September 27, 2001

Mr. Otto L. Maynard
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
Burlington, KA 66839

SUBJECT: WOLF CREEK GENERATING STATION - ISSUANCE OF AMENDMENT REGARDING REDUCED NUMBER OF REACTOR PRESSURE VESSEL HEAD CLOSURE BOLTS REQUIRED TO BE FULLY TENSIONED IN REACTOR MODES 1 THROUGH 5 (TAC NO. MA9990)

Dear Mr. Maynard:

The Commission has issued the enclosed Amendment No. 142 to Facility Operating License No. NPF-42 for the Wolf Creek Generating Station (WCGS). The amendment consists of changes to the Technical Specifications (TS) in response to your application dated September 15, 2000 (WO 00-0036), as supplemented October 3, 2000 and September 13, 2001 (ET 01-0026).

The amendment allows plant operation with a reactor pressure vessel head closure bolt not fully tensioned for one operating cycle. A program plan is added to the Administrative Controls of the TS, and footnotes (b) and (c) of Table 1.1-1, "Modes," which refer to the number of these bolts that must be fully tensioned, are revised.

A copy of our related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

/RA/
Jack Donohew, Senior Project Manager, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-482

Enclosures: 1. Amendment No. 142 to NPF-42
2. Safety Evaluation

cc w/encls: See next page

September 27, 2001

Mr. Otto L. Maynard
President and Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
Post Office Box 411
Burlington, KA 66839

ML003756514
ML012640013
ML003760844

SUBJECT: WOLF CREEK GENERATING STATION - ISSUANCE OF AMENDMENT REGARDING REDUCED NUMBER OF REACTOR PRESSURE VESSEL HEAD CLOSURE BOLTS REQUIRED TO BE FULLY TENSIONED IN REACTOR MODES 1 THROUGH 5 (TAC NO. MA9990)

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WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 142
License No. NPF-42

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Wolf Creek Generating Station (the facility) Facility Operating License No. NPF-42 filed by the Wolf Creek Nuclear Operating Corporation (the Corporation), dated September 15, 2000, as supplemented October 3, 2000, and September 13, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. NPF-42 is hereby amended to read as follows:

   2. Technical Specifications

      The Technical Specifications contained in Appendix A, as revised through Amendment No. 142, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated in the license. The Corporation shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. The license amendment is effective as of its date of issuance and shall be implemented within 60 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Stephen Dembek, Chief, Section 2
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: September 27, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 142

FACILITY OPERATING LICENSE NO. NPF-42

DOCKET NO. 50-482

Replace the following page of the Appendix A Technical Specifications with the attached page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change. The corresponding overleaf page is also provided to maintain document completeness.

REMOVE	INSERT
iv	iv
1.1-7	1.1-7
5.0-24	5.0-24
5.0-25	5.0-25
5.0-26	5.0-26
5.0-27	5.0-27
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5.0-29	5.0-29
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5.0-31	5.0-31
5.0-32	5.0-32
5.0-33	5.0-33
5.0-34	5.0-34
---	5.0-35

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 142 TO FACILITY OPERATING LICENSE NO. NPF-42

WOLF CREEK NUCLEAR OPERATING CORPORATION

WOLF CREEK GENERATING STATION

DOCKET NO. 50-482

1.0 INTRODUCTION

By application dated September 15, 2000, as supplemented on October 3, 2000, and September 13, 2001, Wolf Creek Nuclear Operating Corporation (the licensee) requested changes to the Technical Specifications (TS, Appendix A to Facility Operating License No. NPF-42) for the Wolf Creek Generating Station (WCGS). The proposed changes would allow the plant to operate with a reactor pressure vessel (RPV) head closure bolt not fully tensioned for one operating cycle. The proposed changes to the TS would add a RPV head closure bolt program plan to the administrative controls section and revise footnotes (b) and (c) to TS Table 1.1-1, "Modes." The addition of the program plan to Section 5 of the TS resulted in changes to two page numbers in the Table of Contents for the TS.

The proposed footnote (b) would allow one RPV head closure bolt to not be fully tensioned in Mode 4 (hot shutdown) and Mode 5 (cold shutdown), and, thus, would allow the plant to start up and operate up to full power in this condition. By allowing one detensioned (i.e., not fully tensioned) closure bolt in Modes 4 and 5, the proposed footnote (b) also requires that the definition of refueling in footnote (c) be changed from the current one or more closure bolts not being fully tensioned, to allow two or more closure bolts untensioned in Mode 6.

