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CP-202000263
TXX-20028

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

Ref 10 CFR 50.55a

04/9/2020

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT (CPNPP)
DOCKET NO. 50-446
REACTOR VESSEL HEAD, BOTTOM MOUNTED INSTRUMENTATION, AND HOT LEG ULTRASONIC TESTING EXAMINATIONS RELIEF REQUESTS

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a(z)(2), "Hardship without a compensating increase in quality and safety", Vistra Operations Company LLC (Vistra OpCo) hereby requests Nuclear Regulatory Commission (NRC) approval to extend scheduled reactor vessel head visual examination, reactor vessel bottom mounted instrumentation (BMI) visual examination, and reactor vessel hot leg nozzle ultrasonic testing examinations from the Unit 2 spring 2020 refueling outage (2RF18) to the Unit 2 fall 2021 refueling outage (2RF19) due to COVID-19 issues.

On March 13, 2020, President Donald Trump declared the Coronavirus (COVID-19) pandemic a national emergency. In addition, Texas Governor Greg Abbott declared a state of disaster due to the COVID-19 pandemic on March 13, 2020. The U.S. Center for Disease Control (CDC) has determined that COVID-19 poses a serious public health risk. The CDC identified the majority of U.S. states reporting community spread of COVID-19. Currently CPNPP is operating in accordance with the CPNPP Pandemic Response Guideline. Due to the COVID-19 pandemic, there is a desire to minimize the potential of inadvertently spreading the COVID-19 virus to CPNPP personnel from outside contractors needed to perform reactor vessel head visual examination, reactor vessel bottom mounted instrumentation (BMI) visual examination, and reactor vessel hot leg nozzle ultrasonic testing examinations. Due to the potential spread of COVID-19 to CPNPP personnel, Vistra OpCo has identified performance of these examinations as a hardship without a compensating increase in the level of quality and safety in accordance with 10 CFR 50.55a(z)(2). As an alternative, Vistra OpCo is proposing to delay the inspections for one refueling cycle from spring 2020 (2RF18) to fall 2021 (2RF19).

These augmented examinations in the Unit 2 ISI program are delineated by American Society of Mechanical

Engineers (ASME) Code Case N-729-4 for reactor vessel head visual examinations, Code Case N-722-1 for reactor vessel bottom mounted instrumentation (BMI) visual examinations, and Code Case N-770-2 for reactor vessel hot leg nozzle ultrasonic testing examinations.

CPNPP has identified relief requests that will be required due to minimize the spread of the COVID-19 virus. The identified relief requests are listed in the Attachment. Each relief request is included as an Enclosure.

CPNPP requests approval of relief requests for reactor vessel head visual examination, reactor vessel bottom mounted instrumentation (BMI) visual examination on or before April 16, 2020.

CPNPP requests approval of relief request for reactor vessel hot leg nozzle ultrasonic testing examinations on or before April 20, 2020.

This communication contains no new commitments.

Should you have any questions, please contact James Barnette at (254) 897-5866 or james.barnette@luminant.com.

Sincerely,

Steven K. Sewell

Attachment Relief Request List

Enclosures
1. CPNPP Unit 2, REACTOR VESSEL HEAD VISUAL EXAMINATION
2. CPNPP Unit 2, REACTOR VESSEL BOTTOM MOUNTED INSTRUMENTATION (BMI) VISUAL EXAMINATION
3. CPNPP Unit 2, REACTOR VESSEL HOT LEG NOZZLE ULTRASONIC TESTING EXAMINATION

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Relief Request List

2RF18 Reactor Vessel Head Visual Examination Deferral (2A3-3)	
Regulation Number	10 CFR 50.55a
Regulation Name	Codes and Standards
Regulation Exemption being requested under	10 CFR 50.55a(z)(2)
Basis for Exemption	110 CFR 50.55a(z)(2)
Code Allowance	Code Case N-729-4
Mitigations Measures	Normal compliance will be restored following CPNPP, Unit 2, Cycle 19 in 2RF19
Date Exemption Needed	April 16, 2020

2RF18 Reactor Vessel Bottom Mounted Instrumentation Visual Examination Deferral (2A3-4)	
Regulation Number	10 CFR 50.55a
Regulation Name	Codes and Standards
Regulation Exemption being requested under	10 CFR 50.55a(z)(2)
Basis for Exemption	10 CFR 50.55a(z)(2)
Code Allowance	Code Case N-722-1
Mitigations Measures	Normal compliance will be restored following CPNPP, Unit 2, Cycle 19 in 2RF19
Date Exemption Needed	April 16, 2020

2RF18 Reactor Vessel Hot Leg Nozzle-to-Safe End Ultrasonic Testing Examination Deferral (2A3-5)	
Regulation Number	10 CFR 50.55a
Regulation Name	Codes and Standards
Regulation Exemption being requested under	10 CFR 50.55a(z)(2)
Basis for Exemption	10 CFR 50.55a(z)(2)
Code Allowance	Code Case N-770-2
Mitigations Measures	Normal compliance will be restored following CPNPP, Unit 2, Cycle 19 in 2RF19
Date Exemption Needed	April 20, 2020

Proposed Alternative
In Accordance with 10 CFR 50.55a(z)(2)

--Hardship without a compensating increase in quality and safety--

1. ASME Code Component(s) Affected

Components:	Reactor Vessel (RV) Upper Head. Reactor head is categorized as a cold head that is made of Alloy 600 and has Alloy 600 CRDM nozzles.
Code Class:	Class 1
Code Case:	N-729-4 (Ref. 2)
Item Number:	Code Case N-729-4 Item Number B4.10
Description:	Head with UNS N06600 nozzles and UNS N06082 or UNS W86182 partial penetration welds

2. Applicable Code Edition and Addenda

ASME Section XI, 2007 Edition through the 2008 Addenda, “Rules for Inservice Inspection of Nuclear Power Plant Components.” (Ref. 1)

3. Applicable Requirement

The Code of Federal Regulations, Title 10, Part 50, Section 55a (g)(6)(ii)(D)(1) states:

> “Holders of operating licenses or combined licenses for pressurized-water reactors as of or after August 17, 2017 shall implement the requirements of ASME BPV Code Case N–729–4 instead of ASME BPV Code Case N–729–1, subject to the conditions specified in paragraphs (g)(6)(ii)(D)(*2*) through (*4*) of this section, by the first refueling outage starting after August 17, 2017.”

