-2500-1, IWB-5220, Code Case N-798, and Code Case N-800
Item Number:	B15.20
Description:	Code Class 1 pressure retaining components that are beyond the first normally closed valve to the second boundary component. Including RC, CS, SI, and RH piping, vents, drains, and valves as noted on Tables A-1, A-2, B-1, B-2
Component Number:	Piping components listed in A-1, A-2, B-1, B-2
Drawing Number:	Drawings listed in Tables A-1, A-2, B-1, B-2

2. Applicable Code Edition and Addenda

The current Code of record for Comanche Peak Units 1 and 2 is the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI, 2007 Edition with 2008 Addenda (Reference 1).

3. Applicable Code Requirement

ASME Section XI, Table IWB-2500-1, "Examination Categories," Examination Category B-P, Item Number B15.20 requires that a system leakage test be conducted once per interval at or near the end of the interval in accordance with the requirements of IWB-5220.

Paragraph IWB-5222(a) requires that the pressure retaining boundary during the system leakage test shall correspond to the reactor coolant boundary, with all valves in the position required for normal reactor operation startup with the visual examination extended to include the second closed valve at the boundary extremity. Paragraph IWB-5222(b) requires the pressure retaining boundary during the system leakage test conducted at or near the end of each inspection interval shall extend to all Class 1 pressure retaining components within the system boundary.

ASME Code Case N-798, "Alternative Pressure Testing Requirements for Class 1 Piping Between the First and Second Vent, Drain, and Test Isolation Devices," (Reference 2) states that for portions of Class 1 vent, drain and test piping between the first and second isolation devices that normally remain closed during plant operation, only the boundaries of IWB-5222(a) shall apply.

ASME Code Case N-800, "Alternative Pressure Testing Requirements for Class 1 Piping Between the First and Second Injection Valves," (Reference 3) states that for portions of the Class 1 boundary between the first and second isolation valves in the injection and return path of standby safety systems, the system leakage test may be conducted by pressurization of the Class 1 volume using the Class 2 safety system to pressurize the volume. It further states that such alternative tests shall be performed each inspection interval and the system leakage test shall be conducted using the pressure associated with the Class 2 system function that provides the highest pressure between the Class 1 isolation valves.

Unit 1 ISI Third Interval start date: August 13, 2010, Unit 1 ISI Third Interval end date: August 12, 2020.
Unit 2 ISI Third Interval start date: August 3, 2014, Unit 2 ISI Third Interval end date: August 2, 2024.

4. Reason for Request

Pursuant to 10 CFR 50.55a(z)(2), relief is requested on the basis that hardship and unusual difficulty exists in establishing a system configuration that will subject selected Class 1 components to reactor coolant system (RCS) pressure during the system pressure test without a compensating increase in the level of quality and safety. CPNPP requests approval to perform the examination of selected Class 1 piping and valves at plant conditions other than those required by IWB-5222(b) by using the alternative boundaries permitted by Code Cases N-798 and N-800 at the end of the interval.

The design of some CPNPP, Unit 1 and Unit 2 Class 1 process piping requires substantial effort to extend the boundary subject to RCS pressure where check valves or non-redundant components serve as the first system isolation from the RCS. Such configurations would require temporary piping installations, such as high-pressure hoses, and/or other unusual temporary system configurations in order to achieve test pressures at upstream piping and valves required by IWB-5222(b).

These components are located in areas involving occupational radiation exposure, and leakage testing of these lines would require significant dose. Establishing and restoring such temporary configurations would result in an unwarranted increase of worker radiation exposure. The activities associated with this work include scaffold erection, insulation removal, valve manipulations, freeze seal, examinations, re-installation of insulation, and scaffold removal.

Based on the above, the extension of the boundary subjected to RCS pressure during system leakage tests to include all Class 1 pressure retaining components within the system boundary in accordance with IWB-5222(b) represents a hardship and unusual difficulty that does not provide a compensating increase in the level of quality and safety provided by the examination.

