



May 10, 2007

Terry J. Garrett  
Vice President, Engineering

ET 07-0016

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

- Reference:
- 1) Letter ET 06-0038, dated September 27, 2006, from T. J. Garrett, WCNOG, to USNRC
  - 2) Letter dated April 11, 2007, from V. Rodriguez, USNRC, to T. J. Garrett, WCNOG (ML070930659)
  - 3) Letter ET 07-0011, dated May 2, 2007, from T.J Garrett, WCNOG, to USNRC

Subject: Docket No. 50-482: Response to NRC Requests for Additional Information Related to Wolf Creek Generating Station License Renewal Application

Gentlemen:

Reference 1 provided Wolf Creek Nuclear Operating Corporation's (WCNOG) License Renewal Application for the Wolf Creek Generating Station (WCGS). Reference 2 requested additional information regarding the License Renewal Application. Attachment I provides the WCNOG response to each NRC request.

Attachment II provides a comprehensive commitment list including all commitments made in References 1 and 3. The list also includes one additional commitment made in response to Reference 2.

If you have any questions concerning this matter, please contact me at (620) 364-4084, or Mr. Kevin Moles at (620) 364-4126.

Sincerely,

A handwritten signature in black ink, appearing to read "TJ Garrett", written over a horizontal line.

Terry J. Garrett

TJG/rlt

Oath


Attachment I WCNOC Response to NRC Requests for Additional Information  
(ML070930695) Dated April 9, 2007

Attachment II List of Commitments

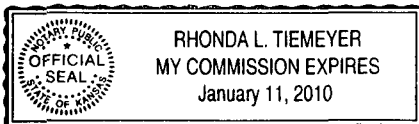
cc: J. N. Donohew (NRC), w/a  
V. G. Gaddy (NRC), w/a  
B. S. Mallett (NRC), w/a  
V. Rodriguez (NRC), w/a  
Senior Resident Inspector (NRC), w/a

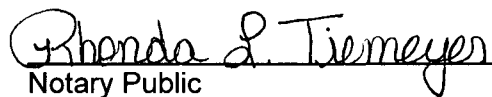
STATE OF KANSAS     )  
                              ) SS  
COUNTY OF COFFEY    )

Terry J. Garrett, of lawful age, being first duly sworn upon oath says that he is Vice President Engineering of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the contents thereof; that he has executed the same for and on behalf of said Corporation with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By   
Terry J. Garrett  
Vice President Engineering

SUBSCRIBED and sworn to before me this 10 day of May, 2007.



  
Notary Public

Expiration Date January 11, 2010

**Attachment I**

**WCNOC Response to NRC Requests for Additional Information (ML070930659)  
Dated April 11, 2007**

RAI B.2.1.34-1  
RAI B.2.1.34-2  
RAI B.2.1.34-3  
RAI B.2.1.34-4  
RAI B.2.1.34-5  
RAI B.2.1.34-6  
RAI B.2.1.34-7  
RAI B.2.1.34-8  
RAI B.2.1.34-9

**WCNOC Response to NRC Requests for Additional Information (ML070930659)  
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**Nickel Alloy Aging Management Program**

**RAI B.2.1.34-1**

The Nickel Alloy Aging Management Program (AMP) was submitted prior to the performance of pre-mitigation weld inspections for the application of weld overlays on pressurizer connections with dissimilar metal butt welds at WCGS. The pre-mitigation inspection performed in 2006 identified extensive circumferential cracking at three dissimilar metals welds associated with surge, relief, and safety nozzles. The staff requests that the applicant revise this AMP to incorporate information pertaining to the dissimilar metals butt weld inspection activities and findings. The revised AMP should: (1) discuss program enhancements incorporated as a result of the inspections, (2) provide information regarding the mitigation and preventive actions, taken or planned, to reduce the susceptibility of Alloy 600/82/182 components to primary water stress corrosion cracking (PWSCC), (3) discuss the inspection frequency and method of inspection of components susceptible to PWSCC covered under the scope of this program, and (4) provide justification that the AMP will provide reasonable assurance that PWSCC will be detected on a timely matter.

In addition, the staff requests that the applicant update the AMP Updated Safety Analysis Report (USAR) supplement to reflect all changes made to the program.

**RAI B.2.1.34-1 Response**

The following changes to the Alloy 600 program resulted from the circumferential cracking identified in 2006.

(1) Examinations have been added to the program as a result of the 2006 operating experience. Visual examination of bottom mounted nozzles are performed every other refueling outage. A baseline volumetric examination was performed during Refueling Outage 14 (Spring 2005) on all hot leg nozzles, cold leg nozzles and bottom mounted nozzles.