ASME Code Case N-729-4, *Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial-Penetration Welds* (Ref. 2).

4. Reason for Request

The U.S. Federal Government made a COVID-19 declaration of emergency pursuant to the Stafford Act on March 13, 2020. The U.S. Center for Disease Control (CDC) has determined that COVID-19 poses a serious public health risk. The CDC has identified many U.S. States reporting community spread of COVID-19 with the anticipation of conditions worsening over the coming weeks.

In response to the COVID-19 Pandemic, Vistra Operations LLC (Vistra OpCo) has established the following guidelines and restrictions at Comanche Peak Nuclear Power Plant (CPNPP):

1. Employees who do not have a critical need to be at CPNPP facilities must work remotely.
2. Employees who must work from a CPNPP facility are to practice strict social distancing.
3. Outage scope shall be reduced to limit the number of supporting contract personnel.

These guidelines and restrictions were established to eliminate the potential of inadvertently spreading the COVID-19 virus to CPNPP personnel and the surrounding community from outside contractors who perform examinations and tests at CPNPP. Also, due to recent travel restrictions and quarantine requirements imposed by both the U.S. Government and the State of Texas, the availability of outside contractors to provide the NDE services may be limited. Further complicating this situation is Vistra OpCo reliance on outside NDE resources to supplement the small CPNPP NDE Staff.

Many of the planned spring 2020 refueling outage (2RF18) activities have been postponed until future outages based on these guidelines and restrictions; however, the Reactor Vessel Upper Head Visual (VE) examination which is required each refueling outage by Code Case N-729-4 as mandated by the Code of Federal Regulations in Title 10, Part 50, Section 55a, (10CFR50.55a) cannot be postponed without prior NRC approval.

5. Proposed Alternative and Basis for Use

Proposed Alternative

Delay required RV Upper Head Visual (VE) examinations performed by contract personnel from 2RF18 to fall 2021 refueling outage (2RF19). This interval extension is being requested in accordance with 10CFR 50.55a(z)(2) as a hardship without a compensating increase in quality and safety.

In lieu of performing RV Upper Head Visual examination, CPNPP personnel will perform a boric acid inspection of the head by observing the flange area and inspecting underneath the CRDM cooling shroud support ring gap, looking for signs of active boric acid leakage.

Basis for Use

Code Case N-729-4 requires that Comanche Peak Unit 2 perform Visual Examination (VE) of the Reactor Vessel Upper Head every refueling outage. The VE are performed in order to detect leakage as a result of Primary Water Stress Corrosion Cracking (PWSCC) operating experience (OE) and the structural loss of the ferritic head material due to boric acid wastage.

In addition, leakage from the Reactor Vessel Upper Head would be detected in many ways due to CPNPP's extremely low tolerance for Class 1 operational leakage. Some of these detection methods are discussed below:

Operations Monitoring

Technical Specifications (TS) 3.4.13, RCS Operational LEAKAGE, for each Unit, limits system operation in the presence of leakage from Reactor Coolant System (RCS) components to leakage 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 Reactor Coolant Pressure Boundary (RCPB) is maintained.

Per LCO 3.4.13 RCS operational LEAKAGE shall be limited to No pressure boundary LEAKAGE and 1 gpm unidentified LEAKAGE.

Procedure OPT-303, *Reactor Coolant System Water Inventory*, Attachment 10.2, RCS *Live Leakrate Action Levels and Response Guidelines*, provides the steps that would be taken to satisfy TS SR 3.4.13.1 by performance of an RCS water inventory balance. A summary of the steps is seen below in A through E:

A. Action Levels based on Absolute Value of Unidentified RCS Inventory Balance (From Surveillance Data)

Entrance Criteria	ACTION LEVEL
One seven (7) day rolling average of Unidentified RCS Inventory Balance values > 0.1 gpm	LEVEL 1
Two consecutive Unidentified RCS Inventory values > 0.15 gpm	LEVEL 2
One Unidentified RCS Inventory Balance value > 0.3 gpm	LEVEL 3

B. Action Levels based on Deviation from the Baseline Mean:

Entrance Criteria	ACTION LEVEL
Nine (9) consecutive Unidentified RCS Inventory Balance values > baseline mean [μ]	LEVEL 1
Two (2) of three (3) consecutive Unidentified RCS Inventory Balance Values > [$\mu + 2\sigma$], where σ is the baseline standard deviation	LEVEL 2
One (1) Unidentified RCS Inventory Balance > [$\mu + 3\sigma$]	LEVEL 3

C. Exit Criteria following Action Level Entry:

Exit Criteria
• Location of RCS leak has been identified AND Leak terminated (isolated or stopped) – confirmed by RCS leak rate and VCT level trends OR • A minimum of 2 daily leak rates with indicated leakage less than the applicable Action Level AND Ops Department and Engineering staff recommend exiting the applicable Action Level

D. For any ACTION LEVEL response:
   1) Run confirmatory leak rate calculation
   2) Confirm indication
   3) Evaluate trend of affected parameters
   4) Check for abnormal trend of other leakage indicators

