APPENDIX

U. S. NUCLEAR REGULATORY COMMISSION

REGION IV

NRC Inspection Report: 50-298/83-11

Docket: 50-298

License: Nebraska Public Power District (NPPD) Post Office Box 499 Columbus, Nebraska 68601

Facility Name: Cooper Nuclear Station (CNS)

Inspection At: Cooper Nuclear Station Brownville, Nebraska 68321

Inpection Conducted: May 9-13, 1983

Inspector:

San E. Baer, Radiation Specialist

<u>6/24/83</u> Date Date

G/28/83 Date

Approved:

Jaine Murray, Chief, Facilities Radiation Protection Section

Reviewed: 7.9. Westerman, Chief, Reactor Project Section A

Inspection Summary

Inspection conducted May 9-13, 1983 (Report 50-298/83-11)

Areas Inspected: Routine, unannounced inspection of the licensee's radiation protection program during refueling operations including procedures, advanced planning and preparation, training, exposure control, respiratory protection, posting and control, radioactive and contaminated material control, surveys, and the ALARA program. The inspection involved 37 onsite inspector-hours by one NRC inspector.

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

License: DPR-46

DETAILS

1. Persons Contacted

Principal Licensee Personnel

*P. V. Thomason, Acting Station Superintendent
*J. Sayer, Chemistry and Health Physics Supervisor
R. McDonald, Health Physicist
J. Kuttler, Lead Health Physics Technician
J. Cline, Health Physics Secretary

Other Personnel

*D. DuBois, Senior Resident Reactor Inspector, USNRC

The NRC inspector also interviewed several other licensee and contractor employees including health physics and chemistry technicians, operators, and maintenance personnel.

*C notes those present during the exit interview on May 13, 1983.

2. Licensee Action on Previous Inspection Findings

(Open) Open Item (298/8220-02): Exposure Control - This item was discussed in NRC Inspection Report 50-298/82-20 and involved the lack of a documented thermoluminescent (TLD) versus direct-reading dosimeter (DRD) discrepancy evaluation. The licensee had initiated a program to review the TLD vs DRD results, but had not completed a written procedure which detailed the review criteria, documentation, and approval of the discrepancy evaluation. This item remains open. See paragraph 5 for details.

(Open) Open Item (298/8220-02): ALARA Program - This item was discussed in NRC Inspection Report 50-298/82-20 and involved the lack of a formal ALARA program which satisfied the recommendations of Regulatory Guide 8.8. The licensee had not completed procedures for the ALARA program. This item remains open. See paragraph 11 for details.

(Open) Open Item (298/8232-01): <u>Radiation Worker Training</u> - This item was discussed in NRC Inspection Report 50-298/82-32 and involved the lack of a radiation worker training program that included all the elements of Regulatory Guides 8.27 and 8.29 recommendations. This item remains <u>open</u>. See paragraph 7 for details.

(Oper) Open Item (298/8232-02): Beta Radiation Calibration of Portable Survey Instrumentation - This item was identified in NRC Inspection Report 50-298/82-32 and involved the lack of full range beta calibration as recommended by ANSI N323-1978. This item remains open. See paragrapah 10 for details. (Open) Open Item (298/8232-03): Whole Body Counter Operational Check -This item was identified in NRC Inspectica Report 50-298/82-32 and involved the lack of an operational check of the whole body counter as recommended by ANSI N343-1978. This item remains open. See paragraph 6 for details.

(Open) Open Item (298/8232-04): Whole Body Counter Calibration -This item was identified in NRC Inspection Report 50-298/82-32 and involved the lack of a comprehensive calibration and testing program as recommended by ANSI-N343-1978. This item remains <u>open</u>. See paragraph 6 for details.

3. Radiation Protection Procedures

Technical Specification 6.3.4 requires procedures to be maintained and consistent with the requirements of 10 CFR Part 20.

The NRC inspector reviewed the licensee's radiation protection procedures with special emphasis on those which had been revised since the last radiation protection operations inspection.

Procedures Reviewed

- . 9.1.2.2, "Area Posting and Access Control," Revision 6, March 28, 1983
- . 9.1.3., "Radiation Safety Standards," Revision 5, February 18, 1983
- . 9.1.5, "Respiratory Program," Revision 13, March 28, 1983
- . 9.2.1, "Radiation and Contamination Survey Frequency," Revision 9, January 25, 1983
- . 9.3.2.3, "Automatic Sample Changer (Gas Flow) Smear Counter," Revision 3, December 27, 1982
- . 9.3.2.4, "Well Counter," Revision 6, December 27, 1982
- . 9.3.3.1, "Pocket Chamber Dosimeter Direct Reading," Revision 5, January 25, 1983
- . 9.5.4.2, "Solid Radioactive Waste Calculations," Revision 4, Febuary 21, 1983

The NRC inspector expressed concern on various sections of Procedure 9.1.5, "Respiratory Program," which were considered potential problem areas with a licensee's representative. These areas of concern were as follows: Section V.G states, "Adjustments and repair of reducing valves and regulators will be made only by a skilled person who thoroughly understands the construction, operation, and adjustments of these reducing valves and regulators."