The following tables contain specific information pertaining to the various pipe segments for which relief is being requested:

Table A-1, "Unit 1, Class 1 Piping Between the First and Second Vent, Drain, and Test Isolation Devices (N-798)," identifies the Class 1 pressure retaining components associated with the requested relief that will remain in their normal operating configuration and will not be pressurized to RCS pressure during the system leakage test. None of the welds are selected under the criteria of the risk-informed ISI program. No leakage has been identified with these piping segments.

Table A-2, "Unit 2, Class 1 Piping Between the First and Second Vent, Drain, and Test Isolation Devices (N-798)," identifies the Class 1 pressure retaining components associated with the requested relief that will remain in their normal operating configuration and will not be pressurized to RCS pressure during the system leakage test. None of the welds are selected under the criteria of the risk-informed ISI program. No leakage has been identified with these piping segments.

Table B-1, "Unit 1, Class 1 Piping Between the First and Second Isolation Valves (N-800)," identifies the Class 1 pressure retaining components associated with the requested relief that will remain in their normal operating

configuration and will not be pressurized to RCS pressure during the system leakage test, however, will be examined at operating pressures associated with the outboard Class 2 system functional pressure. Seven Safety Injection welds and three RHR welds are selected under the criteria of the Risk-Informed ISI program. No leakage has been identified with these piping segments.

Table B-2, "Unit 2, Class 1 Piping Between the First and Second Isolation Valves (N-800)," identifies the Class 1 pressure retaining components associated with the requested relief that will remain in their normal operating configuration and will not be pressurized to RCS pressure during the system leakage test, however, will be examined at operating pressures associated with the outboard Class 2 system functional pressure. Nine Safety Injection welds and two RHR welds are selected under the criteria of the Risk-Informed ISI program. No leakage has been identified with these piping segments.

Table C, "Class 1 Piping Design Table" Identifies the Class 1 piping and fitting material type, schedule, and pressure rating.

Small Bore Class 1 RCS Manual Vent and Drain Lines

Relief is requested from pressurizing piping between the first and second isolation device on small size vent and drain lines. The Class 1 vents or drain lines in the RCS identified in Tables A-1, and A-2 range in size from 3/4 inch to two inches. The Class 1 vents and drains in the RCS are equipped with inboard isolation valves and outboard isolation valves that provide double isolation of the Reactor Coolant Pressure Boundary (RCPB). The valves are maintained in the closed position during normal plant operation and the downstream pipe and blind flange are not normally pressurized. To pressurize those piping segments as required by IWB-5222(b), it would be necessary to open the inboard valves manually to pressurize the downstream piping and connections. Pressurization by this method defeats the double isolation and reduces the margin of personnel safety for those performing venting and draining operations on high-pressure components after the test. Furthermore, performing the test with the inboard isolation valves open requires several person-hours to position the valves for the test and restore the valves to their closed positions once the test is completed. These valves are located in close proximity to the RCS loop piping and would require personnel entry into high radiation areas within the containment and a consequential increase in radiation exposure. The required plant configuration for testing would defeat one of the two RCPB isolation devices. Thus, compliance with the IWB-5222(b) requirement results in unnecessary hardship without a compensating increase in the level of quality and safety.

These piping segments are included in the examination population for visual examination (VT-2) through the entire length as part of the Class 1 system leakage test at the conclusion of each refueling outage. The proposed leakage test will not specifically pressurize past the first isolation valve for this examination. No external or visible leakage will be allowed. Since this type of test will assure that the combined first and second isolation devices are effective in maintaining the RCPB at normal operating temperature and pressure, the increase in safety achieved from the IWB-5220 required leakage test is not commensurate with the hardship of performing such testing.

Class 1 Safety Injection and Shutdown Cooling Piping Segments

HPSI/Cold Leg Injection

These piping segments, identified in Table B-1, B-2, provide the flow path for High Pressure Safety Injection (HPSI) into the RCS. The primary isolation devices are the four 1.5-inch check valves at the cold leg oriented to flow into the RCS. The upstream isolation is at a single 3-inch check valve. The piping segments provide the required double isolation barrier for the RCPB. These lines are visually examined during the Reactor Coolant System Pressure Isolation Valve leak rate testing, in accordance with the requirement to examine systems at their highest operating pressure.

