U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-358/80-02

Docket No. 50-358 License No. CPPR-88

Licensee: Cincinnati Gas and Electric Co.
139 East 4th Street
Cincinnati, OH 45201

Facility Name: Wm. H. Zimmer Nuclear Power Station

Inspection At: Zimmer Site, Moscow, OH

Inspection Conducted: January 21-25, 1980

M. C. Schumacher 2/15/80
Inspector: M. C. Schumacher

W. L. Fisher 2/19/80
Approved By: W. L. Fisher, Chief
Fuel Facility Projects and
Radiation Support Section

Inspection Summary

Inspection on January 21-25, 1980 (Report No. 50-358/80-02)
Areas Inspected: Routine, announced, preoperational inspection of radiation protection, including: organization, training, procedures, facilities, instruments and equipment, and respiratory protection; and radwaste system status of preop testing, examination of selected ventilation systems, and procedures. The inspection involved 44 inspector-hours on site by one NRC inspector.
Results: No items of noncompliance or deviations were identified in any of the areas inspected.

DETAILS

1. Persons Contected

J. Schott, Plant Superintendent
*P. King, Assistant Plant Superintendent
*D. Erickson, Radiation/Chemistry Supervisor
*M. Niswander, Health Physicist
G. Appel, Chemist
*J. Wald, Quality Engineer
R. Dance, Acting Training Supervisor
S. Martin, Test Coordinator
J. Gardner, System Engineer
F. Reck, Radiation/Chemistry Foreman
M. Offerdahl, Radiation Chemistry Foreman
*T. Daniels, NRC Resident Inspector

The inspector also contacted other licensee employees, including engineers, consultants, and radiation/chemistry technicians during the inspection.

*Denotes those present at the exit interview.

2. General

This inspection began at approximately 11:00 a.m. on January 21, 1980. Following a brief meeting with the plant superintendent, the inspector met with the Radiation/Chemistry Supervisor to outline his inspection plans and to arrange for review materials and personnel interviews. The inspection was largely devoted to review of general employee and radiation chemistry technician training, respiratory protection, radiation/chemistry procedures, and preoperational status of ventilation systems. Informal testing of radiation chemistry technician readiness for startup was begun during this inspection. The inspector also attended and reviewed the radiation protection orientation training course. Plant tours were made to observe laboratory facilities and to examine selected ventilation systems.

3. Radiation/Chemistry Organization

One senior technician transferred to become acting head of the training department, one technician transferred to quality assurance as an inspector, one junior technician resigned and two junior technicians were added for a total complement of sixteen (seven senior, seven technicians, two juniors).

4. Training

The inspector attended and reviewed the radiation protection portion of the ZPS-1 orientation course. It was a mixed media presentation of about five hours consisting of three video tapes, broken at frequent intervals to permit instructor-student interaction, and an examination at the end. Respiratory protection will be given in a separate course (in preparation).

The tapes, prepared at the station by a consultant, were generally well done. ALARA is appropriately stressed throughout the presentation. The third tape integrates the information presented in the first two by following a simulated maintenance job from initiation of the RWP, through prior surveillance by radiation protection, to job completion. A few discrepancies were noted in the tape and the training supervisor stated that these would be used to stimulate discussion during breaks in the tape. The inspector indicated that one area in particular needed more emphasis - a discussion of the procedure for gaining admission to controlled areas, which is described in Radiation Protection Procedure, RPP 1.012, "Access Control-Radiation Controlled Areas," and Station Administrative Directive, RP.SAD.02, "Radiation Work Permits."

Licensee records showed that 72 people, including 11 from security, have received this training. The training supervisor stated that this training would be given again to all station personnel after the entire ZPS-1 orientation packet, including security, quality assurance, and emergency response sections, has been completed, tentatively in the fall of 1980. He also indicated consideration of giving the Nuclear Power Fundamentals Course [1/] to store room and office personnel.