(2) Wolf Creek Nuclear Operating Corporation's (WCNOC) program provides for mitigation of reactor coolant system pipe butt welds containing alloy 600. Mitigation plans are prioritized in accordance with risk rankings listed in WCNOC Procedure "Program Plan for Management of Alloy 600 Components and Alloy 82/182 Welds", WCRE-15 Attachment A. Pressurizer surge, relief, safety, and spray nozzles containing alloy 600 material have been overlaid with alloy 690. WCNOC's program directs subsequent examinations of these nozzles to be performed in accordance with "Primary System Butt Weld Inspection and Evaluation Guideline," Materials Reliability Program (MRP-139). Options for mitigating reactor coolant loop nozzles are currently being evaluated.

(3) There have been no changes to the frequency or method of inspection other than those identified in (1) and (2) above.

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(4) The WCNOC alloy 600 program provides reasonable assurance that primary water stress corrosion cracking (PWSCC) degradation will be detected in a timely manner because examination plans optimize inspection intervals and techniques, and maximize the likelihood of detecting a flaw prior to impact on plant safety and reliability. Alloy 600 inspection activities are included as augmented actions in the Inservice Inspection (ISI) program, and include bare metal visual (BMV), surface, and volumetric examinations as directed by regulatory and industry guidance. Inspection of components, where susceptible material is used as a pressure boundary for the primary system, meets or exceeds industry and regulatory guidance. The program incorporates plant specific and industry operating experience. WCNOC has taken a proactive approach in mitigating the Pressurizer nozzles via structural weld overlay and has included locations having susceptible material exposed to primary water in the Alloy 600 program. As part of this program WCNOC is considering available options for repairing/mitigating the Reactor loop nozzles. This proactive approach applies to other high risk or high probability locations as well.

**RAI B.2.1.34-2**

PWSCC of components made of Alloy 600/82/182 in pressurized power reactors (PWR) is an emerging material degradation issue. The industry has initiated augmented inspections and mitigation of susceptible components to ensure safe operation of the affected plants. Recent inspection findings of extensive circumferential cracking of Alloy 82/182 dissimilar metal welds at WCGS has raised concerns regarding the adequacy of the inspection scope and schedule based on industry initiatives. In addition, discussions with the industry to resolve the staff's comments and recommendations to the inspection program delineated in the Materials Reliability Program (MRP)-139, "Primary System Butt Weld Inspection and Evaluation Guideline," is continuing. Therefore, to ensure that the program is acceptable for implementation during the period of extended operation and that it will manage the effects of aging in accordance with 10 CFR 54.21(a)(3), the staff requests that the applicant commit to continue to participate in industry initiatives (such as the Westinghouse Owners Group and the Electric Power Research Institute MRP.) The program inspection requirements of Alloy 600/82/182 components must be consistent with the latest version of the NRC accepted industry guidance, generic communications, orders, and applicable regulatory requirements delineated in 10 CFR 50.55a. In addition, the staff requests that the applicant submit the AMP inspection plan for NRC review and approval at least 24 months prior to entering the period of extended operation.

**RAI B.2.1.34-2 Response**

Currently, License Renewal Application (LRA) section A1.35 "Reactor Coolant System Supplement" commits Wolf Creek Generating Station (WCGS) to the following regarding Reactor Coolant System Nickel Alloy Pressure Boundary Components:

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**"Implement applicable (1) NRC Orders, Bulletins and Generic Letters associated with nickel alloys and (2) staff-accepted industry guidelines"**

**LRA section A1.34 "Nickel Alloy Aging Management Program" will be amended to include the following:**

**"The WCGS Nickel Alloy Aging Management inspection plan will be submitted for NRC review and approval at least 24 months prior to entering the period of extended operation."**

**RAI B.2.1.34-3**

By letter dated October 12, 2005, the NRC staff provided comments and recommendations to the Nuclear Energy Institute (NEI) pertaining to the guidance provided in MRP-139 for the inspection and evaluation of Alloy 82/182 butt welds. This initiative is continuing and a resolution has not been reached. The staff requests that the applicant identify any exceptions that WCGS plans to take to the NRC's comments and recommendations provided to the NEI. If WCGS plans to take exceptions, the staff requests that the applicant provide its technical justification.