Hot Leg/Cold Leg Safety Injection

These large bore piping segments, identified in Tables B-1, B-2, provide the flow path for Safety Injection into the RCS. The primary isolation devices are 10-inch check valves oriented to flow into the RCS with 10-inch, 6-inch and 2-inch second isolation valves on branch lines. The piping segments provide the design required double isolation barrier for the RCPB. These lines are visually examined during the RCS system leakage test within the Class 1 boundary lines.

Leakage testing at RCS pressure would require unusual temporary system configurations, which would challenge the Class 2 piping and components should the Class 1 to Class 2 boundary valve leak by toward the Class 2 system(s). For the proposed testing, the components will be subjected to the outboard Class 2 system functional pressure associated with the SI Accumulators (Cold Leg) and Reactor Coolant System Pressure Isolation Valve leak rate testing (Hot Leg) in accordance with the requirement to examine systems at their highest operating pressure.

Hot Leg Shutdown Cooling Suction

There are two 12-inch Hot Leg Shutdown Cooling Suction lines, one each from RCS Loop 1 and 4 Hot Legs, identified in Tables B-1, B-2. These piping segments consist of piping between the two Shutdown Cooling Suction valves on each train of the system (valves 1/2-8701A and 1/2-8702A on Train A and valves 1/2-8701B and 1/2-8702B on Train B). These valves are open-interlocked at a required set point below 364 psig to avoid over-pressurization of the Shutdown Cooling System. The interlock prevents manual opening of the valves from the Control Room when RCS pressure is above the set point.

The examination of these components will be performed using the outboard Class 2 system functional pressure associated with the normal Shutdown Cooling system pressure and valve in accordance with the requirement to examine systems at their highest operating pressure.

Table A-1:									
Unit 1 Class 1 Piping Between the First and Second Vent, Drain, and Test Isolation Devices (N-798)									
Flow Diagram No.	Line Function	First Isolation Valve	Affected Line	Line Size	Second Isolation Device	Approx. Length (ft-in)	Piping Information		
							# of Welds	# Selected for Exam	Insulated (Y/N)
M1-0262 Sh. -	SI Header Drain	1SI-0049	SI-1-910	3/4"	1SI-0100	1' - 6"	4	0	N
	SI Header Drain	1SI-0050	SI-1-908	3/4"	1SI-0101	0' - 2"	2	0	N
	SI Header Drain	1SI-0051	SI-1-911	3/4"	1SI-0102	0' - 5"	2	0	N
	SI Header Drain	1SI-0052	SI-1-909	3/4"	1SI-0103	0' - 2"	2	0	N
M1-0250 Sh. -	RCS Drain - Loop 1	1RC-8057A	RC-1-015	2"	1RC-8058A	0' - 9"	2	0	Y
	RCS Drain - Loop 2	1RC-8057B	RC-1-035	2"	1RC-8058B	0' - 10"	2	0	Y
	RCS Drain - Loop 3	1RC-8057C	RC-1-053	2"	1RC-8058C	0' - 7"	2	0	Y
	RCS Drain - Loop 4	1RC-8057D	RC-1-072	2"	1RC-8058D	2' - 10"	9	0	Y
	Head Vent TC	1RC-0035	1-2501R-1	1"	Blind Flange	0' - 6"	2	0	Y