E. <u>IF</u> confirmed:
   1) Increase monitoring of leakage indicators
   2) Initiate a Condition Report to document investigation and results in an evaluation
   3) Commence a leak investigation
      - <u>IF ACTION LEVEL 1</u>, search for sources as resources allow
      - <u>IF ACTION LEVEL 2</u>, search for sources, continue 24 hour/day, 7 days/week until cause determined
      - <u>IF ACTION LEVEL 3</u>, search for sources, continue 24 hour/day, 7 days/week until cause determined. At 0.50 gpm sustained leakage, the Shift Manager should consult with the Duty Manager to consider an orderly shutdown to Mode 3.
      - Initiate log book detailing all systems and rooms inspected for leakage with findings. All rooms should be inspected with a thermographic camera (Fire Brigade or Engineering camera).
      - Track all inspections on copies of system drawings, denoting piping and valves inspected.
      - Review recent plant evolutions to determine any “suspect” source(s).
      - Check any components or flow paths recently changed or placed in service, shutdown, vented, drained, filled, etc.
      - Check any maintenance activity that may have resulted in increasing leakage.
      - Check RCS and seal injection filter seals, vents, and drains for leakage (most common source of leakage).
      - Check any filters recently alternated or changed for leakage from their vents or drains, inspect filter housings for gasket leaks, check seal injection filters and reactor coolant filters for signs of leakage.
      - Scrutinize sump pump run times, sample trends, and rad monitor readings.
      - Divide the primary plant into several large groups for investigation. (e.g. Leakage to atmosphere inside containment, S/G primary to secondary leakage, leakage to atmosphere outside containment, inter system leakage)
      - Scrutinize tank levels and trends (e.g., RHUT, RCDT, PRT and SRST), utilizing temporary indication if necessary.
      - Check SI and RHR check valves for small leaks.
      - Initiate outside Containment walk-downs of various portions of potentially affected systems.
      - Notify System Engineer to obtain input/assistance.
   4) <u>IF</u> increased leak rate is indicated inside Containment, <u>THEN</u>:
      - Begin planning for Containment entry while carrying out other actions; obtain proper approval for Containment entry.
      - Obtain a Containment Sump sample (during pump out) and analyze for activity, a larger than expected boric acid concentration and other unexpected chemicals.
      - Evaluate other systems for indications of leakage.
      - Obtain a Containment atmosphere sample for indications of RCS leakage.

- Perform a Containment entry to search for signs of leakage.
- If necessary, utilize robot to perform loop room inspections.

5) Identify the source of the increase in leakage.
6) Quantify the leakage.
7) Initiate plan to correct the leak.
8) Monitor Containment airborne radiation levels as well as area radiation monitors and sample Containment atmosphere for indications of RCS leakage.
9) Monitor other Containment parameters (temperature, pressure, humidity, etc.).
10) If the leak source is found and isolated or stopped, re-perform RCS leak rate calculation.

In addition to surveillance required monitoring, Operations continually monitors the RCS leak rate through control board metering and trend graphing capability. Instrumentation such as pressurizer level, sump levels, containment pressure and humidity instruments, and many others are monitored on a continuous basis and are logged and reviewed each shift.

Administrative controls

Administrative procedures require monitoring of RCS leakage under the Boric Acid Corrosion Control Program (BACCP) on a per cycle basis. The program also addresses abnormal trends in RCS primary system leakage indicators, which may provide indication of leaks much smaller than TS and RCS leakage levels. CPNPP monitors the following containment building/system parameters during the operating cycle to determine any potential leakage from borated or radioactive systems containing boric acid:

Unidentified Reactor Coolant System Leakage:

This parameter monitors unidentified reactor coolant system leakage both inside and outside of containment. The purpose is to review the data graph for trends in leakage and assess if any increases are indication of borated system leakage in Unit 2 containment.

Containment Air Particulate and Gaseous Concentration:

Radiochemistry analysis are performed of the containment atmosphere for each vent process. The vent process is performed approximately every three days and can identify changes in containment activity. The isotope for detecting increase leakage is noble gas Argon-41. Argon-41 is a short-lived isotope that can be readily monitored to detect small increases or upward trends in leakage. From this parameter, an increase in borated system leakage in the Unit 2 containment can be detected.

Containment Air Cooler Condensate Flow and Containment Sump Level/Pump Rates:

The containment air cooler condensate flow is not separately measured, but flows to the containment sumps. Therefore, the reported sump flow rates include the containment air cooler condensate flows. Review of monthly Unit 2 sump pump volumes for this operating cycle are performed to determine if any upward trend in daily pump volume rates are observed. An increased pump rate could indicate leakage from borated systems in Unit 2 containment.

Containment Humidity/Dew Point Temperatures:

The Unit 2 containment has five area dew point temperature sensors at containment elevations 832, 860, and 905, as well as the Control Rod Drive Mechanism shroud and the reactor coolant pipe penetrations. Weekly dew point temperature measurements during plant operation are performed to monitor changes in temperature that could be indicative of leakage from borated systems in containment. Minor changes in temperature, both up and down, are gradual and are considered to be normal due to seasonal variations.

Continued monitoring of these parameters will provide early indication of any abnormal unidentified leakage during the upcoming cycle following 2RF18.

Previous CPNPP Unit 2 Internal Operating Experience (OE)

The last Reactor Vessel Upper Head VE for Unit 2 was performed in the Fall of 2018 during refueling outage 2RF17 with no relevant indications. The last Reactor Vessel Upper Head Penetration Nozzle examination per Code Case N-729-4 Item Number B4.20 was performed in the Spring of 2017 during refueling outage 2RF16 with no indications identified. To date there have been no observed Reactor Vessel Upper Head or Head Penetration leaks in Unit 2.

Other Considerations

Visual examinations of the Reactor Vessel Upper Head will be performed by the Boric Acid Corrosion Control Program (BACCP) during 2RF18.

The ISI Pressure Testing Program will implement the Class 1 System Leakage Test required by ASME Section XI Examination Category B-P, Item Number B15.10 at normal operating pressure and temperature during heatup from 2RF18; VT-2 Visual Examination will be performed during the test.

Any gross leakage (i.e. water, boric acid, insulation deformation) or structural deformities would be identified during the above examinations/activities and captured in the Corrective Action Program.

In summary, extending the inspection frequency for direct visual examination of reactor vessel head and associated penetrations to the next refueling outage scheduled for the fall of 2021 (2RF19) would not adversely impact the function of the reactor vessel head or penetration pressure boundary integrity or result in a reduction in plant safety. In the current pandemic environment, performing the required tests would result in an increased risk of virus exposure to plant personnel and a reduction in occupational health and safety without a compensating benefit. Therefore, this one-time request for relief meets the criteria in 10 CFR 50.55a(z)(2) for proposing inspection alternatives on the basis that compliance results in hardship or unusual difficulty without a compensating increase in level of quality or safety during the current COVID-19 pandemic.

