

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

Region I

Report No. 50-244/79-01

Docket No. 50-244

License No. DPR-18 Priority -- Category C

Licensee: Rochester Gas and Electric Company

89 East Avenue

Rochester, New York

Facility Name: R. E. Ginna Nuclear Power Plant

Inspection at: Ontario, New York

Inspection conducted: January 9-12, 1979

Inspectors: G. P. Yuhas
G. P. Yuhas, Radiation Specialist

1-31-79
date signed

date signed

date signed

Approved by: H. W. Crocker
H. W. Crocker, Acting Chief, Radiation
Support Section, FF & MS Branch

2/2/79
date signed

Inspection Summary:

Inspection on January 9-12, 1979 (Report No. 50-244/79-01)

Areas Inspected: Routine, unannounced inspection by a regional based inspector of the radiation protection program during operations including: exposure controls; instruments and equipment; surveys; notifications and reports; and followup on previous inspection findings. Upon arrival at 6:00 a.m., January 9, 1979, several areas were examined to review implementation of radiation safety practices and procedures. This inspection involved 36 inspector-hours on site by one NRC regional based inspector.

Results: Of the four areas inspected, no items of noncompliance were identified in two areas; two apparent items of noncompliance were identified in one area (Infraction - failure to perform a survey as required by 10 CFR 20.201(b) as necessary to comply with 10 CFR 20.103, Infraction - failure to perform a survey as required by 10 CFR 20.201(b) as necessary to comply with 10 CFR 20.101, Paragraph 5); and one apparent item of noncompliance was identified in another area, (Deficiency - failure to furnish a report of exposure to radiation and radioactive materials as required by 10 CFR 20.409, Paragraph 6).

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DETAILS

1. Persons Contacted

- *L. S. Lang, Superintendent of Nuclear Production
- *B. A. Snow, Station Superintendent
- *J. C. Noon, Assistant Superintendent
- *E. L. DeMerritt, Supervisor, Chemistry and Health Physics
- *B. R. Quinn, Health Physicist
- *D. Filkins, Senior Chemist
- *R. Watts, Technical Assistant, Health Physics

*denotes those present at the exit interview on January 12, 1979.

2. Licensee Action on Previous Inspection Findings

(Closed) Previously Identified Item (50-244/77-22-02): The licensee has taken those actions specified in IE Circular No. 76-03, "Radiation Exposures in Reactor Cavities." The inspector reviewed procedure RF-14.1.1, Revision 3, "Thimble Retraction Procedure for Plant Refueling." The inspector discussed the need for continued vigilance in this area of exposure control with licensee representatives.

(Closed) Noncompliance (50-244/77-02-02): Failure to barricade a high radiation area near the reactor coolant filter handling area in the Auxiliary Building. The inspector toured the Auxiliary Building on January 11, 1979 making independent measurements to verify compliance with the requirements of Technical Specification 6.13 "High Radiation Area." All high radiation areas were properly posted and access was being controlled in accordance with the above requirement.

(Closed) Noncompliance (50-244/78-03-03): Failure to adhere to procedure HP-6.2 "Posting of Contaminated and Airborne Area." During tours of the Auxiliary Building, the inspector verified that all areas with smearable contamination in excess of 10,000 dpm/100 cm² were posted in accordance with procedural requirements.

Failure to adhere to procedure A-1.1, "Locked Radiation Areas." On January 9, 1979, the inspector audited the high radiation area key control program against procedural requirements. All keys were present or accounted for and the log book was being properly maintained.

(Closed) Noncompliance (50-244/78-03-12): Failure to post a radiation area located near the Upper Radwaste Storage Area in accordance with the requirements of 10 CFR 20.203(b). During tours of the facility, the inspector verified that the Upper Radwaste Storage Area was locked, properly posted, and that the dose rate at the perimeter fence was less than 2.5 mrem/hr. Radiation Work Permit Number 15 has been prepared to insure a resurvey of the area after each movement of material.

(Closed) Noncompliance (50-244/77-06-01): Failure to perform beta radiation surveys in the steam generators. Procedure M-43.2, Revision 6, "Initial Radiological Survey" has been developed and implemented to insure adequate surveys are performed when the primary side of the steam generators are opened.

