

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

DOCKET/REPORT NO: 50-244/94-14

LICENSEE: Rochester Gas and Electric Company (RG&E)

FACILITY: R.E. Ginna Nuclear Power Plant
Ontario, New York

DATES: May 9-13, 1994

INSPECTOR:

Leanne M. Kay
Leanne M. Kay, Reactor Engineer
Electrical Section
Division of Reactor Safety

10 June '94
Date

APPROVED BY:

James M. Trapp
James M. Trapp, Acting Chief
Electrical Section
Division of Reactor Safety

6-13-94
Date

Area Inspected: This was an announced inspection to review the overall adequacy and implementation of RG&E's fire protection program at the R.E. Ginna Nuclear Power Plant. During this inspection, administrative controls and procedures established to implement the fire protection program were reviewed. Procedures reviewed included those related to the control of combustibles, fire-risk evolutions, and fire barrier breach permits. Maintenance and testing records for fire detection and suppression systems were reviewed to assess plant fire control capabilities. Additionally, design control procedures for fire protection screening of plant modifications, and quality assurance audits of the fire program were reviewed. A plant walkdown was performed to assess housekeeping and equipment conditions, and an unannounced fire drill was observed to evaluate the adequacy of the fire simulations and firefighter's extinguishing techniques. The inspector also reviewed an unresolved item regarding fire response plans.

Results: The inspector determined that the fire protection program at Ginna complies with the program requirements provided in the updated final safety analysis report (UFSAR) and licensing documents. The inspector concluded that the policy and procedure documentation reviewed were technically sound and effectively implemented. The fire program adequately designated personnel to implement the program and delineated training and qualification requirements necessary for the program to be effective for protecting the plant from fire.

Fire equipment was properly maintained. Acceptable housekeeping and good fire protection equipment material conditions and control of combustibles were observed. Fireloading was maintained within analyzed quantities. Interviews with personnel demonstrated adequate knowledge of station fire program policy and procedures. Based on the plant tour, the inspector concluded that suppression and detection systems observed were adequate to provide protection against a fire.

A weakness was identified regarding the roster of qualified fire brigade personnel. Specifically, three fire brigade members, who did not successfully pass their annual physicals, remained on the roster. Although none of the unqualified brigade members participated as fire brigade members during the time in which they failed to meet all requirements, the inspector determined that licensee management should improve the feedback process to the training department for verification of brigade members' qualifications.

Based on observation of the fire drill, the inspector determined that the brigade demonstrated proper firefighting tactics for minimizing fire propagation and efficient fire extinguishment. The administrative procedure for fire barrier penetration inspections was found to clearly present requirements that would ensure proper examination and subsequent barrier qualification. Lastly, the licensee's initiative to evaluate Hemyc wrap barrier material test results was considered good, and will be valuable for maintaining its qualification. An unresolved item pertaining to fire response plan format has been adequately resolved and the item is closed.

DETAILS

1.0 PURPOSE

The purpose of this inspection was to assess the overall adequacy, implementation, and maintenance of the fire protection program at the R.E. Ginna Nuclear Power Plant. The inspection included verifications of procedure implementation and evaluation of the technical adequacy of procedures and programs to assure that the fire protection program was consistent with the updated final safety analysis report (UFSAR), fire hazards analysis, and NRC safety evaluation report and supplements. Assessments were made of plant fire equipment conditions and housekeeping by plant walkdowns and maintenance records reviews. Evaluations were made of fire brigade and firewatch personnel qualifications. Program assessments conducted by RG&E were reviewed to evaluate the effectiveness of the audits performed. Surveillance tests and inspections related to fire protection were also reviewed regarding administrative requirements.

2.0 INSPECTION FINDINGS

2.1 Fire Program - Procedure Review and Implementation (64704)

Selected sections of the fire protection procedures listed in Attachment 2 of this report were reviewed by the inspector to verify that the fire protection program requirements, as described in the UFSAR and other licensing documents, have been adequately implemented.