NUREG-0041 states in Section 10.2 that, "Only factory-trained individuals shall repair or adjust regulators, timers, alarms, or other such parts of respiratory protective devices." To maintain the National Institute for Occupational Safety and Health (NIOSH) approval, Ticle 10 CFR Part II requires that reducing or admission valves or regulators shall be returned to the manufacturer or to a trained technician for adjustment cr repair.

Section 10.c refers to respirators with approval numbers that bear the prefix "BM."

Respirators approved under the former Bureau of Mines schedules have approval numbers preceded by the letters "BM." The termination date for approved use of these respirators was in 1980. This section is no longer applicable.

Attachment "D" to the procedure is the "Certification for Use of Respiratory Equipment," which references a medical examination and contains a certification statement that is signed by the individual's supervisor.

An individual's supervisor is not authorized to make a determination that the individual in physically able to use respiratory protective equipment. 10 CFR 20.103(c)(2) states that a physician must make this determination.

The NRC inspector did not review Procedure 9.5.3, "Radioactive Material Shipment," Revision 7, dated November 17, 1982. A licensee's representative stated that this procedure was being revised to incorporate the changes directed by 49 CFR, published in the Federal Register on March 10, 1983, and effective July 1, 1983.

No violations or deviations were identified.

4. Advanced Planning and Preparation

a. Health Physics Staffing

The licensee had augmented its health physics staff during the refueling outage with station chemistry technicians. These technicians had previously been trained in station health physics procedures and assisted the health physics staff during prior refueling outages. A total of 12 technicians were available for the outage, 7 technicians on days and 5 during the night.

The NRC inspector expressed concern to licensee representatives with regard to the number of technicians available to perform training activities, monitoring and documentation of results, instrument calibration, and perform routine duties during the outage. (See paragraphs 4b, 5, and 10 for additional details.)

b. Instrumentation, Equipment, and Supplies

The NRC inspector made observations in this field and interviewed licensee representatives to verify that adequate quantities of instrumentation, equipment, and supplies were available to support the refueling outage.

The NRC inspector noted that most of the licensee's high volume air samplers were due for recalibration midway through the outage. A licensee representative stated that these instruments would be recalibrated when they were due.

No violations or deviations were identified.

5. Exposure Control

All personnel entering the radiation control area (PCA) were routinely issued a thermoluminescent dosimeter (TLD) and a direct-reading dosimeter (DRD). These devices were assigned to individuals to comply with the requirements of 10 CFR 20.202(a). Additional dosimetric devices, such as high range DRD's, may be required in certain areas and are specified on the special work permit (SWP). The licensee does not generally use extremity dosimetric devices.

The licensee used two hard hat divers to insert plugs into the jet pump risers within the reactor cavity. These individuals were provided with additional extremity dosimeter devices; six TLD's and DRD's were used to monitor hands, feet, body, and head radiation exposures. The licensee had calculated the divers would be working in a radiation field of 20 mRem per hour; actual measurements indicated the radiation level was 12 mRem per hour. The divers were also furnished with communications, extra safety line, and their movements were monitored by an underwater television camera. This work was still in progress at the conclusion of this inspection.

The licensee administratively limits radiation exposures to 1250 mRem per calendar quarter. Authorization to exceed this limit is granted after the licensee has a current Form NRC-4 for the individual, as required by 10 CFR Part 20.102. The NRC inspector examined Form NRC-4 for 12 of the 18 individuals who were approaching or exceeded 1250 mRem during the current calendar quarter. The individual's exposure history file contained completed Form NRC-4's and the appropriate radiation exposure authorization forms. No radiation overexposures were identified.

The NRC inspector reviewed the licensee's DRD versus TLD exposure results (this had been previously identified as open item 298/8220-01) for the period January 1 through April 1, 1983. The licensee had been reviewing discrepancies and noting on the computer printout the findings. The NRC inspector discussed with a licensee's representative the need to nave a formal procedure and documentation for the results of the investigation. (See Institute of Nuclear Power Operations, 82-001-EPN-03, "Comparison of Dosimetry Results," dated September 1982.) The licensee stated that he would develop a formal procedure and documentation for this program.