6. Duration of Proposed Alternative

The duration of the request is for Unit 2 operating cycle 19, until refueling outage 2RF19 in the Fall of 2021.

7. Precedents

Exelon Generating Co., LLC issued Relief Request I4R-23 for the Limerick Generating Station to request the delay in examinations due to COVID-19 issues. See Accession No. ML20088B022 and Verbal Authorization per Accession No. ML20089A007.

8. References

1. American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section XI, 2007 Edition through 2008 Addenda

2. ASME Code Case N-729-4, Alternative Examination Requirements for PWR Reactor Vessel Upper Heads with Nozzles Having Pressure-Retaining Partial-Penetration Welds, Section XI, Division 1

3. 10CFR50.55a, Code and standards, January 2020.

Proposed Alternative
In Accordance with 10 CFR 50.55a(z)(2)

--Hardship without a compensating increase in quality and safety--

1. ASME Code Component(s) Affected

Components:	Reactor Vessel (RV) Bottom Mounted Instrumentation (BMI) Nozzle Penetration
Code Class:	Class 1
Code Case:	N-722-1 (Ref. 2)
Examination Category:	B-P [Class 1 Pressurized Water Reactor (PWR) Components Containing Alloy 600/82/182]
Item Number:	Code Case N-722-1 Item Number 15.80
Description:	58 BMI Nozzles welded to the inside surface of the RV with partial penetration J-groove welds

2. Applicable Code Edition and Addenda

ASME Section XI, 2007 Edition through the 2008 Addenda, "Rules for Inservice Inspection of Nuclear Power Plant Components." (Ref. 1)

3. Applicable Requirement

The Code of Federal Regulations, Title 10, Part 50, Section 55a (g)(6)(ii)(E)(1) states:

> "All licensees of pressurized water reactors must augment their inservice inspection program by implementing ASME Code Case N-722-1, subject to the conditions specified in paragraphs (g)(6)(ii)(E)(*2*) through (*4*) of this section. The inspection requirements of ASME Code Case N-722-1 do not apply to components with pressure retaining welds fabricated with Alloy 600/82/182 materials that have been mitigated by weld overlay or stress improvement."

ASME Code Case N-722-1, *Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated with Alloy 600/82/182 Materials*. (Ref. 2).

4. Reason for Request

The U.S. Federal Government made a COVID-19 declaration of emergency pursuant to the Stafford Act on March 13, 2020. The U.S. Center for Disease Control (CDC) has determined that COVID-19 poses a serious public health risk. The CDC has identified many U.S. States reporting community spread of COVID-19 with the anticipation of conditions worsening over the coming weeks.

In response to the COVID-19 Pandemic, Vistra Operations Company LLC (Vistra OpCo) has established the following guidelines and restrictions at Comanche Peak Nuclear Power Plant (CPNPP):

1. Employees who do not have a critical need to be at CPNPP facilities must work remotely.
2. Employees who must work from a CPNPP facility are to practice strict social distancing.
3. Outage scope shall be reduced to limit the number of supporting contract personnel.

These guidelines and restrictions were established to minimize the potential of inadvertently spreading the COVID-19 virus to CPNPP personnel and the surrounding community from outside contractors who perform examinations and tests at CPNPP. Also, due to recent travel restrictions and quarantine requirements imposed by both the U.S. Government and the State of Texas, the availability of outside contractors to provide the NDE services may be limited. Further complicating this situation is the Vistra OpCo reliance on outside NDE resources to supplement the small CPNPP NDE Staff.

Many of the planned spring 2020 refueling outage (2RF18) activities have been postponed until future outages based on these guidelines and restrictions; however, the Reactor Vessel Bottom Mounted Instrumentation (BMI) Nozzle Penetration examination which is required every other refueling outage by Code Case N-722-1 as mandated by the Code of Federal Regulations in Title 10, Part 50, Section 55a, (10CFR50.55a) cannot be postponed without prior NRC approval.

5. Proposed Alternative and Basis for Use

Proposed Alternative

Delay required rescheduling BMI visual examinations (VE) performed by contract personnel from 2RF18 to the fall 2021 refueling outage (2RF19). This interval extension is being requested in accordance with 10CFR50.55a(z)(2) as a hardship without a compensating increase in quality and safety.

In lieu of performing BMI VEs, CPNPP personnel will perform a boric acid inspection of the bottom head from the peripheral of the reactor mirror insulation package by removal of select insulation panels to gain access which will allow inspection for any gross active boric acid leakage.

Basis for Use

Code Case N-722-1 requires a VE of the CPNPP Unit 2 reactor pressure vessel BMI nozzle penetrations every other outage. The BMI visual inspections are performed in order to detect leakage as a result of Primary Water Stress Corrosion Cracking (PWSCC) operating experience (OE). As identified in MRP-206 (Ref. 3) the inspections are performed to address safety concerns attributed to nozzle ejection as a result of a large circumferential crack below the bottom of the J-groove weld and the structural loss of the ferritic head material due to boric acid wastage.

In addition, leakage from the Lower Head would be detected in many ways due to CPNPP’s extremely low tolerance for Class 1 operational leakage. Some of these detection methods are discussed below:

Operations Monitoring

Technical Specifications (TS) 3.4.13, “RCS Operational LEAKAGE”, for each Unit, limits system operation in the presence of leakage from Reactor Coolant System (RCS) components to leakage 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 Reactor Coolant Pressure Boundary (RCPB) is maintained.

Per LCO 3.4.13 “RCS operational LEAKAGE shall be limited to no pressure boundary LEAKAGE and 1 gpm unidentified LEAKAGE.”