Rochester Gas and Electric Company (RG&E) has established a fire protection plan, dated February 14, 1992, to present requirements and departmental responsibilities for the fire protection program. This plan clearly described the fire protection system design basis. Additional design-basis information of the fire protection program was contained in letters between RG&E and the NRC, including the safety evaluation report (SER) and subsequent three supplements.

Ginna Nuclear Power Plant Administrative Procedure A-202, Revision 7, "The Fire Protection Program," provides guidance for implementing the requirements of the fire protection program. This procedure delineates responsibilities and describes procedures for controlling combustible materials, ignition sources, fire barrier penetrations, impairing fire protection systems, performing firewatches; and conducting plant fire protection inspections. The inspector concluded that the fire program procedure adequately designated the personnel and qualification requirements for those responsible for implementing the program.

The inspector reviewed the general employee training program and corresponding lesson plan to verify that workers have been provided the necessary information pertaining to fire program requirements. The general employee training program included information on hot work permits, fire door closure and use, types of fire suppression systems, and good housekeeping practices. The inspector determined that adequate measures had been established for employees to comply with requirements of the fire protection program.

In addition, the inspector reviewed the licensee's established controls for performing plant modifications. The purpose of this review was to verify that potential impacts on fire protection were made prior to modification installation. The inspector determined that engineering activities that could affect fire protection documents and procedures were controlled by engineering procedures. The inspector found that RG&E Administrative Procedure QE-305, Revision 10, for performing plant modifications (engineering work requests), did require an engineering evaluation for assessing the potential impact on fire protection during the preliminary engineering phase. The inspector concluded that adequate direction for performing fire protection engineering reviews had been established.

The inspector concluded that the policy and procedures reviewed were technically sound and effectively implemented. The fire program adequately designated personnel to implement the program and delineated training and qualification requirements necessary for the fire protection program to be effective.

2.2 Facility Tour

The inspector toured accessible vital and nonvital areas of the site and inspected the fire protection water suppression systems, fire pumps, firewater piping and distribution systems, post indicator valves, yard hydrants, contents of indoor and outdoor fire protection equipment storage cabinets, emergency lighting patterns, and the condition of fire brigade equipment. The tour also included inspection of the various types of fire detectors, alarm panels, positions of automatic and manual fixed suppression instruments, firehose stations, fireloading, fire barrier penetrations, fire detection systems, and fire doors. The inspector also discussed fire program requirements with firewatch personnel encountered during the tour to assess the knowledge of these individuals.

The inspector noted that tank gauges on fire equipment, including extinguishers and halon tanks registered full. Generally, fire doors observed latch properly. Fire brigade members clothes were in good condition and well organized in the turn-out gear closet. Access to fire suppression devices was not restricted by any materials or equipment. The fire suppression system pressure was verified by the inspector to be maintained greater than the required 75 psi both inside and outside the plant.

The inspector reviewed the fireloading for selected plant fire areas, including the turbine oil storage room, for comparison of design-basis loading with actual values. Calorific values (BTU/lb) of materials observed were compared to the total BTU content analyzed for that area. The fireloading values were determined to be within the maximum allowed values established in combustibles' report No. 02-0950-1340, Revision 1. This determination considered combinations of suppression and detection systems present for each area. The inspector determined that the licensee had a good combustible control program.

In general, adequate housekeeping and good fire protection equipment material conditions were observed. The inspector randomly checked inspection tags on portable fire extinguishers and completed surveillance records of hose reels to verify that the required monthly surveillance inspections were performed. The monthly surveillance inspections for equipment observed were completed in accordance with stated requirements.

Based on interviews with personnel both within and outside of the fire department, the inspector concluded that licensee personnel were knowledgeable of station policy and procedures for firewatches, reporting of fires, and responding to fires.