Table A-2:									
Unit 2 Class 1 Piping Between the First and Second Vent, Drain, and Test Isolation Devices (N-798)									
Flow Diagram No.	Line Function	First Isolation Valve	Affected Line	Line Size	Second Isolation Device	Approx. Length (ft-in)	Piping Information		
							# of Welds	# Selected for Exam	Insulated (Y/N)
M2-0250 Sh. -	RCS Drain - Loop 1	2RC-8057A	RC-2-015	2"	2RC-8058A	0' - 9"	2	0	Y
	RCS Drain - Loop 2	2RC-8057B	RC-2-035	2"	2RC-8058B	0' - 10"	2	0	Y
	RCS Drain - Loop 3	2RC-8057C	RC-2-053	2"	2RC-8058C	0' - 9"	2	0	Y
	RCS Drain - Loop 4	2RC-8057D	RC-2-072	2"	2RC-8058D	2' - 8"	9	0	Y
	Head Vent TC	2RC-0035	1-2501R-1	1"	Blind Flange	0' - 7"	2	0	Y

Table B-1:

Unit 1 Class 1 Piping Between the First and Second Isolation Valves (N-800)

Flow Diagram No.	Line Function	First Isolation Valve	Affected Line	Line Size	Second Isolation Device	Approx. Length (ft-in)	Piping Information		
							# of Welds	# Selected for Exam	Insulated (Y/N)
M1-0253 Sh. A	Pressurizer Aux. Spray	1CS-8377	CS-1-112	2"	1-8145	184' - 6"	24	0	Y
M1-0261 Sh. -	HPSI - Loop 2	1SI-8900B	SI-1-200	1 1/2"	1-8815	36' - 11"	12	0	N
		1SI-8900B	SI-1-026	1 1/2"	1-8815	117' - 8"	20	0	N
		1SI-8900B	SI-1-033	3"	1-8815	20' - 2"	6	3	N
		1SI-8900B	SI-1-303	3"	1-8815	18' - 6"	6	2	N
	HPSI - Loop 1	1SI-8900A	SI-1-199	1 1/2"	1-8815	41' - 1"	12	0	N
		1SI-8900A	SI-1-025	1 1/2"	1-8815	16' - 2"	6	0	N
		1SI-8900A	SI-1-339	3"	1-8815	6' - 3"	8	2	N
	HPSI- Loop 4	1SI-8900D	SI-1-202	1 1/2"	1-8815	41' - 0"	12	0	N
		1SI-8900D	SI-1-028	1 1/2"	1-8815	11' - 9"	4	0	N
	HPSI - Loop 3	1SI-8900C	SI-1-201	1 1/2"	1-8815	37' - 7"	14	0	N
		1SI-8900C	SI-1-027	1 1/2"	1-8815	141' - 3"	37	0	N
M1-0263 Sh. -	Hot Leg Injection - Loop 2	1-8949B	SI-1-101	6"	1-8841A	35' - 4"	8	0	N
		1-8949B	SI-1-301	2"	1SI-8905B	1' - 7"	6	0	N
	Hot Leg Injection - Loop 3	1-8949C	SI-1-102	6"	1-8841B	35' - 4"	8	0	N
		1-8949C	SI-1-302	2"	1SI-8905C	1' - 8"	6	0	N
	Hot Leg Injection - Loop 1	1-8949A	SI-1-148	6"	1SI-8905A	0' - 6"	2	0	N
		1-8949A	SI-1-059	2"	1SI-8905A	34' - 6"	20	0	N
	Hot Leg Injection - Loop 4	1-8949D	SI-1-172	6"	1SI-8905D	0' - 6"	2	0	N
		1-8949D	SI-1-086	2"	1SI-8905D	40'-6"	19	0	N
M1-0262 Sh. - M1-0263 Sh. -	Cold Leg Injection - Loop 1	1-8948A	SI-1-179	10"	1-8956A	21' - 7"	8	0	N
		1-8948A	SI-1-089	6"	1-8818A	34' - 5"	12	0	N
		1-8948A	SI-1-063	2"	1SI-8819A	1' - 4"	3	0	N
		1SI-0049	SI-1-910	3/4"	1-8956A	1' - 2"	2	0	N
	Cold Leg Injection - Loop 2	1-8948B	SI-1-180	10"	1-8956B	17' - 3"	8	0	N
		1-8948B	SI-1-090	8"	1-8818B	30' - 11"	10	0	N
		1-8948B	SI-1-328	6"	1-8818B	1' - 9"	2	0	N
		1-8948B	SI-1-065	2"	1SI-8819B	6' - 2"	13	0	N
		1SI-0050	SI-1-908	3/4"	1-8956B	1' - 2"	2	0	N
	Cold Leg Injection - Loop 3	1-8948C	SI-1-181	10"	1-8956C	16' - 8"	8	0	N
		1-8948C	SI-1-091	8"	1-8818C	35' - 10"	11	0	N
		1-8948C	SI-1-330	6"	1-8818C	1' - 8"	2	0	N
		1-8948C	SI-1-067	2"	1SI-8819C	3' - 8"	11	0	N
		1SI-0051	SI-1-911	3/4"	1-8956C	0' - 9"	2	0	N
	Cold Leg Injection - Loop 4	1-8948D	SI-1-182	10"	1-8956D	21' - 7"	8	0	N
		1-8948D	SI-1-092	6"	1-8818D	33' - 11"	14	0	N
		1-8948D	SI-1-069	2"	1SI-8819D	2' - 9"	9	0	N
		1SI-0052	SI-1-909	3/4"	1-8956D	1' - 5"	2	0	N
M1-0260 Sh. -	RHR Suction - Train A	1-8702A	RH-1-001	12"	1-8701A	42' - 8"	6	2	Y
	RHR Suction - Train B	1-8702B	RH-1-002	12"	1-8701B	43' - 5"	6	1	Y