The proposed revision to footnotes (b) and (c) for Modes 4, 5, and 6 of Table 1.1-1 would add the phrase ", except as specified in Specification 5.5.17, 'Reactor Vessel Head Closure Bolt Program.'" This program would provide the requirements to have plant operation with a closure bolt less than fully tensioned, which is required by Table 1.1-1. The proposed amendment does not allow operation with the same RPV head closure bolt not fully tensioned for more than one operating cycle. The bolt would be repaired in the next refueling outage.

The supplemental letter provided the responses to the staff's request for additional information (available through ADAMS accession numbers ML011630386, ML012080016, and ML012360222). The e-mail supplement dated October 3, 2000 (ADAMS Accession No. ML003760844) and the supplemental letter dated September 13, 2001, provided clarifying information, did not expand the scope of the application as originally noticed, and did not change the staff's proposed no significant hazards consideration determination published in the *Federal Register* on October 4, 2000 (65 FR 59227).

2.0 BACKGROUND

The RPV is addressed in Sections 5.1 and 5.3 of the WCGS Updated Safety Analysis Report (USAR). The RPV is a cylindrical vessel with a welded hemispherical bottom head, and a removable, bolted, flanged and gasketed hemispherical upper head that sits on the vessel flange. The reactor vessel flange and head are sealed by two hollow metallic O-rings. The RPV seal leakage is collected by two leakoff connections: one between the inner and outer O-ring and one outside the outer O-ring. The connections can be valved open or closed.

The RPV head closure bolts are shown in USAR Figure 5.3-1 and are composed of a stud, nut, and washer. The studs are threaded into holes in the vessel flange. The nut is threaded on the stud, and the nut and washer hold down the RPV head onto the RPV vessel flange to form the RPV pressure boundary. As stated in USAR Table 5.3-2, "Reactor Vessel Design Parameters," there are 54 closure studs in the RPV head.

The bolts are fully tensioned to maintain the reactor coolant system (RCS) pressure in the RPV with the plant in Modes 1 through 5, by the current TS Table 1.1-1, and to prevent unacceptable leakage from the RPV. They are removed prior to refueling to allow the head to be removed from the RPV body so that fuel assemblies may be removed from the core during refueling because the RPV contains the reactor core. The closure bolts are part of the RCS pressure boundary, are safety-related, and meet the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section III, and Appendix G to 10 CFR Part 50. The licensee stated in its application that the closure bolts are designed and fabricated to the ASME Code, Section III, Class 1, 1971 Edition through Winter 1972.

During tensioning and detensioning of the RPV head closure bolts, there is the possibility for getting a closure bolt stuck in a position where there is not enough thread engagement to tension the bolt without overloading and damaging the vessel flange or a closure bolt is stuck in the vessel flange. The bolt may also not be capable of being inserted in its flange hole. Also, a closure bolt could have failed in service while the plant is operating. In these cases, the closure bolt would not be able to be fully tensioned as required by TS Table 1.1-1.

The licensee stated that the scenario of not being able to fully tension a RPV head stud without damaging the threads of the stud or the mating threads in the vessel flange has occurred at several plants with RPVs similar to the RPV at WCGS. This includes D.C. Cook (one stud in 1986), Catawba (one in 1989), Callaway (five in 1987), Comanche Peak (one in 1992, three in 1994), Sequoyah (one in 1996), Seabrook (one in 1997), and Braidwood (one in 1992). In 1987, the Callaway plant experienced problems with removing a closure bolt from the RPV head in the second refueling outage for the unit, and one closure bolt could not be fully tensioned prior to restart from the outage. In the outage, there were problems with five bolts, but four of the five were repaired and could be fully tensioned. The staff approved the restart of the plant from the outage and its power operation for one operating cycle with one closure bolt not fully tensioned. This was addressed in the staff's letters of November 3, 1987, and May 26, 1988. The bolt was repaired in the next refueling outage.

The licensee stated that it is not standard industry operating practice to operate a nuclear power plant with one RPV head closure bolt not fully tensioned; however, as explained above, it

has been done. The licensee also pointed out that, although it has not experienced a stuck bolt at WCGS, it did have one that was difficult to turn in and out of the flange threaded hole in that, during Refueling Outage 8 in 1996, it experienced difficulties installing one bolt. The licensee has concluded that even though a stuck bolt that cannot be fully tensioned is not an expected occurrence at WCGS, it is a possibility.

