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 CRUTCHFIELD,D. Operating Reactors Branch.5

SUBJECT: Forwards application for exemption from schedular
 requirements of 10CFR50.48 for alternative shutdown sys
 required by 10CFR50, App R.

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NOTES:NRR/DL/SEP 1cy.

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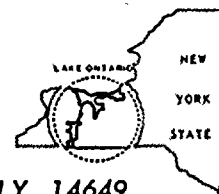
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ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649

JOHN E. MAIER
Vice President

TELEPHONE
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December 27, 1983

Director of Nuclear Reactor Regulation
Attention: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch No. 5
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: 10 CFR 50.48 Exemption Application
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Crutchfield:

Rochester Gas and Electric is requesting an exemption from the scheduler requirements of 10 CFR 50.48 with the enclosed application. RG&E has recognized from the time that 10 CFR 50 Appendix R was issued that the schedule requirements for back-fitting to achieve compliance with the regulation were going to be very difficult to meet. An application for exemption was first submitted November 17, 1982. Additional analyses have been performed since the time of that application which show that RG&E is closer to compliance than originally established. Alternative modifications have also been developed which can be implemented with less disruption to the plant, more quickly than the previously approved dedicated shutdown system, and with incremental safety benefits during the modification process. In addition, interim compensatory measures are proposed which will provide substantially the same safety benefit as the permanent backfits for regulatory compliance. Therefore, RG&E believes that compelling reasons justify the issuance of the requested exemption.

Very truly yours,

John E. Maier
John E. Maier

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10 CFR 50.48 EXEMPTION APPLICATION
ROCHESTER GAS AND ELECTRIC CORPORATION
GINNA NUCLEAR PLANT

On April 13, 1983, the Nuclear Regulatory Commission forwarded a safety evaluation report (SER) for Ginna Nuclear Plant describing the status of conformance to the backfit requirements of 10 CFR 50 Appendix R. In that correspondence, the Commission reviewed the dedicated shutdown system originally proposed by Rochester Gas and Electric Corporation (RGE) on March 19, 1981 and approved it as an alternative shutdown system thereby enacting the scheduler requirements of 10 CFR 50.48(c)(4). These requirements call for the implementation of modifications before startup after the earliest of the following events commencing 180 days after Commission approval:

- (1) The first refueling outage;
- (2) Another planned outage that lasts for at least 60 days;
or
- (3) An unplanned outage that lasts for at least 120 days.

Based on the SER received in April 1983, the date from which the first of these events must be considered is calculated to be October 10, 1983.

RGE has evaluated the circumstances associated with this matter and has determined that an exemption from the scheduler requirements of 10 CFR 50.48 is both warranted and due for the following reasons:

- (1) A reanalysis of methods of achieving conformance to Appendix R has been completed since April 1983. The results of this program have identified an alternative shutdown approach that will achieve conformance to the rule substantially earlier and with less impact on the plant than with the previously approved dedicated shutdown system;
- (2) The new alternative shutdown system will be incorporated in the plant by means of a phased program allowing for a sequential implementation of improvements in the post-fire safe shutdown capability. Conversely, the previously proposed dedicated shutdown system provided total safe shutdown capability only after complete system installation without the desirable incremental increase in plant safety;
- (3) As a result of the new analysis, it has been determined that the Ginna Plant is closer to verbatim Appendix R compliance than previously determined. Compensatory measures are proposed to provide substantially the same

safety benefits as verbatim Appendix R compliance prior to the installation of each required alternative shutdown plant modification.

- (4) The scheduler requirements associated with modifications required for implementation of the proposed alternative shutdown system are not possible to meet given current RGE resources and previous licensing commitments;
- (5) Substantial fire prevention, detection and suppression improvements have been made by upgrading features and programs at the Ginna Plant in response to BTP 9.5-1. These upgrades have increased plant and public safety.

The test for an exemption from requirements stated under Part 50 is described in subparagraph 50.12, "Specific Exemptions". Under this section, the Commission may grant an exemption as it determines is authorized by law and will not endanger life or property or the common defense and security and is otherwise in the public interest. RGE believes that this test may be satisfied under these circumstances in that the conduct of activities necessary to meet the schedule of 10 CFR 50.48 would:

- (1) Adversely impact plant operation;
- (2) Introduce unresolved safety issues due to the potential lack of detailed review of proposed modifications; and
- (3) Is contrary to the safe operation of the plant and the interests of public health and safety.

Further, the implementation of the alternative shutdown system, to be described in more detail in a subsequent submittal, provides for faster compliance with Appendix R with less cost to the consumer and ultimately less impact on plant operation and safety.

