U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-305/82-14(DETP)

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

Inspection Conducted: July 12-15, 1982

Inspectors: D. C. Miller/for R. A. Paul — 8/10/82
W. B. Grant — 8/10/82

Approved By: D. C. Miller/for L. R. Greger, Chief — 8/10/82
Facilities Radiation
Protection Section

Inspection Summary

Inspection on July 12-15, 1982 (Report No. 50-305/82-14(DETP))
Areas Inspected: Routine, unannounced inspection of status of post-TMI requirements and review of previous findings. The inspection involved 72 inspector-hours onsite by two NRC inspectors.
Results: Three deviations from commitments were identified concerning the development of sampling and analysis for post-accident releases of airborne radioactive iodines and particulates (Section 6.b), lack of operable containment high range radiation monitors (Section 6.c), and lack of containment air sampling and analysis procedures (Section 5).

DETAILS

1. Persons Contacted

*R. Lange, Maintenance Supervisor
*M. Marchi, Technical Supervisor
*M. Reinhart, Health Physics Supervisor
*D. Nalepka, Nuclear Engineer
*R. Pulec, Nuclear Engineer
*W. Winnowski, Supervisor, Chemistry
*D. Padula, Plant Health Physicist
*K. Weinhauer, Nuclear Services Supervisor
*C. Long, Assistant Radiation Protection Supervisor
*R. Draheim, Nuclear Design Change Supervisor

*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 July 12, 1982, was conducted to review the status of post-TMI requirements and the status of previous inspection findings. Several tours of the plant were made. General housekeeping was excellent.

3. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance Item (305/77-11-01): Concerning Type A packages containing greater than Type A quantities of materials identified as Group II Mixed Fission Products. The licensee has developed procedures (RC-HP 38A and 138) to cover shipments of Type A packages. In addition, the inspectors reviewed the analytical results of Transport Groups I and II materials.

(Closed) Open Item (305/80-26-01): Station Health Physics staff was lacking in technical depth. The licensee has appointed an assistant health physics supervisor and hired a university trained health physicist to provide technical support at the station.

(Closed) Open Item (305/80-26-05): Solid radwaste equipment breakdowns caused increased radiation exposure to radwaste operators. The licensee has initiated a design change review for the installation of a shadow shield and other equipment for the waste drum area to reduce radiation exposures.

(Closed) Open Item (305/81-11-02): Evaluation of permanent shielding for the letdown demineralizer prefilter and a shadow shield for the waste drum handling area. The licensee has initiated a design change

review for the installed shielding in the waste drum area. A review of letdown demineralizer shielding indicated that it was not feasible to install on a cost per person-rem basis.

(Open) Open Item (305/81-11-04): Development of whole body counting procedures which include correlation between whole body count results and MPC-hours. The licensee has initiated, but has not completed, the procedures.

(Closed) Open Item (305/81-11-05): Need for ALARA engineering expertise in the radwaste area. One of the assigned functions of the recently appointed plant health physicist is to accomplish ALARA engineering in the radwaste area.

4. Training

General employee training was reviewed. The training is presented in a series of video tapes made at the site by the Training Department. Minor discrepancies were noted in the portions of the tapes describing the use of radiation work permits, anticontamination clothing, and step-off-pads. This matter was discussed at the exit interview.

5. TMI Action Plan Task II.B.3 Post-Accident Sampling

The licensee has installed a high range sample system (HRSS), supplied by Sentry Systems, in the high radiation sample room on the 642' level of the auxiliary building. Reactor coolant can be remotely sampled and diluted by factors of 10E3 and 10E6 to permit analysis. This portion of the system has been tested and is operational.

Analysis of high activity containment atmosphere samples requires either inline analysis capability or removal of the sample from the shielded container. Inline gamma spectroscopy equipment is on order and delivery is expected in September 1982.

Interim procedures and training for removal of containment air samples and analysis on laboratory spectroscopy equipment were not developed. This portion of the system therefore is not considered operational.

Procedure EP.RET-3C, "Post-Accident Operation of the High Radiation Sampling System," which addresses reactor coolant and containment air sampling, was reviewed and found to be complete. Six chemical technologists responsible for sampling have been trained in the procedure. At the request of the inspector, two technologists acceptably demonstrated their knowledge of the procedure and ability to collect and analyze reactor coolant samples.

With the exception of clarification item 2.a (ability to quantify certain radionuclides in the containment atmosphere within three hours), the licensee appears to have met the requirements of TMI Action Plan Task II.B.3. The licensee's failure to develop procedures for containment atmosphere sample transfer and analysis or install iodine

spectroscopy equipment is considered a deviation from the commitments made in their April 23, 1982 letter to NRR. In a letter from NRR dated June 30, 1982, the licensee was requested to submit information to enable NRR to conduct a postimplementation review of this item. These matters were discussed at the exit interview.

6. TMI Action Plan Items II.F.1.1.B.2, II.F.1.2.B.2 and II.F.1.3.B.2

a. Noble Gas Effluent Monitor (II.F.1.1.B.2)

The licensee has installed two SPING-4 extended range noble gas effluent offline monitors. One SPING-4 samples the containment/shield building vent and the other samples the auxiliary building vent. Each monitor contains three noble gas channels. There are also two stack gas monitors with extended range noble gas channels for use as backups to the SPING-4s. The monitors readout in the Radiation Safety Office and the Radioanalytical Facility near the Technical Support Center.