In addressing the potential difficulty in repairing a stuck head closure bolt, the licensee stated that such corrective actions require special equipment and the sudden mobilization of such activities in a refueling outage can be impractical without a significant extension of the outage. The licensee's engineering, outage management, and scheduling practices support leaving the untensioned bolt for one operating cycle and performing the repair as a planned activity during the next scheduled refueling outage. This is what occurred in the Callaway refueling outage in 1987; five bolts were found to have problems and one could not be repaired in the outage.

The licensee has, therefore, proposed to amend its TS to allow operation with one closure bolt not fully tensioned and to commit to restrictions on plant operation until the closure bolt is returned to service. In its proposal, the licensee addressed the two cases of one closure bolt missing and one closure bolt failed. This is discussed below.

3.0 EVALUATION

The licensee proposed to add a RPV head closure bolt program to the Administrative Controls section of the TS and to revise footnotes (b) and (c) of TS Table 1.1-1 by adding a reference to the program plan. The proposed changes would revise (1) footnote (b) to allow one of the 54 RPV head closure bolts to not be fully tensioned in Modes 4 and 5, and (2) footnote (c) to have refueling be defined by two or more such bolts not fully tensioned. These changes will allow the licensee to operate the plant with one bolt untensioned (i.e., not fully tensioned).

In providing its justification for operating with one head closure bolt untensioned, the licensee addressed the stresses in the remaining closure bolts that are fully tensioned and in the membrane of the RPV, the finite element analysis of the RPV, and a comparison of the calculated stresses to the ASME Code allowable values. These are discussed below.

Two Off-Design Cases of Untensioned Closure Bolts

In its justification, the licensee addressed the following two cases of untensioned closure bolts: (1) the missing closure bolt, and (2) the failed closure bolt. The missing closure bolt is the case where the remaining 53 closure bolts were fully tensioned and one bolt could not be fully tensioned during restart from refueling. The failed closure bolt is the case where all the closure bolts were fully tensioned after refueling the plant and one closure bolt failed or broke at some time during the restart to power operation of the plant. The failure could occur before or after entry into Modes 1 or 2. The licensee stated that while its evaluation of these two cases determined that it should be acceptable to operate with an untensioned or failed closure bolt, it is not its standard operating practice to operate the plant in this condition. These two cases are considered off-design cases.

Primary Membrane Stresses in Closure Studs

The licensee calculated the primary stresses in the studs of the closure bolts for one bolt untensioned or failed in service with the following assumptions:

- The RPV vessel and head are rigid.
- The RPV vessel and head are at design temperature and pressure.
- The RPV vessel and head do not exert contact forces on each other, which would serve to mitigate the redistribution of loads when the bolt fails to be fully tensioned.
- The design pressure acts out to the radius of the inner O-ring of the vessel.
- Each closure bolt fully tensioned is treated individually as a point force.
- If tensioned, the closure bolts are initially uniformally tensioned.
- The closure bolt that is untensioned or failed in service does not carry any load.

The licensee provided the stud load and stress for the two cases in Attachment 1 to its September 15, 2000, application, and stated that the ASME Code primary membrane stress allowables are met for the two cases discussed above.

Finite Element Analyses

The licensee stated that it did six finite element analyses of the reactor vessel in the intact design condition and the two off-design closure bolt cases discussed above using Revision 5 of the ANSYS finite element program. The six cases are as follows:

- Case A1 representing the preload condition with all closure bolts fully tensioned.
- Case A2 representing the same case as A-1, but with the reactor vessel at design pressure.
- Case B-1 representing one closure bolt untensioned and all other closure bolts fully tensioned.
- Case B-2 representing the same case as B-1, but with the reactor vessel at design pressure.
- Case C-1 representing the preload condition of all closure bolts fully tensioned and one bolt fails in service.
- Case C-2 representing the same case as C-1, but the reactor vessel at design pressure.

For conservatism, the licensee used the reactor vessel design pressure of 2485 psig instead of the lower operating pressure of 2317 psig, which are given in USAR Table 5.3-2. The analyses also assumed that all parts are isothermal.

The licensee stated that the finite element analyses demonstrated that there were negligible effects of the off-design closure bolt cases on the stress distributions in the reactor vessel and head.