**RAI B.2.1.34-3 Response**

**WCNOC is participating with the Nuclear Energy Institute (NEI) to obtain staff acceptance of the guidance provided in MRP-139 for the inspection and evaluation of Alloy 82/182 butt welds.**

**WCNOC may take exception to comment 2 with regard to the statement "that leak before break (LBB) welds shall be mitigated." Although WCNOC is pursuing plans to mitigate our LBB welds, definitive mitigation strategies and dates have not been set.**

**WCNOC takes exception to comment 17. WCNOC does not interpret MRP-139 to permit volumetric coverage less than that required by the ASME code. WCNOC considers MRP section 1.2 to be consistent with ASME code in that WCNOC does not interpret the guidelines set forth in 1.2 to reduce current ASME Code requirements.**

**RAI B.2.1.34-4**

By letter dated July 27, 2004, Wolf Creek Nuclear Operating Corporation (WCNOC) responded to NRC Bulletin 2004-01, "Inspection of Alloy 82/182/600 Materials Used in the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized Water Reactors." The staff requests that the applicant confirm that WCGS is not taking any exception to the guidance provided in this bulletin. If exceptions are identified, the applicant should address and justify them, especially those in the following areas: (1) percentage of inspection coverage to be achieved at each location, and (2) performance of an extent-of-condition evaluation, sample expansion, and

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non-destructive examinations if circumferential cracking is found. In addition, in view of the extensive PWSCC found at WCGS, the staff requests that the applicant discuss any enhancements made to the WCGS inspection plan for those components addressed in Bulletin 2004-01.

**RAI B.2.1.34-4 Response**

The only exception taken to the recommendations of NRC Bulletin 2004-01 was explained in Table 1 of the response in relation to the spray nozzle to safe-end weld. This exception was part of a relief request submitted by WCNOC (Reference 1) and approved by the NRC (Reference 2).

The pressurizer surge, safety, relief and spray nozzles have been overlaid with alloy 690. The pressure boundary in these locations is now the alloy 690 overlay. The original alloy 600 is no longer credited as the pressure boundary. WCNOC examination criteria uses the guidance of MRP-139.

**RAI B.2.1.34-5**

NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity," requested information from PWR licensees regarding the reactor coolant pressure boundary integrity associated with the reactor pressure vessel lower head penetrations. WCNOC did not discuss augmented inspection plans for these components in its response to this bulletin nor in its description of the AMP. In view of the extensive PWSCC found at WCGS, the staff requests that the applicant discuss the inspection plan for the components addressed in Bulletin 2003-02, and provide justification for its adequacy.

**RAI B.2.1.34-5 Response**

In response to NRC Bulletin 2003-02, WCNOC stated: "A surveillance procedure being developed for inspection of the lower RPV head will be complete by October 19, 2003. This procedure will be performed during the Fall 2003 refueling outage and is also expected to be performed during subsequent refueling outages."

In accordance with WCNOC's response to NRC Bulletin 2003-02, WCNOC performed bare metal visual (BMV) examinations of the lower RPV head nozzles (bottom mounted nozzles, (BMN)) during the Fall 2003 and Spring 2005 outages. During the Spring 2005 outage, WCNOC also performed ultrasonic, eddy current and visual examinations of the BMN welds from inside the vessel. No indications were found.

As the environmental conditions of the nozzles are similar to the closure head, which requires visual inspections every 3rd refueling, WCNOC has chosen to reduce the frequency of the BMN BMV examinations from each refueling to every other refueling. Currently, WCNOC plans to conduct BMN BMV (or similar) examinations every other refueling, with additional NDE exams (eddy current,



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ultrasonic and visual) when the lower core barrel is removed for ISI exams. Exam frequency is based on industry experience and guidance.

**RAI B.2.1.34-6**

The LRA states that the reactor coolant system (RCS) pressure boundary, RCS non-pressure boundary, and ESF locations are included within the scope of this AMP. The staff requests that the applicant identify the components associated with these locations and its corresponding inspection plan. In addition, the staff requests that the applicant identify any Alloy 600/82/182 components not covered within the scope of this program and the reasons for their exclusion.

**RAI B.2.1.34-6 Response**

The nickel alloy program identifies the following Alloy 600 locations and inspection frequencies. With the exception of Steam Generator tubing, which is managed by the steam generator tubing integrity AMP (XI.M19), all Alloy 600 locations in plant systems are included in the scope of this program.