The inspector concluded that fire equipment was properly maintained. Acceptable housekeeping and good fire protection equipment material conditions and control of combustibles were observed. Fireloading was maintained within analyzed quantities. Interviews with personnel demonstrated adequate knowledge of station policy and procedures. Based on this tour, the inspector concluded that suppression and detection systems observed were adequate to provide protection against fire.

2.3 Administrative Controls

The inspector reviewed Ginna Administrative Procedure No. A-804, "Bulk Storage of Combustibles and Their Use," dated November 4, 1993, and procedures listed in Attachment 2 to verify that the following attributes had been established for combustible material and ignition source control to prevent fires and protect safety-related equipment:

- Special authorization is required for the use of combustible, flammable, or hazardous explosive material in safety-related areas;
- All waste, debris, rags, oil spills, or other combustible materials resulting from completed work activities have been removed;
- There are periodic inspections for the accumulation of combustibles;
- Transient combustibles are restricted and controlled in safety-related areas;
- Housekeeping is properly maintained in areas containing safety-related equipment and components;
- Smoking in safety-related areas is prohibited, except where 'smoking permitted' areas have been specifically designated by plant management;
- Requirements have been established for special authorization (permits) for activities involving welding, cutting, grinding, open flame or other ignition sources and that they are properly safeguarded in areas containing safety-related equipment and components;

- Work authorization, construction permit, or similar arrangements are provided for review and approval of construction and maintenance activities that could lessen the safety of the facility; and
- Fire reporting instructions for general plant personnel are developed.

The review of procedures and tours of the site identified acceptable conditions. Appropriate permit systems were in place to control ignition sources such as cutting and welding, the storage of combustible materials, and fire barrier/stop breaches. No hot work in progress was observed. The inspector concluded that the procedures for controlling combustible material were detailed and the procedure requirements were being implemented.

2.4 Fire Program Audits

The licensee is required by the Ginna Station Quality Assurance (QA) Program, Appendix D, technical specifications, and the UFSAR to perform three types of audits of the fire protection program. The QA program verifies that requirements for design, procurement, installation, testing, and administrative controls for the fire protection program for safety-related/safe shutdown plant areas are satisfied. These audits include an independent fire protection and loss prevention program inspection and audit every 12 months, an audit of the facility fire protection program and implementing procedures every 24 months, and an inspection and audit of the fire protection and loss prevention program by a qualified outside fire consultant at least once every 36 months. The inspector reviewed the fire protection audit program to verify that these audits had been performed satisfactorily and in accordance with technical specification requirements.

The inspector noted that the audit findings and observations were good and met the requirements of the program. The audits indicated that Ginna demonstrated good control of the overall fire protection program. Audit scopes were appropriate and based on performance perspectives. The inspector verified that proper reviews and actions were taken to resolve identified deficiencies. No discrepancies were noted for the resolutions reviewed.

Based on review of the audits identified in Attachment 2 and disposition of identified findings, the inspector determined that audit inspection findings were qualitatively assessed and corrective actions had been taken for identified deficiencies. The inspector concluded that audits conducted were effective for assessing fire program attributes.

2.5 Training

The inspector performed a review of Ginna training documents to verify that the licensee had developed and implemented procedures that require:

- Announced and unannounced fire drills;

- A minimum of one drill per year for each fire brigade member;
- At least one backshift drill per year for each brigade member;
- Maintenance of training records; and
- Fire brigade training and retraining at prescribed frequencies.

The inspector determined that the fire brigade training requirements were documented in Administrative Procedure A-103.9, Revision 13, "Fire Brigade Training" and A-102, Revision 12, for "Firewatch Personnel." These procedures adequately presented fire protection personnel duties and responsibilities.

The inspector reviewed 1993 training records of fire brigade members to verify that they completed the required training, drill participation, annual hands-on training, and physicals. The inspector identified that the roster of qualified fire brigade members, distributed by the training department, failed to identify or remove those brigade members who did not fulfill all requirements. Specifically, three fire brigade members who did not successfully pass their annual physicals remained on the roster. Although none of the unqualified brigade members participated as fire brigade members during the time in which they failed to meet all requirements, the inspector determined that licensee management should address the feedback process to the training department. Additionally, affirmation should be made by training of the qualifications of fire brigade members. The fire protection engineer stated that they would correct this process for conveying information back to training.

