



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ROCHESTER GAS AND ELECTRIC CORPORATION

DOCKET NO. 50-244

R. E. GINNA NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 22
License No. DPR-18

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Rochester Gas and Electric Corporation (the licensee) dated October 24, 1986 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. DPR-18 is hereby amended to read as follows:

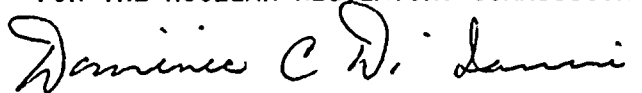
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(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No.22, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Dominic C. DiIanni, Project Manager
Project Directorate #1
Division of PWR Licensing-A

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 10, 1987

ATTACHMENT TO LICENSE AMENDMENT NO.22

FACILITY OPERATING LICENSE NO. DPR-18

DOCKET NO. 50-244

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE

3.5-7
3.10-2
3.10-7
3.10-8
3.10-9
3.10-10
3.10-13
3.10-14

3.10-18
3.10-19

4.1-5
4.1-6
4.1-8

INSERT

3.5-7
3.10-2
3.10-7
3.10-8
3.10-9
3.10-10
3.10-13
3.10-14
3.10-14a
3.10-18
3.10-19
3.10-19a
4.1-5
4.1-6
4.1-8
4.1-9

TABLE 3.5-1 (Continued)

		1	2	3	4	5	6
NO.	FUNCTIONAL UNIT	NO. OF CHANNELS	NO. OF CHANNELS TO TRIP	MIN. OPERABLE CHANNELS	MIN. DEGREE OF REDUNDANCY	PERMISSIBLE BYPASS CONDITIONS	OPERATOR ACTION IF CONDITIONS OF COLUMN 3 OR 5 CANNOT BE MET
11.	Turbine Trip	3	2	2	1		Maintain 50% of Rated Power
12.	Steam Flow Feedwater Flow Mismatch With Lo Steam Generator Level	2/loop	1/loop	1/loop	1/loop		Maintain hot shutdown
13.	Lo Lo Steam Generator Water Level	3/loop	2/loop	2/loop	1/loop		Maintain hot shutdown
14.	Undervoltage 4 KV Bus	2/bus	1/bus	1/bus	—*		Maintain hot shutdown
15.	Underfrequency 4 KV Bus	2/bus	1/bus (both busses)	1/bus	—*		Maintain hot shutdown
16.	Quadrant Power Tilt Monitor (Upper & Lower Ex-Core Neutron Detectors)	1	—*	1 or Log individual upper & lower ion chamber currents once/hr & after a load change of 10% or after 48 steps of control rod motion	—*		Maintain hot shutdown

3.5-7

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- 3.10.1.2 When the reactor is critical except for physics tests and control rod exercises, the shutdown control rods shall be fully withdrawn (indicated position).
- 3.10.1.3 When the reactor is critical, except for physics tests and control rod exercises, each group of control rods shall be inserted no further than the limits shown by the lines on Figure 3.10-1 and moved sequentially with a 100 (± 5) step (demand position) overlap between successive banks.
- 3.10.1.4 During control rod exercises indicated in Table 4.1-2, the insertion limits need not be observed but the Figure 3.10-2 must be observed.
- 3.10.1.5 The part length control rods will not be inserted except for physics tests or for axial offset calibration performed at 75% power or less.
- 3.10.1.6 During measurement of control rod worth and shutdown margin, the shutdown margin requirement, Specification 3.10.1.1, need not be observed provided the reactivity equivalent to at least the highest estimated control rod worth is available for trip insertion and all part length control rods are fully withdrawn. Each full length control rod not fully inserted, that is, the rods available for trip insertion, shall be demonstrated capable of full insertion when tripped from at least the 50% withdrawn position (indicated) within 24 hours prior to reducing the shutdown margin to less than the limits of Specification 3.10.1.1. The position of each full length rod not fully inserted, that is, available for trip insertion, shall be determined at least once per 2 hours.

3.10.2.12 When the reactor is critical and thermal power is less than or equal to 90% of rated power, an alarm is provided to indicate when the axial flux difference has been outside the target band for more than one hour (cumulative) out of any 24 hour period. In addition, when thermal power is greater than 90% of rated power, an alarm is provided to indicate when the axial flux difference is outside the target band. If either alarm is out of service, the flux difference shall be logged hourly for the first 24 hours the alarm is out of service and half-hourly thereafter.