The ZPS-1 orientation course will also be used for annual refresher training. The inspector pointed out that the radiation protection portion of this course would be inappropriate for Radiation/Chemistry (R/C) Technicians. This matter was discussed at the exit interview.

The need for intensive training on the use of portable survey instruments for operators and others permitted to do self-monitoring was discussed separately with the training and Radiation Chemistry Supervisors, and at the exit interview. The inspector believes that training given to date, particularly for auxiliary operators, would not be enough to safely permit them to work in significant radiation fields or to function adequately during a radiation emergency. The R/C Supervisor stated that a lesson plan for operator self-monitoring training was being developed and would be given before startup. This matter will be reviewed during subsequent inspections.

1/ Region III Report No. 50-358/78-04.

Individual training folders reviewed for R/C Technicians indicated satisfactory progress in the formalized training program.

On-the-job training qualification records are used to certify performance of specific R/C procedures to the satisfaction of an individual in a higher grade classification who has witnessed the performance. The individual procedures are grouped as requirements for the various technician grades, and licensee representatives have previously stated that all technicians will meet their grade requirements by startup. 2/

Completed qualification sheets are reviewed by a foreman and by the chemist or radiation chemistry supervisor. Periodically the records are called in and reviewed for progress by the supervisor. The inspector briefly reviewed the record for one senior technician and indicated that a thorough review would occur during the next inspection.

Direct assessment of R/C Technician readiness for startup was begun during this inspection with a contrived problem involving analyzing an air sample to determine airborne exposure (MPC-hours) and to make respirator selection. Particulate and charcoal filters prepared by Region III were used and the problem was given separately to two technicians on successive shifts with instructions that a quick answer was needed. Lack of fluency in the several procedures used was apparent, and the results were not obtained quickly enough. Some conceptual difficulties were noted and resolved during the exercise, but the main difficulties probably owed to lack of practice with the procedures. The inspector stated that he regarded this as a preliminary exercise, typical of evaluations he planned to make before startup. Based on this evaluation alone, the department does not appear ready for startup.

Licensee representatives stated they plan to conduct such training themselves before startup.

5. Radiation/Chemistry Procedures

Approximately 90% of a projected 300 procedures had reached typed draft status at the time of this inspection.

Selected radiation protection (RPP) and chemistry (CRP) procedures were reviewed onsite and in the office before and after this inspection. No significant problems were noted in the following procedures:

2/ Ibid.

RPP 2.009	Rev. 02 (12/10/79)	"Issuing Personnel Dosimetry"
RPP 4.224	Rev. 00 (10/20/79)	"Operational Use of the Eberline Ping 2A Constant Air Monitors"
RPP 6.072	Rev. 01 (11/5/79)	"Storage and Use of Sealed and Unsealed Radioactive Exempt Sources"
RPP 7.160	Rev. 00 (10/20/79)	"Qualitative and Quantitative Respirator Facepiece Fitting"
RPP 7.161	Rev. 00 (10/9/79)	"NaCl Aerosol Test System"
CRP 3.007	Rev. 01 (12/10/79)	"Sample Counting Preparation"
CRP 3.009	Rev. 0 (3/30/79)	"Laboratory Statistics"

Problems noted by the inspector in his review of the following procedures were discussed with licensee representatives:

RPP 1.030	Rev. 01 (12/1/78)	"Receipt of Radioactive Material"

Survey acceptance criteria for packages on sole-use shipments are inconsistent with 49 CFR 173.393 requirements for closed vehicles.

RPP 1.211	Rev. 04 (12/10/79)	"Radiation Exposure Records and Reports"

The 10 CFR 19.13(e) requirement that estimated doses given to transients in lieu of special personnel monitoring results must be so identified is not mentioned in this procedure.

RPP 2.073	Rev. 01 (12/10/79)	"Calibration of Technical Associates Model PDR-1B Alarming Pocket Digital Dosimeter"

Procedure effectively calls for only a one point calibration of integrated dose.