Procedure OPT-303, *Reactor Coolant System Water Inventory*, Attachment 10.2, RCS *Live Leakrate Action Levels and Response Guidelines*, provides the steps that would be taken to satisfy TS SR 3.4.13.1 by performance of an RCS water inventory balance. A summary of the steps is seen below in A through E:

A. Action Levels based on <u>Absolute Value of Unidentified RCS Inventory Balance</u> (From Surveillance Data)

Entrance Criteria	ACTION LEVEL
One seven (7) day rolling average of Unidentified RCS Inventory Balance values > 0.1 gpm	LEVEL 1
Two consecutive Unidentified RCS Inventory values > 0.15 gpm	LEVEL 2
One Unidentified RCS Inventory Balance value > 0.3 gpm	LEVEL 3

B. Action Levels based on <u>Deviation from the Baseline Mean</u>:

Entrance Criteria	ACTION LEVEL
Nine (9) consecutive Unidentified RCS Inventory Balance values > baseline mean [μ]	LEVEL 1
Two (2) of three (3) consecutive Unidentified RCS Inventory Balance Values > [μ + 2σ], where σ is the baseline standard deviation	LEVEL 2
One (1) Unidentified RCS Inventory Balance > [μ + 3σ]	LEVEL 3

C. Exit Criteria following Action Level Entry:

Exit Criteria
• Location of RCS leak has been identified <u>AND</u> Leak terminated (isolated or stopped) – confirmed by RCS leak rate and VCT level trends <u>OR</u>

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- A minimum of 2 daily leak rates with indicated leakage less than the applicable Action Level
  AND
  Ops Department and Engineering staff recommend exiting the applicable Action Level

D. For any ACTION LEVEL response:
1) Run confirmatory leak rate calculation
2) Confirm indication
3) Evaluate trend of affected parameters
4) Check for abnormal trend of other leakage indicators

E. IF confirmed:
1) Increase monitoring of leakage indicators
2) Initiate a Condition Report to document investigation and results in an evaluation
3) Commence a leak investigation
   - IF ACTION LEVEL 1, search for sources as resources allow
   - IF ACTION LEVEL 2, search for sources, continue 24 hours/day, 7 days/week until cause determined
   - IF ACTION LEVEL 3, search for sources, continue 24 hours/day, 7 days/week until cause determined. At 0.50 gpm sustained leakage, the Shift Manager should consult with the Duty Manager to consider an orderly shutdown to Mode 3.
   - Initiate log book detailing all systems and rooms inspected for leakage with findings. All rooms should be inspected with a thermographic camera (Fire Brigade or Engineering camera).
   - Track all inspections on copies of system drawings, denoting piping and valves inspected.
   - Review recent plant evolutions to determine any "suspect" source(s).
   - Check any components or flow paths recently changed or placed in service, shutdown, vented, drained, filled, etc.
   - Check any maintenance activity that may have resulted in increasing leakage.
   - Check RCS and seal injection filter seals, vents, and drains for leakage (most common source of leakage).
   - Check any filters recently alternated or changed for leakage from their vents or drains, inspect filter housings for gasket leaks, check seal injection filters and reactor coolant filters for signs of leakage.
   - Scrutinize sump pump run times, sample trends, and rad monitor readings.
   - Divide the primary plant into several large groups for investigation. (e.g. Leakage to atmosphere inside containment, S/G primary to secondary leakage, leakage to atmosphere outside containment, inter system leakage)
   - Scrutinize tank levels and trends (e.g., RHUT, RCDT, PRT and SRST), utilizing temporary indication if necessary.
   - Check SI and RHR check valves for small leaks.
   - Initiate outside Containment walk-downs of various portions of potentially affected systems.
   - Notify System Engineer to obtain input/assistance.

4) IF increased leak rate is indicated inside Containment, THEN:
   - Begin planning for Containment entry while carrying out other actions; obtain proper approval for Containment entry.
   - Obtain a Containment Sump sample (during pump out) and analyze for activity, a larger than expected boric acid concentration and other unexpected chemicals.
   - Evaluate other systems for indications of leakage.
   - Obtain a Containment atmosphere sample for indications of RCS leakage.
   - Perform a Containment entry to search for signs of leakage.
   - If necessary, utilize robot to perform loop room inspections.
5) Identify the source of the increase in leakage.
6) Quantify the leakage.
7) Initiate plan to correct the leak.
8) Monitor Containment airborne radiation levels as well as area radiation monitors and sample Containment atmosphere for indications of RCS leakage.
9) Monitor other Containment parameters (temperature, pressure, humidity, etc.).
10) If the leak source is found and isolated or stopped, re-perform RCS leak rate calculation.

In addition to surveillance required monitoring, Operations continually monitors the RCS leak rate through control board metering and trend graphing capability. Instrumentation such as pressurizer level, sump levels, containment pressure and humidity instruments, and many others are monitored on a continuous basis and are logged and reviewed each shift.

Administrative controls

Administrative procedures require monitoring of RCS leakage under the Boric Acid Corrosion Control Program (BACCP) on a per cycle basis. The program also addresses abnormal trends in RCS primary system leakage indicators, which may provide indication of leaks much smaller than TS and RCS leakage levels. CPNPP monitors the following containment building/system parameters during the operating cycle to determine any potential leakage from borated or radioactive systems containing boric acid.

Unidentified Reactor Coolant System Leakage:

This parameter monitors unidentified (RCS leakage both inside and outside of containment. The purpose is to review the data graph for trends in leakage and assess if any increases are indication of borated system leakage in Unit 2 containment.

Containment Air Particulate and Gaseous Concentration:

Radiochemistry analysis are performed of the containment atmosphere for each vent process. The vent process is performed approximately every three days and can identify changes in containment activity. The isotope for detecting increase leakage is noble gas Argon-41. Argon-41 is a short-lived isotope that can be readily monitored to detect small increases or upward trends in leakage. From this parameter, an increase in borated system leakage in the Unit 2 containment can be detected.

Containment Air Cooler Condensate Flow and Containment Sump

Level/Pump Rates:

The containment air cooler condensate flow is not separately measured, but flows to the containment sumps. Therefore, the reported sump flow rates include the containment air cooler condensate flows. Review of monthly Unit 2 sump pump volumes for this operating cycle are performed to determine if any upward trend in daily pump volume rates are observed. An increased pump rate could indicate leakage from borated systems in Unit 2 containment.