**REACTOR VESSEL COMPONENTS (RV)**

RV Outlet Nozzle Safe-End-Hot Leg – Each Refueling (Bare Metal Visual), Every 5 Years (Volumetric)  
RV Head Vent Nozzle – Lesser of 3rd Refueling or 5 Years  
RV Bottom Mounted Nozzle – Each Refueling (Bare Metal Visual), 10-year ISI Exam (Volumetric)  
RV BMN Weld – 10-year ISI Exam  
RV BMN to Guide Tube Weld – Each Refueling  
RV Inlet Nozzle Safe-End (Cold Leg) Weld – Every 3rd Refueling (Bare Metal Visual), Every 6 Years (Volumetric)  
RV Core Support Block at Weld – Once per Interval  
RV Core Support Block Weld – Once per Interval  
RV Core Support Block – Once per Interval  
RV Head Vent to Elbow Weld – Each Refueling  
RV Head Vent Elbow to Piping Weld – Each Refueling  
RV Head Vent Pipe to SS Elbow – Each Refueling  
RV Head Vent Nozzle Elbow – Each Refueling  
RV Head Vent Horizontal Pipe – Each Refueling  
Head Vent Penetration Weld – Lesser of 4th Refueling or 7 Years  
Control Rod Drive Mechanism (CRDM)  
CRDM Nozzle and Nozzle Weld – Lesser of 4th Refueling or 7 Years  
CRDM Nozzle – Lesser of 3rd Refueling or 5 Years  
CRDM to Flange Weld – Each Refueling

**PRESSURIZER COMPONENTS (PZR)**

PZR Safety and Relief Nozzle Safe-End Weld – Each Refueling (Bare Metal Visual), Each Period (Volumetric)

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**PZR Surge Line Nozzle Safe-End Weld – Each Refueling (Bare Metal Visual), Each Period (Volumetric)**

**PZR Spray Nozzle Safe-End Weld – Each Refueling (Bare Metal Visual), Each Period (Volumetric)**

**STEAM GENERATOR COMPONENTS (S/G)**

**SG Partition Plate-Hot Leg – Each Period**

**SG Partition Stub-Hot Leg – Generator Maintenance**

**SG Partition Stub/Tubesheet Weld-Hot Leg – Generator Maintenance**

**SG Partition Plate/Stub Weld-Hot Leg – Generator Maintenance**

**SG Closure Ring-Hot Leg – Generator Maintenance**

**SG Cladding on CS Shell-Hot Leg – Generator Maintenance**

**SG Partition Plate/Lower Bowl Weld-Hot Leg – Generator Maintenance**

**SG Closure Ring Weld-Hot Leg – Generator Maintenance**

**SG Partition Plate-Cold Leg – Generator Maintenance**

**SG Partition Stub-Cold Leg – Generator Maintenance**

**SG Tubesheet and Radius Cladding-Hot Leg – Generator Maintenance**

**SG Partition Stub/Tubesheet Weld-Cold Leg – Generator Maintenance**

**SG Partition Plate/Stub Weld-Cold Leg – Generator Maintenance**

**SG Closure Ring-Cold Leg – Generator Maintenance**

**SG Closure Ring Weld-Cold Leg – Generator Maintenance**

**SG Drain Pipe – Each Refueling**

**SG Cladding on CS Shell-Cold Leg – Generator Maintenance**

**SG Partition Plate/Lower Bowl Weld-Cold Leg – Generator Maintenance**

**SG Tubesheet and Radius Cladding-Cold Leg – Generator Maintenance**

**REACTOR COOLANT PIPING COMPONENTS (RCS)**

**RCS Hot Leg Thermowells – Each Refueling**

**RCS Cold Leg Thermowells – Each Refueling**

**ENGINEERED SAFETY FEATURES COMPONENTS (ESF)**

**Accumulator Nozzles (All Alloy 82/182 Welds) – ISI Period**

**Note: The pressurizer surge, safety, relief and spray nozzles have been overlayed with alloy 690. The pressure boundary in these locations is now the alloy 690 overlay. The original alloy 600 is no longer credited as the pressure boundary.**

**RAI B.2.1.34-7**

The detection of aging effects program element states that this AMP utilizes various visual, surface and volumetric inspections and examination techniques for early detection of PWSCC in Alloy 600 components. However, it does not specify whether the equipment, method and personnel used for these inspections meet the ASME Code Section XI requirements. The staff requests that the applicant revise the LRA to clarify this statement.

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**RAI B.2.1.34-7 Response**

The equipment, methods and personnel used for alloy 600 examinations are in accordance with applicable regulatory or code requirements (NRC Order EA-03-009 or ASME Section XI) or industry standard (MRP-139). (Reference WCNOC Procedure "Alloy 600 Program Management", AP 29A-007 Step 6.4). WCNOC procedure "Alloy 600 Program Management", AP 29A-007 Attachment A, identifies the locations examined and the examination technique utilized. WCNOC procedure "Program Plan for Management of Alloy 600 Components and Alloy 82/182 Welds", WCRE-15 Section 4.1, describes the requirements for each examination technique.

