U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-244/94-08

Docket No. 50-244

License No. DPR-18

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: March 28 - April 1, 1994

Inspector: J. Noggle, Senior Radiation Specialist — date 4/25/94

Approved by: R. Bores, Chief, Facilities Radiation Protection Section, Division of Radiation Safety and Safeguards — date 5/03/94

Areas Inspected: Areas covered in this inspection included personnel exposure control and exposure reduction techniques employed during the Spring 1994 refueling outage at the Ginna Nuclear Power Plant.

Results: The licensee's radiation protection organization performed effectively in providing the necessary job coverage radiation safety oversight of outage activities. Some improvements were noted in the as low as is reasonably achievable (ALARA) program with continuing support from the engineering organization noted. Also, the internal dosimetry tracking process was cumbersome and considered a weakness. No safety concerns or violations of NRC regulatory requirements were identified during the inspection.

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DETAILS

1.0 Individuals Contacted

1.1 Rochester Gas and Electric Corporation

* S. Adams, Superintendent Support Services
* T. Alexander, Manager, Nuclear Assurance
* J. Bement, Radiation Protection Operations Lead Technician
* A. Harhay, Manager, Radiation Protection and Chemistry
* N. Kiedrowski, Senior Instructor, Radiation Protection
* K. Lang, Health Physicist
* F. Mis, Health Physicist
* J. St. Martin, Director, Operating Experience
* R. Watts, Corporate Radiation Protection
* J. Widay, Plant Manager

1.2 USNRC Personnel

T. Moslak, Senior Resident Inspector

* Denotes attendance at the exit meeting on April 1, 1994.

2.0 Purpose

This inspection was an announced safety inspection of the Ginna Nuclear Power Plant radiation control program during the Spring 1994 refueling and maintenance outage.

3.0 Previously Identified Item

(Closed) Inspector Followup Item (50-244/93-20-02)
The licensee had identified two instances where faulty valve lineups resulted in the inability of the licensee to obtain containment air and containment recirculation fan condensate samples. The NRC inspector requested a licensee review of radiation protection sampling procedures to evaluate the need for more specific valve lineup instructions to preclude other similar events from occurring. The licensee completed this review and revised the instruction accordingly. The inspector reviewed the revisions. Procedure PC-24, Rev. 14, describes the liquid sampling setup requirements. This procedure has been revised to include specific valve numbers and the discrete steps necessary to perform the liquid sampling. Signoffs were included to indicate that correct valve lineups were completed. All liquid sampling procedures, including the containment air condensate sampling procedure, were revised to incorporate reference to Procedure PC-24 for proper valve lineups. These revisions have also been incorporated into the training program. This item is now closed.

4.0 Organization

The licensee's radiation protection organization normally consists of 30 personnel of whom 6 were long-term contractors. During this outage, an additional 61 contract HP personnel were hired. The HP staff was supervised by 8 RG&E HP technicians to provide 24-hours/day leadership over the contract HP technician workforce. Adequate manpower resources were available to accomplish the outage activities in a safe manner.

The previous HP Operations Foreman retired and was replaced by a fully qualified HP lead technician who had previous experience writing special work permits (SWPs) and supervising HP technicians. No deficiencies with regard to radiation safety personnel resources were noted.

5.0 Training and Qualifications

The licensee has issued an incentive-based three-year contract for HP technician services. This new initiative implemented for this outage will include the 1996 steam generator replacement outage. The HP contractor was asked to propose a percentage of the contract for performance-based adjustment based on the utility evaluation report developed after each outage. The "at risk" percentage could be increased or decreased by 100% depending on the performance rating. The categories to be rated include: HP technician performance, budget, coordination, and schedule parameters. Negative incentive would come out of the contractor company's profit margin. Positive incentive would be directed to both the contractor company and the HP technicians. This is viewed as a good initiative that encourages high performance and penalizes the contractor company for poor performance.

The inspector reviewed selected contractor resumes and training qualifications to ensure the minimum requirements of ANSI 18.1-1971 were met for HP technicians responsible for job coverage and the radiological protection of the workers. In all cases, the criteria were met. No discrepancies were noted.