Table B-2:									
Unit 2 Class 1 Piping Between the First and Second Isolation Valves (N-800)									
Flow Diagram No.	Line Function	First Isolation Valve	Affected Line	Line Size	Second Isolation Device	Approx. Length (ft-in)	Piping Information		
							# of Welds	# Selected for Exam	Insulated (Y/N)
M2-0255 Sh. -	Pressurizer Aux. Spray	2CS-8377	CS-2-112	2"	2-8145	187' - 11"	30	0	Y
M2-0261 Sh. -	HPSI - Loop 2	2SI-8900B	SI-2-200	1 1/2"	2-8815	38' - 5"	10	0	N
		2SI-8900B	SI-2-026	1 1/2"	2-8815	117' - 3"	27	0	N
		2SI-8900B	SI-2-033	3"	2-8815	8' - 0"	6	2	N
		2SI-8900B	SI-2-303	3"	2-8815	18' - 4"	7	3	N
	HPSI- Loop 1	2SI-8900A	SI-2-199	1 1/2"	2-8815	39' - 11"	8	0	N
		2SI-8900A	SI-2-025	1 1/2"	2-8815	14' - 1"	7	0	N
		2SI-8900A	SI-2-339	3"	2-8815	7' - 0"	8	2	N
	HPSI - Loop 4	2SI-8900D	SI-2-202	1 1/2"	2-8815	41' - 5"	10	0	N
		2SI-8900D	SI-2-028	1 1/2"	2-8815	10' - 6"	7	0	N
	HPSI - Loop 3	2SI-8900C	SI-2-201	1 1/2"	2-8815	36' - 3"	16	0	N
		2SI-8900C	SI-2-027	1 1/2"	2-8815	166' - 4"	33	0	N
M2-0263 Sh. -	Hot Leg Injection - Loop 2	2-8949B	SI-2-101	6"	2-8841A	35' - 0"	9	0	N
		2-8949B	SI-2-301	2"	2SI-8905B	2' - 11"	6	0	N
	Hot Leg Injection - Loop 3	2-8949C	SI-2-102	6"	2-8841B	35' - 4"	9	0	N
		2-8949C	SI-2-302	2"	2SI-8905C	2' - 11"	6	0	N
	Hot Leg Injection - Loop 1	2-8949A	SI-2-148	6"	2SI-8905A	1' - 11"	2	0	N
		2-8949A	SI-2-059	2"	2SI-8905A	37' - 8"	17	0	N
	Hot Leg Injection - Loop 4	2-8949D	SI-2-172	6"	2SI-8905D	2' - 1"	2	0	N
		2-8949D	SI-2-086	2"	2SI-8905D	37' - 0"	16	0	N
M2-0263 Sh. B M2-0263 Sh. -	Cold Leg Injection - Loop 1	2-8948A	SI-2-179	10"	2-8956A	21' - 6"	8	0	N
		2-8948A	SI-2-089	6"	2-8818A	35' - 6"	13	0	N
		2-8948A	SI-2-063	2"	2SI-8819A	1' - 3"	3	0	N
		2-8948A	3/4-2501R-1	3/4"	2SI-0049	1' - 2"	2	0	N
	Cold Leg Injection - Loop 2	2-8948B	SI-2-180	10"	2-8956B	18' - 6"	8	0	N
		2-8948B	SI-2-090	8"	2-8818B	31' - 3"	10	0	N
		2-8948B	SI-2-328	6"	2-8818B	1' - 5"	2	0	N
		2-8948B	SI-2-065	2"	2SI-8819B	7' - 3"	13	0	N
		2-8948B	3/4-2501R-1	3/4"	2SI-0050	1' - 2"	2	0	N
	Cold Leg Injection - Loop 3	2-8948C	SI-2-181	10"	2-8956C	17' - 6"	8	2	N
		2-8948C	SI-2-091	8"	2-8818C	35' - 2"	10	0	N
		2-8948C	SI-2-330	6"	2-8818C	1' - 8"	2	0	N
		2-8948C	SI-2-067	2"	2SI-8819C	4' - 7"	11	0	N
		2-8948C	3/4-2501R-1	3/4"	2SI-0051	1' - 2"	2	0	N
	Cold Leg Injection - Loop 4	2-8948D	SI-2-182	10"	2-8956D	21' - 5"	8	0	N
		2-8948D	SI-2-092	6"	2-8818D	33' - 11"	14	0	N
		2-8948D	SI-2-069	2"	2SI-8819D	2' - 8"	9	0	N
		2-8948D	3/4-2501R-1	3/4"	2SI-0052	1' - 2"	2	0	N
M2-0260 Sh. -	RHR Suction - Train A	2-8702A	RH-2-001	12"	2-8701A	44' - 4"	6	2	Y
	RHR Suction - Train B	2-8702B	RH-2-002	12"	2-8701B	46' - 2"	6	0	Y