The following sections discuss the major reasons for justifying the scheduler exemption request in more detail.

Background

It is a matter of record that RG&E has supported the objectives of the Commission's fire protection program from its inception.

With the issuance of Appendix R in November 1980, RG&E was compelled, based on initial studies and the limited period allowed licensees to respond under 10 CFR 50.48, to propose to implement a dedicated shutdown system. RG&E opted to support the Commission's goals and to propose, in a timely manner, the most prudent compliance option available at that time.

Over the next 25 months, RG&E participated with the Commission in providing detailed information concerning the proposed dedicated shutdown system. This system, as defined by late 1982, involved

extensive proposed plant modifications including:

- (1) A new vital bus switchgear located in the Standby Auxiliary Feedwater Building;
- (2) New dedicated shutdown system (DSS) switchgear including a new seismic category 1 structure;
- (3) New power, control, and instrument circuits for the DSS bus;
- (4) A new DSS control panel containing instrumentation and controls for the DSS including isolation and transfer devices; and
- (5) New dedicated instrument loops and transmitters.

Such a listing is clearly impressive and suggests a massive engineering and construction effort for installation. In addition, the vendor lead times for many of these items are now known to be especially long with switchgear delivery extending two or more years from receipt of orders. Thus, procurement activities for such items alone clearly precluded meeting the schedule dictated in 10 CFR 50.48(c)(4).

During this period of fire protection review, RGE was also participating in the Systematic Evaluation Program (SEP). The objectives of this program were to (1) assess the significance of the differences between current technical positions on safety issues and those which existed when the plant was licensed; (2) establish a basis for resolving the differences in an integrated fashion; and (3) document the evaluation of plant safety. As with other SEP plants, fire protection was identified as one of the many issues to be resolved. Another topic to be resolved under SEP was "Systems Required for Safe Shutdown". Initial studies by RGE suggested that a dedicated shutdown system would offer the most effective solution to both the SEP and fire protection programs.

RG&E recognized subsequently during the design process for the dedicated shutdown system that the Commission's Appendix R schedules were unrealistic and applied for a schedular exemption November 17, 1982. Difficulty in meeting the schedules for the significant modifications required was evident at RG&E, and industry wide response to Appendix R implementation schedules lends credence to the assertion that the schedules were unattainable. In addition, RG&E frequently noted that the identified modifications of the proposed dedicated shutdown system were those anticipated to be used to resolve SEP review requirements, even though the specific modifications were developed for Appendix R compliance.

RG&E recognized, as did the NRC staff in their letter dated April 11, 1983, "that in the integration process some aspects of the fire protection modifications may be altered." As the SEP Integrated Assessment took place it became evident that the dedicated shutdown system was unnecessary for SEP topic resolution and that 10CFR 50 Appendix R compliance modifications should be redefined. However, because of the integration with SEP modifications, a firm schedule could not be presented in 1982 and the RG&E exemption request was denied.

Because of these reasons and escalating cost estimates for the dedicated shutdown system, it was decided to reanalyze the Ginna Plant to evaluate alternate means for meeting Appendix R requirements. As a result, a new alternative shutdown approach was defined between January and September of 1983. This approach provides for fewer plant modifications, allowing for a more timely and cheaper method of conforming to Appendix R. This approach also incorporates Commission guidance that evolved during 1982-1983.

New Alternative Shutdown Approach

A detailed description of the new alternative shutdown approach, based on the reanalysis performed in 1983, will be submitted to the Commission within 30 days of transmittal of this letter. The approach combines local safe shutdown system control capability, limited upgrading of fire area boundaries and installation of one- and three-hour-equivalent protection of selected safe shutdown power, control and instrumentation circuits. This approach provides a level of safe shutdown capability commensurate with that achieved by the earlier dedicated shutdown system. Due to the significantly reduced number of modifications, conformance to Appendix R will be achieved in a shorter timeframe, with a substantially reduced magnitude and cheaper set of modifications which will result in less subsequent impact on plant operations and safety.

Activities necessary to implement the alternative shutdown approach consist of:

- (a) Protection of selected safe shutdown cables;
- (b) Modification of charging pump breaker power circuits;
- (c) Modification of emergency diesel generator control circuits;
- (d) Modification of turbine-driven AFW lube oil pump control circuits;
- (e) Upgrading of selected fire area boundaries;
- (f) Installation of a limited number of new ionization smoke detectors;
- (g) Installation of two new local instrumentation panels;
- (h) Procurement of new spare source range monitor drawer;
- (i) Installation of radiant energy shields between redundant trains in containment;

- (j) Development of detailed procedures to achieve safe shutdown given a fire in any plant area; and
- (k) Development of detailed procedures to accomplish repair activities necessary to achieve cold shutdown.

