U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-244/94-20

Docket Nos. 50-244

License Nos. DPR-18 Category C

Licensee: Rochester Gas and Electric Corporation
89 East Avenue
Rochester, New York 14649

Facility Name: Robert E. Ginna Nuclear Power Plant

Inspection At: Ontario, New York

Inspection Conducted: August 8-12, 1994

Inspector:

J. Noggle, Senior Radiation Specialist — 8/26/94 date

Approved by:

for R. Bores, Chief, Facilities Radiation Protection Section — 9/9/94 date

Areas Reviewed: The inspection was an announced review of the radiological controls program with respect to current program performance and with respect to the revised 10 CFR Part 20 regulations. Areas reviewed included: radiation protection performance, station radiological control procedures and applicable training programs.

Results: The licensee performed very well radiologically, during the Spring 1994 refueling outage, with a 20% reduction in personnel exposures over the previous refueling outage. Further, the licensee has established a goal for the Spring 1995 refueling outage of another 20% exposure reduction, which demonstrates management commitment to the As Low As is Reasonably Achievable (ALARA) principle. With respect to implementation of the revised 10 CFR Part 20 regulations, the licensee's radiation protection procedures were generally well written with a few discrepancies noted by the inspector. The revised 10 CFR Part 20 requirements were thoroughly integrated into the licensee's program with no discrepancies with the regulations noted. The radiation protection training program had also been thoroughly revised and was of very good quality. No safety conerns or violations of NRC regulatory requirements were identified.

DETAILS

1.0 Individuals Contacted

1.1 Licensee Personnel

* A. Harhay, Manager, Radiation Protection and Chemistry
* A. Herman, Health Physicist, Steam Generator Replacement Project
* J. Huff, Manager, Maintenance Training
* J. Knorr, Supervisor, Radiation Protection/Chemistry Training
* N. Leoni, Radiation Protection/Chemistry Quality Improvement Specialist
* R. Marchionda, Superintendent, Support Services
* R. McMahru, Quality Control Engineer, Operations
* F. Mis, Health Physicist, Dosimetry and Radwaste
* P. Polfleit, On-site Emergency Planner
* B. Quinn, Corporate Health Physicist
* W. Thomson, Health Physicist, As Low As Reasonably Achievable (ALARA)

1.2 USNRC Personnel

* J. Joyner, Chief, Facilities Radiological Safety and Safeguards Branch, Region I
* T. Moslak, Senior Resident Inspector

* Denotes those individuals attending the exit meeting on August 12, 1994.

2.0 Radiation Protection Performance Status

The inspector reviewed the licensee's personnel exposure results. The Spring 1994 refueling outage resulted in collective personnel exposures of 124 person-rem versus an outage goal of 135 person-rem. This represents a 20% reduction in outage personnel exposure when compared to the previous outage. The licensee noted a reduction in respirator usage, successful decontamination of the reactor cavity, an increase in shielding applications, and a high level of performance for steam generator maintenance and refueling activities. The total year-to-date collective occupational personnel exposure was 136.3 person-rem as of July 31, 1994. The licensee expects to stay within the annual exposure goal of 155 person-rem, barring any unplanned station maintenance requirements. The Vice President of Ginna Nuclear Production has set a 1995 outage goal of 100 person-rem, which is a significant challenge to Ginna Station and indicates a strong management commitment to the station ALARA program.

The inspector reviewed the licensee's radiological incident report (RIR) program status to determine if management oversight was effective in identifying and resolving radiological incidents. The inspector reviewed four RIRs that were written during the past four months. All four were identified by radiation protection (RP) and were of minor safety significance. With respect to the three RIRs that had been completed, the incidents were given the appropriate level of management attention and appropriate corrective actions had been taken. Few RIRs

were identified and the cause for this has not been fully determined by the inspector. It may be indicative of a well run program or a lack of general worker knowledge and accessibility to write RIR reports. This area will be reviewed in a future inspection.