Comparison of Calculated Stresses to ASME Allowable Values

The licensee submitted a table in Attachment 1 to its application that provided a comparison of the stress increases due to the two off-design closure bolt cases and the ASME Code

allowables. The stresses are for the reactor vessel, the vessel head, and the head closure bolts fully tensioned. The licensee stated that the table shows there is no significant increase in any of the stresses as a result of operating the plant with an untensioned or failed closure bolt and that operating in the two off-design cases will not increase the stresses above the allowables.

RCS Leakage

If closure bolts when fully tensioned act to prevent unacceptable leakage from the RPV through the vessel head, operating with an untensioned or failed closure bolt could cause leakage through the inner and outer O-ring seals in the vessel head. The potential for such leakage would be increased by the one closure bolt not being fully tensioned. The licensee addressed this potential in the next section.

TS 3.4.13 provides the RCS operational leakage for WCGS and requires the identified leakage to be less than 10 gpm. The leakage through the seals in the vessel head is collected and measured and is an identified leakage from the RCS.

The licensee stated that any leakage caused by a closure bolt not being fully tensioned would be identified by the reactor coolant pressure boundary leakage detection system. This system is described in USAR Section 5.2.5. The leakage past the reactor vessel head seals is indicated and alarmed in the control room by a rise in temperature from installed temperature monitors. The leakage from the vessel head would be measured, added to the total of identified leakage, and compared to the maximum allowed by the TS.

Bolt Degradation Mechanisms

In response to questions from the staff, the licensee discussed possible bolt degradation mechanisms. In its discussion, the licensee stated that there have been no reported failures (i.e., loss of function of maintaining RCS pressure) of RPV head closure bolts at nuclear power plants. Industry experience with failures of primary coolant pressure boundary bolting, which includes head closure bolts, has been primarily with fasteners on steam generator manways and reactor coolant pump (RCP) main flange bolts. The degradation mechanisms that these fasteners have experienced are boric acid corrosion and stress corrosion cracking, and these fasteners are in locations where they are more likely than RPV head closure bolts of being wetted by boric acid from leakage during power operation or periods of layup in outages. The licensee stated that, because of the uniqueness of the RPV head seal design and the way the bolts are handled during refueling outages, the failure experience with other primary system pressure boundary fasteners is not considered relevant to RPV head bolts. No boric acid corrosion of the bolts resulting from leakage through the head seals has been reported in the nuclear industry. There has been no reported cracking degradation of RPV head closure bolts at pressurized water reactors, as WCGS.

The licensee further explained that degradation of RPV head closure bolts adjacent to or near an untensioned bolt would only be expected if significant leakage through the head seals were to occur at that location. Leakage is not expected from operation of the RPV with one bolt tensioned because the analysis discussed above shows that the additional flange separation at

the location of untensioned bolt is less than 0.0005 inches (0.5 mils) and the minimum elastic springback of the head O-ring and maximum gasket opening (during heatup) is 0.013 inches and 0.005 inches, respectively. Therefore, as the licensee stated, the additional flange separation at the location of an untensioned bolt is small compared to the maximum gasket opening and the opening displacement that the O-ring is designed to seal. The licensee further pointed out that (1) it would take more than two adjacent bolts that are untensioned to increase the flange separation to more than the 0.013 minimum elastic spring back of the O-ring and (2) four untensioned bolts (the maximum number of untensioned studs where the ASME Code stress requirements in the head and flange are still met) distributed around the flange would not create a worst situation than item (1) because item (1) is a more severe case for flange separation than (2).

The licensee further stated that industry experience with leakage through the RPV head O-rings is that such leakage is mostly caused by foreign matter under the O-ring or small defects (e.g., scratches or wrinkles) of the O-ring. These factors would be unaffected by the fact one head closure bolt was not fully tensioned.

Based on the above, the staff concludes that the potential for leakage through the RPV head is not anticipated simply because one head closure bolt is not fully tensioning. And if leakage through the head should occur, then the limits in the TS apply, as discussed above in the previous section on RCS leakage.