3. Exposure Control

- a. The inspector reviewed the exposure records of 20 individuals selected at random from the licensee's exposure control records.

These records were reviewed against the following requirements:

<u>AREA</u>	<u>Regulatory Requirement</u>
Dosimetry	10 CFR 20.202, HP-1.1, "Issuing Personnel Dosimeters"
External Exposure	10 CFR 20.101, HP-1.2, "External Exposure Limits"
Internal Exposure	10 CFR 20.103
Exposure Records	10 CFR 20.401, HP-1.3, "External Exposure Records," HP-3.2, "In-Plant Reporting of Current Exposure"

- b. The inspector reviewed the licensee's method of neutron monitoring and dose accountability. The licensee has required the use of NTA film when the potential for neutron dose exists. In addition, the licensee performs neutron surveys with a calibrated Eberline PNR-4 neutron dose rate instrument. These survey results combined with staytime information are used to calculate the potential neutron exposure. The dose calculated from PNR-4 data is then recorded in the individuals' exposure record. Procedure HP-1.6, "Neutron Exposure," provides the details of this method.

In 1977, the licensee representative estimates about 70 individuals were monitored for neutron exposure. In 1978, about 50 individuals were monitored for neutron exposure. About five man-rem of neutron exposure are received per year.

A review of neutron dose records for November 1978 indicates 23 individuals were monitored. The total neutron exposure received was 2.1 rem. One task performed in the containment at power, (SWP 1657-4) resulted in 1182 mrem of calculated neutron dose. In the performance of this task three individuals received a neutron dose of slightly greater than 300 mrem in the fourth calendar quarter. The largest cumulative neutron dose for an individual was 340 mrem.

The inspector reviewed the guidance of Regulatory Guide 8.14, "Personnel Neutron Dosimeters," with the licensee representatives. These representatives stated that there is an active program to define the neutron energy spectrum present in the containment at power. This information will be used to select a neutron dosimeter that meets the performance requirements specified in the regulatory guide.

4. Instruments and Equipment

The inspector reviewed the availability and calibration of the licensee's radiation survey instruments. The instruments listed below were selected from those in use, or available for use. The operability and response to known intensities of radiation was demonstrated by the licensee representative for each instrument.

<u>Instrument</u>	<u>Serial Number</u>
Eberline PIC6A	1438
Eberline PIC6A	1611
Eberline PIC6A	1612
Jordan Rad Gun	2234
Jordan Rad Gun	2282
Eberline RO-1	169
Eberline E500B	698
Eberline PAC 4S	2355
Teletector	48534
Xtex	1

All the above instruments were properly labeled indicating their calibration date. All responded acceptably to a known source of radiation except the Jordan Rad Guns. These over responded to the known intensity of radiation and were removed from service by the licensee representative.

The inspector reviewed calibration data for several gamma and one neutron survey instruments.

The Final Safety Analysis Report (FSAR) states in Section 11, "Waste Disposal and Radiation Protection System," that, "Survey instruments are calibrated quarterly."

The record review indicates that gamma survey instruments are being calibrated semi-annually and neutron survey instruments are calibrated annually.

Procedure HP-7.1, "Calibration of Gamma Survey Instruments - Low Range" and HP-7.1 "Calibration of Gamma Survey Instruments - High Range" both state, "Calibration frequency to be every six months, or the instrument must be taken out of service." Procedure HP-7.4, "Calibration of Neutron Survey Instruments" states, "Calibration frequency to be annual or the instrument will be tagged out of service."

A review of the calibration history for the Teletector gamma survey instruments indicates these instruments were tagged out due to a malfunction on average of three times per year. The instruments required recalibration at a frequency of somewhat less than six months. Other instruments such as the PNR-4 neutron survey meter have had no indications of malfunction or deterioration in calibration from year to year.

Radiation survey instruments are an integral part of the radiation protection program. While some survey instruments are durable and maintain calibration, others are fragile and require more frequent calibrations. The inspector discussed this matter with licensee representatives. The durability of other radiation survey instruments will be reviewed in a subsequent inspection. (50-244/79-01-01).

