

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

REPORT/DOCKET NO. 50-244/92-18
LICENSE NO. DPR-18
LICENSEE: Rochester Gas and Electric Corporation
89 East Avenue
Rochester, New York 14649
FACILITY NAME: Robert E. Ginna Nuclear Production
INSPECTION AT: Rochester, New York
INSPECTION DATES: November 9-13, 1992

INSPECTOR: A. L. Della Greca 12/4/92
A. L. Della Greca, Sr. Reactor Engineer,
Electrical Section, EB, DRS Date

APPROVED BY: J. P. Beall / for 12/9/92
W. H. Ruland, Chief, Electrical Section,
Engineering Branch, DRS Date

Areas inspected: Routine announced inspection by regional personnel to review the status of previously identified open items and to determine the adequacy of the licensee's actions to resolve these issues.

Results: The inspection concluded that the licensee satisfactorily resolved the previously identified issues. No new violations were identified. However a concern was raised regarding the potential cable routing deviations identified by the licensee while addressing a similar deviation previously identified by the NRC. No documentation was available to show that the identified cable routing deviations had been reviewed to assess their impact on safety.



1.0 SCOPE OF INSPECTION

The purpose of this inspection was to review the status of several issues identified previously, during the NRC inspection of the licensed program, and to determine the adequacy of the licensee's corrective actions in resolving each issue. Four of the issues reviewed were identified during the electrical distribution system functional inspection (EDSFI), in May and June 1991 (Inspection Report No. 50-244/91-80). Three additional issues were identified during an assessment of engineering and technical support, in January 1992.

2.0 STATUS OF PREVIOUSLY IDENTIFIED ITEMS

2.1 (Closed) Deviation No. 50-244/91-80-01 regarding the inadequate configuration of tie breaker BT17-18.

While reviewing the physical configuration of the emergency buses, the EDSFI team determined that only one breaker had been provided to interconnect buses 17 and 18. The concern with the use of one breaker to interconnect redundant buses was that the spurious closure of the breaker through a single failure could result in the loss of three of the four emergency buses. The identification of the deficiency to the licensee resulted in the immediate withdrawal of the breaker in its test position. However, an evaluation of this issue at the time of the EDSFI concluded that the as-found configuration of the buses and tie breaker constituted a deviation of paragraph 3.1.2.2.8 of the Updated Final Safety Analysis Report (UFSAR) regarding independence of the on-site electrical sources.

In its response to the Notice of Deviation, the licensee indicated that the tie breaker was in its original plant configuration and that redundant control interlocks were provided. This design and configuration was considered to meet the single failure criterion at the time of review. Nonetheless, as stated above, the licensee withdrew the breaker in its test position. In this position a single failure of the breaker in its closed position will not invalidate the redundancy of buses. To ensure that the revised bus configuration was maintained, the licensee revised procedure O-6.13, Daily Surveillance Log, to require verification that the bus tie breaker is open and in the test position.

The current inspection verified completion of the above actions, therefore this issue is closed.

2.2 (Closed) Deviation No. 50-244/91-80-02 regarding the inadequate separation between the component cooling water (CCW) pumps control circuits.

While reviewing the control logic for the CCW pumps, the team found that the 125 Vdc control circuit conductors for both pumps shared the same four conductor cable. This finding was considered to constitute a deviation from the statement in paragraph 8.3.1.4.2 of the UFSAR regarding cable routing.



To address this issue, the licensee committed to separate the conductors during the 1992 refueling outage and to initiate a study that would identify safety-related and engineered safety feature circuits not meeting the current separation criteria.

During the current inspection, verification of the corrective actions determined that the licensee had initiated an engineering work request (EWR) to identify other potential items of noncompliance. The results of this review are discussed below, under Section 3.0. The review also determined that a modification to separate the control conductors had been completed and that an appropriate safety evaluation in accordance with 10 CFR 50.59 had been performed. Based upon this review, this item is closed.

2.3 (Closed) Unresolved Item No 50-244/91-80-03 pertaining to completion of the dynamic response analysis of the emergency diesel generator.

The EDSFI team's review of a preliminary transient analysis determined that, although the general approach was acceptable, several assumptions used in the analysis had not been properly substantiated. These included non-validated model software, unknown constants for the exciter and governor, and unretrievable values for speed-torque curves and motor inertia. Therefore, the capability of the emergency diesel generators to accept and power emergency loads was unresolved pending the licensee's completion of the analysis and appropriate verification or justification of the assumptions.

