U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report/License No.: 50-244/94-29/DPR-18

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

Facility Name: Ginna Nuclear Power Plant

Inspection At: Ontario, New York

Inspection Conducted: December 19, 1994 - January 6, 1995

Inspector: _____
J. Noggle, Senior Radiation Specialist

Approved by: _____
R. Bores, Chief, Facilities Radiation Protection Section

Areas Inspected: Announced review of implementation of radiological controls program at the Ginna Nuclear Power Plant, including audits and surveillances; organization and facility changes; exposure reduction status; review of radiological events; and training of the radiation protection staff.

Results: The licensee conducted an effective radiation controls program and implemented enhancements in several areas including: streamlining of the HP access control point, implementation of an electronic pocket dosimeter (EPD) system, and establishment of a new station committee chartered to reduce outage exposures from a job planning and work method perspective. Results from these initiatives will be reviewed during the next scheduled outage period. Audits of various program areas and performance of the HP training program have been good. The reduction in two corporate HP positions has added some responsibilities to the site HP staff. As a result of a review of recent radiological events, one violation (with two examples) of NRC requirements was identified, involving (1) the failure to perform appropriate measurements (surveys) of concentrations of radioactive material in air during removal of a pipe flange with fixed contamination from the steam generator blowdown system and (2) the failure to perform surveys to ensure that licensed material, i.e., a contaminated pipe flange, was not released for unrestricted use.

[2] N. Leoni, Quality Improvement Spec...
[1] R. Marchionda, Superintendent Ginna Maintenance
[2,3] T. Marlow, Superintendent Ginna Production
[1,2] F. Mis, Health Physicist, Dosimetry, Radwaste, Instrumentation
[2] T. Plants, Station Engineer
[1] W. Thomson, Health Physicist, As Low As is Reasonably Achievable (ALARA), Respiratory Protection

The inspector also interviewed other licensee personnel during the inspection.

1.2 NRC PERSONNEL

[1,2] T. Moslak, Senior Resident Inspector

[1] Denotes those present at the exit meeting on December 22, 1994.
[2] Denotes those participating in a telephone conference on January 6, 1995.
[3] Denotes those participating in a telephone communication on January 26, 1995.

2.0 PURPOSE OF INSPECTION

This inspection was a review of implementation of the radiological controls program in effect at the Ginna Nuclear Power Plant.

3.0 AUDITS AND SURVEILLANCES

The inspector reviewed the following audits and surveillances performed as part of the independent management oversight by the licensee.

Audit No. 94-13, "Audit of Ginna Station Outage Activities", dated May 19, 1994.
Audit No. 94-21, "Audit of Ginna Station Radiation Protection and Chemistry Programs", dated August 8, 1994.
Audit No. 94-25, "Audit of Ginna Station Radwaste and 10 CFR 20 Programs", dated July 29, 1994.
Audit No. 94-28, "Audit of Ginna Station Indoctrination, Training, Retraining, and Qualifications", dated October 27, 1994.

The above audits provided good independent review of the radiation controls program with no significant findings noted. The audit of the radwaste program area indicated that some procedure improvements were needed, however, this subject area was beyond the scope of this

DETAILS

1.0 INDIVIDUALS CONTACTED

1.1 PRINCIPAL LICENSEE PERSONNEL

[1,2] A. Harhay, Manager, Radiation Protection and Chemistry
[1,2] K. Lang, Health Physicist, Operations
[2] N Leoni, Quality Improvement Specialist
[1] R. Marchionda, Superintendent Ginna Maintenance
[2,3] T. Marlow, Superintendent Ginna Production
[1,2] F. Mis, Health Physicist, Dosimetry, Radwaste, Instrumentation
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inspection and will be reviewed during a subsequent inspection. The licensee adequately tracks audit findings and closes findings systematically.

In addition to the above audits, the licensee conducted the following quality assurance surveillances during 1994.

QA Surveillance Report No. 94-063, conducted on March 10 - 31, 1994 to review compliance with radiation work permits during the 1994 outage.
QA Surveillance Report No. 94-062, conducted on March 10 - 31, 1994 to assess the radiation posting practices during radiography of pipe welds during the outage.
QA Surveillance Report No. SQUA-1994-0019-CEC, conducted on September 2 - 17, 1994 to review calibration and source responses performed for radiation protection survey instrumentation.