A summary of the requirements for equipment, methods and personnel used for alloy 600 examinations is provided below.

VT-2 exams are performed under procedures written to meet the requirements of ASME Section XI code. Equipment utilized must be in accordance with Section XI and the personnel performing the exam must be qualified to a minimum Level II in VT-2 method examinations.

Bare Metal Visual (BMV) exams are performed utilizing a procedure that meets the VT-2 requirements of ASME Section XI with the additional requirements that the surface of the component be visible. Remote video equipment is allowed but must be demonstrated to have the ability to fulfill detection requirements. Personnel performing the exam must be qualified to a minimum of Level II in VT-2 method with additional training in the detection of Boric Acid leakage/corrosion.

Surface exams are performed in accordance with Section XI for method, equipment and personnel qualification requirements.

Code required Volumetric Exams are in accordance with Appendix VIII of ASME Section XI.

Non-Code required exams are in accordance with the appropriate industry standard with equipment and procedure demonstrations as required. These are exams required by the NRC such as under head exams as well as voluntary exams of BMN's and are performed using personnel, equipment, and procedures qualified by performance demonstrated methodology.

**RAI B.2.1.34-8**

The monitoring and trending program element states that relative risk rankings for Alloy 600 locations are included as part of this AMP. The staff requests that the applicant address how the relative risk rankings will be used in the inspection of Alloy 600/82/182 components and whether this ranking methodology was approved by the NRC.

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**RAI B.2.1.34-8 Response**

The ranking system is used to prioritize the expenditure of resources for mitigation, replacement, or additional inspections beyond regulatory/industry requirements. WCAP 16228-P provided the initial relative risk ranking for Alloy 600/82/182 reactor coolant system locations at WCNOC. The NRC has not approved this methodology.

**RAI B.2.1.34-9**

The corrective actions program element states that "Corrective actions may be used as tracking and documentation records for changes in plant thought processes and to identify potential improvement in programs from benchmarking activities." The staff requests that the applicant provide details and examples to clarify this statement.

**RAI B.2.1.34-9 Response**

Evaluations of WCNOC and industry operating experience have been documented in the WCNOC corrective action program and improvements have been factored into the WCNOC Alloy 600 program. Examples follow below.

Performance Improvement Request (PIR) 2003-1450 established the need to develop an Alloy 600 program plan to manage issues associated with Alloy 600 and associated weld material 82/182, prior to issuance of MRP-126. The PIR was modified in December 2004 to reference MRP-126 as an industry document that outlined mandatory requirements in establishing a plant program for Alloy 600.

PIR 2005-0174 documents evaluation of Westinghouse Technical bulletin TB-04-19, "Steam Generator Channel Head Bowl Drain Line Leakage". The evaluation determined that the bulletin was applicable to WCGS and that the recommendations of the bulletin had been previously captured in the Alloy 600 program.

PIR 2006-0196 documents WCNOC's evaluation of the EPRI NDE Steering Committee recommendation to consider radiography testing (RT) techniques for detection of PWSCC in Alloy 600 weldments. The WCNOC evaluation determined that ultra sonic testing (UT) and eddy current testing (ET) are still the methods of choice.

Condition Report (CR) 2006-002468 documents WCNOC evaluation of UT indications found on the Pressurizer Pressure Operated Relief Valve (PORV) nozzle and on Pressurizer safety nozzle C. The most probable mechanism responsible for the detected flaws was determined to be PWSCC. The evaluation also identified that prior to Refueling Outage (RF15), most identified susceptible welds capable of volumetric examination had been examined by volumetric inspection at least once since plant startup as part of the plant ASME Section XI

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ISI program, but some of the volumetric inspections were performed using procedures, equipment, and personnel that did not meet current qualification requirements. However, subsequent to RF 15, all welds and components with high susceptibility to PWSCC at WCGS had been inspected by "state-of-the-art" non-destructive examination (NDE) techniques or had been repaired/mitigated to remove the susceptibility. For example, the steam generator bowl drain coupling welds were removed in RF 14 and replaced with Alloy 52, which is considered to be resistant to PWSCC. All of the pressurizer nozzles were inspected during Refuel 15 and full structural weld overlays were applied to all nozzles during that outage. The evaluation determined that all locations of equivalent susceptibility to the nozzles where flaws were found, as well as other locations with high-risk significance, such as the reactor vessel outlet nozzles, bottom mounted nozzles and Control Rod Drive Mechanism (CRDM) nozzles, were repaired or examined using qualified techniques during Refuel 14 and Refuel 15. The evaluation concluded that all items in Table 5-1 of WCAP-16228-P had been examined or repaired/mitigated, and other potentially susceptible locations, in lower susceptibility categories, would continue to be monitored in accordance with WCNOC procedures (AP 29A-007 and WCRE-15).