RPP 3.210	Rev. 00 (12/6/78)	"Airborne Radioactivity Analysis"

Procedure does not correctly identify the condition for required respirator use (Section 5.1.6). Criteria for counting iodine samples are not given. Error in specifying unidentified MPC (Attachment 8.5).

RPP 7.101	Rev. 01 (3/14/79)	"Use of Respiratory Protective Equipment"

Neither 10 CFR 20.103 nor Regulatory Guide 8.15 is referenced. The quality assurance program for breathing air is not referenced.

RPP 7.110	Rev. 00 (1/18/79)	"Collecting, Cleaning, and Maintaining Respiratory Equipment"

Procedure does not provide for screening surveys of respirators before cleaning, periodic inspection of SCBA's, or inspection of SCBA regulator diaphragms as recommended in IE Circular 79-09.

RPP 7.125	Rev. 00 (1/17/79)	"Inspection and Use of the Scottoramic Facepiece for Air Purifying and Air Supplying Respirators"

Procedure does not call for inspection of exhalation valve before use.

Instruction for removing the facepiece after use is at variance with that illustrated in the training course with respect to the glove removal sequence.

RPP 7.135	Rev. 00 (1/18/79)	"Scott Presur-Pak II SCBA"

Exhalation valve check and glove removal sequence as in RPP 7.125.

CRP 3.165	Rev. 00 (12/3/79)	"Sr89-90 Radiochemical Separation"

Error noted in formula in Section 5.4.3.

6. Facilities

The licensee is reviewing of possible locations for a post-accident sampling station. One possibility being considered is upgrading one of the two existing hot laboratory sinks. This laboratory is immediately across the hall from the counting room, which contains the GeLi system and other laboratory counters. Licensee representatives have indicated that adequate shielding could probably be provided to maintain a habitable environment for both personnel and counting equipment. Of more concern, is the effect of loss

of the single fan powering the exhaust (Paragraph 9) which could possibly jeopardize counting room operations under accident conditions. The need for evaluating this possibility was discussed at the exit interview.

7. Instruments and Equipment

The status of the gamma spectrometry system and software for its associated computer was reviewed. Programs for sample analysis, generation of release permits, and radioisotope source inventory are now usable. They appear to be soundly based. Further requirements to enhance their usefulness to R/C Technicians were discussed with licensee representatives.

As previously reported [3/], the station's inventory of survey instruments meets FSAR requirements. However, the number (3) of high range (10^3 R/hr) instruments appears too small to reliably support even normal operations. Licensee representatives stated that additional high range instruments will be acquired as a result of TMI Lessons Learned.

8. Respiratory Protection Program

The station's respiratory protection program is well along in its development. However, evaluation of the program cannot be completed until the training program and procedures covering bioassay are completed and reviewed. The inspector did review licensee procedures directly related to the program and noted that the following topics were either not covered or were inadequately covered:

a. station philosophy, policy, and guidance for the taking of air samples as it relates to respiratory protection;
b. respirator selection guidance for R/C Technicians;
c. control, issuance, return and storage;
d. contamination surveys of respirators after use and before cleaning;
e. respirator decontamination;
f. frequency of periodic SCBA inspections; and
g. assurance of quality of breathing air purchased.

With respect to item g., the inspector was informed that the station's service air compressor was designed for breathing air and that quality tests would be performed by the station chemist. This matter will be reviewed further in subsequent inspections.

3/ Region III Report No. 50-358/78-24

9. Preoperational Testing

Status of preoperational testing for liquid, gaseous, and radwaste systems, for process monitoring systems, and for ventilation systems, was reviewed with the licensee's test coordinator and other licensee personnel. The inspector also examined the installation of selected ventilation systems while accompanied by a contractor system engineer and verified routing of exhaust piping for the laboratory system and reactor, turbine, and radwaste buildings.