The contractor HP training program was accomplished in one week beginning with an initial HP screening examination provided through the Middle Atlantic Nuclear Training Group (MANTG). Successful completion of this examination was indicated by achieving greater than or equal to 80%. The licensee provided a second chance for a technician who failed the examination by offering the technician an opportunity to pass another test version. Two test failures resulted in rejection of the HP technician from employment. One individual was rejected due to this reason. The licensee also accepts successful test results within a two-year period from another MANTG participating utility. Also, if an individual is certified by the National Registry of Radiation Protection Technologists (NRRPT), the screening examination requirement is waived. After completion of the initial HP screening examination,

16 hours of classroom training was provided on site specific HP procedures. Job coverage related on the job training (OJT) signoffs were required within a 30-month period to complete the HP technician qualification program. The inspector reviewed select HP contractor personnel and verified that the above training requirements were completed. In general, the contractor HP technician training appeared to be adequate.

6.0 Radiological Incidence Reports

The inspector reviewed the licensee's radiological incident reports (RIRs) to evaluate management oversight of radiological events at the station. The licensee recorded eight RIRs for 1994. There were two incidents that had potential safety significance relative to high radiation area entry. These involved the non-issuance of alarming dosimeters for high radiation area entries. In one case, there was no actual high radiation area present although the entrance to the "A" reactor coolant system loop area was conservatively posted as a high radiation area. The posting was precautionary since the radiation levels in this area were dependent on changes in the steam generator water level. The HP staff was cognizant of the steam generator water level and the radiation levels at the time of the event. In the other case, constant HP coverage was provided for entry into an RCS loop area, meeting the Technical Specification requirement for high radiation area entry. The special work permit (SWP), however, required issuance of alarming dosimeter without specifying constant HP coverage. The inspector reviewed with the licensee the conditions surrounding each event and was satisfied that in each case, the licensee exercised control over the areas. However, attention to detail with regard to postings and improvements in SWP briefings was needed. The licensee had made these assessments, improved radiological postings, and reinforced with the HP staff, the need to verify SWP compliance prior to the beginning of work.

The inspector noted a contributing problem with regard to proper issuance of alarming pocket dosimeters. At the alarming dosimeter issue point, the HP staff was not checking the SWPs to ensure who was required to have an alarming dosimeter and who had one for data comparison purposes only. The staff health physicists stated that with the adoption of the new access control system, scheduled for Fall of 1994, everyone entering the RCA would be issued an alarming dosimeter and this contributing problem will no longer be a concern.

The other RIRs recorded minor station radiological occurrences of low safety significance.

The inspector determined that the licensee's review of the RIRs was thorough and effective actions have been implemented to prevent recurrences. In general, the licensee had a low frequency of safety significant radiological events. Management oversight of radiological problems was effective.

7.0 Exposure Reduction

The licensee reported 193.1 person-rem for 1993, which included 156 person-rem for the 1993 refueling outage. This compares favorably with the previous three years: 347 person-rem for 1990; 328 person-rem for 1991; and 261 person-rem for 1992. Compared with other U.S. pressurized water reactors (PWRs), the annual exposure history at Ginna remains higher than the average. For 1994, the licensee estimates 160 person-rem with a goal of 140 person-rem from outage exposures. At the time of this inspection (day 28 out of a 39-day scheduled outage), the licensee had accumulated 104.2 person-rem versus the pro-rated estimate of 114.6 person-rem. The licensee's station exposures have demonstrated a good moderately downward trend.

The permanent ALARA group staff includes a staff Health Physicist and an ALARA technician. During the preparation and performance of this outage, the HP Department provided additional staffing for the ALARA group to include three ALARA technicians while upgrading the permanent ALARA technician to a lead ALARA technician position. In addition, field engineering supplied part-time assistance of an engineer for the second consecutive outage to support the shielding requests generated by the ALARA group. Noted improvements in the ALARA performance were observed during this inspection.

The use of permanently installed lead shielding was noted inside of the containment vessel. Both the regenerative heat exchanger and the pressurizer spray line had been shielded with heat resistant Amertex lead blankets that were approved for use during containment operating conditions. This allows for elimination of the installation and removal resources associated with the temporary outage shielding approach and can also be of benefit during routine containment power entry inspections.