The results of all three QA surveillances indicated good compliance with station procedures and no adverse findings were reported. In summary, the licensee provided good independent review of the radiation controls program. No discrepancies in program implementation were noted by the inspector.

4.0 ORGANIZATION CHANGES

Due to a company-wide organizational downsizing effort, the licensee has eliminated two corporate HP positions. The corporate HP functions from these positions have been reassigned to the onsite HP group. These additional responsibilities include: ALARA design reviews, radwaste technical support, steam generator replacement/decommissioning support, and radiation program trending and oversight functions. The corporate ALARA committee functions have been reassigned to the Ginna Planning Committee. These reassignments appear to be logical and supported by experienced licensee personnel. The onsite radiation protection group staffing has not changed, however, some of the operations HP technicians have been assigned to various HP specialist areas that previously were filled by shift rotation of the operations HP technicians. This slight organizational change may allow the development of greater onsite HP expertise in the various HP support technical areas. The HP organization appears to be stable, but has lost its independent corporate oversight capability. Future inspections will try to determine the impact of this change on the program quality.

5.0 ACCESS CONTROL FACILITY CHANGES

The licensee has recently remodeled the radiological controlled area (RCA) access control point. Previously, a change area was located at the entrance to the RCA, with the HP office located one room removed from this area, adjacent to the exit door from the RCA. Signing onto radiation work permits was previously performed immediately after entering the RCA in the intermediate building, and respiratory protection equipment and survey instruments were obtained in the basement of the intermediate building. Currently all of the above

activities have been relocated to an expanded room located at the entrance to the RCA. The radiation work permit sign-in functions have been improved by establishing an HP office "island" in the room with three electronic pocket dosimeter (EPD) entry readers and two exit readers that interface with an access control computer software system allowing real-time exposure control and radiation work permit sign-in entries to be made. These changes have markedly improved the efficiency of the access control process and exposure control of workers.

6.0 RADOSE, ELECTRONIC POCKET DOSIMETER AND SOFTWARE SYSTEM

The licensee has purchased a new electronic pocket dosimeter (EPD) system, Radose, in July 1994, with in-field testing beginning in October 1994. The EPDs being used at Ginna Station consist of the Rad-51 silicon detector unit, which exhibits very good energy response characteristics between 100 keV and 1 MeV (within 5% of true response). The licensee has conducted additional response testing for very high energy gamma radiation fields that would be found during operations due to nitrogen 16 (N-16) gamma radiation fields. The licensee has determined that in the 5-7 MeV range, the Rad-51 dosimeter over-responds by approximately 30% versus the TLD, which over-responds by about 4-10%. The over-response characteristic is conservative. The actual use of the EPD in these high energy radiation fields would ordinarily be limited to containment power entries. As a secondary dosimeter that does not provide final exposure records, the EPD appears to be well suited to the Ginna Nuclear Power Plant radiological environment.

The inspector reviewed the licensee's implementation of the new RCA access control system. The inspector reviewed the new software implementation process to determine if appropriate precautions were made with respect to personnel exposure record protection. The inspector verified that the Radose system has access restrictions that prevent changing of recorded personnel exposure data. The inspector also verified that contingencies for computer or power failure were provided by having a duplicate hard disk drive running in parallel with the primary mass storage device and providing magnetic tape archives on a daily basis for personnel exposure data. The system file servers were also provided with uninterruptible power supplies in the event of power failure to allow for controlled shutdown of the computer system and avoid loss of any recorded data. The inspector was satisfied that sufficient precautions have been taken to preserve and protect personnel exposure records generated and kept electronically on the Radose system.

7.0 DOSIMETRY PROCESSING

The licensee utilizes the Panasonic Model UD-802 thermoluminescent dosimeter (TLD) for determining official record personnel exposures due to gamma and beta radiation. In addition the 809/A12 TLD is used for monitoring of neutron exposures, when necessary. The TLD processing for both TLDs has been tested and accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) for radiation categories 1-7 for the UD-802 TLD and in categories 1,2,4,5,7 and 8 for the 809/A12 TLD

badge. The current NVLAP accreditation period expires in October 1995. The inspector reviewed the latest TLD proficiency results, dated February 16, 1994. These results were from the 1993 proficiency testing, were very good and passed in all of the above tested categories. The inspector also reviewed the latest onsite NVLAP assessor's inspection, dated March 4-5, 1994, which listed two deficiencies in procedures. These two deficiencies had not yet been addressed by the licensee, pending completion of implementation of the new electronic data handling system, Radose, which will affect the manner of resolution of the two assessment findings. The inspector discussed with the licensee the methodology of handling anomalous TLD data and contingency procedures to ensure proper handling of any anomalous TLD results. This will be followed in a future inspection. The inspector determined that the licensee provided very good TLD processing results through implementation of its program.