Table C: Class 1 Piping Design Table			
Nuclear Code Class 1			
Material	**Stainless Steel of ASME Specification listed below for each item.**		
Piping			
Pipe Size	**2" and smaller**	**2 1/2" to 8"**	**10" to 14"**
Pressure Rating	**2485 psig**	**2800 psig**	**2465 psig**
Construction	**Seamless**	**Seamless**	**Seamless**
ASME Spec	**SA-376 Type 304 or 316**	**SA-376 Type 304 or 316**	**SA-376 Type 304 or 316**
Schedule	**160**	**160**	**140**
Fittings			
Size	**2" and smaller**	**2 1/2" to 8"**	**10" to 14"**
Type	**Forged**	**Seamless**	**Seamless**
Joint	**Socket-Weld**	**Butt-Weld**	**Butt-Weld**
ASME Spec	**SA 182 Type F 304 or F 316**	**SA-403 Type WP 304 or WP 316 or SA 182 Type F 304 or F 316**	**SA-403 Type WP 304 or WP 316 or SA 182 Type F 304 or F 316**
Rating/Schedule	**6,000 lb**	**SCH 160**	**SCH 140**

Table Notes:
Under the current applicable code edition and addenda, lines >1" nominal pipe size are also classified under Examination Category B-J, with the item number determined by the line size and joint configuration. For the adopted Risk-Informed Program, the lines are classified under Examination Category R-A according to the degradation mechanism and risk consequence to determine the item number and risk category.

The welds listed under the column "# Selected for Exam" are limited to welds selected for volumetric (UT) examination only.