In reviewing the calibration and maintenance history for survey instrumentation it was noted that the instrument malfunction tags were not being completed according to procedure HP-7.6, "Tagging of Instruments Requiring Calibration or Maintenance." Of 40 tags reviewed 7 had a signature and date indicated when the instrument was returned to service. This same finding has been made by licensee Audit No. 78-43 performed December 5-6, 1978. The licensee has taken appropriate action to insure this procedure is followed. The inspector did not observe any tags improperly completed after December 12, 1978.

A review of records associated with the laboratory counting equipment indicates for the December 1978, the requirements specified in procedure HP-10.1, "Quality Control of Counting Systems" have been met.

Ten self reading pocket dosimeters were selected from those in use at the entrance to the controlled area. This selection included five 0-200 mr and five 0-500 mr dosimeters. In addition, five 0-1R and three 0-10R dosimeters were selected from those intended for use during the upcoming outage. Each dosimeter was inspected for physical damage and the records of radiation response reviewed. Procedure HP-7.5, "Pocket Dosimeter/Accuracy and Leak Test" requires each dosimeter be tested every six months and that test data be maintained on the "Pocket Dosimeter Test Record." This record was not available for the three 0-10R dosimeters. The licensee representative stated the record had been completed but could not be located and that the 0-10R dosimeters had not been used. The licensee representative stated the 0-10R dosimeters will be retested prior to use.

The licensee uses a vendor supplied whole body counter. This equipment is operated by the licensee's staff in accordance with procedure HP-2.2, "Whole Body Count Operation." A review of reports supplied by the vendor indicates adequate quality control and calibration of this equipment.

During tours of the facility the inspector noted that there appears to be adequate supplies of protective clothing and other materials necessary for implementation of the radiation protection program.

No item of noncompliance was identified in this area.

5. Surveys

- a. Licensee sealed radioactive sources must be leak tested every six months, inventoried yearly, and records maintained, as required by Technical Specifications and procedure HP-8.4, "Radioactive Source Inventory." Records indicate the inventory has been performed and all sealed sources were leak tested as required during 1978.
- b. A review of 1978 survey records indicates that whole body dose rate surveys are being performed as required in procedure HP-5.1, "Area Radiation Surveys." The inspector and a licensee representative toured the controlled area perimeter making independent measurements to verify previous survey results.

On September 15, 1978, a complete neutron survey was performed outside the containment with the reactor at full power. The maximum contact neutron dose rate as measured with a PNR-4 was located near the equipment hatch. This contact reading of 15 mrem/hr produced a maximum whole body dose of 1.5 mrem/hr.

- c. 10 CFR 20.201(b), "Surveys," requires that such surveys be conducted as may be necessary to comply with the regulations contained in each section of Part 20. A "survey," as defined in Paragraph 20.201(a), means "an evaluation of the radiation hazards incident to production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive materials present."

On April 3, 1978, Special Work Permit (SWP) No. 383 was initiated for contractor supplied individuals to "clean and lubricate Incore Thimble Tubes." This task performed according to procedure M-52.3, "Incore Thimble Cleaning" involved flushing the tube with demineralized water, removal of the water by air pressure, vacuum-drying of the thimble bore, and lubrication of the entire thimble bore length.

The procedure required a SWP and observation of normal health physics precautions. SWP No. 383 did not require measurement of the airborne radioactive materials present or respiratory protection for the workers. Individuals worked for about five hours under this SWP. On April 4, 1978 SWP 413 was prepared for continuation of this job. No air sample or respiratory protection was required. Individuals worked for about 13 hours under this SWP. One individual was sprayed with fluid from the thimble cleaning operation. He attempted to decontaminate himself prior to informing the health physics staff. He had already washed his moustache several times before the health physics collected a nasal smear. This smear indicated 1.9×10^{-4} uCi of gross activity.

SWP 444 was issued at 7:00 a.m. April 5, 1978 to complete the thimble cleaning and lubrication job. This SWP did not require a measurement of the concentration of airborne radioactive material present or respiratory protection devices for the workers. When the workers completed the cleaning and lubrication of the thimble tubes, they decontaminated the seal table using acetone to remove the residual contamination caused in the cleaning operation.

10 CFR 20.103(a)(3), "Exposure of individuals to concentrations of radioactive materials in air in restricted areas," requires that the licensee use suitable measurements of concentrations of radioactive materials in air for detecting and evaluating airborne radioactivity in restricted areas.

