U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-305/83-06(DRMSP)

Docket No. 50-305 License No. DPR-43

Licensee: Wisconsin Public Service Corporation
Post Office Box 1200
Green Bay, WI 54305

Facility Name: Kewaunee Nuclear Power Plant

Inspection At: Kewaunee Site, Kewaunee, WI

Inspected Conducted: April 18-22, 1983

Inspectors: R. A. Paul 5/23/83
Date

W. B. Grant 5/23/83
Date

Approved By: L. R. Greger, Chief 5/24/83
Facilities Radiation Protection Section Date

Inspection Summary

Inspection on April 18-22, 1983 (Report No. 50-305/83-06(DRMSP))
Areas Inspected: Routine unannounced inspection of the radiation protection program for operation and refueling and the radioactive waste program including: ALARA, exposure controls, posting and controls, transportation activities, TMI Action Items, effluent control instrumentation, testing of air cleaning systems, reactor coolant water quality, training, surveys, licensee audits, solid and liquid radioactive waste, and licensee action on previous inspection findings. The inspection involved 86 inspector-hours onsite by two NRC inspectors.
Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

L. Arno, I & C Supervisor
*D. Hintz, Plant Manager
C. Hutter, Rad. Chem. Clerk
C. Long, Assistant Health Physics Supervisor
*C. Luoma, Manager Nuclear Power, WPS
*M. Marchi, Technical Supervisor
*J. Mueller, Corporate Health Physicist and Director of Training, WPS
*D. Nalepka, Nuclear Engineer, WPS
P. O'Brien, Nuclear Training Supervisor, Non-licensed
*D. Padula, Plant Health Physicist
R. Pulec, Nuclear Engineer
*J. Richmond, Plant Services Superintendent
W. Winnowski, Supervisor, Chemistry

*R. Nelson, NRC Senior Resident Inspector

The inspectors also interviewed other licensee personnel.

*Denotes those present at the exit interview.

2. General

This inspection, which began at 8:00 a.m. on April 18, 1983, was conducted to examine the routine aspects of the radiation protection program during operations and refueling, the status of post-TMI action items and licensee actions regarding previous inspection findings.

3. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (305/82-20-01): Failure to label containers of radioactive material in accordance with 10 CFR 20.203 requirements. The licensee developed a program to ensure proper labelling of containers and revised Procedure RC-HP-46 to incorporate instructions concerning labelling of containers of licensed radioactive materials.

(Closed) Open Item (305/82-20-03): Formalized procedures required for the computerized radiation protection program and liquid waste discharge program were needed. The licensee is in the process of developing a procedure to describe what the computerized radiation protection program does, and how to use the system. Revisions have been made to Surveillance Procedure (SP-136) which require recording of calculated discharge values onto the effluent discharge logs and onto the semiannual effluent reports.

(Closed) Open Item (305/82-20-04): Formalized procedures covering shipping and packaging of Type B shipments were needed. The licensee has developed an Administrative Control Directive (ACD) which includes the radwaste procedures and outlines the steps and responsibilities of each group involved in shipping, packaging and auditing of all Type B shipments.

(Closed) Open Item (305/81-11-04): A procedure to relate whole body counting data to MPC hours was needed. Procedure (RC-HP-32I) has been revised to include methods for computing MPC-hours from whole body/organ burdens.

(Closed) Deviation (305/82-14-01): Procedures for sample collection and analysis of post-accident radioactive releases were not sufficient to meet the requirements of Clarification Item 1 of TMI Action Item II.F.1.2.B.2. The licensee has revised Procedure (RC-HP-58B) to allow for continuous sample collection of plant effluents, except for those times when the filters are being collected and replaced.

4. Effluent Control Instrumentation

The inspectors reviewed records of effluent monitoring system calibrations and functional tests conducted to meet the requirements of technical specifications. Records from September 1982 to date were reviewed. Except for the Liquid effluent radiation monitor (R18), calibrations were conducted annually during the refueling outage. Monitor R18 was calibrated quarterly. No problems were noted.