**References:**

- 1) Letter ET 01-0009, dated February 5, 2001, from R. A. Muench, WCNOC, to USNRC.
- 2) Letter dated December 13, 2001, from, Stephen Dembek, USNRC, to Otto L. Maynard, WCNOC.

**Attachment II**

**List of Commitments**

**LICENSE RENEWAL APPLICATION - LIST OF REGULATORY COMMITMENTS**

The following table identifies a summary of those actions committed to by Wolf Creek Nuclear Operating Corporation (WCNOC) in the License Renewal Application (LRA) and subsequent requests for additional information. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Kevin Moles at (620) 364-4126.

	<b>COMMITMENT SUBJECT</b>	<b>LRA, Appendix A, Section</b>	<b>COMMITMENT DESCRIPTION</b>
1	Boric Acid Corrosion Program (RCMS 2006-198)	A1.4	Prior to the period of extended operation, procedures will be enhanced to state that susceptible components adjacent to potential leakage sources will include electrical components and connectors. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
2	Nickel-Alloy Penetration Nozzles Welded To The Upper Reactor Vessel Closure Heads of Pressurized Water Reactors (RCMS 2006-199)	A1.5	Prior to the period of extended operation, procedures will be enhanced to indicate that detection of leakage or evidence of cracking in the vessel head penetration nozzles or associated welds will cause an immediate reclassification to the "High" susceptibility ranking, commencing from the same outage in which the leakage or cracking is detected. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
3	Closed-Cycle Cooling Water System (RCMS 2006-200)	A1.10	Prior to the period of extended operation, a new periodic preventive maintenance activity will be developed to specify performing inspections of the internal surfaces of valve bodies and accessible piping while the valves are disassembled for operational readiness inspections to detect loss of material and fouling. <b>Reference: ET 06-0038 Due: March 11, 2025</b>

	COMMITMENT SUBJECT	LRA, Appendix A, Section	COMMITMENT DESCRIPTION
4	Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems (RCMS 2006-201)	A1.11	Prior to the period of extended operation, procedures will be enhanced to: (1) identify industry standards or Wolf Creek Generating Station (WCGS) specifications that are applicable to the component, and (2) specifically inspect for loss of material due to corrosion or rail wear. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
5	Fire Protection (RCMS 2006-202)	A1.12	Prior to the period of extended operation: (1) fire damper inspection and drop test procedures will be enhanced to inspect damper housing for signs of corrosion, (2) fire barrier and fire door inspection procedures will be enhanced to specify fire barriers and doors described in USAR Appendix 9.5A, "WCGS Fire Protection Comparison to APCSB 9.5-1 Appendix A", and WCGS Fire Hazards Analysis, and (3) training for technicians performing the fire door and fire damper visual inspection will be enhanced to include fire protection inspection requirements and training documentation. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
6	Fuel Oil Chemistry (RCMS 2006-203)	A1.14	Prior to the period of extended operation: (1) the emergency fuel oil day tanks will be added to the ten year drain, clean, and internal inspection program, and (2) procedures will be enhanced to provide for supplemental ultrasonic thickness measurements if there are indications of reduced cross sectional thickness found during the visual inspection of the emergency fuel oil storage tanks. <b>Reference: ET 06-0038 Due: March 11, 2025</b>



	COMMITMENT SUBJECT	LRA, Appendix A, Section	COMMITMENT DESCRIPTION
7	One-Time Inspection (RCMS 2006-204)	A1.16	<p>The One-Time Inspection program conducts one-time inspections of plant system piping and components to verify the effectiveness of the Water Chemistry program (A1.2), Fuel Oil Chemistry program (A1.14), and Lubricating Oil Analysis program (A1.23). This new program will be implemented and completed within the ten-year period prior to the period of extended operation.</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>
8	Selective Leaching of Materials (RCMS 2006-205)	A1.17	<p>The Selective Leaching of Materials program is a new program that will be implemented prior to the period of extended operation.</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>
9	Buried Piping and Tanks Inspection (RCMS 2006-206)	A1.18	<p>The Buried Piping and Tanks Inspection program is a new program that will be implemented prior to the period of extended operation. Within the ten-year period prior to entering the period of extended operation, an opportunistic or planned inspection will be performed. Upon entering the period of extended operation a planned inspection within ten years will be required unless an opportunistic inspection has occurred within this ten-year period.</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>
10	One-Time Inspection of ASME Code Class 1 Small-Bore Piping (RCMS 2006-207)	A1.19	<p>The fourth interval of the ISI program at WCGS will provide the results for the one time inspection of ASME Code Class 1 small-bore piping.</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>