According to the workers interviewed, discussions with the health physics staff, and from a review of records provided by the licensee, no contamination survey of the seal table was made prior to initiation of the decontamination, in addition, no measurement of the concentration of radioactive material present in the workers breathing zone was made during the acetone decontamination.

The inspector discussed seal table decontamination with the contract workers involved. These individuals indicated that the use of acetone for decontamination in this process had been known to result in concentrations of radioactive material in air.

Failure to perform measurements of the concentration of radioactive materials in air represents an item of noncompliance with 10 CFR 20.103(a)(3) (50-244/79-01-02).

After completing the seal table decontamination, the workers left the controlled area. One individual (A) stated that he alarmed the frisker when surveying his face and hair. The health physics staff had the individual shower with soap and water. A survey record indicates no contamination in excess of 100 counts per minute as measured with a "end window gm" after this shower.

Three workers were given initial whole body counts prior to start of work, and the completion of work on April 5, 1978. This information is presented below:

WHOLE BODY COUNT DATA

Individual A

Initial Count

Date 4/2/78 At 1630

POTASSIUM GRAMS = 96.167 + OR - 37.852 AT 2-SIGMA, G K/KG = 1.325
 COBALT 60, NCI = 49.607 + OR - 2.891 AT 2-SIGMA, % MPBB = 4.510
 COBALT 58, NCI = 75.976 + OR - 3.431 AT 2-SIGMA, % MPBB = 2.620
 CESIUM 137, NCI = MASKED BY OTHER RADIONUCLIDES

First Count After Work

4/5/78 At 1130 (7.80 MIN. COUNT)

POTASSIUM, GRAMS = MASKED BY COBALT 60
 COBALT 60, NCI = 992.361 + OR - 10.385 AT 2-SIGMA, % MPBB = 90.215
 COBALT 58, NCI = 798.506 + OR - 10.802 AT 2-SIGMA, % MPBB = 27.535
 CESIUM 137, NCI = MASKED BY OTHER RADIONUCLIDES
 CHROMIUM 51, NCI = 2955.458 + OR - 101.789 AT 2-SIGMA, % MPBB = 4.926

Recount Prior To Leaving Site

4/5/78 At 1300 (7.80 MIN. COUNT)

POTASSIUM, GRAMS = MASKED BY COBALT 60
 COBALT 60, NCI = 821.971 + OR - 9.483 AT 2-SIGMA, % MPBB = 74.725
 COBALT 58, NCI = 639.071 + OR - 9.752 AT 2-SIGMA, % MPBB = 22.037
 CESIUM 137, NCI = MASKED BY OTHER RADIONUCLIDES
 CHROMIUM 51, NCI = 2681.344 + OR - 88.920 AT 2-SIGMA, % MPBB = 4.469

Individual B

Initial Count 4/2/78 At 1700 (7.80 MIN. COUNT)

POTASSIUM GRAMS = 161.389 + OR - 38.015 AT 2-SIGMA, G K/KG = 1.779
 COBALT 60, NCI = 33.347 + OR - 2.648 AT 2-SIGMA, % MPBB = 3.032
 COBALT 58, NCI = 53.972 + OR - 3.120 AT 2-SIGMA, % MPBB = 1.861
 CESIUM 137, NCI = 6.681 + OR - 3.384 AT 2-SIGMA, % MPBB = 0.022

Count After Work 4/5/78 AT 1411 (7.82 MIN. COUNT)

POTASSIUM, GRAMS = MASKED BY COBALT 60
 COBALT 60 NCI = 259.943 + OR - 5.692 AT 2-SIGMA, % MPBB = 23.631
 COBALT 58, NCI = 236.115 + OR - 6.068 AT 2-SIGMA, % MPBB = 8.142
 CESIUM 137, NCI = MASKED BY OTHER RADIONUCLIDES
 CHROMIUM 51, NCI = 981.348 + OR - 55.754 AT 2-SIGMA, % MPBB = 1.636

Individual C

Initial Count 4/2/78 At 1645 (7.82 MIN. COUNT)

POTASSIUM, GRAMS = 169.635 + OR - 34.088 AT 2-SIGMA, G K/KG = 1.870
 CESIUM 137, NCI = 3.328 + OR - 2.311 AT 2-SIGMA, % MPBB = 0.011