3.10.3 Control Rod Drop Time

3.10.3.1 While critical, the individual full length (shutdown and control) rod drop time from the fully withdrawn position (indicated) shall be less than or equal to 1.8 seconds from beginning of decay of stationary gripper coil voltage to dashpot entry with:

- a. T_{avg} greater than or equal to 540°F, and
- b. All reactor coolant pumps operating.

3.10.3.2 With the drop time of any full length rod determined to exceed the above limit, restore the rod drop time to within the above limit prior to criticality.

3.10.4 Control Rod Group Height

3.10.4.1 While critical, and except for physics testing, all full length (shutdown and control) rods shall be operable and positioned within ± 12 steps (indicated position) of their group step counter demand position.

3.10.4.2 With any full length rod inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untripable, determine that the shutdown margin requirement of Specification 3.10.1.1 is satisfied within 1 hour and be in hot shutdown within 6 hours.

3.10.4.3 With one full length rod inoperable due to causes other than addressed by 3.10.4.2, above, or misaligned from its group step counter demand position by more than ± 12 steps (indicated position), operation may continue provided that within one hour either:

3.10.4.3.1 The rod is restored to operable status within the above alignment requirements, or

3.10.4.3.2 The rod is declared inoperable and the shutdown margin requirement of Specification 3.10.1.1 is satisfied. Operations may then continue provided either:

- a. The remainder of the rods in the group with the inoperable rod are aligned to the same indicated position as the inoperable rod within one hour, while maintaining the limit of Specification 3.10.1.3; or
- b. The power level is reduced to less than or equal to 75% of rated power within the next one hour, and the high neutron flux trip setpoint is reduced to less than or equal to 85% rated power within the next four hours (total of six hours) and the following evaluations are performed:
 - (i) The shutdown margin requirement of Specification 3.10.1.1 is determined at least once per 12 hours.

(ii) A power distribution map is obtained from the movable incore detectors and $F_Q(Z)$ and $F_{\Delta H}^N$ are verified to be within their limits within 72 hours.

(iii) A reevaluation of each accident analysis of Table 3.10-1 is performed within 5 days; this reevaluation shall confirm that the previously analyzed results of these accidents remain valid for the duration of operation under these conditions.

c. If power has been restricted in accordance with (b) above, then following completion of the evaluation identified in (b), the power level and high neutron flux trip setpoint may be readjusted based on the results of the evaluation provided the shutdown margin requirement of Specification 3.10.1.1 is determined at least once per 12 hours.

3.10.4.4 With two or more full length rods inoperable or misaligned from the group step counter demand position by more than ± 12 steps (indicated position), be in hot shutdown within 6 hours.

3.10.5 Control Rod Position Indication Systems

3.10.5.1 While critical, the rod position indication system and the step counters shall be operable and capable of determining the control rod positions within ± 12 steps.

3.10.5.2 With a maximum of one rod position indication per bank inoperable either:

- a. Determine the position of the non-indicating rod(s) indirectly by the movable incore detectors at least once per 8 hours and immediately after any motion of the non-indicating rod which exceeds 24 steps (demand position) in one direction since the last determination of the rod's position, or
- b. Reduce the power to less than 50% of rated power within 8 hours.

3.10.5.3 With a maximum of one step counter per bank inoperable either:

- a. Verify that position indication for each rod of the affected bank is operable and that the rods of the bank are at the same indicated position at least once per 8 hours, or
- b. Reduce the power to less than 50% of rated power within 8 hours.

Basis

The reactivity control concept is that reactivity changes accompanying changes in reactor power are compensated by control rod motion. Reactivity changes associated with xenon, samarium, fuel depletion, and large changes in reactor coolant temperature (operating temperature to cold shutdown) are compensated by changes in the soluble boron concentration. During power operation, the shutdown groups are fully withdrawn

conditions are as follows:

1. Control rods in a single bank move together with no individual rod insertion differing by more than 25 steps from the bank demand position.
2. Control rod banks are sequenced with overlapping banks as described in Specification 3.10.
3. The full length control bank insertion limits are not violated.
4. Axial power distribution limits which are given in terms of flux difference limits and control bank insertion limits are observed. Flux difference is $q_T - q_B$ as defined in Specification 2.3.1.2d.

The permitted relaxation in $F_{\Delta H}^N$ with reduced power allows radial power shape changes with rod insertion to the insertion limits. It has been determined that provided the above conditions 1 through 4 are observed, these hot channel factors limits are met. In Specification 3.10, F_Q is arbitrarily limited for $P < 0.5$ (except for lower power physics tests).