	<b>COMMITMENT SUBJECT</b>	<b>LRA, Appendix A, Section</b>	<b>COMMITMENT DESCRIPTION</b>
11	Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components (RCMS 2006-208)	A1.22	The Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components program is a new program that will be implemented prior to the period of extended operation. For those systems or components where inspections of opportunity are insufficient, an inspection will be conducted prior to the period of extended operation to provide reasonable assurance that the intended functions are maintained. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
12	Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (RCMS 2006-209)	A1.24	The Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program is a new program that will be implemented prior to the period of extended operation. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
13	Electrical Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits (RCMS 2006-210)	A1.25	A review of the calibration surveillance test results will be completed before the period of extended operation and every 10 years thereafter. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
14	Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements (RCMS 2006-211)	A1.26	The Inaccessible Medium Voltage Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements program is a new program that will be implemented prior to the period of extended operation. <b>Reference: ET 06-0038 Due: March 11, 2025</b>

	COMMITMENT SUBJECT	LRA, Appendix A, Section	COMMITMENT DESCRIPTION
15	ASME Section XI, Subsection IWL (RCMS 2006-212)	A1.28	<p>Prior to the period of extended operation, procedures will be enhanced to include two new provisions regarding inspection of repair/replacement activities. The 2003 edition of ASME Section XI, Subsection IWL, Article IWL-2000, includes two provisions that are not required by the 1998 edition. IWL-2410(d) specifies additional inspections for concrete surface areas affected by a repair/replacement activity, and IWL-2521.2 specifies additional inspections for tendons affected by a repair/replacement activity. In accordance with 10 CFR 50.55a, WCGS will revise their CISI program prior to the next inspection interval to incorporate the ASME Code edition and addenda incorporated into 10 CFR 50.55a at that time.</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>
16	Masonry Wall Program (RCMS 2006-213)	A1.31	<p>Prior to the period of extended operation, procedures will be enhanced to identify un-reinforced masonry in the Radwaste Building within the scope of license renewal that requires aging management.</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>
17	Structures Monitoring Program (RCMS 2006-214)	A1.32	<p>Prior to the period of extended operation, procedures will be enhanced to add inspection parameters for treated wood.</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>
18	RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants (RCMS 2006-215)	A1.33	<p>Prior to the period of extended operation, procedures will be enhanced: (1) so that the main dam service spillway and the auxiliary spillway will be inspected in accordance with the same specification, (2) to clarify the scope of inspections for the spillways, (3) to add the 5 year inspection frequency for the main dam service spillway, and (4) to add cavitation to the list of concrete aging effects for surfaces other than spillways.</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>

	COMMITMENT SUBJECT	LRA, Appendix A, Section	COMMITMENT DESCRIPTION
19	Reactor Coolant System Supplement (RCMS 2006-216)	A1.35	<p>WCNOC will:</p> <p>A. Reactor Coolant System Nickel Alloy Pressure Boundary Components</p> <p>Implement applicable (1) NRC Orders, Bulletins and Generic Letters associated with nickel alloys and (2) staff-accepted industry guidelines, and</p> <p>B. Reactor Vessel Internals</p> <p>(1) Participate in the industry programs for investigating and managing aging effects on reactor internals; (2) evaluate and implement the results of the industry programs as applicable to the reactor internals; and (3) upon completion of these programs, but not less than 24 months before entering the period of extended operation, WCNOC will submit an inspection plan for reactor internals to the NRC for review and approval.</p> <p><b>Reference: ET 06-0038</b></p> <p><b>A.,B(1),(2) Due: March 11, 2025</b></p> <p><b>B(3) Due: March 11, 2023</b></p>
20	Electrical Cable Connections Not Subject To 10 CFR 50.49 Environmental Qualification Requirements (RCMS 2006-217)	A1.36	<p>Prior to the period of extended operation, the infrared thermography testing procedure will be enhanced to require an engineering evaluation when test acceptance criteria are not met. This engineering evaluation will include identifying the extent of condition, the potential root cause for not meeting the test acceptance, and the likelihood of recurrence.</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>