No significant preoperational testing of radwaste or process monitoring systems had been completed as of this inspection. Flushing of liquid systems before turnover was nearly completed. Test procedures for the off-gas pretreatment monitor (PR-2) and the main steam line monitors (PR-3) had been approved by the station but were not reviewed by the inspector. The procedure (PR-1) for the main plant stack monitoring system was delayed pending review and upgrading based on TMI experience. Licensee representatives also stated that a standby gas treatment system exhaust monitoring system is being proposed. 4/

Testing of the auxiliary building ventilation (Procedure VA-1, 8/2/78), including air integrated system test had been completed. 5/ However, the test package is being held for another integrated system test after control of the area is relinquished by the construction department. The inspector observed that obvious penetrations to the charcoal bedroom had been plugged; he also observed a plugged floor drain in the room and questioned its effect on an integrated systems test. The systems engineer stated that the drain had been cleared for the previous test and would be again for the final test. The need for this was discussed at the exit interview.

Testing of the ventilation system for the R/C laboratory counting room complex (VL-1, 8/2/78), was estimated at 60% complete. This is a test of the system exclusive of the filters. Final acceptance of the system will require satisfactory testing of the filter system (VL-02, 9/5/78) which has not been started. The latter procedure tests only the filter efficiency at a specified fan flow, but provides no verification of hood face flow or check on system balance within the laboratory complex. The advisability of making such a check was discussed with the system engineer and at the exit interview.

The laboratory ventilation system exhausts via hoods in the hot and cold laboratories through a HEPA filter. Exhaust is powered by a single fan except for some recirculation from the office and counting room to the supply fan. Loss of the exhaust fan or a significant imbalance in the ventilation system could adversely affect counting room operations in an accident and the problem could be further

4/ Ibid.
5/ Region III Report No. 50-358/79-01.

exacerbated if one of the existing hot laboratory hoods is designated as a post accident sampling station (Paragraph 6). Loss of exhaust fan also may present problems of back flow from the reactor building vent if the laboratory exhaust fan isolation dampers fail, particularly if the laboratory air supply is also not operating. This concern was discussed by telephone with the licensee's test coordinator and with the station superintendent on February 4, 1980. The inspector's examination also revealed a deteriorated fabric coupling on the high pressure side of the laboratory exhaust fan. The need for good operational surveillance by cognizant station personnel to detect such problems was emphasized at the exit interview.

Testing of the machine shop ventilation system (VJ-1, 9/21/78) was estimated at 35% complete. Testing of the integrated system, including HEPA efficiency had not been started. Installed components (fan, ducts, filter housing, etc.) were examined and discharge routing to a serfice building roof vent was verified.

Licensee representatives indicated that initial tests of filter efficiency would be done by a yet unselected ventilation contractor.

10. Exit Interview

The inspection results were discussed with Mr. P. King and others (Paragraph 1) at the close of the inspection and by telephone on January 29 and 30 and February 4, 1980.

Licensee representatives stated significant training in instrument use will be given to self monitors before fuel loading and that refresher training for R/C Technicians would go beyond the normal radiation protection refresher for other plant personnel. They also acknowledged the inspector's opinion, based on an exercise conducted with technicians, that the R/C Department was not yet ready for startup and stated that more such exercises will be conducted by the department in order to ensure readiness. (Paragraph 4)

The inspector described the current supply of high range portable survey instruments as probably inadequate for even normal operations. Licensee representatives stated that this topic is under review as a result of TMI Lessons Learned. (Paragraph 7)

Inspector questions related to the laboratory ventilation system and the location of the post-accident sampling hood were discussed here and by telephone on February 4, 1980. Licensee representatives stated these concerns would be reviewed. (Paragraphs 6 and 9)

The inspector's comments on the status of the respiratory protection program were acknowledged. Licensee representatives stated that the station already recognized the need for ensuring respirable air quality on the service air system and would also extend quality assurance to purchased air. (Paragraph 8)