The liquid effluent radiation monitor is functionally checked prior to each release. Records of these checks were reviewed; no problems were noted.

No items of noncompliance or deviations were identified.

5. Testing of Air Cleaning Systems

During March 1983, a contractor performed in-place filter tests on some plant ventilation systems. Also, charcoal samples for methyl iodide tests were collected. The in-place testing included visual inspections of the filter installations, DOP testing of the HEPA filters, and freon testing of the charcoal adsorbers. Systems tested include the auxiliary building special ventilation system (SV-1A and SV-1B) and the spent fuel pool ventilation system (SFP-1A and SFP-1B). Testing of the shield building ventilation system which is also required by technical specification, was scheduled for later in the outage. All in-place tests indicated greater than 99 percent removal as required by technical specifications. New charcoal adsorbers were installed in SV-1A and SV-1B prior to in-place testing. Charcoal samples were taken from SFP-1A and SFP-1B for laboratory methyl iodide testing. There are no technical specification requirements for testing other plant ventilation filter systems. However, procedures have been written to test the control room ventilation system every two years and other ventilation systems are normally in-place tested after each filter change. The results of the laboratory methyl iodide tests will be reviewed during a future inspection.

No items of noncompliance or deviations were identified.

6. Reactor Coolant Water Quality

The inspectors reviewed selected records to determine compliance with technical specification requirements for reactor coolant periodic tests including: gross beta-gamma activity, tritium activity, and water chemistry (Cl, F, O_2). Records from December 1, 1982 to date were reviewed; no problems were noted.

No items of noncompliance were identified.

7. Training/Retraining

The inspectors reviewed records of training received by contractors during the current refueling outage. Instructions in radiation protection, safety, respiratory protection, and security are presented in a series of video-taped lectures. A quiz is given at the conclusion of the presentation and a grade (70%) is required. The training program appears to meet the requirements of 10 CFR 19.12. No problem areas were noted.

During a previous inspection[1], the licensee committed to implement a retraining program for radiation technicians (RTs) in 1983. The Corporate Health Physicist HP and Director of Training stated that this retraining program would begin in the fall of 1983. The retraining program will consist of plant systems training and other courses designed to expand the RTs knowledge of Health Physics and measurement and data systems. This matter was discussed during the exit meeting interview.

In September 1983, the radiation helpers and possibly some RTs will be given a math course taught by a faculty member of the University of Wisconsin.

No items of noncompliance or deviations were identified.

8. Licensee Audits

The inspectors reviewed the radiation protection findings contained in the December 1982 INPO evaluation. The licensee has completed some of INPO's recommended actions in areas which include radiological protection procedures, calibration of instruments, contamination control and training.

The Licensee Quality Assurance Directive (QAD 7.2) audit conducted on December 29, 1982, was reviewed. The audit examined the adequacy of procedures for the shipment of low level radwaste to ensure compliance with requirements. The audit identified two open items (both of which were closed prior to the issuance of the audit report) and a recommendation that a checklist be developed for shipment preparation. The licensee has added a checklist to Procedure RC-HP-38A. In addition, the inspectors reviewed the following quality assurance audits:

1 Inspection Report No. 50-305/82-20.

QA 82-58 - Radiation Chemistry and Health Physics Measurement and Test Equipment

QA 81-93 - Radiation Chemistry and Health Physics Procedures

QA 82-67 - Radioactive Materials Sources

QA 82-34 - Personnel Qualifications

QA 82-68 - Vendor evaluation of Eberline Nuclear Services Division

Most identified problems have been corrected by the licensee. The inspectors reviewed the licensees corrective actions; no problems were noted. Corrective actions for the remaining problems are under review.

No items of noncompliance or deviations were identified.

9. Outage Planning/Preparation/ALARA

Health physics (HP) personnel were involved in pre-outage reviews, were made aware of the major jobs in advance of the outage, and conducted pre-job ALARA reviews. Radiologically significant jobs included valve maintenance, steam generator work, and in-service inspection (ISI).