	COMMITMENT SUBJECT	LRA, Appendix A, Section	COMMITMENT DESCRIPTION
21	Metal Fatigue of Reactor Coolant Pressure Boundary (RCMS 2006-218)	A2.1	<p>Prior to the period of extended operation, the Metal Fatigue of Reactor Coolant Pressure Boundary program will be enhanced to include: (1) Action levels to ensure that if the fatigue usage factor calculated by the code analysis is reached at any monitored location, appropriate evaluations and actions will be invoked to maintain the analytical basis of the leak-before-break (LBB) analysis and of the high-energy line break (HELB) locations, or to revise them as required, (2) Action levels to ensure that appropriate evaluations and actions will be invoked to maintain the bases of safety determinations that depend upon fatigue analyses, if the fatigue usage factor at any monitored location approaches 1.0, or if the fatigue usage factor at any monitored NUREG/CR6260 location approaches 1.0 when multiplied by the environmental effect factor <math>F_{EN}</math>, (3) Corrective actions, on approach to these action levels, that will determine whether the scope of the monitoring program must be enlarged to include additional affected reactor coolant pressure boundary locations in order to ensure that additional locations do not approach the code limit without an appropriate action, and to ensure that the bases of the LBB and HELB analyses are maintained, (4) 10 CFR 50 Appendix B procedural and record requirements. Prior to the period of extended operation, changes in available monitoring technology or in the analyses themselves may permit different action limits and action statements, or may re-define the program features and actions required to address the fatigue time-limited aging analyses (TLAAs).</p> <p><b>Reference: ET 06-0038 Due: March 11, 2025</b></p>

	COMMITMENT SUBJECT	LRA, Appendix A, Section	COMMITMENT DESCRIPTION
22	Environmental Qualification of Electrical Components (RCMS 2006-219)	A2.2	Prior to the period of extended operation, program documents will be enhanced to describe methods that may be used for qualified life evaluations for the period of extended operation. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
23	Concrete Containment Tendon Prestress (RCMS 2006-220)	A2.3	Prior to the period of extended operation, procedures will be revised to: (1) extend the list of surveillance tendons to include random samples for the year 40, 45, 50, and 55 year surveillances, (2) explicitly require a regression analysis for each tendon group after every surveillance, (3) invoke and describe regression analysis methods used to construct the lift-off trend lines, (4) extend surveillance program predicted force lines for the vertical and hoop tendon groups to 60 years, and (5) conform procedure descriptions of acceptance criteria action levels to the ASME Code, Subsection IWL 3221 descriptions. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
24	ASME III Subsection NG Fatigue Analysis of Reactor Pressure Vessel Internals (RCMS 2006-221)	A3.2.2	WCNOC will obtain a design report amendment to either quantify the increase in high-cycle fatigue effects, or to confirm that the increase will be negligible. WCNOC will complete this action before the end of the current licensed operating period. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
25	Assumed Thermal Cycle Count for Allowable Secondary Stress Range Reduction Factor in B31.1 and ASME III Class 2 and 3 Piping (RCMS 2006-222)	A3.2.4	WCNOC will complete the reanalysis of the reactor coolant sample lines and any additional corrective actions or modifications indicated by them, before the end of the current licensed operating period. <b>Reference: ET 06-0038 Due: March 11, 2025</b>

	COMMITMENT SUBJECT	LRA, Appendix A, Section	COMMITMENT DESCRIPTION
26	USAR Supplement (RCMS 2006-223)	A0	Following issuance of the renewed operating license in accordance with 10 CFR 50.71(e), WCNOG will incorporate the USAR supplement into the WCGS USAR as required by 54.21(d). <b>Reference: ET 06-0038 Due: March 11, 2025</b>
27	Pressure-Temperature (P-T) Limits (RCMS 2006-224)	A3.1.3	WCNOG will revise the Pressure and Temperature Limits Report for a 60-year licensed operating life. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
28	Implementation of New Programs (RCMS 2006-225)	N/A	Implementation of new programs may require additional action items not included in this list. WCGS is committed to including new program elements in the corrective action program. <b>Reference: ET 06-0038 Due: March 11, 2025</b>
29	LRA Amendment	N/A	License Renewal Application changes discussed in ET 07-0011 will be submitted in an amendment to the Application. <b>Reference: ET 07-0011 Due: July 20, 2007</b>
30	Nickel Alloy Aging Management Program	A1.34	The WCGS Nickel Alloy Aging Management inspection plan will be submitted for NRC review and approval at least 24 months prior to entering the period of extended operation  <b>Reference: ET 07-0016 Due: March 11, 2023</b>