These required modifications are significantly less in scope than those required for the dedicated shutdown system.

Resource Commitments and Schedules

Based on current RG&E regulatory commitments and other planned plant improvements, substantial modification and backfit activities are scheduled for the next several outages.

RG&E Ginna Station capital expenditure projections indicate that more than \$40,000,000 worth of modifications are scheduled for each of the next several years. Because of resource limitations, namely physical space, manpower and project supervision during outages, RG&E has never accomplished more than approximately \$30,000,000 worth of modifications in any one year. Clearly, to add to an already ambitious modification program by imposing the Appendix R schedule will jeopardize successful completion of the projects and will adversely affect plant safety.

The NRC Staff has indicated in NUREG-0821 that a PRA study attaches low additional safety margin benefit at Ginna through Appendix R compliance. A reasonable schedule for compliance relative to the schedules for other plant safety improvements should be established.

An integrated approach to nuclear safety is fundamental to the SEP concept and has been continued in the integrated schedule for implementing modifications. A schedule has been designed in conjunction with the Commission with the goal of enhancing nuclear safety within the real life constraints of engineering, design, analysis, and construction management. Long lead items are carefully planned and resources positioned to achieve timely safety improvements in a controlled manner. RG&E may be faced with the prospect of diverting resources away from other integrated improvements even if an exemption from the Appendix R schedule is granted. Moreover, it is not clear that a commensurate improvement in safety would be achieved even if sufficient resources could be diverted from other projects to meet the Appendix R schedule requirements.

One of the most limiting resources for the next several years is the design and management of electrical projects. One of the largest projects is the design and installation of new plant process computers and the Safety Assessment System required to meet TMI Action Plan items. Appendix R compliance will necessitate installation of two new instrument panels, new transfer and isolation switches, and new electrical cables. In addition, some existing electrical cables will be provided

with protective barriers and some of the fire area barriers and detection and suppression systems will be upgraded. Many of these modifications must be designed by, and the construction supported by, the electrical engineering group. TMI backfits, SEP backfits, Appendix R compliance and other plant modification work cannot all be supported on the current schedules without relief.

RG&E's fire protection program was previously reviewed and approved by the Commission. It is in place and functioning well providing a defense-in-depth appropriate to the risk at hand. Dedicated shutdown system modifications previously defined were designed to provide an additional level of protection but with greatly diminishing safety returns. Consequently, RG&E believes that the Commission should deliberately weigh the diminishing returns associated with immediate Appendix R modification installation against those from the SEP and other backfits which may be displaced by such a rescheduling.

RG&E has long proposed that the maximum overall safety benefit can be gained by integrating all proposed modifications. The Commission has also recognized this position in NUREG 0821, Integrated Plant Safety Assessment. Imposing an Appendix R compliance schedule without consideration for other issues negates the intent and the years of effort put into the SEP review and integrated assessment.

The 1984 refueling outage, which is not atypical, is already planned to have over 250 people on site performing only modification work. This is the number of people required beyond the manpower necessary for refueling, maintenance, overhaul, tests, inspections, calibrations and normal plant activities. Additional modification work imposed through Appendix R will exacerbate already complicated security, work space and job control conditions.

Substantial modifications can be scheduled between outages and to the greatest extent possible, the Appendix R modifications will be integrated into the existing RGE schedule for plant modifications and backfits already developed.

Phased Program

One of the benefits of implementing an alternative shutdown approach in lieu of a dedicated shutdown system is the capability of implementing a phased program for achieving total compliance with the regulation.

The dedicated shutdown system requires complete system installation and testing before any safety benefit is achieved. By contrast, the alternative shutdown design to be submitted will provide additional safety margin as each of the individual modifications is completed. This fact was discussed with the staff, and recognized to be a benefit, in meetings held to discuss Appendix R compliance on June 7 and October 27, 1983. Completion of the alternative shutdown system modifications can be accomplished sooner than the

modifications for the dedicated shutdown system. Work on the alternative shutdown modifications can begin almost as soon as the NRC staff gives an indication that the alternative proposals are acceptable. The alternative proposal will allow for phased implementation of safety improvements, and if approval is given before the end of the 1984 refueling outage, we expect that the modifications can be completed by the end of the 1986 refueling outage. This schedule allows for adequate integration with other existing modification projects but assumes that during that period no more modifications than are already committed are also required to be completed. Because higher priority work may develop, RG&E suggests that 1986 be established as the target completion date but that the NRR Project Manager be given the authority to coordinate the project completion with existing and new requirements that may be issued.

