

# WOLF CREEK

NUCLEAR OPERATING CORPORATION

Forrest T. Rhodes  
Vice President  
Engineering & Technical Services

June 23, 1992

ET 92-0128

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Mail Station P1-137  
Washington, D. C. 20555

Subject: Docket No. 50-482: Response to Generic Letter  
92-01, Revision 1, "Reactor Vessel Structural  
Integrity"

Gentlemen:

The purpose of this letter is to transmit Wolf Creek Nuclear Operating Corporation's (WCNOC) response to Generic Letter 92-01, Revision 1. This Generic Letter requested information to determine if licensees are meeting commitments and license conditions regarding 10 CFR 50.60, 10 CFR 50.61, and Generic Letter 88-11.

The attachment to this letter provides the requested information on the Wolf Creek Generating Station (WCGS) reactor vessel and material surveillance program.

If you have any questions concerning this matter, please contact me or Mr. S. G. Wideman of my staff.

Very truly yours,



Forrest T. Rhodes  
Vice President  
Engineering & Technical Services

FTR/aem

Attachment

cc: A. T. Howell (NRC), w/a  
R. D. Martin (NRC), w/a  
G. A. Pick (NRC), w/a  
W. D. Reckley (NRC), w/a

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ADD: D. McDonald  
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STATE OF KANSAS       )  
                              ) SS  
COUNTY OF COFFEY     )

Forrest T. Rhodes, of lawful age, being first duly sworn upon oath says that he is Vice President Engineering and Technical Services of Wolf Creek Nuclear Operating Corporation; that he has read the foregoing document and knows the content thereof; that he has executed that 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

Forrest T. Rhodes  
Forrest T. Rhodes  
Vice President  
Engineering & Technical Services

SUBSCRIBED and sworn to before me this 23 day of June, 1992.

Marlene Hearn  
Notary Public

Expiration Date 8-4-94



Wolf Creek Generating Station Response to Generic Letter 92-01 Rev. 1

Question 1:

Certain addressees are requested to provide the following information regarding Appendix H to 10 CFR Part 50:

Addressees who do not have a surveillance program meeting ASTM E 185-73, -79, or -82 and who do not have an integrated surveillance program approved by the NRC (see Enclosure 2), are requested to describe actions taken or to be taken to ensure compliance with Appendix H to 10 CFR Part 50. Addressees who plan to revise the surveillance program to meet Appendix H to 10 CFR Part 50 are requested to indicate when the revised program will be submitted to the NRC staff for review. If the surveillance program is not to be revised to meet Appendix H to 10 CFR Part 50, addressees are requested to indicate when they plan to request an exemption from Appendix H to 10 CFR Part 50 under 10 CFR 50.60(b).

Response:

1. The Wolf Creek Generating Station (WCGS) surveillance program is designed to cover the 40-year design life of the reactor vessel. The surveillance program is based on ASTM E-185-79 which complies with Appendix H to 10 CFR Part 50. Letter KMLNRC 82-235 (Reference 1) transmitted WCAP 10015 to the NRC and provides a description of the surveillance program, a description of the material involved, the specimen and capsule design and fabrication, and the preirradiated test results.

Question 2:

Certain addressees are requested to provide the following information regarding Appendix G to 10 CFR Part 50:

- a. Addressees of plants for which the Charpy upper shelf energy is predicted to be less than 50 foot-pounds at the end of their licenses using the guidance in Paragraphs C.1.2 or C.2.2 in Regulatory Guide 1.99, Revision 2, are requested to provide to the NRC the Charpy upper shelf energy predicted for December 16, 1991, and for the end of their current license for the limiting beltline weld and the plate or forging and are requested to describe the actions taken pursuant to Paragraphs IV.A.1 or V.C of Appendix G to 10 CFR Part 50.
- b. Addressees whose reactor vessels were constructed to an ASME Code earlier than the Summer 1972 Addenda of the 1971 Edition are requested to describe the consideration given to the following material properties in their evaluations performed pursuant to 10 CFR 50.61 and Paragraph III.A of 10 CFR Part 50, Appendix G:

- (1) the results from all Charpy and drop weight tests for all unirradiated beltline materials, the unirradiated reference temperature for each beltline material, and the method of determining the unirradiated reference temperature from the Charpy and drop weight test;
- (2) the heat treatment received by all beltline and surveillance materials;
- (3) the heat number for each beltline plate or forging and the heat number of wire and flux lot number used to fabricate each beltline weld;
- (4) the heat number for each surveillance plate or forging and the heat number of wire and flux lot number used to fabricate the surveillance weld;
- (5) the chemical composition, in particular the weight in percent of copper, nickel, phosphorous, and sulfur for each beltline and surveillance material; and
- (6) the heat number of the wire used for determining the weld metal chemical composition if different than Item (3) above.