8.0 RADIATION PROTECTION CONTROLS

The inspector reviewed the accessible areas of the plant and verified that high radiation doors were locked, and radiological postings were posted as required. Some variability in the use of contamination boundary demarcation tape was noted. In some areas rad tape was used on the floor to define the contamination area boundary and in other areas this was not used. In a gas decay tank work area, a contamination rope barricade and posting were used without a floor rad tape boundary. The inspector also noted an extension cord and a hose running from the clean area into the contaminated area without a clear definition of the clean or contaminated portion. Both the cord and hose had been taped down to the floor with conventional tape, which had been pulled loose during the work evolution and the original position of the cord and hose could not be determined. The licensee reestablished a clear contamination boundary and stated that the use of rad tape would be reevaluated. All other postings and housekeeping of plant areas were very good.

Station radiation work permits (special work permits or SWPs) were sampled and were well written. The new Radose system allows workers to sign-in and out on SWPs through a touch-screen CRT Radose interface. Further Radose system capabilities include: screening workers for required training and for ALARA pre-job briefing attendance prior to allowing entry on an SWP. Also the Rad-51 dosimeters allow for dose and dose rate alarms, as well as a timekeeping alarm function. The dose and dose rate alarms currently are being utilized and timekeeping may be utilized after an EPD reader can be located in close proximity to a timed work location. Internal dose tracking is also being developed into the Radose system to allow air sample results to be compared to SWP sign-in times and result in the calculation of personnel internal doses. Development of the above Radose functions will be followed in future inspections.

The inspector reviewed selected radiological incident reports (RIRs) for 1994 to determine the effectiveness of the licensee in identifying and resolving radiological incidents occurring at Ginna Station. Eighteen

RIRs were reviewed, and except for one as discussed below, they were of low safety significance and showed good management attention in effective resolution of the radiological concerns.

Radiological Incident Report No. 94-29 documented a December 5, 1994 event in which a "B" steam generator blowdown system flange was cut from the piping system and carried off site through the guardhouse portal monitors by a worker. Twice, one of the portal monitors alarmed, while two subsequent passes through the portal monitors did not result in an alarm. Security personnel subsequently allowed the worker and the flange to leave the restricted area. After returning from a "clean" offsite licensee photography laboratory, the flange was taken to a "clean" workshop where the flange face was machined. The worker who carried the flange off site became concerned about causing the guardhouse radiation alarms when he had exited the plant with the flange, and asked HP personnel to survey the flange in the workshop. The licensee determined that the flange had contamination of up to 100,000 dpm/20 cm^2 on the flange face. Due to the machining of the face, there was 1500 dpm/100 cm^2 smearable contamination on the workbench area. Until requested by the concerned worker, no surveys or evaluation of radiological conditions had been conducted by the licensee of the flange or of the system from which it was removed. The contaminated flange had been removed from the plant system without establishing radiological controls and released from the site without a survey, even after causing a guardhouse portal monitor to alarm twice. The failure to evaluate radiological conditions or to make radiological surveys is a violation of 10 CFR 20.1501, which requires the licensee to make surveys that may be necessary to comply with the regulations in Part 20 and that are reasonable under the circumstances to evaluate the extent of radiation levels, concentrations or quantities of radioactive materials, and the potential radiological hazards that could be present in use in the work areas. The licensee failed to assess the radiological hazards, including suitable and timely measurements of concentrations of radioactive materials associated with removal of the flange from the steam generator blowdown system and failed to survey the contaminated pipe flange prior to allowing its unrestricted release from the site (50-244/94-29-01).

The inspector reviewed the licensee's actions in response to this event. The licensee determined that the flange contained only fixed contamination until machined later on December 5, 1994 and that no measurable personnel contamination or personnel exposure had occurred due to the event. The licensee determined that there were no multiple barriers to assess radiological contamination in plant systems that were considered to be "clean" and outside of radiological control. The licensee also determined that security personnel had failed to comply with procedures that required notification of health physics personnel upon portal monitor alarm. The licensee conducted a thorough event review and provided a description of final corrective actions to the inspector on January 6, 1995.