In general, the licensee has demonstrated an improving trend in station personnel exposures and has committed to further reducing outage exposures. Management oversight of radiological incidents has been good for those few opportunities identified for review.

3.0 Radiation Protection Program Procedure Review

The inspector examined 29 station radiation protection procedures, which included general station procedures, radiation protection administrative-level procedures, and RP implementing procedures. The inspector reviewed several procedure discrepancies with the applicable licensee personnel, with the following results.

In general, the new 10 CFR Part 20 requirements were integrated fully throughout all levels of the applicable station procedures. The inspector noted that the station had in place administrative exposure limits that were below the NRC regulatory limits.

Total effective dose equivalent (TEDE) administrative limits were set at 2 rem per year; with approval of the Manager, Radiation Protection and Chemistry (RP/CM) TEDE may be up to 3 rem per year; and with approval of the Vice President, Nuclear Production, TEDE may be up to a maximum of 4.5 rem per year (as compared to the regulatory TEDE limit of 5 rem per year).

Internal exposure is tracked at levels $\geq$ 1 derived air concentration (DAC)-hour or 2.5 millirem committed effective dose equivalent (CEDE). Definitive internal exposure bioassay measurements are made when an individual has accumulated 12, 40 and 150 DAC-hours. Internal exposure based on bioassay measurements that result in $\geq$ 50 mrem CEDE are recorded (representing 10% of the regulatory level for recording exposures).

The licensee has opted to allow the use of planned special exposures, but they require the approval of the RP/CM and the Plant Manager, with the ALARA Committee responsible for making the evaluations and submitting the required reports to the NRC.

The exposure controls associated with the declared pregnant woman provide for the voluntary declaration and undeclaration by the woman. They also institute a 300 millirem limit for the nine-month gestation period, with a monthly control level of 30 millirem per month (versus the NRC regulatory limits of 500 millirem to the fetus and a control level of 50 millirem per month).

Through discussions with the licensee the inspector determined that the licensee has made a shift in respiratory protection use implementation

practice rather than in a formal procedural program change. If a definite need for respiratory protection is determined based on historical air sample data or due to plant conditions, then the radiation work permit (RWP) will require the appropriate respiratory protection equipment. If RP staff evaluation has determined that respiratory protection equipment may not be necessary and may cause an overall increase in TEDE exposure if used, then the RWP will not be written to require respiratory protection. However, the final determination for respiratory protection requirement will be made by the RP technician and workers involved, to include the as-found job conditions and the work performance capabilities of the workers involved. The inspector considers this a very good method that considers historical air sample records, TEDE ALARA evaluation for the job, and the unique aspects of the job that come together at the jobsite to determine the need for respiratory protection.

The inspector found the revised 10 CFR Part 20 changes, as noted above, reflect a good safety perspective.

a. The following specific comments and/or discrepancies were noted.

A-1, Rev. 38, "Radiation Control Manual". Section 3.10.3.f states the requirements for high radiation area entry. The second bullet in this section states that high radiation area entry would be allowed when an individual is provided with a dosimeter which integrates the dose and alarms upon reaching a predetermined setpoint. Section 6.13.1.a.(2) of the Ginna Technical Specifications, Appendix A, states that entry into a high radiation area is permissible if an alarming dosimeter is used and "... after the dose rate levels in the area have been established and personnel have been made knowledgeable of them." The Radiation Protection/Chemistry Manager (RP/CM) agreed to correct this procedure oversight and indicated that the applicable RP implementing procedure and station practice is in accordance with the Technical Specification criterion.

Section 3.12.1.7, second bullet, states that the dose record from a hot particle is maintained in the file of the exposed worker and is not assigned or tracked as part of an individual's skin dose. The inspector discussed with the licensee the meaning of not assigning or tracking a hot particle exposure. The licensee indicated that for exposure control purposes, the hot particle exposures are not subtracted from the allowable shallow dose equivalent, but any hot particle exposure that was in a worker's dosimetry file would be reported to the individual. The inspector indicated that this interpretation was in accordance with the applicable NRC HP Position and regulatory requirements.