During the period until construction is completed, adequate fire protection will exist as a result of interim fire protection program action and modifications previously implemented, both of which are described below.

Compensatory Measures

The activities required for alternative shutdown implementation can be classified into three categories:

- (a) Plant modifications requiring shutdown;
- (b) Plant modifications incorporated during operation or shutdown; and
- (c) Operational and repair procedure development.

Included in the first category are all modifications to safe shutdown system control and process monitoring circuits. These include the installation of new isolation and transfer devices. These types of modifications must be performed during a plant outage. Based on current RG&E regulatory commitments, inadequate manpower and time exists for incorporation of these modifications by the end of the spring 1984 outage. Current commitments also preclude the completion of these modifications until the 1986 refueling outage, however, compensatory measures are being proposed to justify continued plant operation prior to completion of these modifications. Interim procedures will be developed by the end of the spring 1984 outage to provide enhanced safe shutdown capability. The procedures will direct the operators to various local control stations and provide information for equipment operation and fuse pulling and cable cutting activities required for isolation from fire-affected circuits.

The second category of plant modifications can be incorporated during either plant shutdown or operation. These include the protection of safe shutdown circuits with one- or three-hour-rated material, the upgrading of selected fire area boundaries, and the procurement of a new source range monitor drawer. These activities

can be performed during plant operation and allow for an excellent method of leveling manpower requirements between outages. It is expected that these modifications will be started in 1984. In the interim, compensatory measures are being proposed. In all plant areas where protection of safe shutdown circuits and cables is being proposed and for areas requiring alternative shutdown, inspections will be performed daily to assure that no hazards accumulate in the areas of concern. Inspections will also be performed in all areas where fire area boundaries are being upgraded. The inspections will be performed by a shift supervisor or higher management until the alternative shutdown modifications necessary for that area are installed. This inspection will provide assurance that unacceptable levels of transient combustibles do not accumulate in sensitive areas, will improve plant housekeeping, will provide another visible reinforcement to plant personnel that fire protection is an important safety function and will assure adequate fire protection prior to the installation of the Appendix R fire protection modifications. Inspections will be completed each day when the reactor is not shut down except on infrequent occasions when abnormal conditions warrant the shift supervisor remaining in the control room to achieve greater safety. Areas of the plant which are normally locked or otherwise have restricted entry, such as the containment, may be excluded from the inspection. This inspection will supplement already existing inspections including fire protection and safety inspector patrols of all areas for which burning permits have been issued, weekly plant-wide fire watch patrols, a biweekly inspection by the fire protection coordinator, and the weekly duty engineer inspections. The special inspections will be terminated in each plant area as the modifications in that area are totally incorporated.

The third category of plant activities involve the development of operation and repair procedures required to implement the alternative shutdown approach. A summary of these procedures is contained in Attachment 1. Various procedures have already been developed based upon prior Systematic Evaluation Program (SEP) commitments. The remaining procedures will be developed during the phased program. Prior to the production of the final procedures, the interim procedures will act as a compensatory measure to provide an adequate level of safe shutdown capability.

Fire Protection Upgrades

Following the 1975 Browns Ferry fire, the NRC Staff concluded that cost-effective fire protection measures should be instituted to significantly decrease the frequency and severity of fires at nuclear power plants even though WASH-1400, "Reactor Safety Study - An Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants", dated October 1975, concluded that the Browns Ferry fire did not affect the validity of the overall risk assessment. Consequently, Branch Technical Position CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants" Rev. 3 (July 1981) (formerly BTP APCSB 9.5.1), was developed. Rochester Gas and Electric (RG&E) formally responded early to the BTP in its March

1977 Fire Hazards Analyses for the R. E. Ginna Nuclear Power Plant, which described the existing and proposed fire protection features designed to meet the criteria of the BTP. As a result of NRC review of the 1977 Fire Hazards Analysis in the SER issued on February 14, 1979, the supplements issued on December 17, 1980 and February 6, 1982, and along with additional measures taken after issuance of Appendix R, RG&E has implemented substantial improvements to the fire protection program at the Ginna plant and has installed in excess of \$15 million dollars worth of modifications. A discussion of these program and modification improvements is provided below.

Automatic smoke detection systems are provided in all plant locations containing safety-related equipment and/or concentrations of combustible materials. In addition, automatic preaction sprinklers or automatic water spray nozzles are installed for all cable trays where large concentrations of cable trays exist. All areas with flammable liquids are protected by detection and an automatic water suppression system. The relay room is protected by detection, an automatic halon system and manual spray system. Procedures currently exist to provide additional protection in the form of a fire watch where surveillance procedures indicate that detection or suppression systems are not in service.