The limits on axial power distribution referred to above are designed to minimize the effects of xenon redistribution on the axial power distribution during load-follow maneuvers. Basically, control of flux difference is required to limit the difference between the current value of Flux Difference (ΔI) and a reference value which corresponds to the full power equilibrium

value of Axial Offset (Axial Offset = ΔI /fractional power). The reference value of flux difference varies with power level and burnup but expressed as axial offset it varies primarily with burnup. The technical specifications on power distribution assure that the F_Q upper bound envelope of 2.32 times Figure 3.10-3 is not exceeded and xenon distributions are not developed which, at a later time, could cause greater local power peaking even though the flux difference is then within the limits.

The target (or reference) value of flux difference is determined as follows. At any time that equilibrium xenon conditions have been established, the indicated flux difference is noted with part length rods withdrawn from the core and with control Bank D more than 190 steps (indicated position) withdrawn. This value, divided by the fraction of full power at which the core was operating is the full power value of the target flux difference.

Values for all other core power levels are obtained by multiplying the full power value by the fractional power. Since the indicated equilibrium value was noted, no allowances for excore detector error are necessary and indicated deviation of ± 5 percent ΔI is permitted from the indicated reference value. During periods where extensive load following is

required, it may be impossible to establish the required core conditions for measuring the target flux difference every month. For this reason, two methods are

feet out of alignment with its bank) does not result in exceeding core safety limits in steady state operation at rated power and is short with respect to probability of an independent accident. If instead of determining the hot channel factors, the operator decides to reduce power, the specified 75% power maintains the design margin to core safety limits for up to 1.12 power tilt, using the 2 to 1 ratio. Reducing the overpower trip set point ensures that the protection system basis is maintained for sustained plant operation. A tilt ratio of 1.12 or more is indicative of a serious performance anomaly and a plant shutdown is prudent. The maximum rod drop time restriction is consistent with the assumed rod drop time used in the safety analyses. Measurement with T_{avg} greater than or equal to 540°F and with both reactor coolant pumps operating ensures that the measured drop times will be representative of insertion times experienced during a reactor trip at operating conditions. The various control rod banks (shutdown banks, control banks A,B,C, and D) are each to be moved as a bank; that is, with all rods in the bank within one step (5/8 inch) of the bank position. Position indication is provided by two methods: a digital count of actuation pulses which shows the

demand position of the banks and a microprocessor rod position indication (MRPI) system which indicates the actual rod position. The digital counters are known as the step counters.

Operability of the control rod position indication is required to determine control rod positions and thereby ensure compliance with the control rod alignment and insertion limits. The 12 step permissible demand to indicated misalignment and the 0 step rod to rod indicated misalignment ensures that the 25 step misalignment assumed in the safety analysis is met. The MRPI system displays the position of all rods on a CRT. A failure of the CRT would result in loss of position indication of the rods even though the MRPI system is still operable. Since the MRPI system also transmits rod position information to the Plant Process Computer System (PPCS), the PPCS can be used for rod position indication until the CRT is made operable.

The action statements which permit limited variations from the basic requirements are accompanied by additional restrictions which ensure that the original design criteria are met. Misalignment of a rod requires measurement of peaking factors or a

restriction in power; either of these restrictions provide assurance of fuel rod integrity during continued operation. In addition, those safety analyses affected by a misaligned rod are reevaluated to confirm that the results remain valid during future operation.

References:

- (1) Updated Final Safety Analysis Report (UFSAR)
Section 4.2.

TABLE 4.1-1

MINIMUM FREQUENCIES FOR CHECKS, CALIBRATIONS AND
TEST OF INSTRUMENT CHANNELS

Channel Description	Check	Calibrate	Test	Remarks
1. Nuclear Power Range	S M*(3)	D(1) Q*(3)	B/W(2)(4) P(2)(5)	1) Heat balance calculation** 2) Signal to ΔT ; bistable action (permissive, rod stop, trips) 3) Upper and lower chambers for axial offset** 4) High setpoint ($\leq 109\%$ of rated power) 5) Low setpoint ($\leq 25\%$ of rated power)
2. Nuclear Intermediate Range	S(1)	N.A.	P(2)	1) Once/shift when in service 2) Log level; bistable action (permissive, rod stop, trip)
3. Nuclear Source Range	S(1)	N.A.	P(2)	1) Once/shift when in service 2) Bistable action (alarm, trip)
4. Reactor Coolant Temperature	S	R	M(1) (2)	1) Overtemperature-Delta T 2) Overpower - Delta T
5. Reactor Coolant Flow	S	R	M	
6. Pressurizer Water Level	S	R	M	
7. Pressurizer Pressure	S	R	M	
8. 4 Kv Voltage & Frequency	N.A.	R	M	Reactor Protection circuits only
9. Rod Position Indication	S(1,2)	N.A.	M	1) With step counters 2) Log rod position indications each 4 hours when rod deviation monitor is out of service

* By means of the movable in-core detector system.