5. Proposed Alternative and Basis for Use

In accordance with 10 CFR 50.55a(z)(2), relief is requested on the basis that hardship and unusual difficulty exists in establishing a system configuration that will subject selected Class 1 components to RCS pressure during the system pressure test as required by IWB-5222(b) without a compensating increase in the level of quality and safety.

VistraOpCo proposes to perform the examination of selected CPNPP Unit 1 and Unit 2 Class 1 piping and valves at the end of the third 10-Year ISI interval, respectively, with plant conditions other than those required by IWB-5220 by using the alternative boundaries permitted by Code Cases N-798 and N-800.

The objective of the required extended pressure boundary conditions in accordance with IWB-5222(b) is to detect evidence of leakage, and thereby verify the integrity of the RCPB beyond the first isolation valve. As discussed above, in order to meet IWB-5222(b) requirement, the establishment of and the return from the required temporary configurations would involve considerable time to accomplish, result in an unwarranted increase of worker radiation exposure, exposure of personnel to industrial safety risks due to use of a single

isolation valve, and potentially over pressurize downstream piping in the event of valve leakage. As a result, VistraOpCo has concluded that compliance with IWB-5222(b) requirement constitutes a hardship without a compensating increase in the level of quality and safety. The proposed alternative testing methods permitted in Code Cases N-798 and N-800 would provide a level of assurance that the RCS pressure boundary is maintaining structural integrity at elevated pressure.

In the unlikely event of a through wall leak in the piping segments identified in Tables A-1, A-2, B-1 and B-2 during normal operation, the leak would result in unidentified RCS leakage. RCS leakage detection instrumentation have been designed to aid operating personnel in differentiating between possible sources of detected leakage within the containment and identifying the physical location of the leak. The RCS leakage detection instrumentation consists of the containment sump monitor, air cooler condensate flow rate monitor, and the containment atmosphere radioactivity monitor (gaseous or particulate). Technical Specifications (TS) 3.4.15, "RCS Leakage Detection Instrumentation," requires the containment sump monitor, a particulate radioactivity monitor, and either a condensate flow rate monitor or a gaseous radioactivity monitor to be operable. (Reference 4)

The reactor coolant contains radioactivity that, when released to the containment, can be detected by the gaseous or particulate containment atmosphere radioactivity monitor. Radioactivity detection systems are included for monitoring both particulate and gaseous activities because of their sensitivities and rapid responses to RCS leakage, but have recognized limitations. Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter, until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. If there are few fuel element cladding defects and low levels of activation products, it may not be possible for the gaseous or particulate containment atmosphere radioactivity monitor to detect 1.0 gpm increase within one hour during normal operation. However, the gaseous or particulate containment atmosphere radioactivity monitor is operable when it is capable of detecting 1.0 gpm increase in unidentified leakage within one hour provided the equilibrium activity of the reactor coolant is sufficiently high and the containment atmosphere activity is below the level that would mask the activity corresponding to this leakage.

TS 3.4.13, "RCS Operational Leakage," limit system operation in the presence of leakage from RCS components to amounts that do not compromise safety. Surveillance Requirement (SR) 3.4.13.1 requires the performance of RCS water inventory balance to verify RCS leakage is within limits to ensure that the integrity of the RCPB is maintained (Reference 5). In the event that unidentified leakage increases greater than specified thresholds or greater than the baseline mean by specified values during the performance of the RCS water inventory balance, administrative procedures require graduated levels of response based on the magnitude of the leakage or deviation above the baseline mean.

Operations Procedure OPT-303 "REACTOR COOLANT SYSTEM WATER INVENTORY" defines the methodology used to establish acceptable baseline values, establish unidentified leakage action levels, the criteria used to ensure adequate monitoring of RCS leakage, and the minimum actions that could be taken at each action level to ensure the safe operation of the plant. The procedure also addresses abnormal trends in RCS primary system leakage indicators, which may provide indication of leaks much smaller than TS and RCS leakage levels.