The ALARA shield package format was completely revised and greatly improved over the previous outage. Previously the shield packages measured contact dose rates and did not focus on the work area dose rate reduction. The latter is applicable to the reduction of personnel exposures while performing work. The inspector noted that now each shield package contained a dose rate goal for the shielding that reflected near background values. Therefore, if the initial shield design did not meet the stated shield package goal, further shielding efforts could be made to ensure full exposure reduction potential was attained. This was an improved approach over that used during previous outages. The inspector reviewed all twelve shield packages utilized during the outage. They included: "A" sump and incore detector area, pressurizer spray line, top of pressurizer block valves, a valve located on the "B" RCP platform, "B" crossover piping, reactor head thermocouples and conoseal area, general purpose moveable shield racks, regenerative heat exchanger, primary sample delay coil, steam generator hand holes, and an auxiliary building drain line. The approved shield design packages were worth approximately 9,000 pounds of shielding that was

estimated to save up to 68 person-rem. The actual shielding used and actual exposure savings attained would be expected to be somewhat lower than these ideal values, however, this does provide an indication of a moderate level of effort and performance of the ALARA group in reducing outage personnel exposures.

The ALARA group has developed an outage exposure tracking system based on the Plan-A-Log outage schedule. This schedule provided estimated exposure tracking as a function of the scheduled work during the outage. This was an improvement over the previous straight-line estimation as a function of time previously used, which estimated the exposure for the outage and assumed a straight line accumulation with time throughout the outage. The new method accounts for the timing of various specific jobs and reflects the estimated exposure expenditures for each day. The actual exposure expenditures were tracked and compared to the estimate to determine if overall personnel exposures were remaining ALARA.

The inspector questioned the accuracy of tracking actual exposures against the originally scheduled exposures, when actual work completion varies from the original schedule. (If the workscope did not follow the original schedule, but was worked more slowly or more quickly, then the exposure accumulation would not be expected to follow the original exposure estimate schedule.) If the Plan-A-Log outage schedule tracking, which reported the actual completion status of each job on a shiftly basis, was also to the exposure tracking estimate, schedule variations could be accomodated in the tracking to provide accurate comparisons of work completed versus exposure expended. This would allow for the timely identification and correction for exposure overruns. Notwithstanding, the inspector determined that the current ALARA estimation and tracking method was very good and provided a good measure of exposure oversight during this outage.

The inspector reviewed ALARA Procedure RP-ALA-Shield, Rev. 0, "Control of Temporary Lead Shielding". This procedure provided an acceptable methodology for the safe application of temporary shielding on plant systems. Opportunity exists to expand the scope of this procedure or develop additional procedures to include the analysis of exposure reduction possibilities and include cost versus benefit analysis evaluations. Improvement in these areas would provide better formulation of exposure reduction problems for engineering evaluation and allow the licensee to make appropriate resource commitments based on defensible ALARA decisions.

The inspector also reviewed Procedure A-1.6.1, Rev. 16,"ALARA Job Reviews". This procedure indicates the various review levels required based on the exposure estimated to complete a job. This procedure requires worker attendance at ALARA prejob review briefings for jobs expected to result in significant exposure. The inspector questioned the licensee as to how work was controlled so that only workers who attended the ALARA prejob briefing were allowed to work on a SWP. The staff Health Physicist indicated that there was currently no mechanism to ensure attendance

at an ALARA prejob briefing was met. However, the staff Health Physicist indicated that the alarming dosimeter computer network software under evaluation could provide this capability and stated that this provision would be considered during dosimetry system development and implementation.

In general, the inspector determined that steady improvements have been made in the ALARA program performance, but areas for growth still exist in meeting the exposure reduction challenges of Ginna Station.

8.0 Exposure Control

The inspector reviewed the major outage work areas of the plant and made the following observations.

The refueling cavity was successfully decontaminated (a previous weakness) through a vendor-supplied hydrolasing service, although occasional airborne radioactivity areas resulted during the outage. This allowed the reduction in respirator use for most of the refueling activities. In addition, stairs were installed in the cavity to allow safer access for cavity workers than the conventional vertical ladder.