** Not required during hot, cold, or refueling shutdown but as soon as possible after return to power.

TABLE 4.1-1 (Continued)

Channel Description	Check	Calibrate	Test	Remarks
10. Rod Position Bank Counters	S(1,2)	N.A.	N.A.	1) With rod position indication 2) Log rod position indications each 4 hours when rod deviation monitor is out of service
11. Steam Generator Level	S	R	M	
12. Charging Flow	N.A.	R	N.A.	
13. Residual Heat Removal Pump Flow	N.A.	R	N.A.	
14. Boric Acid Tank Level	D	R	N.A.	Bubbler tube rodded weekly
15. Refueling Water Storage Tank Level	N.A.	R	N.A.	
16. Volume Control Tank Level	N.A.	R	N.A.	
17. Reactor Containment Pressure	D	R	M(1)	1) Isolation Valve signal
18. Radiation Monitoring System	D	R	M	Area Monitors R1 to R9, System Monitor R17
19. Boric Acid Control	N.A.	R	N.A.	
20. Containment Drain Sump Level	N.A.	R	N.A.	
21. Valve Temperature Interlocks	N.A.	N.A.	R	
22. Pump-Valve Interlock	R	N.A.	N.A.	
23. Turbine Trip Set-Point	N.A.	R	M(1)	1) Block Trip
24. Accumulator Level and Pressure	S	R	N.A.	

4.1-6

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TABLE 4.1-2

MINIMUM FREQUENCIES FOR EQUIPMENT AND SAMPLING TESTS

		<u>Test</u>	<u>Frequency</u>	<u>FSAR Section Reference</u>
1.	Reactor Coolant Chemistry Samples	Chloride and Fluoride Oxygen	3 times/week and at least every third day 5 times/week and at least every second day except when below 250°F	
2.	Reactor Coolant Boron	Boron concentration	Weekly	
3.	Refueling Water Storage Tank Water Sample	Boron concentration	Weekly	
4.	Boric Acid Tank	Boron concentration	Twice/week	
5.	Control Rods	Rod drop times of all full length rods	After vessel head removal and at least once per 18 months (1)	7
6.a	Full Length Control Rod	Move any rod not fully inserted a sufficient number of steps in any one direction to cause a change of position as indicated by the rod position indication system	Monthly	7
6.b	Full Length Control Rod	Move each rod through its full length to verify that the rod position indication system transistions occur	Each Refueling Shutdown	
7.	Pressurizer Safety Valves	Set point	Each Refueling Shutdown	4
8.	Main Steam Safety Valves	Set point	Each Refueling Shutdown	10
9.	Containment Isolation Trip	Functioning	Each Refueling Shutdown	5
10.	Refueling System Interlocks	Functioning	Prior to Refueling Operations	9.4.5

	<u>Test</u>	<u>Frequency</u>	<u>FSAR Section Reference</u>
11. Service Water System	Functioning	Each Refueling Shutdown	9.5.5
12. Fire Protection Pump and Power Supply	Functioning	Monthly	9.5.5
13. Spray Additive Tank	NaOH Concent.	Monthly	7
14. Accumulator	Boron Concentration	Bi-Monthly	6
15. Primary System Leakage	Evaluate	Daily	4
16. Diesel Fuel Supply	Fuel Inventory	Daily	8.2.3
17. Spent Fuel Pit	Boron Concentration	Monthly	9.5.5
18. Secondary Coolant Samples	Gross Activity	72 hours (2)(3)	
19. Circulating Water Flood Protection Equipment	Calibrate	Each Refueling Shutdown	

Notes:

- (1) Also required for specifically affected individual rods following any maintenance on or modification to the control rod drive system which could affect the drop time of those specific rods.
- (2) Not required during a cold or refueling shutdown.
- (3) An isotopic analysis for I-131 equivalent activity is required at least monthly whenever the gross activity determination indicates iodine concentration greater than 10% of the allowable limit but only once per 6 months whenever the gross activity determination indicates iodine concentration below 10% of the allowable limit.