A-1.1, Rev. 23, "Access Control to Locked High Radiation and Very High Radiation Areas". This procedure specifically designates the containment A sump as a very high radiation area and prescribes an additional key required for entry. That key is to be controlled by the RP/CM in addition to the locked high radiation area key provided by the Shift Supervisor. The procedures also states that this additional key

would only be issued to RP qualified personnel. Entry to a very high radiation area requires the approval of the Plant Manager as well as the Shift Supervisor and RP/CM. The inspector determined that these are very good controls instituted for very high radiation area entry.

Section 3.3.d.2 states that an individual may enter a locked high radiation area when provided with an alarming integrating dosimeter, preset to alarm at a dose specified by radiation protection (RP) personnel. As stated in a previous paragraph in this section, there is a further Technical Specification requirement that the dose rate levels must have been previously evaluated and communicated to the individual prior to entry. The RP/CM agreed to change this procedure to reflect this requirement.

A-1.5, Rev. 6, "Keeping Occupational Exposures at Ginna ALARA". Section 5.0 provides a list of Ginna administrative exposure limits. Section 5.2 requires the summation of internal with external exposure when the external exposure is $\geq$ 0.5 rem and the internal exposure is $\geq$ 25 % maximum permissible body burden. The current regulatory requirements require internal exposure monitoring (and therefore summing of internal and external exposures) when internal and external exposures represent $\geq$ 10% of the annual exposure limit. The RP/CM agreed to correct this procedure discrepancy. Section 5.3 lists an administrative exposure limit based on 3 rem from external sources and 10% MPBB from internal sources. The proper internal exposure units are currently in terms of annual limits of intake (ALI), DAC-hours, or rem. The RP/CM agreed to correct this discrepancy.

A-1.8, Rev. 1, "Health Physics Work Permits". This procedure appropriately describes the requirements for high radiation area entry as found in the Technical Specifications. One of these approved methods for entry includes continuous coverage by a qualified RP technician. In Section 3.1.1, continuous coverage was defined and provided alternatives to providing direct line-of-sight RP technician coverage, including the use of remote video monitoring or remote exposure monitoring equipment to fulfill the continuous coverage requirement. The inspector discussed with the licensee the limitations of video camera monitoring when not combined with audio communications, since continuous coverage of high radiation area entries implies the ability to direct the worker. The remote dosimetry equipment, which does provide valuable exposure control information, does not provide the RP technician with the knowledge of where the worker is working or what he is doing and, by itself, lacks the communication element necessary to provide direction to the worker. The RP/CM acknowledged the inspector's concerns and agreed to re-evaluate and revise the continuous coverage definition as necessary.

b. The following procedure comments are offered for consideration and evaluation and represent areas of less safety significance.

A-1.3, Rev. 0, "Restricted Area Entry and Exit". Section 3.3.1.d lists the requirements for radiological controlled area entry, which require a

thermoluminescent dosimeter (TLD) and a self-reading dosimeter (SRD). The licensee indicated plans to replace the self-reading dosimeter with the RADOSE alarming pocket dosimeter in September 1994. This procedure will need to be revised at that time. Section 3.5.1 lists protective clothing removal sequence in precise terms to include removing tape from wrists. The inspector observed trial uses of reusable elastic bands in place of disposable tape by several workers. This procedure should be revised to reflect the current accepted work practices.

RP-ALA-Shield, Rev. 0, "Control of Temporary Lead Shielding". This procedure describes a dose savings evaluation that balances the dose expended in installing and removing temporary shielding versus the dose saved. For shielding applications where a net dose savings is determined, the procedure specifies a dose rate goal be established as the acceptance criteria for the final shield installation. This is a good approach, however, there is no guidance or procedure development to address the iterative process of shielding, surveying, and engineering approval that would be required to meet the specified acceptance criteria.

The licensee representatives stated that the above comments and concerns would be evaluated.

c. Other procedures that were reviewed, and which were of good quality with no discrepancies noted, are listed below.