During the current inspection, the licensee provided new steady state loading analyses DA-EE-92-098-01 and DA-EE-92-120-02, for diesel generators A and B, respectively. These analyses evaluated the diesel loading requirements during the injection and recirculation phases of a worst case accident and the capability of the diesel generators to power those loads. Where motor data was not available, tests were conducted to develop it. The licensee also provided a draft copy of diesel generator A dynamic loading analysis, DA-EE-92-112-01, dated October 25, 1992. This analysis used the test results and the data developed for the steady state analyses to evaluate the dynamic voltage and frequency response of the diesel generator to the accident loads addition. The analysis also developed and verified computer models for motors and diesel generator components. The various cases evaluated addressed timer drift and loading of the containment spray pump (process dependent) at various points of the loading cycle. Voltage and frequency plots were developed for worst case loss of coolant accident (LOCA) occurring concurrently with, before and after a loss of offsite power (LOOP). In all cases, the plots indicated acceptable voltage and frequency transients and the capability of the diesel generators to accept and accelerate the loads.

At the time of the inspection, the analysis for diesel generator A was under review for approval; the analysis for generator B, DA-EE-92-113-01, was being finalized, with all computer simulation and plots completed. The results of the generator B analysis were similarly acceptable. Based on the review of the draft dynamic analysis, this item is closed.



2.4 (Closed) Violation No. 50-244/91-80-04 related to the lack of evaluation of the protective relay setting driftings below the Technical Specification limits.

During the May 1991 EDSFI, the inspection team found that three protective relays settings had drifted below the Technical Specification limit and had not been evaluated. The finding was considered to be a violation of the requirements contained in the Technical Specification and in the relay calibration procedure PR-1-1.

In their letter of September 30, 1991 the licensee disagreed with the violation indicating that, although the as-found settings were below the Technical Specification limit, they did not exceed the acceptance criteria of the new procedure PR-1-1. They also stated that they had previously reported a similar situation in LER 90-008, Revision 1.

The NRC's review of the data provided by the licensee, concluded that the violation had been improperly cited. However, the corrective actions resulting from the LER were deemed inadequate to preclude recurrence of the problem. The new finding was considered to be a violation of 10CFR 50, Appendix B, Criterion XVI. The issues were discussed with the licensee during a telephone call on December 27, 1991 and a Notice of Violation was issued with the letter of June 29, 1992. This letter also stated that the data provided by the licensee to address the new violation had been reviewed and found acceptable. No further actions were required or taken by the licensee to address the new violation. Therefore, this issue is closed.

2.5 (Closed) Unresolved Item No. 50-244/91-80-05 regarding degraded Voltage effects on Class 1E motors.

The EDSFI team's review of the degraded voltage study determined that it did not analyze the voltage levels at the terminals of the loads supplied by the safety-related motor control centers (MCCs) and which are required to operate during an accident. Therefore it concluded that there was no assurance that such loads could operate safely under degraded conditions.

To address this issue, the licensee prepared an analysis, No. DA-EE-92-008-07, Effects of Degraded Voltage on MCC 1E Motors, dated August 19, 1992. This analysis assumed minimum voltage at the emergency bus and calculated the minimum expected voltage at each of the safety-related loads supplied by the MCCs. In the worst case, the voltage was calculated to be 84.3% of the motors rated voltage and would recover to above 90% within a two hour period. The analysis concluded that, at the calculated voltages, all motors would be able to operate safely and that minimum degradation of the motors insulation would occur as a result of their operation under the degraded condition for the two hour period. The calculation estimated that the effect of the degraded voltage condition on a Class B motor insulation would be equivalent a less than 40 hours operation at rated voltage. The service life expectancy of a motor operating at rated voltage is approximately 20,000 hours. In view of the above, this issue is closed.



2.6 (Closed) Violation No. 50-244/92-01-01 pertaining to the lack of documentation to establish the environmental qualification for the SMA type torque switches.

During the January 1992 evaluation of the licensee's engineering and technical support staff, the NRC inspectors determined that the licensee had discovered three safety-related motor operated valves (MOVs) with SMA type torque switches. These switches had not been environmentally qualified by Limatorque, the motor operators manufacturer, as stated in their maintenance bulletin issued in August 1988. No evaluation had been performed by the licensee to establish the environmental qualification of the switches and no justification had been prepared for the specific application. The absence of qualification documentation was considered to be a violation of 10CFR 50.49.