No violations or deviations were identified.

6. Respiratory Protection Program

The inspector reviewed selected portions of the respiratory protection program to determine compliance with the requirements of 10 CFR 20.103.

a. Respiratory Protection Fitting and Training

The NRC inspector reviewed the licensee's respiratory protection fitting and training program, including the medical certification required for wearing of respiratory equipment. The inspector examined the records of 9 individuals from the 44 contractor supplied personnel the licensee had qualified to wear respiratory protection equipment. All individuals had attended the required training course and had a current medical certification.

The NRC inspector discussed with a licensee representative the current method used for fit testing. The licensee stated that approval had been received to purchase quantitative fitting test equipment and they sere in the process of evaluating the equipment available.

b. Bioassay

The licensee maintains a vendor-supplied lay-down type whole body counter onsite. The vendor had supplied an americium-241 source that is counted concurrent with all whole body counter operations and is used to assure that the equipment is within the operating parameters.

The inspector discussed with a licensee representative the status of open items (298/8232-03), Whole Body Counter Operational Check, and (298/8232-04), Whole Body Counter Calibration. The licensee stated that they were in the process of obtaining National Bureau of

Standard's traceable standard for calibration sources and were considering a procedural change which would use the vendor-supplied americium-241 source for the operational check.

The NRC inspector noted the americium-241 source is used to verify that a shift of the electronic gain has not occurred. Gain shift is only one of the elements which determine the overall accuracy of the system. The use of the americium source for an operational check would not meet the recommendations of ANSI-N-343-1978.

No violations or deviations were identified.

7. Training

The licensee utilizes a series of videotapes augmented by lectures to meet the training requirements of 10 CFR Part 19.12. At the conclusion of the training session a written examination is given. Individuals are required to pass the examination before they are allowed unescorted access to radiologically controlled areas.

The NRC inspector observed selected portions of the tape and lecture series. The inspector noted that the licensee did not include all elements of Regulatory Guides 8.27 and 8.29, or require all individuals to dress in anticontamination clothing and to properly undress or demonstrate the accepted method to remove contaminated tools or equipment from a contaminated area. This was previously identified as open item (298/8232-01) and remains open.

The inspector also reviewed examinations and training records of 10 contractor personnel who were allowed unescorted access.

The NRC inspector discussed the status of upgrading the radiation worker training program with licensee representatives. The licensee had received approval from corporate for a contractor to provide training personnel at the station. It was not determined if the contractor would supply a new training program, administer the station program, or when the contractor would assume training activity duties.

No violations or deviation were identified.

8. Posting and Control

The inspector reviewed the posting and control of radiation areas, high radiation areas, contaminated areas, and radioactive material areas against the requirements of 10 CFR Parts 20.203, 20.207, and station procedures developed in accordance with Technical Specification 6.3.4.

During tours of the licensee's facilities, the NRC inspector observed the drywell and refueling floor access control, adherence to special work permit requirements, contamination control and exit procedures. All areas inspected were adequately posted and properly controlled.

No violations or deviations were identified.

9. Radioactive and Contaminated Material Controls

The NRC inspector reviewed the licensee's program for radioactive and contaminated material control against the requirements of 10 CFR Part 20.203(f).

The NRC inspector observed the licensee's control of radioactive and contaminated material, tools, and equipment during tours of the radiologically controlled area. Several areas were dedicated for storage of radioactive tools, equipment, and materials.

The NRC inspector noted that a large quantity of radiologically contaminated wood was being stored in the turbine building basement, the augmented offgas building truck bay and adjacent area contained a large quantity of contaminated steel drums, and the radwaste building hot machine shop and decontamination shop contained a large quantity of plastic bags containing contaminated tools and equipment.

The NRC inspector discussed with licensee representatives the conditions noted in the turbine building, augmented offgas building, and radwaste building. The licensee stated that the contaminated wood will be removed and disposed of as low level radioactive waste and that the truck bay, hotshop, and decontamination shop would be cleaned up.

No violations or deviations were identified.

10. Surveys

The NRC inspector reviewed the licensee's radiation, contamination, and airborne radioactivity surveys to determine compliance with 10 CFR Parts 20.103, 20.201, and 20.401.

The NRC inspector reviewed selected radiation and contamination survey data used for the preparation of special work permits to assure that the data was current and represented an accurate evaluation of the radiological conditions present in the work area. The inspector conducted independent radiation level measurements and compared the results with licensee recorded data.