Containment Humidity/Dew Point Temperatures:

The Unit 2 containment has five area dew point temperature sensors at containment elevations 832, 860, and 905, as well as the Control Rod Degradation Mechanism shroud and the reactor coolant pipe penetrations. Weekly dew point temperature measurements during plant operation are performed to monitor changes in temperature that could be indicative of leakage from borated systems in containment. Minor changes in temperature, both up and down, are gradual and are considered to be normal due to seasonal variations.

Continued monitoring of these parameters will provide early indication of any abnormal unidentified leakage during the upcoming cycle following 2RF18.

<u>Previous CPNPP Unit 2 Internal Operating Experience (OE)</u>

The last BMI inspection for Unit 2 with vendor assistance was performed in the Spring of 2017 during refueling outage 2RF16 with no relevant indications. During every other outage when the BMI visual examinations are not performed, (i.e., 2RF17) CPNPP personnel perform a boric acid inspection of the bottom head area. To date there have been no observed BMI leaks in Unit 2.

<u>Other Considerations</u>

Visual examination of the exterior surface of the BMI penetrations will be performed in accordance with the BACCP during 2RF18.

The ISI Pressure Testing Program will implement the Class 1 System Leakage Test required by ASME Section XI Examination Category B-P, Item Number B15.10 at normal operating pressure and temperature during heatup from 2RF18 which includes the BMI area; VT-2 Visual Examination will be performed during the test.

Any gross leakage (i.e. water, boric acid, insulation deformation) or structural deformities would be identified during the above examinations/activities and captured in the Corrective Action Program.

In summary, extending the inspection frequency for direct visual examination of reactor bottom head and associated penetrations to the next refueling outage scheduled for 2RF19 would not adversely impact the function of the reactor bottom head or penetrations pressure boundary integrity or result in a reduction in plant safety. In the current pandemic environment, performing the required tests would result in an increased risk of virus exposure to plant personnel and a reduction in occupational health and safety without a compensating benefit. Therefore, this one-time request for relief meets the criteria in 10 CFR 50.55a(z)(2) for proposing inspection alternatives on the basis that compliance results in hardship or unusual difficulty without a compensating increase in level of quality or safety during the current COVID-19 pandemic.

6. Duration of Proposed Alternative

The duration of the request is for Unit 2 operating cycle 19, until refueling outage 2RF19 in the fall of 2021.

7. Precedents

ML20088A533 supplemented by ML20090L944 – Relief Request 65 Unit 2, COVID-19, Request for Relief from Bottom Mounted Instrumentation Nozzles and a Pressurizer Nozzle to Surge Line Weld Overlay Examination – Palo Verde Nuclear Generating Station (PVNGS)

8. References

1. American Society of Mechanical Engineers Boiler and Pressure Vessel Code Section XI, 2007 Edition through 2008 Addenda.

2. ASME Code Case N-722-1, Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated with Alloy 600/82/182 Materials Section XI, Division 1.

3. MRP206, Inspection and Evaluation Guidelines for Reactor Vessel Bottom-Mounted Nozzles in U.S. PWR Plants.

4. 10 CFR 50.55a, Codes and Standards, January 2020.

Proposed Alternative
In Accordance with 10 CFR 50.55a(z)(2)

--Hardship without a compensating increase in quality and safety--

1. ASME Code Component(s) Affected

Components:	Nozzle to Safe-End & Safe-End to Pipe Weld on the Hot Legs of a 4 Loop Westinghouse plant.
Code Class:	Class 1
Examination Category:	Nozzle to Safe End Welds - Code Case N-770-2 Safe-End to Pipe Welds – Risk Informed R-A
Item Number:	Nozzle to Safe-End Welds - Examination Item A-2 Safe-End to Pipe Welds – Risk Informed R1.20
Description:	Unmitigated butt weld at Hot Leg operating temperature $\leq$ 625°F
Component Identification:	Nozzle to Safe-End Welds TCX-1-4100-1, TCX-1-4200-1, TCX-1-4300-1, TCX-1-4400-1 Safe-End to Pipe Welds TCX-1-4100-2, TCX-1-4200-2, TCX-1-4300-2, TCX-1-4400-2

2. Applicable Code Edition and Addenda

Code Case N-770-2 as referenced in 10CFR50.55a(g)(6)(ii)(F). American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, "Rules for Inservice Inspection of and Testing of Components of Light-Water Cooled Plants" 2007 Edition with 2008 Addenda.

3. Applicable Requirement

10CFR 50.55a(g)(6)(ii)(F) requires licensees of existing, operating pressurized-water reactors as of August 17, 2017 to implement the requirements of ASME Code Case N-770-2, subject to the conditions specified in paragraphs (g)(6)(ii)(F)(2) through (13). Table 1 of Code Case N-770-2 requires volumetric examination of all unmitigated butt weld at Hot Leg operating temperature $\leq$625°F every 5 years and visual examination each refueling outage.

4. Reason for Request

The U.S. Federal Government made a COVID-19 declaration of emergency pursuant to the Stafford Act on March 13, 2020. The U.S. Center for Disease Control (CDC) has determined that COVID-19 poses a serious public health risk. The CDC has identified many U.S. States reporting community spread of COVID-19 with the anticipation of conditions worsening over the coming weeks.

In response to the COVID-19 Pandemic, Vistra Operations Company LLC (Vistra OpCo) has established the following guidelines and restrictions at Comanche Peak Nuclear Power Plant (CPNPP):

1. Employees who do not have a critical need to be at CPNPP facilities must work remotely.
2. Employees who must work from a CPNPP facility are to practice strict social distancing.
3. Outage scope shall be reduced to limit the number of supporting contract personnel.

These guidelines and restrictions were established to eliminate the potential of inadvertently spreading the COVID-19 virus to CPNPP personnel and the surrounding community from outside contractors who perform examinations and tests at CPNPP. Also, due to recent travel restrictions and quarantine requirements imposed by both the U.S. Government and the State of Texas, the availability of outside contractors to provide the NDE services may be limited. Further complicating this situation is Vistra OpCo reliance on outside NDE resources to supplement the small CPNPP NDE Staff.