Although HP personnel participated in pre-outage reviews, it was noted that HP personnel assigned to job sites in containment were often not informed until the last minute as to which specific jobs were to be performed under their coverage. Although there was no indication that any of the jobs were performed without HP knowledge or coverage, the problem led to possible anti-ALARA practices and unnecessary disputes between work groups and HP personnel. This matter was discussed during the exit meeting.

The licensee indicated that ALARA reviews for certain outage tasks were conducted and that ALARA engineering was accomplished. Included in the ALARA reviews and engineering were the reactor coolant pump, sludge lance and fuel handling jobs.

As identified in previous inspections and contractor audits, the licensee has not developed a written formal ALARA program. The licensee has drafted (but not implemented) a written management policy for ALARA. Although the licensee has the necessary tools (computerized radiation protection management system and RWP program) to identify where ALARA engineering is required and to measure the effectiveness of the ALARA program, the licensee believes the tracking and documentation of the program is not worth the expenditure of the needed person-hours. This matter was discussed during the exit meeting.

10. Exposure Control - External

The licensee's whole body exposure records for 1982 were reviewed. The highest whole body personal exposure was 2.41 rems.

The whole body dose for all persons involved in the refueling outage from March 1 through April 17 was 121 person-rems. About 37 percent of this dose was due to steam generator and valve maintenance work.

No items of noncompliance or deviations were identified.

11. Exposure Controls - Internal

The licensee controls internal exposures through engineering controls, air sampling and contamination surveillance programs, and use of approved respiratory protection equipment. A whole body count bioassay program is utilized to evaluate program effectiveness.

The inspectors selectively reviewed whole body count results for 1983 to date; no results exceeding the 40 MPC hour control measure were noted. The whole body counter is vendor calibrated every two years. The last calibration was in March 1982.

The licensee's program for fit testing respirators was reviewed. During this review, it was noted that fit tests are conducted for MSA filter respirators and MSA airline supplied air respirators for station employees and contractors. In addition, station employees are fit tested for the MSA 401 self-contained breathing apparatus. The inspectors selectively reviewed fit test results and medical qualification statements for station employees and contractors for the 1983 outage. No problems were noted.

In response to the Health Physics Appraisal[2], the licensee has implemented Procedure RC-HP-32G "Breathing Air Quality Tests." Tests of the plant's breathing air system are made monthly and prior to each refueling shutdown using a breathing air respirator filtration cart. Hose connections from all areas of the plant are prescheduled for monthly tests. The inspectors reviewed records of the breathing air quality tests for 1982 and 1983 to date; no problems were noted.

No items of noncompliance or deviations were identified.

12. In-Plant Radiation Protection Program

a. Surveys

The inspectors selectively reviewed radiation, contamination and airborne radioactivity surveys conducted to meet surveillance requirements and determine radiation work permit requirements. During the refueling outage, contamination surveys are conducted daily on all levels of the containment building where work is in progress. Areas with removable contamination in excess of 500 dpm are roped off and decontaminated as quickly as time and work load permit. No problems were noted.

[2] Inspection Report No. 50-305/80-26.

b. Posting and Access Controls

The inspectors reviewed radiation, high radiation, and contamination area postings within the plant controlled area. In addition to the postings required by 10 CFR 20.203, the licensee posts dose rate and contamination levels at the entrance to the controlled area. No problems were noted.

c. Procedural Adherence

Based on observations by the inspectors during tours of the reactor containment and auxiliary building, it appears outage activities were accomplished by persons closely adhering to radiation protection procedures, RWP's and special instructions. Sufficient radiation safety coverage was provided.

13. Solid Radwaste

ALARA engineering is continuing in this area. The licensee has issued a Design Change Request (DCR) for additional shielding of the radwaste operator in the radioactive waste solidification area. The DCR was initiated on October 28, 1982. According to the licensee, the engineering design has been completed and construction should begin after the current refueling outage. In addition, formalized radwaste procedures have been written and an Administrative Control Directive (ACD-6.2) which references those procedures is in the plant approval process.