Flamemastic, a fire retardant coating, has been applied in locations containing concentrations of cable trays, such as in the vault below emergency diesel generator 1B and at the entrances of the cable tunnel from the intermediate building, air handling room and auxiliary building.

An abundance of manual fire fighting equipment exists at the plant in the form of manual hose stations and portable extinguishers. Should any manual hose station be out of service, the location and spacing of other hose stations ensures effective coverage of the affected area by adding one additional hose length to the nearest hose station not out of service.

The Ginna plant is unique in that two separate fire water systems exist. Redundant electric and diesel driven fire pumps are provided on site to ensure that pressure and water flow requirements of the automatic and manual suppression capabilities are maintained. In addition, an offsite supplied underground yard fire water system with diesel backed redundant pumps is available. Each of these sources is capable of supplying all the water required for suppression of a fire in each plant area. A cross-tie capability exists between these two sources so that the manual hose stations and automatic suppression systems can be supplied even with the failure of both onsite pumps.

RG&E has also installed hose connections to the standby auxiliary feedwater pumps and emergency diesel generators to gain additional benefits from the underground yard fire water system. These connections ensure continued decay heat removal capability given a total loss of all service water. An adaptor has also

been provided at the condensate storage tanks so that a hose connection can maintain tank inventory for the auxiliary feedwater pumps, if required, through use of the separate underground yard system.

In addition, a number of other fire protection program and plant modifications have been completed including the upgrading of detection and suppression systems, fire area penetration seals, reactor coolant pump oil collection systems, fire area dampers, drain backflow protection, emergency lighting and fire door supervision.

Fire brigade training requirements are in excess of those required by the BTP. In addition to the training and drills conducted on site, the program includes 8 hours per year of hands-on training for each brigade member at the Rochester Fire Academy, an academy which is used to train members of the local paid and volunteer fire departments. The local fire department is approximately 4 miles off-site and is included in an annual training session on-site to ensure their ability to respond quickly and effectively to fire situations at the plant. Other surrounding departments periodically respond to the site and participate in this drill. A good working relationship has been established between the plant staff and these fire departments.

RG&E has a well maintained fire penetration seal program at the Ginna plant that ensures all penetrations required to be sealed to specific hourly ratings are identified, sealed, tagged, and maintained in good condition.

In order to ensure that the fire protection program is effective and takes into account the unique operating features associated with a nuclear power plant, the fire protection coordinator at the site is a former shift supervisor.

RG&E believes that the fire protection program in effect at Ginna, in conjunction with supervision of this program by a former shift supervisor, demonstrates an appropriately high level of safety which supports granting this schedular exemption request.

Summary

RG&E's commitment and responsiveness to the Commission's requirements for fire protection for Ginna is a matter of record. This commitment is represented by a closed out SER on most items except those primarily involving safe shutdown. These items were approached initially with a proposal for a dedicated shutdown system coordinated with the Systematic Evaluation Program. Integration and coordination of all plant modifications, including SEP, TMI, and Appendix R, along with an intensive reevaluation of Appendix R compliance options has produced a more achievable set of Appendix R modifications. These modifications can be installed faster with less disruption to the existing plant, and subsequently,

with less potential for disruption to the established safe operating record of Ginna.

Appendix R schedule requirements fail to adequately consider the plethora of new requirements issued to operating plants, the combination of which may not provide the maximum benefit to public health and safety if improperly coordinated.

Interim protective and preventative measures to be implemented will provide substantially the same benefits until permanent plant modifications are completed.

Therefore RG&E's request for a schedule exemption from the requirements of 10 CFR 50.48 is justified and should be granted.

ATTACHMENT 1
ROCHESTER GAS AND ELECTRIC CORPORATION
R. E. GINNA NUCLEAR PLANT

SUMMARY OF PROPOSED REPAIR AND OPERATIONAL PROCEDURES

<u>Procedure</u>	<u>Description</u>
Turbine-driven AFW Local Operation	Procedure to operate TD AFW pump locally.
Charging Pump Local Operation	Procedure to operate charging pump 1A from Charging Pump Room.
Emergency Diesel Generator Local Operation	Procedure to start and operate EDG locally.
Safe Shutdown Valve Closure	Procedure to isolate valves to assure achieve- ment of safe shutdown.
CCW Repair Procedure	Procedure to install spare CCW pump to replace damaged pumps.
Water-Solid SG Operation	Procedure to utilize water-solid SG operation to achieve cold shutdown.
Source Range Neutron Monitor Repair Procedure	Procedure to install spare neutron monitor panel.
Long-Term DC Power Supply	Procedure to supply dc trains A and B from TSC battery and charger.

