#### APPENDIX C

## U.S. NUCLEAR REGULATORY COMMISSION REGION IV

License: NPF-42 NRC Inspection Report: 50-482/87-12 Docket: 50-482 Licensee: Wolf Creek Nuclear Operations Corporation (WCNOC) P. O. Box 411 Burlington, Kansas 66839 Facility Name: Wolf Creek Generating Station (WCGS) Inspection At: WCGS Site, Burlington, Kansas Inspection Conducted: May 18-22, 1987 26/87 Inspectors: Baer, Radiation Specialist, Facilities Radiological Protection Section 6/26/87

L. Scott, Radiation Specialist, Facilities Radiological Protection Section

Approved:

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Murray, Chief, Fadilities Radiologiea Protection Section

Inspection Summary

#### Inspection Conducted May 18-22, 1987 (Report 50-482/87-12)

Areas Inspected: Routine, unannounced inspection of the radiation protection program including: organization and management controls; external occupational exposure control and personal dosimetry; internal exposure control and assessment; control of radioactive materials and contamination, surveys, and monitoring; facilities and equipment; and the licensee's actions concerning certain NRC Inspection and Enforcement Information Notices (IEIN).

Results: Within the areas inspected, one violation and one deviation were identified (violation, radiation protection manager qualifications, paragraph 5; and deviation, airborne radioactivity monitors, paragraph 6).

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## DETAILS

1. Persons Contacted

#### WCNOC

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\*F. T. Rhodes, Vice President, Nuclear Operations \*G. D. Boyer, Plant Manager \*L. F. Breshears, Health Physics (HP) Supervisor \*H. M. Davis, HP Supervisor D. M. Dullum, Engineer, Nuclear Operations Support (NOS) \*A. A. Freitag, Manager, Nuclear Plant Engineering \*C. J. Hoch, Quality Assurance (QA) Technician E. C. Holman, HP Technician J. M. Isom, HP Technician \*C. Kesinger, Training Program Coordinator (HP) \*W. H. Ketchum, Radiological Services Lead Engineer L. M. Kline, HP Technician \*W. M. Lindsay, Supervisor, Quality Systems \*O. L. Maynard, Manager, Licensing \*G. A. McClelland, QA Auditor C. M. Medenciy, HP Supervisor M. H. Megehee, Compliance Engineer \*T. S. Morrill, Site Health Physicist J. R. Myer, Senior Engineer NOS \*M. M. Nichols, Superintendent, Plant Support L. W. Nilges, HP Technician \*D. K. Parks, Training Coordinator \*G. J. Pendergrass, Licensing Engineer L. T. Rice, HP Technician \*W. J. Rudolph II, Manager, QA W. L. Selbe, Lead Engineer NOS R. M. Stambaugh, Supervisor, Audits, QA \*K. M. Thrall, Radiological Services Senior Engineer \*M. G. Williams, Superintendent, Regulatory, Quality and Administration

#### NRC

\*B. L. Bartlett, NRC Resident Inspector J. E. Cummins, NRC Senior Resident Inspector

\*Denotes those individuals present during the exit interview conducted on May 22, 1987.

The NRC inspectors also interviewed several other licensee employees including administrative, HP, and chemistry personnel.

#### 2. Inspector Observations

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The following are observations the NRC inspectors discussed with the licensee during the exit interview on May 22, 1987. These observations are not violations, deviations, unresolved items, or open items. These observations were identified for licensee consideration for program improvement, but the observations have no specific regulatory requirement. The licensee stated that these items would be considered.

Radiation Survey Instrumentation - The NRC inspectors noted that a large number of the portable radiation monitoring instrumentation were not available to support plant operation. This equipment was either out-of service because the calibration had expired or was in need of repair.

Emergency Locker Equipment - Radiological monitoring equipment contained in emergency kits are not removed and exchanged when their calibration expires prior to the next scheduled inventory.