Inspection of RPV Head and Head Bolts

The licensee stated that RPV head closure bolts are removed from the vessel flange at the beginning of each refueling outage and stored in a dry clean environment. During the outage, each bolt is visually inspected, which is beyond what is required by ASME Code Section XI. This inspection is to detect evidence of corrosion or mechanical damage. In accordance with ASME Code Section XI, all bolts are inspected by volumetric UT and MT surface examination to detect cracking degradation every 10-year inspection interval, with typically one third of the bolts inspected every other refueling outage. The UT will detect flaws with a reflective area of 0.059 square inches and serves primarily to detect cracks growing toward the center of the stud from the thread roots. The MT surface examination will identify any surface connected linear indications greater than 1/16 inch long and is sensitive to very shallow cracks. Flaws at the detection limits have no structural significance. For WCGS, no flaws were identified by the pre-service or first 10-year inspection interval inspections. The licensee concluded that the inspections conducted on the bolts provide assurance that any structurally significant flaw in the bolts will be identified. The staff concurs with the licensee's conclusion.

Effect of Failure of Bolt During Power Operation

The licensee has stated that degradation of a single head closure bolt during power operation would probably have no effect on plant operation and would not be detected because, as stated in the section above on bolt degradation mechanisms, the additional flange separation with one bolt not fully tensioned would be less than the O-ring springback. It explained further that there has been no history of failure of a head closure bolt in the nuclear industry and operation of WCGS with one bolt untensioned has been analyzed and this condition meets the requirements

of the ASME Code (see the above section on the comparison of calculated stresses to ASME allowable values).

The staff agrees that the operation of WCGS with one head closure bolt not fully tensioned has been analyzed by the licensee and the condition meets the requirements of the ASME Code. The staff also agrees that the operation with one bolt not fully tensioned should not be expected by itself to result in leakage through the head o-rings. However, it expects that such operation could result in leakage through the inner head O-ring or both the head inner and outer O-ring. If this should happen, there would be RCS leakage which has been discussed in the section above on RCS leakage. The conclusion is that the TS would only allow operation up to 10 gpm through the O-rings (identified leakage) or up to 1 gpm through the head (RCS pressure boundary leakage) before requiring the plant to shut down. These TS leakage requirements would prevent any damage to the head and flange from operation with one bolt not fully tensioned from going to a more serious condition.

Proposed Program Plan and Commitments

Because operation of WCGS with an untensioned reactor vessel head closure bolt not fully tensioned is not considered standard operating practice, the licensee committed in its application to the following precautions before such operation:

1. The particular circumstances of a closure bolt not being fully tensioned will be reviewed to determine whether the analysis is still applicable,

2. the reactor vessel will not be subjected to hydrostatic test conditions before the closure bolt is returned to service, and

3. the heat-up rate will be held to 50°F per hour (half the typical 100°F per hour design heat-up rate) until the closure stud is returned to service.

In the discussions by phone with the licensee on August 16 and 24, 2001, on the licensee's responses to the request for additional information (available through ADAMS accession numbers ML011630386, ML012080016, and ML012360222), the staff stated that (1) the operation of the plant with one head closure bolt not fully tensioned should be limited to one operating cycle (as was done for Callaway in 1987), and (2) that the proposed amendment to allow such degraded operation should be governed by a program plan, similar to other program plans, in the Administrative Controls section of the TS instead of revised footnotes to TS Table 1.1-1 on the defined reactor modes. It was the position of the staff that one operating cycle gave the licensee sufficient time to plan for the repair of the bolt in the next refueling outage, and that the staff had only considered one operating cycle for Callaway in 1987. Also, a program plan would be better than footnotes to TS Table 1.1-1 to define that the degraded operation is limited to one operating cycle and what if anything is being relied upon for such operation.

In discussions with the licensee on attributes for a program plan it was decided that the program should include the following:

- Operation with one closure bolt not fully tensioned would occur only for cases where the bolt is not capable of being inserted in its hole or can be inserted but the amount of thread engagement is not sufficient to take the tensioning loads without damage to the vessel threads. This would ensure that operation with one bolt not fully tensioned is conducted only because the bolt is not capable of being fully tensioned without damage to the flange.

- The circumstances associated with the closure bolt not fully tensioned will be verified to be bounded by the analysis referenced in the licensee's application. This is the analysis discussed in Section 4.0, "Technical Analysis," of Enclosure 1 to the application dated September 15, 2000. This would ensure that the basis for the staff's approval of the amendment request applies to the condition of the head and flange for operation with one bolt not fully tensioned. This is the first licensee commitment discussed above.

- A review of the results of the visual examinations performed on the closure bolts examined shall be performed to ensure that there is no indication of sufficient degradation of the examined bolts that could affect the conclusions of the previous bullet that the analysis referenced in the licensee's application bounds the condition of the other bolts. This will ensure that the conditions of the other bolts that are fully tensioned are also bounded by the analysis.