Alarming pocket dosimeters were issued to all high radiation area workers as well as select work groups of the outage workforce. The licensee was collecting data to compare with pocket ion chamber data and thermoluminescent dosimeter data. After the ALNOR alarming dosimeters are evaluated, they will be used for all workers entering the radiological controlled area (RCA) and the pocket ion chamber use will be discontinued. This is expected to occur during the Fall of 1994.

Radwaste minimization has been effective. Launderable tarpaulins, cloth bags, and rags have replaced herculite, plastic bags and masslin cloths. Reusable pressurized spray cans were used for dispensing a decontamination solvent instead of the throw away aerosol cans. In 1993, 15,000 ft^3 of radwaste was generated which resulted in 1,600 ft^3 disposal volume after segregation and incineration.

During steam generator nozzle dam removal, the inspector noted that the audio/video communications allowed for excellent coverage of manway entries. The entire steam generator platform was not monitored by the video monitors, however, and the platforms were controlled as high radiation areas and the SWP required continuous HP coverage of this area. During the nozzle dam removal work, three workers were on the platforms and the inspector noted that the video cameras did not provide coverage of all workers. The RPM agreed that this area could be improved. Another area for improvement involved the difficulty of installing the steam generator manway inserts. These heavy steel plates were manually lifted to slightly above shoulder height. This activity had to be repeated several times with some degree of difficulty during this outage because of alignment difficulties and lack of an appropriate

lifting/alignment device. These constitute minor improvement possibilities that could be made, however, Ginna continues to provide a very successful steam generator maintenance program.

The HP training staff was temporarily rotated into HP positions during the outage performing the following duties: sample counting, SWP review, dosimetry, and CO_2 blast decontamination coordinator. This was in response to a previous INPO finding that reported a gap between the training curriculum and the actual HP plant practices.

The HP control points were well staffed to coordinate and provide oversight of outage activities. A good level of surveys and job coverage oversight was maintained. An adequate level of air samples (approximately 30) were taken per day during the outage with a relatively high number of airborne radioactivity results associated with the refueling cavity work area, steam generator maintenance, and pressurizer component maintenance. Appropriate respiratory protection of the workers was generally prescribed for this work, however the high number of airborne radioactivity air sample results provided a significant demand on the internal dosimetry tracking program.

The current internal dosimetry tracking program involved correlation of high activity air sample data with SWP sign-in sheet entry times to establish air sample based intake assignments. This manual correlation and calculation required the dosimetry staff and operational HP staff to separately provide their reviews followed by a senior level health physicist to review and approve the completed internal dosimetry tracking package for each completed SWP. This method of tracking was not always accurate and not timely with respect to outage requirements.

This tracking system was previously reported as being inaccurate and not current in a previous inspection report[1]. At that time, the inspector pointed out inaccuracies in the air sample calculations and numerous transcription errors in the various forms used. The licensee has improved the accuracy of air sample calculations with the institution of a computer program to provide this function. The rest of the manual administrative internal tracking system remains weak to meet current outage demands. This is viewed as a process weakness. The licensee stated that the tracking system process would be reevaluated and appropriate changes to improve its accuracy and timeliness would be made.

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[1] NRC Inspection No. 50-244/92-05, conducted on April 27 - May 1, 1992

9.0 HP Initiatives

The design of a new improved personnel access to the restricted area has been approved. This new design is intended to economize the personnel travel path and increase the accessibility for HP interface for all personnel entering the radiological controlled area of the plant. The reconstruction of the existing plant space is expected to be completed by the end of 1994. The current design was reviewed by the inspector and was viewed as an improvement and a good initiative.

The radiation protection and chemistry procedure upgrade project was begun in 1993 and was expected to revise all of the subject procedures (approximately 400) during a three-year period. The upgrade project was to bring the procedures in line with a substantially revised and improved procedure writer's guide. During 1993, all of the radiation protection and chemistry staff were trained on the new procedure writer's guide and 34 procedures were rewritten to satisfy the new 10 CFR 20 requirements. In 1994, 137 procedures are currently targeted for revision. This procedure upgrade project is viewed as a good initiative. The inspector will review the revised procedures in future inspections.

10.0 Exit Meeting

The inspector met with licensee representatives at the end of the inspection, on April 1, 1994. The inspector reported the inspection results and the licensee acknowledged the inspection findings.