#### 3. Program Areas Inspected

The following program areas were inspected. Unless otherwise noted, the inspection was completed and revealed no violations, deviations, unresolved items, or open items. Notations after a specific inspection item are used to identify the following: I = item not inspected or only partially inspected; V = violation; D = deviation; U = unresolved item; and D = open item.

rocedure	Inspection Requirements	
83722	Organization and Management Controls (Radiation Protection)	
	02.01 - Organization 02.02 - Staffing 02.03 - Radiation Protection Manager - V (see paragraph 5) 02.04 - Identification and Correction of Program Weaknesses - I	
	02.05 - Audits and Appraisal	
83524	External Occupational Exposure Control and Personal Dosimetry	
	02.01 - Physical Controls 02.02 - Administrative Controls 02.03 - Personal Dosimetry	
83724	External Occupational Exposure Control and Personal Dosimetry	
	02.01 - Audits and Appraisal 02.02 - Program Changes	

	02.03 - Planning and Preparation for Outages 02.04 - Personal Dosimetry 02.05 - Administrative Controls 02.06 - Records, Reports, and Notifications
83525	Internal Exposure Control and Assessment
	02.01 - Administrative Controls 02.02 - Engineering Controls - I 02.03 - Respiratory Protection Equipment - I 02.04 - Air Sampling - I 02.05 - Bioassay - I
83725	Internal Exposure Control and Assessment
	02.01 - Audits and Appraisals 02.02 - Program Changes 02.03 - Planning and Preparation for Outages - I 02.04 - Assessing Intakes of Radioactive Materials - I 02.05 - Engineering Administrative Controls - I 02.06 - Respiratory Protection Equipment - I 02.07 - Records, Reports, and Notifications
83526	Control of Radioactive Materials and Contamination, Surveys, and Monitoring
	<ul> <li>O2.01 - Area and Airborne Radiation Monitors - D (see paragraph 6)</li> <li>O2.02 - Portable Survey, Sampling, and Contamination Monitoring Instruments</li> <li>O2.03 - Protective Clothing and Equipment</li> <li>O2.04 - Radioactive Material and Contamination Control</li> <li>O2.05 - In-Plant Surveys and Monitoring</li> </ul>
83726	Control of Radioactive Materials andContamination, Surveys, and Monitoring
	02.01 - Audits and Appraisals 02.02 - Program Changes 02.03 - Surveys and Monitoring 02.04 - Radioactive Materials and Contamination Controls
83527	Facilities and Equipment
	02.01 - Facilities 02.02 - Equipment
83727	Facilities and Equipment
	02.01 - Facility Changes

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## 4. Review of NRC Inspection and Enforcement Information Notices

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The NRC inspectors reviewed the licensee's program for reviewing and tracking information contained in certain IEINs. The licensee's nuclear operations support group tracks IEINs and other information in accordance with Procedure KGP-1311, "Industrial Technical Information Program."

The licensee's responses to the following IEIN's were reviewed:

79-07	79-09	80-22	81-26
82-18	82-31	82-36	82-42
82-43	82-44	82-49	82-51
83-05	83-10	83-14	83-21
83-25	83-33	83-49	83-52
83-59	83-64	83-67	83-68
83-73	83-81	84-15	84-19
84-24	84-34	84-40	84-50
84-56	84-57	84-59	84-60
84-61	84-72	84-75	84-82
84-91	85-06	85-42	85-46
85-48	85-52	85-60	85-87
85-88	85-92	86-18	86-20
86-22	86-23	86-24	86-30
86-32	86-41	86-42	86-43
86-44	86-46	86-76	86-90
86-103	86-107	87-03	87-07

The licensee's actions were generally considered acceptable. The NRC inspectors discussed with licensee representatives that some IEINs involve incidents which could involve more than one work group within the licensee's organization. However, procedures have not been established for these types of incidents.

No violations or deviations were identified.

# 5. Radiation Protection Manager Qualifications

The NRC inspectors reviewed the qualifications of the individual recently assigned to the position of Site Health Physicist.

Technical Specification 6.3.1 states "each member of the unit staff shall meet or exceed the minimum qualifications of ANSI/ANS 3.1-1978, except for the Site Health Physicist who shall meet or exceed the qualifications of Regulatory Guide 1.8, September 1975 for a Radiation Protection Manager." Regulatory Guide 1.8, September 1975 states, in part, the Radiation Protection Manager (RPM) should be an experienced professional in applied radiation protection at nuclear facilities dealing with radiation protection problems and programs similar to those at nuclear power stations. The RPM should have a Bachelor's Degree or the equivalent in a science or engineering subject, including some formal training in Radiation Protection. The RPM should have at least 5 years of professional experience in applied radiation protection and at least 3 years of this professional experience should be in applied radiation protection work in a nuclear facility dealing with radiological problems similar to those encountered in nuclear power stations, preferably in an actual nuclear power station.