- A statement that operation with the same head closure bolt less than fully tensioned shall be limited to one operating cycle (i.e., until the next refueling outage). The licensee shall, in its corrective actions program (discussed below), make appropriate plans in the operating cycle so that the bolt will be repaired in the next refueling outage.

- A report to be made to the Commission that operation is being conducted with one closure bolt not fully tensioned and describing the circumstances for such operation. This will ensure that the staff knows that WCGS is being operated with one bolt not fully tensioned and that the licensee would be planning in the refueling outage to repair the bolt.

In the discussions, the staff requested the licensee to consider adding to the program plan the two commitments on (1) The reactor vessel will not be subjected to hydrostatic test conditions before the closure bolt is returned to service, and (2) the heat-up rate will be held to 50^{o}F per hour (half the typical 100^{o}F per hour design heat-up rate) until the closure stud is returned to service. The licensee responded by stating that neither commitment were requirements for power operation of the plant at full RCS pressure with one head closure bolt not fully tensioned. The two commitments were precautions because the vessel was in a degraded condition with the one bolt not fully tensioned. They are good practices to provide additional assurance beyond the small calculated additional flange separation that the O-ring leakage does not occur. The licensee stated that no part of its analysis and the conclusions of the analysis rely on either of these two commitments. Based on this, the staff concludes that these two commitments do not rise to the level of requirements for the TS.

The staff also requested that the licensee consider adding a requirement to the program plan that a plan be developed during the operating cycle to repair the bolt in the refueling outage.

Such a plan should ensure that the chance that the bolt cannot be repaired in that refueling outage is minimized. In the case of Callaway operating for one operating cycle with one bolt not fully tensioned, the bolt was repaired in the next refueling outage; however, the staff does not know the extent of the planning performed by the licensee for Callaway in preparation for the refueling outage. The staff believed such preplanning for the repair of the bolt should be a requirement for the amendment. The licensee responded that Criterion XVI, "Corrective Actions," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," of 10 CFR Part 50 requires that measures shall be established to assure that conditions adverse to quality, such as failures and deficiencies are promptly identified and corrected. The licensee's position is that this criterion would require that the licensee plan to correct the condition in the refueling outage. Upon considering the requirements in Appendix B for corrective actions, the staff concluded that Appendix B was sufficient that a plan to correct the condition of the bolt did not have to be stated in the program (i.e., such a statement would duplicate the requirements in Appendix B to 10 CFR Part 50).

The licensee proposed the program plan in its letter of September 13, 2001. The attributes proposed for the program plan were those discussed above and, based on that, the staff concludes that the proposed program plan is acceptable.

Conclusion

The staff has reviewed the licensee's request to amend the TS to allow operation of WCGS with one reactor vessel head closure bolt not fully tensioned for no more than one operating cycle. The proposed amendment is the addition of (1) a phrase to footnotes (b) and (c) of TS Table 1.1-1 that states "except as specified in Specification 5.5.17, 'Reactor Vessel Head Closure Bolt Integrity'", and (2) a program plan to the Administrative Controls section of the TS that provides the requirement for such operation. The proposed amendment allows the plant to be in Modes 1 through 5, and thus to operate at full power with one reactor vessel head closure bolt not fully tensioned.

Based on the finite element analyses and the proposed program plan, the staff concludes that operation of WCGS with one RPV head closure bolt not fully tensioned is safe and acceptable for one operating cycle because the resulting stresses in the RPV head, flange, and head closure bolts are within acceptable limits. Based on this, the staff concludes that the proposed amendment is acceptable. The staff is not relying on the two commitments discussed above concerning a hydrostatic pressure test and the heatup rate to reach this conclusion.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Kansas State Official was notified of the proposed issuance of the amendment. The staff of the State official had discussed the State's concerns by phone with the NRC project manager for WCGS about the licensee's application dated September 15, 2000, and had requested that the State be kept informed of any meetings and calls between the NRC technical reviewers and the licensee on the application. The State was provided a copy of the licensee's responses to the staff's request for additional information and informed of when the phone conferences with the licensee would be conducted. The State did not participate in the two calls, but were given the licensee's responses to the staff's request

for additional information. The State stated that its concerns had been resolved by the staff. The State had no comments on the final proposed amendment.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (65 FR 59227). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

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