The fire response plans and lesson plans were reviewed. These fire response plans are used by brigade members for developing firefighting strategies, identification of firefighting equipment, and fire area layouts. The inspector determined that the fire response plans were well designed and effectively presented major and safe shutdown equipment, ventilation systems, operational concerns, and potential hazards. The plans also presented the detection and suppression, fire barriers and their ratings, and any specialized firefighting equipment in each plant fire area.

The inspector determined that the training material presented during recent fire brigade and firewatch training was organized and clearly presented the information to support the objectives. Discussions held with fire brigade members and firewatch personnel indicated that they were cognizant of their responsibilities. The fire brigade members stated that the training was good and helped maintain their fire protection and firefighting skills.

The inspector concluded that good procedures had been developed and implemented to properly incorporate training program requirements. Training records were complete and training materials were organized. Overall, the inspector concluded the training program

was adequate to present fire program requirements. However, the process for providing necessary information back to the training department requires improvement for their verification of brigade qualification.

2.6 Fire Drill

The inspector observed an unannounced fire drill. The inspector performed this review to evaluate brigade response and understanding of fire attack strategies.

An unannounced drill was conducted in the "A" emergency diesel generator room. The drill was conducted to demonstrate the following:

- An understanding of the fire attack strategy;
- The ability to properly assess the fire;
- An awareness of vital equipment in the area;
- Effective communication with other brigade members; and
- An awareness of additional hazards in the fire area.

The inspector determined that proper command and control was taken by the brigade leader and actions were timely and decisive. Fire brigade members responded to the alarm appropriately, utilized the fire response plan, and analyzed the fire situation in a timely manner.

The inspector concluded that the fire brigade response was appropriate. The brigade members were knowledgeable of strategies and demonstrated proper fire fighting tactics for minimizing fire propagation and efficient fire extinguishment.

2.7 Fire Equipment Maintenance and Inspection

The inspector reviewed selected surveillance, maintenance, and inspection procedures for fire protection equipment to verify that the procedures provided adequate detail and were technically sound. Attachment 2 contains a list of the procedures of which selected sections were reviewed by the inspector. In addition, a sample of completed test results and inspection records were reviewed to verify compliance with UFSAR commitments and to verify that procedure implementation was appropriately documented.

Based on this review, the inspector concluded that procedures were adequate. These procedures provided adequate detail and were effective for maintaining equipment and verifying operability. The test results and inspection records reviewed verified the equipment was in compliance with UFSAR commitments, and were properly documented.

2.8 Fire Barrier Penetrations

Administrative Procedure A-202, Revision 7, establishes administrative controls and requirements to prevent fires and to ensure activities are conducted in a manner that promotes fire prevention. Fire barriers are located throughout the plant to prevent a fire from spreading from one area to another. Penetrations in these barriers are sealed to maintain the integrity of the barrier. RG&E has a fire penetration seal program to provide control such that all penetrations, temporary and permanent, are identified, sealed, tagged, and maintained in good condition.

RG&E Procedure FPS-2, Revision 1, "Ginna Station Fire Barrier Penetration Seal Program," establishes controls and procedures to maintain fire barriers and delineates responsibilities for ensuring penetrations are intact. Quality control (QC) inspection procedure No. 44, Revision 5, "Fire Barrier Inspection," presents the methodology and acceptance criteria to be used in the inspection of fire barriers/penetrations. The inspector found these procedures were very thorough and clear in describing the acceptance criteria for components or component attributes such as depth, thickness, cracks, and inclusions.

The inspector verified that evaluations for existing penetration seal materials existed to support their qualification for each use throughout the plant. Ginna engineering work request No. 4941 established penetration qualification packages and design-basis information for fire barrier seals. This information included endurance qualification tests performed in accordance with ASTM-E-119 (1976). Results of these tests for varied configurations demonstrated that none of the seals allowed the passage of flames during the fire exposure period.