Response:

- 2.a. The Charpy upper shelf energy for WCGS's reactor vessel is predicted to be greater than 50 foot-pound at the end of WCGS's operating license using the guidance in Paragraph C.1.2 or C.2.2 in Proposed Revision 2 to Regulatory Guide 1.99, dated February 10, 1986. This conclusion was based on WCGS's first material specimen analysis results (capsule "U"). Analysis of capsule "U" utilized the guidance of Proposed Revision 2 to Regulatory Guide 1.99. Letter ET 87-0346 (Reference 2) submitted the results of this analysis to the NRC.

In response to Generic Letter 88-11, letter WM 88-0290 (Reference 3) submitted the results of a comparison of Proposed Revision 2 to Revision 2 of Regulatory Guide 1.99. It was concluded that Proposed Revision 2 was more conservative when calculating  $DRT_{NDT}$  due to a change in attenuation factor when compared to Revision 2 to Regulatory Guide 1.99.

Surveillance capsule "Y" was the second capsule removed from the WCGS reactor vessel, and was removed November 5, 1991 during Refueling Outage V. 10 CFR 50 Appendix H.III.A requires WCNO to submit the results of capsule "Y" to the NRC by November 5, 1992. Analysis of capsule "Y" will utilize the guidance contained in Revision 2 to Regulatory Guide 1.99 as was committed to in Reference 3.

- 2.b. The WCGS reactor vessel was manufactured to the 1971 Edition with Addenda through Winter 1972. Reactor vessel material and preirradiation material properties are identified in WCAP-10015 which was transmitted to the NRC by Reference 1.

Question 3:

Addressees are requested to provide the following information regarding commitments made to respond to GL 88-11:

- a. How the embrittlement effects of operating at an irradiation temperature (cold leg or recirculation suction temperature) below 525°F were considered. In particular licensees are requested to describe consideration given to determining the effect of lower irradiation temperature on the reference temperature and on the Charpy upper shelf energy.
- b. How their surveillance results on the predicted amount of embrittlement were considered.
- c. If a measured increase in reference temperature exceeds the mean-plus-two standard deviations predicted by Regulatory Guide 1.99, Revision 2, or if a measured decrease in Charpy upper shelf energy exceeds the value predicted using the guidance in Paragraph C.1.2 in Regulatory Guide 1.99, Revision 2, the licensee is requested to report the information and describe the effect of the surveillance results on the adjusted reference temperature and Charpy upper shelf energy for each beltline material as predicted for December 16, 1991, and for the end of its current license.

Response

- 3.a. WCGS Technical Specifications prohibit the reactor coolant system operating loop temperature to fall below 551°F, except during the performance of physics tests. At 0% reactor power the reactor coolant temperature  $T_{hot}$  and  $T_{cold}$  are identical at 557°F. As power is increased,  $T_{hot}$  rises to 618.2°F and  $T_{cold}$  rises to 558.8°F.
- 3.b. WCNOG utilized Proposed Revision 2 to Regulatory Guide 1.99 to perform the analysis of capsule "U". Analysis of capsule "Y" and future analyses will utilize the guidance of Revision 2 to Regulatory Guide 1.99, as was committed to in Reference 3.
- 3.c. No data from the WCGS surveillance program have exceeded the mean-plus-two standard deviation bound predicted by Proposed Revision 2 to Regulatory Guide 1.99. Test results are within the values predicted by the Proposed Regulatory Guide.

References:

- 1) Letter KMLNRC 82-235, dated August 11, 1982 from G. L. Koester (KG&E) to H. R. Denton (NRC)
- 2) Letter ET 87-0346, dated November 4, 1987 from J. A. Bailey (WCNOG) to NRC
- 3) Letter WM 88-0290, dated November 7, 1988 from B. D. Withers (WCNOG) to NRC