The noble gas monitors were calibrated using Xe-133 gas in January 1982. The results of the calibration of the low and intermediate level detectors appear acceptable. However, the calibration of the high level detector indicated only 2.5 cpm above background, calculated to be the equivalent of 2E-2 mCi/cc/cpm for both SPING-4 units. The statistical uncertainty associated with the high level detector calibration appears too great to be considered acceptable. This matter was discussed at the exit interview.

Clarification Item 4(b) requires the use of procedures or calculational methods for converting instrument readings to release rate per unit time based on, among others, radionuclide spectrum distribution. The licensee assumed the use of energy compensated Geiger-Mueller (G-M) tubes in the intermediate and high range detectors would allow them to meet this requirement. However, the licensee did not possess documentation to establish that the energy compensated G-M tubes could meet this requirement over the expected energy range. This matter was discussed at the exit interview.

b. Sampling and Analysis of Plant Effluents (II.F.1.2.B.2)

The sampling system discussed in Section 6.a is also used to collect particulate and iodine samples for isotopic analysis.

Clarification Item 2 requires that radiation exposures not exceed 5 rem whole body and 75 rem extremities during sample removal, replacement, and transport during the duration of the accident. In a letter to NRR dated April 23, 1982, the licensee stated they were having operational problems meeting these exposure requirements, and that procedures to address sample collection and analysis for accident conditions would be developed prior to July 1,

1982. At the time of the inspection, these procedures were not developed nor were persons trained in sample collection and analysis during accident conditions to ensure that exposure limits would not be exceeded. This is considered a deviation from the commitment stated in the licensee's April 23, 1982, letter concerning development of procedures prior to July 1, 1982.

Until the procedures are written and persons are trained in sample removal, replacement and transfer, the requirements of this item are not satisfied. This matter was discussed at the exit interview.

c. Containment High Range Radiation Monitor (II.F.1.3.B.2)

The licensee has installed two wide range containment radiation detectors inside containment. The detectors are gamma ionization chambers sealed in stainless steel housing. Each detector has two channels which provide a range of 1 R/hr to 1E8 R/hr.

Clarification item 1 states the two radiation monitor systems are to meet the requirements of Table II.F.1-3. The Special Calibration Section in Table II.F.1-3 requires that an in-place calibration of the detectors for at least one decade below 10 R/hr shall be performed by means of a calibrated radiation source. During a review of this item, the licensee established the monitors were electronically calibrated but had not been calibrated in place using a radioactive source. A source check was reportedly performed by placing a 1.5 to 2 curie Cesium-137 source next to the detectors. At this position, radiation levels would be at least 30 R/hr, however, no meter response from either detector was noted during the test.

The licensee apparently did not review the source check results to determine the reason for the lack of monitor response. After this matter was questioned by the inspectors, the licensee investigated and determined that the electrical connections at the containment penetration were incorrect rendering the detectors, and therefore the monitors, inoperable.

In a letter to the Division of Licensing (NRR) dated December 18, 1981, the licensee stated that with the exception of two outstanding items, they had completed installation of a system which met the requirements of this Task Item. Neither of the two outstanding items pertained to the calibration of the detectors. In a letter to NRR dated April 23, 1982, the licensee further acknowledged installation of the high range monitors. However, based on the inspection findings, it appears the high range monitors were not calibrated in accordance with the requirements of Table II.F.1-3 nor were they electrically operable. This is considered a deviation from the commitment stated in the licensee's December 18, 1981 and April 23, 1982 letters concerning installation of a system which met the requirements of this Task Item.

Task Items II.B.3; II.F.1.1.B.2; II.F.1.2.B.2; and II.F.1.3.B.2 are considered open pending the licensee's: (1) submittal of requested documentation and information to Region III for review; (2) calibration of high range noble gas and containment high range monitors; and (3) development of procedures and training for handling particulate and iodine samples.

7. Management Controls for TMI Task Action Items

During review of the TMI Action Plant Items, it was apparent that the licensee did not have adequate management controls to ensure completion of these items in accordance with the criteria specified in NUREG-0737 and their commitments to NUREG-0737. This is evidenced by the deviations from their commitments noted in this inspection report and the difficulty encountered locating licensee documentation to verify completion of the Task Items.

8. Exit Interview

The inspectors met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on July 15, 1982. The inspectors summarized the scope and findings of the inspection. In response to certain items discussed by the inspectors during this meeting, and subsequent phone calls between the inspectors and licensee representatives, the licensee:

a. Stated that additional information concerning TMI Action Plan Item II.B.3 would be furnished to NRR for review and that they are working toward meeting the requirements of clarification Item 2a. (Section 5)

b. Stated that information would be sent to Region III concerning the response characteristics of energy compensated G-M tubes. (Section 6.a)

c. Stated that procedures for the collection of samples during accident conditions would be developed by September 1, 1982. (Section 6.b)

d. Stated the high range detectors would be calibrated in accordance with Table 11.F.1-3 requirements of Task Item II.F.1.3.B.2. (Section 6.c)

e. Stated they would review the training tapes and make appropriate modifications. (Section 4)

f. Stated that the high range noble gas monitors will be recalibrated. (Section 6.a)