Count After Work 4/5/78 At 1206 (7.82 MIN. COUNT)

POTASSIUM, GRAMS = MASKED BY COBALT 60
 COBALT 60, NCI = 300.675 + OR - 6.023 AT 2-SIGMA, % MPBB = 27.334
 COBALT 58, NCI = 257.880 + OR - 6.350 AT 2-SIGMA, % MPBB = 8.892
 CESIUM 137, NCI = MASKED BY OTHER RADIONUCLIDES
 CHROMIUM 51, NCI = 1051.081 + OR - 60.802 AT 2-SIGMA, % MPBB = 1.752

The licensee representative stated that the radioactivity measured by the whole body counts on April 5, 1978 was due to external contamination. Survey records do not indicate the location or distribution of this radioactive material on the workers body.

Failure to conduct an evaluation of skin dose resulting from the radioactive material, assumed by the licensee to be external contamination, on the body of workers as necessary to comply with the regulations contained in 10 CFR 20.101, represents an item of noncompliance with 10 CFR 20.201(b) (50-244/79-01-03).

Individuals A and B were given whole body counts on April 21, 1978 on their arrival at a different licensed facility. The results of these whole body counts are noted below.

WHOLE BODY COUNT DATA

Individual A

Date 4/21/78 At 1128 (7.90 MIN COUNT)

POTASSIUM, GRAMS = 159.268 + OR - 38.084 AT 2-SIGMA, G K/KG = 2.195
 COBALT 60, NCI = 13.525 + OR - 2.303 AT 2-SIGMA, % MPBB = 1.230
 COBALT 58, NCI = 5.816 + OR - 2.142 AT 2-SIGMA, % MPBB = 0.201
 CESIUM 137, NCI = 10.163 + OR - 2.501 AT 2-SIGMA, % MPBB = 0.034

Individual B

4/21/78 At 1103 (7.88 MIN. COUNT)

POTASSIUM, GRAMS = 170.835 + OR - 38.799 AT 2-SIGMA, G K/KG = 1.931
 COBALT 60, NCI = 10.591 + OR - 2.322 AT 2-SIGMA, % MPBB = 0.963
 COBALT 58, NCI = 6.282 + OR - 2.076 AT 2-SIGMA, % MPBB = 0.217
 CESIUM 137, NCI = 9.569 + OR - 2.515 AT 2-SIGMA, % MPBB = 0.032

From a review of the whole body count data, it appears that the radioactivity measured in or on the bodies of the workers at the conclusion of the work on April 5, 1978, is not indicative of a lung disposition.

At the conclusion of the inspection, and in a subsequent telephone call on January 19, 1979, the inspector was informed that the licensee is performing additional evaluation of this matter in an effort to better define the dose consequences to these individuals.

6. Notifications and Reports

The inspector reviewed the exposure records of 10 individuals who had terminated their work assignments at the facility during 1978. These records were reviewed to establish compliance with the requirements specified in 10 CFR 20.408 and 10 CFR 20.409.

The licensee's response to 10 requests by workers for their radiation exposure history were reviewed to determine compliance with the requirements of 10 CFR 19.13(b)(c).

10 CFR 20.409(b), "Notification and reports to individuals," states that: "When a licensee is required pursuant to 20.405 or 20.408 to report to the Commission any exposure of an individual to radiation or radioactive material, the licensee shall also notify the individual. Such notice shall be transmitted at a time not later than the transmittal to the Commission, and shall comply with the provisions of 19.13(a) of this chapter." 10 CFR 19.13(a) states, in part: "The information reported shall include data and results obtained pursuant to Commission regulations, orders or license conditions, as shown in records maintained by the licensee pursuant to Commission regulations."

These reports dated June 6, 1978 for individuals A and C, and June 16, 1978 for individual B did not include data or the results of the whole body counts performed on April 5, 1978. These reports did not include skin or extremity dose information. The exposure information contained in these reports only included whole body dose from gamma radiation.

Failure to provide a report that included all the information specified in 10 CFR 19.13(a) represents an item of noncompliance with 10 CFR 20.409 (50-244/79-01-04).

7. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on January 12, 1979 and by telephone on January 19, 1979. The inspector summarized the scope and findings of the inspection as presented in this report.