The NRC inspectors reviewed the personal resume and discussed work assignments with the individual designated as the Site Health Physicist. The NRC inspectors concluded that the individual had accumulated experience which totaled approximately 3 years in applied radiation protection and the equivalent of a bachelors degree.

The failure to designate an individual as the Site Health Physicist that meets or exceeds the requirements of Regulatory Guide 1.8, September 1975 is considered an apparent violation of Technical Specification 6.3.1. (482/8712-01)

#### 6. Airborne Radioactivity Monitoring

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The NRC inspectors reviewed the licensee's airborne monitoring program to determine agreement with Sections 12.3.4.2.2.2.9 and 12.5.2.1 of the USAR. The USAR states that work areas will be monitored using portable continuous airborne monitors (CAMs) as a primary method, with grab sampling as a backup to the CAMs. In addition, the licensee stated in their April 22, 1986, letter in response to deviation (482/8542-01) that CAMs would be utilized to sample the following locations:

1974' Auxiliary Building 2000' Auxiliary Building (north end) 2000' Auxiliary Building (south end) 1976' Radwaste Building 2047' Fuel Building

The NRC inspectors determined on May 20, 1987, the licensee did not have CAMs sampling: (1) the 2000-foot level in the auxiliary building (north end), (2) the 1976-foot level in the radwaste building, and (3) the 2047-foot level in the fuel building. The failure to implement the specified airborne monitoring program is considered a deviation from commitments made to the NRC. (482/8712-02)

#### 7. Personnel Dosimetry

The NRC inspectors reviewed the licensee's personnel dosimetry program. The licensee's primary, in-house, system is a Panasonic Thermoluminescent Dosimeter (TLD) system. The licensee uses four TLD elements, two (elements 1 and 2) are lithium borate and two (elements 3 and 4) calicum sulfate in a type UD802 dosimeter. The filtration over the four elements of the dosimeter is as follows:

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1	23 (mylar)
2	300 (plastic)
3	300 (plastic)
4	1000 (plastic, lead)

The licensee's quality assurance/quality control program includes the use of spiked quality control badges which are read with each tray containing 50 badges. Each month, approximately 15 spiked badges are also processed which have been exposed to beta and gamma radiations, neutron radiation, or gamma radiation. The radioactive sources used to spike these badges are strontium-90, cesium-137, and moderated californium-252.

The licensee had a contractor conduct a neutron and photon dose and energy spectral measurement inside the reactor containment during 50 percent and 100 percent power operation. It was concluded that the remmeter and albedo TLDs used were energy dependent in that they yield a higher response per unit flux at lower neutron energies (less than 10 kev) than at higher energies. The overresponse for the remmeter was approximately 2.5 and the overresponse to the albedo TLD was typically a factor of 6 at 100 percent power and 17 at 50 percent power.

No violations or deviations were identified.

#### 8. Skin Contamination/Hot Particles

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The inspector reviewed the licensee's program for documenting skin and clothing contamination and the operation of laundry facilities including monitoring of protective clothing. Procedures HPH 03-014 "Personnel Decontamination," Revision 1, December 23, 1985, and HP 03-005 "Laundry Facility Operation," Revision O, November 16, 1984, have been implemented to address the above areas.

The NRC inspectors discussed with licensee representatives the information discussed in IEIN 86-23, "Excessive Skin Exposure Due to Contamination with Hot Particles." The licensee utilizes friskers at the step-off-pad leaving contaminated areas and a personnel contamination monitor when exiting the radiologically controlled area. Protective clothing is monitored for fixed contamination and clothing having fixed contamination greater than 0.5 mr/hr is segregated. The NRC inspectors noted in procedure HPH 03-014 that the licensee does not routinely provide for a determination of skin dose from contamination unless personnel contamination is greater than 100 counts per minute above background for longer than one hour nor are there any directions for the removal and identification of the contamination if it is a small area (particle).

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The licensee stated that they plan to review and upgrade procedure HPH 03-014 to ensure the information in IEIN is adequately addressed.

No violations or deviations were identified.

9. Exit Interview

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The NRC inspectors met with the personnel identified in paragraph 1 at the conclusion of the inspection on May 22, 1987. The NRC inspectors summarized the scope and findings of the inspection.