The majority of welds encompassed by the boundaries described in Table B-1 and B-2 were in the population of welds subject to examination under ASME Section XI (Examination Category B-J) prior to adopting a Risk-Informed Inservice Inspection (RI-ISI) program and in the population of the current third interval RI-ISI

program. These programs are intended to verify the structural integrity of piping welds. The selection criteria for inspection under the current interval RI-ISI program are determined by the PRA risk rankings and degradation mechanism assessments. During the first, second, and third intervals at CPNPP Units 1 and 2, there have been no failures during examinations performed on selected welds.

Relief is requested from the extended pressure test boundaries of IWB-5222(b) required for the selected Class 1 components during the System Leakage Test conducted at or near the end of the inspection interval.

For those portions of Class 1 vent and drain lines between the first and second isolation devices that normally remain closed during plant operation, CPNPP will conduct the required end of interval system pressure tests prescribed in IWB-5222(b) using the alternatives of Code Case N-798 and only the boundaries of IWB-5222(a) will apply as follows:

- The Class 1 vents and drain lines proposed system leakage test will not specifically pressurize past the first isolation valve for this inspection. No external or visible leakage will be allowed.

For those portions of the Class 1 boundary between the first and second isolation valves, CPNPP will conduct the required end of interval system pressure tests as prescribed in IWB-5222(b) using the alternatives of Code Case N-800 with only the boundaries of IWB-5222(a) will apply as follows:

- The Pressurizer auxiliary spray examinations will be performed using the outboard Class 2 system functional pressure associated with Auxiliary Spray.

- The High Pressure Safety Injection (HPSI) examinations will be performed during the associated isolation valve leakage surveillances.

- The Hot Leg Injection examinations will be performed during the associated isolation valve leakage surveillances.

- Cold Leg Safety Injection examinations will be performed using the outboard Class 2 system functional pressure associated with the SI Accumulators.

- The Hot Leg Shutdown Cooling Suction examination will be performed using the outboard Class 2 system functional pressure associated with the normal Shutdown Cooling system pressure.

6. Duration of Proposed Alternative

The duration of the proposed alternative is requested for the remainder of the CPNPP Unit 1 Third ISI Interval currently scheduled to end on August 12, 2020 and the remainder of the CPNPP Unit 2 Third ISI interval currently scheduled to end on August 2, 2024.

7. Precedent

The NRC has previously authorized similar relief requests for the use of ASME Code Cases N-798 and N-800. Authorization has been recently granted for relief requests from the following stations.

1. Byron Station, Unit 1, Third Inspection Interval Relief Request 13R-26, was authorized by NRC Safety Evaluation dated January 5, 2015, ADAMS Accession No. ML15005A380.

2. St. Lucie Plant, Unit 2, Third Inspection Interval Relief Request RFA 9, was authorized by NRC Safety Evaluation dated November 25, 2013, ADAMS Accession No. ML13308C426.

3. Sequoyah Nuclear Plant, Units 1 and 2, Third Inspection Interval Relief Request 11-SPT-1, was authorized by NRC Safety Evaluation dated May 20, 2014, ADAMS Accession No. ML14133A112.

4. Surry Power Station, Units 1 and 2, Fourth Inspection Interval Inservice (ISI) Program, System Pressure Testing (SPT), SPT-003 and SPT-002, was authorized by NRC Safety Evaluation dated May 28, 2014, ADAMS Accession No. ML14142A089.

8. References

1. American Society of Mechanical Engineers Boiler and Pressure Vessel Code,
Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components, 2007 Edition, through 2008 Addenda, the American Society of Mechanical Engineers, New York.

2. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Case N-798, "Alternative Pressure Testing Requirements for Class 1 Piping Between the First and Second Vent, Drain, and Test Isolation Devices Section XI, Division 1."

3. American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Case N-800, "Alternative Pressure Testing Requirements for Class 1 Piping Between the First and Second Injection Valves Section XI, Division 1."

4. CPNPP, Units 1 and 2 Technical Specifications 3.4.15, "RCS Leakage Detection Instrumentation."

5. CPNPP, Units 1 and 2 Technical Specifications 3.4.13, "RCS Operational LEAKAGE."