The inspectors reviewed these draft procedures which cover: Filter media solidification; radwaste storage; radwaste shipment flow sheet; radwaste shipment paper preparation; and precast barrel filling. These handwritten draft procedures appeared to answer the inspector's concerns regarding the packaging, shipping and auditing of Type B shipments noted in Inspection Report No. 50-305/82-20(DETP). However, since they are draft procedures and require approval, they will be reviewed again during a future inspection. (50-305/83-06-01)

The inspectors also reviewed the following revised radwaste procedures in draft form:

N RWS - 32 Rev G	Solidwaste Disposal Systems
N RWS - 32 CL-1	Waste Solidification Processing and Drumming Checklist
N RWS - 32 CL-2	Dry Waste Hydraulic Baling Prestart Checklist
N RWS - 32 CL-3	Filter Room Hoist Checklist

According to the Plant Health Physicist, the following additional ALARA actions have been taken to reduce exposures associated with radwaste operations.

a. A DCR has been written for use of a lift platform which allows the forklift truck to be lifted to trailer height permitting faster loading of waste barrels.

b. Radwaste system valves, instruments, and motors are now on preventive maintenance schedules, which should lessen operational break downs.

c. Radwaste operators have been instructed in methods of reducing exposures.

14. Liquid Waste

The inspectors selectively reviewed records of liquids released from liquid waste tanks to Lake Michigan from October 1982 to date. Before discharge, the tank is isolated and the contents recirculated to promote mixing. During recirculation, grab samples are collected and counted for Beta/Gamma and tritium. All isotopes and quantities are identified and recorded. Discharge rate and dilution are based on the quantities of the most restrictive isotopes. No problems were noted with the methods of establishing permissible release rates or quantification of released activity. Releases were within regulatory limits.

During the Performance Appraisal Inspection 50-305/81-27 minor revisions to Surveillance Procedure SP-32A-136 (Liquid Waste Discharge) were recommended concerning the posting of calculated discharge values on the effluent discharge log and onto the semiannual effluent reports. Procedure SP-32A-136, Revision D has been reviewed by the licensee and the suggested revisions have been made.

The inspectors reviewed the licensee's method and records of calibration and set point establishment for the Liquid Waste Discharge Monitor (R18). Monitor R18 is calibrated quarterly using three source strengths and two isotopes. The operator makes a source check, a circuit check, and an alarm test on R18 prior to release.

No items of noncompliance or deviations were identified.

15. Transportation Activities

The inspectors reviewed records of shipments made from November 1982 to date. Two shipments of LSA radioactive waste were made during that period. Shipment 0383-077-A, on March 8, 1983, consisted of twenty-six 55-gallon SPEC 17H drums containing approximately 2 curies total. All packages contained Type A quantities. The inspectors observed the loading and shipping of Shipment 0483-082-L on April 19, 1983. Twenty-six 55-gallon SPEC 17H drums of cement solidified waste and compacted trash were moved from their shielded storage area to the radwaste loading dock. The vehicle (shielded van) was loaded using check list procedures. Drums with the highest radiation readings were placed in the center of the vehicle. Following loading, the vehicle and load were inspected and surveyed in accordance with procedure. A hot spot of 180 mR/hr was detected under the trailer. Since that reading approached the 200 mR/hr

limit, the hot spot was verified using two other radiation detection instruments. The vehicle was placarded and required signatures were obtained. No problems were noted.

The licensee has changed the calculational method for determining activity concentration in liquid filter packages. High activity filters (let down) are placed in a tared precast drum and weighed. The increased weight is due to the filters. The precast drum is then capped (filled) with concrete and weighed again for a shipping weight. Activity concentration is determined from filter weight and filter activity. The handwritten procedure mentioned in Paragraph 13 will formalize this method.

16. Exit Interview

The inspectors met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on April 22, 1983. The inspectors summarized the scope and findings of the inspection. In response to certain items discussed by the inspectors, the licensee:

a. Discussed plans for the retraining of the radiation protection technicians. (Section 7)

b. Stated that the planning and scheduling programs for refueling outage activities would be strengthened. (Section 9)

c. Acknowledged the inspectors comments concerning the ALARA program. (Section 9)