Many of the planned spring 2020 refueling outage (2RF18) activities have been postponed until future outages based on these guidelines and restrictions; however, the unmitigated butt weld at Hot Leg operating temperature $\leq$ 625°F requires a volumetric exam every 5 years as required by Code Case N-770-2 as mandated by the Code of Federal Regulations in Title 10, Part 50, Section 55a, (10CFR50.55a) and cannot be postponed without prior NRC approval.

5. Proposed Alternative and Basis for Use

Proposed Alternative

Vistra OpCo is requesting a one-time deferral to the next refueling outage in the fall of 2021 (2RF19) of the 5-year interval of volumetric examination required by Table 1 of Code Case N-770-2, for Item A-2 unmitigated butt weld at Hot Leg operating temperature $\leq$ 625°F. This interval extension is being requested in accordance with 10CFR50.55a(z)(2) as a hardship without a compensating increase in quality and safety.

In lieu of performing a volumetric exam from the ID of the hot legs, CPNPP will be performing a qualified direct visual examination from the OD on each of the welds identified above.

Basis for Use

Code Case N-770-2 requires volumetric examination of the Reactor Vessel Hot Leg Unmitigated Butt Welds every 5 years. These examinations are performed in order to detect leakage as a result of Primary Water Stress Corrosion Cracking (PWSCC) operating experience (OE) and the structural loss of the ferritic material due to boric acid wastage.

In addition, leakage from Hot Legs would be detected in many ways due to CPNPP's extremely low tolerance for Class 1 operational leakage. These detection methods are discussed below:

Operations Monitoring

Technical Specifications (TS) 3.4.13, RCS Operational LEAKAGE, for each Unit, limits system operation in the presence of leakage from Reactor Coolant System (RCS) components to leakage 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 Reactor Coolant Pressure Boundary (RCPB) is maintained.

Per LCO 3.4.13 RCS operational LEAKAGE shall be limited to No pressure boundary LEAKAGE and 1 gpm unidentified LEAKAGE.

Procedure OPT-303, *Reactor Coolant System Water Inventory*, Attachment 10.2, RCS *Live Leakrate Action Levels and Response Guidelines*, provides the steps that would be taken to satisfy TS SR 3.4.13.1 by performance of an RCS water inventory balance. A summary of the steps is seen below in A through E:

A. Action Levels based on <u>Absolute Value of Unidentified RCS Inventory Balance</u> (From Surveillance Data)

Entrance Criteria	ACTION LEVEL
One seven (7) day rolling average of Unidentified RCS Inventory Balance values > 0.1 gpm	LEVEL 1
Two consecutive Unidentified RCS Inventory values > 0.15 gpm	LEVEL 2
One Unidentified RCS Inventory Balance value > 0.3 gpm	LEVEL 3

B. Action Levels based on <u>Deviation from the Baseline Mean</u>:

Entrance Criteria	ACTION LEVEL
Nine (9) consecutive Unidentified RCS Inventory Balance values > baseline mean [μ]	LEVEL 1
Two (2) of three (3) consecutive Unidentified RCS Inventory Balance Values > [μ + 2σ], where σ is the baseline standard deviation	LEVEL 2
One (1) Unidentified RCS Inventory Balance > [μ + 3σ]	LEVEL 3

Exit Criteria following Action Level Entry:

Exit Criteria
• Location of RCS leak has been identified AND Leak terminated (isolated or stopped) – confirmed by RCS leak rate and VCT level trends OR • A minimum of 2 daily leak rates with indicated leakage less than the applicable Action Level AND Ops Department and Engineering staff recommend exiting the applicable Action Level

C. For any ACTION LEVEL response:
   1) Run confirmatory leak rate calculation
   2) Confirm indication
   3) Evaluate trend of affected parameters
   4) Check for abnormal trend of other leakage indicators

D. IF confirmed:
   1) Increase monitoring of leakage indicators
   2) Initiate a Condition Report to document investigation and results in an evaluation
   3) Commence a leak investigation
      - IF ACTION LEVEL 1, search for sources as resources allow
      - IF ACTION LEVEL 2, search for sources, continue 24 hours/day, 7 days/week until cause determined
      - IF ACTION LEVEL 3, search for sources, continue 24 hours/day, 7 days/week until cause determined. At 0.50 gpm sustained leakage, the Shift Manager should consult with the Duty Manager to consider an orderly shutdown to Mode 3.
      - Initiate log book detailing all systems and rooms inspected for leakage with findings. All rooms should be inspected with a thermographic camera (Fire Brigade or Engineering camera).
      - Track all inspections on copies of system drawings, denoting piping and valves inspected.
      - Review recent plant evolutions to determine any “suspect” source(s).
      - Check any components or flow paths recently changed or placed in service, shutdown, vented, drained, filled, etc.
      - Check any maintenance activity that may have resulted in increasing leakage.
      - Check RCS and seal injection filter seals, vents, and drains for leakage (most common source of leakage).
      - Check any filters recently alternated or changed for leakage from their vents or drains, inspect filter housings for gasket leaks, check seal injection filters and reactor coolant filters for signs of leakage.
      - Scrutinize sump pump run times, sample trends, and rad monitor readings.
      - Divide the primary plant into several large groups for investigation. (e.g. Leakage to atmosphere inside containment, S/G primary to secondary

leakage, leakage to atmosphere outside containment, inter system leakage)
- Scrutinize tank levels and trends (e.g., RHUT, RCDT, PRT and SRST), utilizing temporary indication if necessary.
- Check SI and RHR check valves for small leaks.
- Initiate outside Containment walk-downs of various portions of potentially affected systems.
- Notify System Engineer to obtain input/assistance.

4) IF increased leak rate is indicated inside Containment, THEN:
   - Begin planning for Containment entry while carrying out other actions; obtain proper approval for Containment entry.
   - Obtain a Containment Sump sample (during pump out) and analyze for activity, a larger than expected boric acid concentration and other unexpected chemicals.
   - Evaluate other systems for indications of leakage.
   - Obtain a Containment atmosphere sample for indications of RCS leakage.
   - Perform a Containment entry to search for signs of leakage.
   - If necessary, utilize robot to perform loop room inspections.
5) Identify the source of the increase in leakage.
6) Quantify the leakage.
7) Initiate plan to correct the leak.
8) Monitor Containment airborne radiation levels as well as area radiation monitors and sample Containment atmosphere for indications of RCS leakage.
9) Monitor other Containment parameters (temperature, pressure, humidity, etc.).
10) If the leak source is found and isolated or stopped, re-perform RCS leak rate calculation.