A-1.3.1, Rev. 0, "Visitor Entry to Restricted Areas"
A-1.4, Rev. 0, "Planned Special Exposures"
A-1.6, Rev. 17, "ALARA Committee Operating Procedure"
A-1.6.1, Rev. 16, "ALARA Job Reviews"
A-1.6.3, Rev. 6, "Ginna Station Respiratory Protection Program"
A-1.9, Rev. 0, "Radiological Incident Reports"
RP-DOS-BIOASSAY, Rev.0, "Bioassay Sample Collection, handling, and analysis"
RP-DOS-CALC-INT, Rev. 0, "Determination of Internal Dose Using the INDOS Computer Program"
RP-EXP-EMBRYO/FETUS, Rev. 0, "Determination of Embryo/Fetus Internal/External Radiation Exposure"
RP-EXP-EXT-LIMIT, Rev. 0, "Determining External Exposure Control Levels"
RP-EXP-EXT-REC, Rev. 0, "External Exposure Records"
RP-INS-C-AM22IF, Rev. 0, "Calibration of NMC Constant Air Monitor Model AM-22IF Iodine, Particulate and Gas Monitor"
RP-RDMS-UP-DAC-HRS, Rev. 0, "Updating DAC Hours in RDMS"
RP-RDMS-UP-SKIN, Rev. 0, "Updating Skin Exposure in RDMS"
RP-SUR-NG-EXP, Rev. 0, "Noble Gas Exposure"
RP-SUR-POST-LABEL, Rev. 2, "Radiological Surveys and Area Postings"
RP-WBC-EVAL, Rev. 0, "Whole Body Count Evaluation"
RPA-DOS, Rev. 0, "Dosimetry Program Administrative Procedure"
RPA-RDMS-EXP-REPORTS, Rev. 0, "Occupational Exposure Reports to Individuals and the NRC"
HP-7.14, Rev. 11, "RO-2A Operation and Calibration"
HP-7.7, Rev. 19, "Correction Factors for Beta Survey Instruments"

HP-12.1, Rev. 17, "Use of Respiratory Protection Equipment - General Requirements"
HP-14.0, Rev. 9, "Guidelines for the Use of Air Sampling Equipment"

The inspector reviewed a variety of RP procedures, some from the old procedure format and some from a new revised RP procedure format. The new format provided more detail in the references section including applicable NRC requirements and licensee commitments to the NRC. The applicable procedure step typically included a reference identification in an attempt to improve the traceability of regulatory requirements into the working procedures. In addition, the new format included a definitions section and an acceptance criteria section that provides the user with a glossary of terms used and defines a standard of performance to measure successful completion of the procedure. These procedure format changes provide a clearer and better defined procedure. The inspector's procedure sampling indicated that in general, the RP procedures appeared to be good and technically correct procedures, whether written in the old or in the new format. In conclusion, the inspector noted during the routine three-year review cycle, the RP procedures were being revised to incorporate an improved procedure format. During the process of revising the procedures, the licensee has included a validation and verification step to ensure that the current station practices are accurately captured in these procedures. This is a good initiative. The inspector identified no violations in this area.

4.0 Radiation Protection Training Review

The inspector examined the basic radiation worker and RP technician training programs to ensure the appropriate 10 CFR Parts 19 and 20 content as well as applicable RP procedures were included.

The licensee initially introduced the radiation workers to the revised 10 CFR Part 20 concepts in June of 1993. Since June 1, 1993, any radiation worker requiring either initial radiation worker training or an annual requalification training was required to attend an additional one-hour course entitled, "Survival Kit for 10 CFR 20". The inspector reviewed the lesson material and noted that it included the new regulatory concepts and definitions and supplied the new Ginna annual exposure limits to be implemented on January 1, 1994. In early January 1994, the licensee completed revisions of the radiation worker training and requalification lesson plans, GRC09C, Rev. 5 and GGE08C, Rev. 5, respectively. These lesson plans were reviewed by the inspector and were found to accurately reflect the revised 10 CFR 20 regulations and Ginna RP procedures. To ensure all station radiation workers were informed of the revised regulations by January 1994, the licensee developed a revised 10 CFR 20 quick reference that was handed out and mailed to the onsite workforce in early January 1994. In addition to the abbreviated "quick reference" handout, the licensee revised the "General Employee Training Handbook" in January 1994, and made this available to any worker who requested further information. This handbook was also provided during the 1994 general employee training classes. This training handbook was complete and accurate with one