The licensee has:

- posted the steam generator blowdown system as a radioactive material area requiring personnel to contact HP prior to entry;
- surveyed other secondary systems and posted "potentially contaminated" stickers as appropriate;
- briefed the work foremen on the incident to increase staff sensitivity on possible contamination of secondary plant components;
- provided a technical evaluation of the guardhouse portal monitors;
- purchased two tool monitors to be used at tool storage locations; and
- changed work package preparation by planners and maintenance to include a list of potentially contaminated secondary systems that require a HP survey prior to work commencement.

The licensee's investigation resulted in the following additional recommendations, which are being considered by the licensee management:

- revision of appropriate security procedures to provide greater detail for response to a portal monitor alarm;
- evaluation of actions to be taken by workers and security personnel when portal monitors alarm because of a high background condition;
- evaluation of other potential pathways for the release of materials from the Contaminated Storage Building and the Hot Shop to unrestricted areas; and
- enhancement of general employee training and HP training to clarify the need for HP technicians to assess whether material can be released for unrestricted areas.

Based on the inspector's review of the licensee's proposed corrective actions, as stated above, it appears that these actions, if fully implemented, are adequate to prevent recurrence of this item. The inspector noted that neither of the specific events involving failure to survey had significant radiological safety potential in themselves. The inspector will review the implementation and effectiveness of these actions in future inspections.

9.0 ALARA INITIATIVES

As of December 22, 1994, Ginna Station had accumulated 148 person-rem for 1994, including 124 person-rem from the Spring refueling outage. The 1994 annual station goal was 155 person-rem. The 1994 accumulated total internal exposure results were 29.77 derived air concentration hours (DAC-hrs), with the maximum individual exposed to 6.4 DAC-hrs. The 6.4 DAC-hrs corresponds to an individual internal exposure of 0.074 rem committed effective dose equivalent, whereas, the annual limit is 5.0 rem total effective dose equivalent. The external and internal exposure results for 1994 were very good as compared to the industry average.

The inspector reviewed the licensee's ALARA program and noted the following areas were under development. In October 1994, the licensee established a new non-HP ALARA group called the Station Outage Exposure Reduction Committee. This group is led by an operator with outage management experience and was chartered by the Plant Manager to focus on maintenance and outage scheduling methods that could result in exposure reductions. This action was taken in response to a 1995 outage goal of 100 person-rem as set by the Vice President-Nuclear Operations. The formation of this group represents an indication of management support for maintaining radiation exposures ALARA and of extending the station ALARA program beyond the HP group to a station-wide emphasis.

The licensee has procured 8 closed circuit video cameras and associated monitors to be utilized during the next refueling outage. This will allow the remote monitoring of significant work locations in containment from the refueling floor HP control point. Also, the licensee is evaluating future permanent shielding projects inside containment. These initiatives will be evaluated in future inspections

In summary, the licensee has strong management support for reducing personnel exposures at Ginna Station. Several significant ALARA initiatives are under development to support a very challenging ALARA goal for 1995.

10.0 TRAINING

The inspector reviewed the licensee's HP technician training program for 1994. The licensee has qualified three HP technicians and has two others still undergoing initial HP technician qualification. The training program has been strengthened by revising the qualification cards and by highlighting to the HP Department those areas for which the staff are qualified and not qualified. The inspector reviewed selected HP technicians' qualifications and found them to be very clear and accurate. The inspector reviewed the HP technician continuing education curriculum for 1994 and found the following subject areas were covered: recent procedure changes, NRC inspection reports, RIRs, radwaste shipping, confined space entry requirements, and self-contained breathing apparatus use requirements. The licensee maintains a very good matrix indicating training attendance and current qualification status of all HP personnel. The inspector reviewed radiation protection curriculum review meeting minutes and verified that there is very good feedback to the training program by the HP organization. Overall, the HP training program was found to be very good.

11.0 EXIT MEETING

The inspector met with licensee representatives (denoted in Section 1.0) on December 22, 1994 and by telephone conference on January 6 and 26, 1995. The inspector summarized the purpose, scope and findings of the inspection. The licensee acknowledged the inspection findings.