Based on this review, the inspector determined that qualification documentation for penetration seal materials was concise. The inspector concluded that Ginna had established good controls for maintaining the integrity of fire barriers and considered these controls a strength in the fire program.

2.9 Hemyc Wrap

In an effort to verify Ginna's compliance with fire protection requirements, RG&E began a review of the fire barrier material Hemyc, utilized at the site, to satisfy those requirements. RG&E is taking proactive steps to address the issue of whether the as-built condition of the Hemyc wrap systems are adequately demonstrated by full-scale fire testing. These steps are an effort to circumvent any possible future questions that may arise in comparison of Hemyc wrap to other fire barrier wrap used at other nuclear plants. Hemyc wrap was designed to provide a one-hour fire-resistance rating. The wrap is credited for providing this rating in the Appendix R-Safe Shutdown Analysis.

Hemyc wrap is one type of fire barrier wrap system with a one hour application. The qualification of this wrap includes standards and test methods as well as acceptance criteria delineated in the manufacturer's test report. The manufacturer's test utilized the ASTM-E-119 (1983) standard for furnace temperature and American National Insurer's (ANI) criteria, "Standard Fire Endurance Test Method to Qualify a Protective Envelope for Class 1E Electrical Cables." The ANI standard tests the maintenance of circuit integrity for the duration of fire exposure.

Ginna has completed a plant walkdown of field configurations of Hemyc wrap and has documented the as-built configurations identifying installation features such as raceway size and orientation, variations in the base protective wrap system, and wrapping of supports, interfaces, and penetrations. At the time of this inspection, RG&E Engineering was evaluating the plant configurations with the tested configurations documented by the manufacturer. Based on this evaluation, upon completion, a test matrix can be developed to determine the minimum number of tests, if necessary, which must be performed to provide performance data for all the critical design features not previously tested for the Hemyc wrap at Ginna.

Based on the above actions by the licensee, the inspector concluded that Ginna aggressively approached this Hemyc wrap review and is appropriately considering future actions, as necessary, to fully qualify installed plant configurations.

3.0 (Closed) Unresolved Item No. 50-244/89-80-06 for Evaluation of Site Contingency Procedures Related to Firefighting

The NRC identified that site contingency procedures had a complex format and were difficult to use. Ginna stated that they would evaluate and reformat these procedures as required. This item remained open pending formal documentation of the proposed reformatted plan.

The licensee established a committee to develop new fire protection procedures. The licensee also developed a fire response plan (FRP) task management manual, which defined the technical basis, description, writing guides, basis for verification and proposed work, and milestone schedule for the procedure revision program. The FRPs were developed for each fire area and compiled into a manual. This manual was organized by fire suppression and detection system designation and plant area. The manuals are located in each brigade locker and in the control room. Brigade members have been trained on the revised FRPs and will be retrained during fire brigade refresher training. The licensee plans to review the FRPs on a three-year cycle in accordance with Technical Engineering Guideline 3.0, "Fire Response Plan Control Guideline," Revision 0. Each FRP identified the major equipment, safe shutdown equipment, ventilation, operational concerns, potential hazards, detection and suppression, fire barriers, and any specialized firefighting equipment needed by firefighters for each plant area. These FRPs are utilized by firefighters in determining firefighting strategies for extinguishing fires.

Based on review of the FRPs, the inspector concluded that these plans are well organized and clearly presented valuable information for fire situation analysis necessary for effective firefighting. This item is closed.

4.0 UNRESOLVED ITEMS

Unresolved items are matters about which additional information is necessary to determine whether they are acceptable, a deviation, or a violation. One unresolved item was discussed in detail in Section 3.0 of this inspection report.