exception noted by the inspector. In a discussion section on internal contamination, on page 78, the author indicated that a small amount of contamination internally ingested can give you a significant dose of radiation. In discussions with the licensee, the licensee indicated that this was not the appropriate message they wanted to convey and was not consistent with the revised regulations. The licensee agreed to revise this section.

The inspector reviewed the licensee's training program for temporary contractor RP technicians. The inspector examined RP technician 10 CFR Part 20 training lesson plans and attendance sheets to verify that appropriate training had been completed prior to the Spring 1994 outage.

The licensee is a member of the Middle Atlantic Nuclear Training Group (MANTG) and utilized the MANTG generic RP technician screening exam that incorporated the revised 10 CFR 20 requirements for the contractor RP technicians. Following successful completion of this exam, the contractor RP technicians were given two days of classroom training and one day of RP skill demonstrations, followed by a contractor RP technician site specific training exam. The inspector reviewed the lesson plans and noted that the core RP procedures that had been revised to incorporate the 10 CFR 20 requirements had been included. The inspector reviewed the final training exam and determined that it was a comprehensive examination requiring a good level of site specific knowledge to pass the exam and qualify as an RP technician. The inspector determined that 53 contractor RP technicians received the mentioned training on February 13-25, 1994, and noted that complete documentation of this training was maintained by the licensee's training staff.

The inspector also examined the revised 10 CFR Part 20 training program for the permanent radiation protection staff. This was accomplished in three sets of training classes.

Between July 13 and December 8, 1993, 41 RP technicians and supervisors attended the first training series, Lesson Plan HCS02C, entitled, "HP Case Study Addressing Rad Worker Concerns with New 10 CFR 20". This four-hour course provided the new dose definitions and reasons behind the regulations and presented some anticipated rad worker concerns and adjustments that the RP staff may face during the early 1994 implementation of the revised regulations. This course was a good introduction to the revised 10 CFR Part 20 regulations.

Between August 10 and December 8, 1993, 39 RP technicians and supervisors attended the second training series, Lesson Plan HCS03C, entitled, "Changes to 10 CFR 20 RP Technician Overview, Part 2". This four-to-eight hour course consisted of a comparison of the old 10 CFR 20 regulations and the revised 10 CFR 20 regulations and also included an overview of some of the applicable regulatory guides. The inspector reviewed the lesson plan and course materials and determined that this was a comprehensive review of the revised regulations.

Between November 2 and December 14, 1993, 44 RP technicians and supervisors attended the third training series, Lesson Plan HCT01C, entitled, "Continuing Training-1993, 10 CFR 20 Changes to Plant Procedures". The inspector reviewed the lesson plan and determined that this eight-hour course consisted of the most significantly revised RP procedures in their draft form. Following the training on the procedure content, the students were required to complete seventeen RP problems that required reference and use of the revised RP procedures. The materials reviewed by the inspector indicated that this was an excellent course that incorporated the student's use of the procedures.

In summary, the inspector determined that the licensee had provided the necessary training in the revised 10 CFR 20 regulations to the radiation workers, permanent RP staff, and temporary contractor RP technicians. The training programs were accurate, of sufficient depth and reflected the site specific implementation of the revised regulations.

5.0 Exit Meeting

The inspector met with licensee representatives (denoted in Section 1.0) on August 12, 1994. The inspector summarized the purpose, scope and findings of the inspection. The licensee acknowledged the inspection findings and had no substantive comments regarding them.