In addition to surveillance required monitoring, Operations continually monitors the RCS leak rate through control board metering and trend graphing capability. Instrumentation such as pressurizer level, sump levels, containment pressure and humidity instruments, and many others are monitored on a continuous basis and are logged and reviewed each shift.

Administrative controls

Administrative procedures require monitoring of RCS leakage under the Boric Acid Corrosion Control Program (BACCP) on a per cycle basis. The program also addresses abnormal trends in RCS primary system leakage indicators, which may provide indication of leaks much smaller than TS and RCS leakage levels. CPNPP monitors the following containment building/system parameters during the operating cycle to determine any potential leakage from borated or radioactive systems containing boric acid:

Unidentified Reactor Coolant System Leakage:

This parameter monitors unidentified reactor coolant system leakage both inside and outside of containment. The purpose is to review the data graph for trends in leakage and assess if any increases are indication of borated system leakage in Unit 2 containment.

Containment Air Particulate and Gaseous Concentration:

Radiochemistry analysis are performed of the containment atmosphere for each vent process. The vent process is performed approximately every three days and can identify changes in containment activity. The isotope for detecting increase leakage is noble gas Argon-41. Argon-41 is a short-lived isotope that can be readily monitored to detect small increases or upward trends in leakage. From this parameter, an increase in borated system leakage in the Unit 2 containment can be detected.

Containment Air Cooler Condensate Flow and Containment Sump Level/Pump Rates:

The containment air cooler condensate flow is not separately measured, but flows to the containment sumps. Therefore, the reported sump flow rates include the containment air cooler condensate flows. Review of monthly Unit 2 sump pump volumes for this operating cycle are performed to determine if any upward trend in daily pump volume rates are observed. An increased pump rate could indicate leakage from borated systems in Unit 2 containment.

Containment Humidity/Dew Point Temperatures:

The Unit 2 containment has five area dew point temperature sensors at containment elevations 832, 860, and 905, as well as the Control Rod Drive Mechanism shroud and the reactor coolant pipe penetrations. Weekly dew point temperature measurements during plant operation are performed to monitor changes in temperature that could be indicative of leakage from borated systems in containment. Minor changes in temperature, both up and down, are gradual and are considered to be normal due to seasonal variations.

Continued monitoring of these parameters will provide early indication of any abnormal unidentified leakage during the upcoming cycle following 2RF18.

Previous Internal Operating Experience (OE)

Comanche Peak Unit 2 RPV Hot Leg Nozzle to Safe-End welds and Safe-End to Pipe welds have been previously examined volumetrically (2RF15 Fall of 2015) with no PWSCC flaw like indications identified to date via this method of examination. Visual exams performed during subsequent outages, (2RF16 and 2RF17) have not reported any signs of boric acid leakage.

Other Considerations

Direct visual examinations of the Hot Leg welds will be performed during 2RF18 by qualified site CPNPP personnel.

The ISI Pressure Testing Program will implement the Class 1 System Leakage Test required by ASME Section XI Examination Category B-P, Item Number B15.10 at normal operating pressure and temperature during heatup from 2RF18; VT-2 Visual Examination will be performed during the test. The RV Hot Legs are included in this examination to the extent practical.

Any gross leakage (i.e. water, boric acid, insulation deformation) or structural deformities would be identified during the above examinations/activities and captured in the Corrective Action Program.

In summary, extending the inspection frequency for volumetric examination of Nozzle to Safe-End & Safe-End to Pipe Weld on the Hot Legs to the next refueling outage 2RF19 would not adversely impact the function of the hot legs or RCS pressure boundary integrity or result in a reduction in plant safety. In the current pandemic environment, performing the required tests would result in an increased risk of virus exposure to plant personnel and a reduction in occupational health and safety without a compensating benefit. Therefore, this one-time request for relief meets the criteria in 10 CFR 50.55a(z)(2) for proposing inspection alternatives on the basis that compliance results in hardship or unusual difficulty without a compensating increase in level of quality or safety during the current COVID-19 pandemic.

6. Duration of Proposed Alternative

The duration of the request is for Unit 2 operating cycle 19, until refueling outage 2RF19.

7. Precedents

1. NRC letter to NextEra Energy, "Point Beach Nuclear Plant, Unit 2 - Approval of Relief Request 2-RR-1 1; Steam Generator Nozzle to Safe-End Dissimilar Metal (DM) Weld Inspection RE: (CAC No. MF6615)," dated March 22, 2016 (ADAMS Accession No. ML1 6063A058)

2. NRC letter to Luminant Generation Company LLC, "Comanche Peak Nuclear Power Plant, Unit 1 - Relief Request 183-3, Alternative to the ASME Code, Section XI, Examination Requirements for Reactor Pressure Vessel Cold-Leg Weld Inspection Frequency (CAC No. MF6125)," dated March 14, 2016 (ADAMS Accession No. ML16074A001)

3. NRC letter to Entergy Nuclear Operations, "Indian Point, Nuclear Generating Unit No. 2 Relief Request No. IP2-ISI-RR-14, Code Case N- 770-1, Reactor Coolant System Cold Leg Nozzle Weld Inspection Frequency Extension (TAC No. ME6801)," dated February 2, 2012 (ADAMS Accession No. ML120260090)

4. NRC Letter to Entergy Nuclear Operations, "Indian Point Nuclear Generating Unit No. 3- Safety Evaluation for Relief Request IP3-ISI-RR- 07 for Reactor Vessel Cold Leg Nozzle to Safe-End Weld Examinations (TAC No. MF3346)," dated August 4, 201 4 (ADAMS Accession No. ML14199A444)

8. References

1. Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," Revision 19 dated March 2020

2. Code Case N-770-2, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material with or Without Application of Listed Mitigation Activities Section XI, Division 1"