Licensee personnel appeared to be using consistent requirements when evaluating radiation, contamination, and job evaluations for the specification of protective clothing, dosimetry, health physics coverage and respiratory protection equipment.

The NRC inspector noted that Special Work Permits 83-4-29, 83-5-1, 83-5-2, 83-5-3, 83-5-4, 83-5-6, 83-5-7, and 83-5-20 were all written to cover various work functions being performed in the reactor drywell and did not require that personnel working in these areas be provided with a survey meter. The radiation survey of this area performed on April 30, 1983, indicated the general radiation level was 100 to 200 mRem per hour survey meter. The radiation survey of this area performed on April 30, 1983, indicated the general radiation level was 100 to 200 mRem per hour and the maximum radiation level was 350 to 600 mRem per hour.

The inspector discussed this condition with a licensee's representative who stated that this condition had been identified and resolved on a previous inspection. The licensee had installed portable area radiation monitors in these areas as a replacement for the survey meter requirement. The licensee's representative agreed that personnel working in the area should be informed to observe the portable area radiation monitor while working in the area and the protective actions to take should the monitor alarm.

The NRC inspector discussed with a licensee representative the beta radiation calibration of portable survey instrumentation. This had been previously identified as open item (298/8232-02). The licensee stated that they were in the process of determining the radioactive source(s) required to perform the beta calibration. When this determination is made, the sources will be obtained and procedures written addressing beta calibration.

No violations or deviations were identified.

11. ALARA Program

The licensee does not have a formal written ALARA program or an individual designated to implement a station ALARA program. This had been previously identified as open item (298/8220-02).

The NRC inspector discussed the status of the station ALARA program with a licensee representative. The licensee stated that a position of ALARA coordinator had been proposed to corporate. Procedures were being drafted which will detail the station ALARA program and would incorporate the management statement on ALARA. The licensee projected that the ALARA program would be in effect by the fourth quarter of 1983.

The attached table depicts the annual radiation exposure for the past 3 years.

12. Exit Interview

The NRC inspector met with a licensee representative identified in paragraph 1 at the conclusion of the inspection on May 13, 1983. The inspector summarized the scope and findings of the inspection.

TABLE NO. 1 MAN-REM 1980, 1981, & 1982

JOE FUNCTION	STATION EMPLOYEES		UTILITY EMPLOYEES		OTHER WORKERS		BWR AVERAGE
	Number	Man-Rem	Number	Man-Rem	Number	Man-Fer	
Maintenance	57	95.463	0	0.0	356	600.025	807
Operations	42	50.074	0	0.0	0	0.0	77
Health Physics	11	16.334	0	0.0	9	8.753	72
Supervisory	9	10.479	1	0.576	3	1.173	23
Engineering	13	18.974	12	13.682	7	4.626	67
YEARLY TOTAL	L (Man 1	Rem) 820	0.159			•	1136

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JOB FUNCTION	STATION EMPLOYEES		UTILITY EMPLOYEES		OTHER WORKERS		BWR	
	Number	Man-Rem	Number	Man-Rem	Number	Man-Rem	AVERAGE	
Maintenance	52	89.850	0	0.0	549	339.929	647.103	
Operations	44	40.042	0	. 0.0	0	0.0	121.746	
Health Physics	13	17.853	0	0.0	0.	0.0	54.942	
Supervisory	9	6.339	7	5.535	0	4.706	19.537	
Engineering	19	14.883	13	10.174	31	14.618	114.096	
YEARLY TOTA	L (Man F	(em) 543	929		•		957.454	

1982

JOB FUNCTION	STAT EMPLO	ION YEES	UTIL	LITY DYEES	OTHER WORKERS	
	Number	Man-Rem	Number	Man-Rem	Number	Man-Rem
Maintenance	50	76.317	1	0.111	293	325.482
Operations	47	35.777	0	0.0	0	0.0
Health Physics	14	19.248	0	0.0	0	0.0
Supervisory	11	6.702	4	2.037	10	3.803
Engineering	17	19.946	19 ~	8.035	15	7.284

YEARLY TOTAL (Man Rem) 505.742

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OPEN ACTION ITEMS LIST

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0	8220-0	01	TRP		EXPOSURE Q	ONTROL	33-11	0
0	8220	-02	TRP		ALARA PR	OGRAM	83-11	0
0	8232	-01	THEP		RADIATION WORK	ER TRANING	83.11	0
0	8232-	02	TRP		Bern RADIADON (ALIBRADON	83-11	0
0	8232-	03	TRP		WHOLE BODY COUNTR	EK OPERAT -	83-11	0
0	8232	-04	TEP		WHOLE BODY COON RAMON	TSE CALIB:	83-11	0