In their response to the Notice of Violation, on May 6, 1992, the licensee disagreed that the finding was a violation and stated that the applicable file was maintained current for all significant information available to them. The reasons cited by the licensee to support their position included: 1) the qualification report for the Limatorque operator did not address individual piece parts; 2) torque switch requirements were inserted into the package when the torque switches were replaced; 3) they and the NRC had no basis for knowing the potential presence of untested type torque switches in the Ginna valve operators; 4) the NRC identified no items of concerns during their review of the valve operator file; 5) the Limatorque maintenance bulletin did not require immediate action; 6) the only qualification parameter affecting the SMA switches in question was radiation; and 7) they were well underway in establishing a comprehensive maintenance program for the valve operators, including replacement of the torque switches.

During the current inspection, a review of the issue determined that Limatorque, the valve operator manufacturer, had mailed the maintenance update bulletin to a plant maintenance engineer recently appointed by the licensee to coordinate MOV related activities. The bulletin, dated August 17, 1988, pointed out that valve operators with serial numbers less than 108000 could contain unqualified torque switches and recommended that safety-related units be inspected to ensure that they contained only qualified switches. The bulletin was reviewed by a Henze-Movats engineer who recognized that most valves were suspect, but stated that the switches would be replaced as part of the refurbishment program.

At the time of receipt of the bulletin, a procedure was in place describing the program for the review, assessment and feedback of operations experience. This procedure, No. 1404, Revision 10, dated April 23, 1988, required that the Operational Assessment Coordinator review the "industry documents," establish priorities, distribute copies to responsible technical personnel, and track their review to closure. Maintenance bulletins, like 10 CFR Part 21 reports, were neither specifically identified nor excluded by Section 3.2.2 of the procedure which considered, among others, "Commercial Information Sources, Professional and



Industry Associations, and others" to be "industry documents." Despite the procedure requirements, apparently neither the maintenance bulletin nor the contractor's recommendations received further review by the Operational Assessment Coordinator or other licensee personnel.

In view of the above, the inspector concluded that, prior to the receipt of the maintenance bulletin, the licensee had no basis for suspecting the existence of unqualified components within the Limitorque operator. Therefore, until that time, the qualification package was current. Although, the necessary elements for a proper review of the maintenance bulletin by responsible equipment qualification personnel were in place, no review was conducted and no impact analysis was performed. Therefore, the violation was justified and stands as stated in the Notice of Violation.

The claim that the maintenance bulletin required no immediate action has no basis since it is the licensee's responsibility to determine the urgency of corrective actions and to prepare appropriate justification. Regarding qualification of the torque switch, an analysis was not performed until questioned by the NRC. Therefore, its qualification status was not known.

The torque switches were replaced with qualified ones in 1990. In addition, the analysis concluded that the replaced switches were qualifiable. Therefore, the corrective actions are acceptable and the issue is closed. No further response to this violation is necessary.

2.7 (Closed) Unresolved Item No. 50-244/92-01-02 regarding timeliness of the 10CFR Part 21 report submitted by RG&E to address loose screws and sockets associated with MOV operators.

As stated in NRC Inspection Report No. 50-244/92-01, during the refurbishment of the valve motor operators, the licensee identified the existence of loose screws affecting safety-related components. The discovery eventually resulted in a licensee notification in accordance with 10 CFR Part 21 in May 1990. Because the existence of loose screws was originally identified during the 1988 refueling outage, the timeliness of this report was questioned.

In their letter of May 6, 1992, the licensee indicated that an assessment of the loose hardware was not performed until the end of the 1990 refueling outage (April 1990), when the inspection of all Ginna MOV's for SMA style torque switches was completed. Therefore, the report in accordance with 10 CFR Part 21 was timely. The licensee also stated a time limit between the time of discovery of a potential concern, completing the evaluation and determining the need for reporting the concern under 10 CFR 21 was not in place at the Ginna station until late 1991.



A review of licensee documentation indicated that loose terminations were originally addressed in July 1989 through Corrective Action Report (CAR) No. 1977. Resulting actions included contacting the valve operator manufacturer and Henze-Movats personnel to determine whether the problem was generic or not. Also, a licensee meeting held on October 25, 1989, concluded that they should continue the monitoring of loose hardware problems. In March 1990, in conjunction with the refueling outage maintenance of valve operators, a procedure was revised to address this issue and on May 18, 1990, the first draft of the 10 CFR 21 report was completed. The NRC was formally notified on May 30, 1990.