5.0 EXIT MEETING

The inspector met with RG&E personnel denoted in Attachment 1 of this report at the conclusion of the inspection on May 13, 1994. The scope of the inspection and inspection results were summarized. During this meeting, the licensee acknowledged the inspection findings and stated commitments regarding verification of fire brigade qualifications by training, as detailed in this report. Also at this exit, it was established that Mr. Mark Cavanaugh would be the Ginna technical contact for future NRC discussions regarding the issues covered by this report.

ATTACHMENT 1

Persons Contacted

Rochester Gas and Electric Company

* M. Cavanaugh	Fire Protection Engineer
* C. Edgar	Manager, Electrical/Instrumentation and Controls
* P. Gorski	Manager, Mechanical Maintenance
* T. Harding	Lead Engineer, Technical Engineering
* G. Hermes	Lead Engineer, Safety and Licensing
* K. Laubacker	Lead Electrical Engineer
* F. Macidoska	Supervisor, Licensed Training
* R. Marchiandi	Superintendent, Production
* R. McMahon	QC Engineer
* E. Palmer	Training Supervisor
* J. St.Martin	Director, Operating Experience
* C. Vitali	Corporate Fire Protection Engineer
J. Widay	Plant Manager

U.S. Nuclear Regulatory Commission

* E. Knutson	Resident Inspector
* W. Lazarus	Section Chief, DRP, Region I
T. Moslak	Sr. Resident Inspector

* Indicates those in attendance at the exit meeting held on May 13, 1994.

ATTACHMENT 2

Documents Reviewed

Procedures

A-102	Rev. 12	Firewatch Training
A-202	Rev. 7	The Fire Protection Program and Ginna Station Staff Responsibilities for Fire Protection
A-905	Rev. 19	Open Flame, Welding, and Grinding Permit
A-804	Rev. 12	Bulk Storage of Combustible Materials and Their Use
FPS-1	Rev. 3	Fire Barrier Control Procedure
QE-305	Rev. 10	Preparation, Review, and Approval of Design Verification (for major modifications)
A-301	Rev. 21	Control of Station Modification (for minor modifications)
A-303	Rev. 10	Preparation, Review, and Approval of Safety Analysis
QCIP-44	Rev. 5	Fire Barrier Inspection (Method and Acceptance Criteria)
A-103.9	Rev. 13	Fire Brigade Training
A-54.7	Rev. 12	Fire Protection Tour

Surveillance Tests

FPS-2.1	Rev.3	Control and Verification of UFSAR and/or 10 CFR 50 Appendix R Fire Barriers, dated 12/23/93
M-38.1	Rev.19	Diesel Fire Pump Engine Maintenance and Inspection, dated 9/24/93
PT-13	Rev.74	Fire Pump Operation and Systems Alignment, dated 3/11/94 and 4/12/94
PT-13.4.28	Rev.20	Halon System Testing Computer Room, dated 8/13/93 and 1/26/94
PT-13.7	Rev.22	Fire Hose Reel Assembly, dated 3/7/94 and 4/11/94
PT-13.14	Rev.11	Containment Charcoal Filter Heat Detector, dated 3/5/94 and 3/13/94
PT-13.4.33	Rev.14	Station Halon Systems Bottle Weighing, dated 7/28/93 and 1/27/94

Audits

Audit No. 92-17:CJK (Annual), 91-24:CJK (Bi-annual), and 93-22:CJK (Triennial)

Lesson Plans

FE 121D	Rev.0	Fire Brigade Training Drill
FFB35C	Rev.2	Industrial Hazards and Protection
FFB43C	Rev.5	Hydrants and Hose
FFB53C	Rev.1	Coordinated Fire Attacks
FFB31C	Rev.4	Fire Brigade Responsibilities
FFB36C	Rev.1	Fire Brigade Response
FFW01C	Rev.2	General Employee Training

Modifications

EWR #4941	Fire Barrier Penetration Seals, Revision 2, dated 10/5/92
EWR #4882C	Fire Damper Replacement, Revision 0, dated 1/21/94

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