

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-482/91-06      Operating License: NPF-42

Docket: 50-482

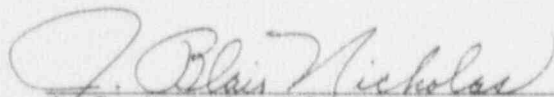
Licensee: Wolf Creek Nuclear Operating Corporation (WCNOC)  
P.O. Box 411  
Burlington, Kansas 66839

Facility Name: Wolf Creek Generating Station (WCGS)

Inspection At: WCGS Site, Burlington, Coffey County, Kansas

Inspection Conducted: January 22-25, 1991

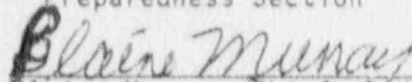
Inspector:



J. B. Nicholas, Senior Radiation Specialist  
Radiological Protection and Emergency  
Preparedness Section

1/29/91  
Date

Approved:



Blaine Murray, Chief, Radiological Protection  
and Emergency Preparedness Section

1/29/91  
Date

Inspection Summary

Inspection Conducted January 22-25, 1991 (Report 50-482/91-06)

Areas Inspected: Routine, announced inspection of the licensee's radiological effluent dose calculations of offsite doses resulting from liquid and gaseous radioactive effluents released to the environment.

Results: The inspector determined that the licensee was calculating offsite doses using methods described in the Offsite Dose Calculation Manual (ODCM). Initial confirmatory dose calculations were performed during the inspection using the NRC PC-DOSE computer code for offsite dose calculations. The licensee and the NRC's calculated doses were in agreement for the radioactive liquid effluents and the noble gas effluents. Comparisons between the licensee's and the NRC's calculated dose results indicated differences for organ doses resulting from radioactive airborne tritium, iodines, and particulates effluents. These differences in the calculated offsite doses were the result of the licensee adding the ground plane dose contribution to each of the organ doses calculated as a result of ingestion.

Within the areas inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

WCNOC

- \*B. L. Withers, President, WCNOC
- J. A. Bailey, Vice President, Operations
- \*G. D. Boyer, Plant Manager
- \*H. K. Chernoff, Supervisor, Licensing
- \*S. E. Henry, Supervisor, Chemistry
- \*R. W. Holloway, Manager, Maintenance and Modifications
- \*W. M. Lindsay, Manager, Quality Assurance
- \*R. L. Logsdon, Manager, Chemistry
- K. J. Moles, Manager, Technical Services
- \*T. S. Morrill, Manager, Radiation Protection
- \*W. B. Norton, Manager, Technical Support
- C. L. Palmer, Supervisor, Chemistry
- \*J. D. Weeks, Manager, Operations
- S. G. Wideman, Senior Engineering Specialist
- \*M. G. Williams, Manager, Plant Support

NRC

- \*M. E. Skow, Senior Resident Inspector, WCGS
- \*L. L. Gundrum, Resident Inspector, WCGS
- \*B. Murray, Chief, Radiological Protection and Emergency Preparedness Section

\*Indicates those present at the exit meeting on January 25, 1991.

2. Radioactive Liquid and Gaseous Effluent Dose Calculations (84750)

The inspector reviewed the licensee's radioactive effluent dose calculations to determine compliance with the requirements in the ODCM and Sections 3/4.11.1 and 3/4.11.2 of the Technical Specifications (TS).

The inspector conducted initial confirmatory calculations of the offsite doses from the plant's liquid and gaseous radioactive effluents released to the environment. Radioactive effluent dose calculations were performed by the inspector for liquids, noble gases, and airborne tritium, iodines, and particulates using the NRC's computer code, PC-DOSE, which was developed to verify the dose calculations described in the licensee's ODCM.

The licensee performed effluent dose calculations using methodologies, assumptions, and equations described in their ODCM and implemented by a computer code supplied by a vendor. The inspector compared test cases with the licensee based on typical effluent radionuclide concentrations and release rates for radioactive liquid and gaseous effluents. The inspector and licensee performed dose calculations using the same

radionuclide concentrations for the liquid effluent test case. The calculated dose results for the radwaste liquid effluents were all in agreement between the licensee's and the NRC's dose results for the adult total body and adult organs for all radionuclides compared.

In addition to the radioactive liquid effluent test case, a test case for noble gas dose and a test case for airborne tritium, iodines, and particulates dose were run. The licensee's dose results for the total body gamma-air dose and the total body beta-air dose from exposure to radioactive noble gases were in agreement with the NRC's calculated doses. The licensee's dose results from the radioactive airborne tritium, iodines, and particulates were greater (i.e., conservative) when compared to the NRC's dose results. For example, the dose data comparisons between the licensee's and the NRC's calculated doses for the child age group organs indicated that the licensee's calculated doses were greater than the NRC's calculated doses except for the total body dose which was identical to the NRC's calculated dose. The differences in the dose results between the licensee's results and NRC's results were determined to be caused by the licensee adding the ground plane dose to each of the organ doses calculated by the licensee as a result of ingestion. The NRC's computer code, PC-DOSE, adds the ground plane dose contribution to only the total body dose. Therefore, if the ground plane dose was added to the NRC's calculated organ doses, the licensee's and the NRC's calculated dose results would be in 100 percent agreement for all examples tested. The inspector concluded that the licensee's computer calculations of offsite doses resulting from radioactive waste effluents discharged to the environment were confirmed to be accurate and in accordance with the methods, assumptions, bioaccumulation factors, and equations described and defined in the ODCM.

No violations or deviations were identified.

### 3. Reports of Radioactive Effluents (84750)

The inspector reviewed the licensee's reports concerning radioactive waste systems and effluent releases to determine compliance with the requirements of 10 CFR Part 50.36(a)(2) and Sections 6.9.1.7, 6.13, 6.14, and 6.15 of the TS.

The inspector reviewed the licensee's semiannual effluent release reports for the periods July 1 through December 31, 1989, and January 1 through June 30, 1990. These reports were written in the format described in NRC Regulatory Guide 1.21 and contained the information required by TS. During the period July 1, 1989, through June 30, 1990, the licensee had performed 90 liquid batch releases and 64 gaseous batch releases. The licensee reported two unplanned releases during the time period reviewed. One of the releases was the subject of Licensee Event Report 50-482/89-015. The other unplanned release did not violate or exceed any TS requirement. No changes were made to the Process Control Program during the time period reviewed. Revision 5 to the ODCM was approved on November 27, 1989, and Revision 6 to the ODCM was approved on

June 13, 1990. The inspector reviewed the changes to the ODCM incorporated into Revisions 5 and 6 and found them satisfactory and well documented. No major changes had been made to the liquid and gaseous radwaste systems during the time period reviewed. Effluent monitoring instrumentation had not been out of service in excess of TS requirements.

No violations or deviations were identified.

4. Exit Meeting (30703)

The inspector met with the licensee representatives identified in paragraph 1 of this report at the conclusion of the inspection on January 25, 1991. The inspector summarized the scope and findings of the inspection and discussed the results of the offsite dose calculations performed during the inspection. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspector during the inspection.