A review of the pertinent procedure, No. A-61, Revision 12, dated June 10, 1986, was also performed. Under Appendix B, Interpretation of 10 CFR 21 Rules and Guidelines, step B.22 states that "There is No Time Limit on evaluations of deficiency or Noncompliance." In addition, step B.25 states that "The 48 hours time period for initial notification does not begin to run until the evaluation has been completed and the Vice President of Electric and Steam Production has been informed." The stated interpretation was in general agreement with the 1990 requirements for 10 CFR 21 reporting. A review of the revised procedure indicated that the current 60-day reporting requirement of 10 CFR 21 had been incorporated therein. Based on the above, the inspector concluded that the licensee report of loose terminations under 10 CFR 21 was adequate. Therefore, this issue is closed.

2.8 (Closed) Unresolved Item No. 50-244/92-01-03 related to the timeliness in addressing environmental qualification of SMA type torque switches.

As stated in Section 2.6, above, the unqualified status of SMA type torque switches was communicated to the licensee by the manufacturer through a maintenance bulletin that was received by an engineer recently assigned to the position. The inspector's evaluation of the issue indicated that the limitorque bulletin was viewed as a maintenance issue and submitted to an individual who had been contracted specifically to develop a valve refurbishment program. His response to the responsible engineer indicated that he understood the issue and that the obsolete switch would be replaced with a fully qualified one. The switches were replaced at the subsequent refueling outage.

Discussions with engineers involved and the fact that other issues identified by the maintenance bulletin were properly handled, indicated that the mishandling of the SMA switch qualification was an isolated case. Contributing factors were considered to be the responsible engineer's limited experience and familiarity with the procedure requirements and the vagueness of the procedure regarding applicability. The applicability procedure, Procedure No. 1404, was revised to clarify the applicability and scope of the required review. The inspector reviewed the revised procedure and had no further questions; this item is closed.



3.0 CABLE SEPARATION

To address a cable separation issue identified during the 1991 EDSFI (Section 2.2, above) the licensee issued Engineering Work Request (EWR) No. 5441. The purpose of the EWR was to review the cable list to determine whether the conductors of other redundant components had been scheduled within the same cable as in the case of the component cooling water pumps. The EWR was also to establish whether credible failures could cause the simultaneous loss of redundant safety-related equipment when required for accident mitigation.

A review of the EWR indicated that the licensee had identified 27 additional situations where conductors from redundant equipment were within the same cable. In most cases, a preliminary description of the problem and of the consequences of the cable failure had been provided. In several cases, only the cables involved had been identified. Because of the equipment involved, the inspector asked whether the impact of the identified problems had been fully evaluated, but determined that no evaluation had been performed and that a review of the issue had been rescheduled to be completed by June 1993. At the request of the inspector, the licensee performed a preliminary safety evaluation and concluded that the loss or failure of any of the cables identified by the EWR would have no safety consequences. The inspector was satisfied with the results of the preliminary analysis and that no safety concerns existed regarding the cable separation deviations identified. However, the cable separation issues are unresolved pending completion of the analysis and resolution of resulting issues by the licensee (50-244/92-18-01).

4.0 UNRESOLVED ITEMS

Unresolved Items are matter about which more information is required to ascertain whether they are acceptable items or violations. One unresolved item identified during this inspection is discussed in Section 3.0 of this report.

5.0 EXIT MEETING

The inspector met with the licensee personnel, denoted in Attachment 1, at the conclusion of the inspection on November 13, 1992 and summarized the scope of the inspection and the inspection findings. In particular, the inspector informed the licensee that insufficient bases had been found for withdrawal of the contested violation described in Section 2.6 of this report. The reasons for this conclusion were also presented. No further comments were received from the licensee regarding this issue.



ATTACHMENT 1

Persons Contacted

Rochester Gas and Electric Corporation

R. Arnold	DBD Project Manager
J. Baker	MOV Maintenance Coordinator
* J. Di Biase	Electrical Engineer
* C. A. Forkell, Jr.	Manager Electrical Engineering
R. Jaquin	Engineer Nuclear Safety and Licensing
* N. J. Love	Lead Electrical Engineer
* T. Miller	Lead Electrical Engineer
* J. Pacher	Electrical Engineer
P. Swift	Electrical Engineer
C. Vitali	Mechanical Engineer
* P. Wilkens	Department Manager Nuclear Engineering Services
* G. Wrobel	Manager Nuclear Safety and Licensing

U. S. Nuclear Regulatory Commission

* E. C. Knutson Resident Inspector

* Denotes personnel present at the exit meeting of November 13, 1992

