TABLE 3.6.2a (cont'd)

INSTRUMENTATION THAT INITIATES SCRAM

Limiting Condition for Operation

Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels Per Operable Trip System	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable			
				Shutdown	Refuel	Startup	Run
(6) Main-Steam-Line Isolation Valve Position	2	4(h)	≤ 10 percent valve closure from full open		(c)	(c)	x
(7) High Radiation Main-Steam-Line	2	2	≤5 times normal background at rated power(n)		x	x	x
(8) Shutdown Position of Reactor Mode Switch	2	1	- -		(k)	x	x
(9) Neutron Flux (a) IRM (i)	2	3(d)	≤96 percent of full scale		(g)	(g)	(g)

(n) Within 24 hours prior to the planned start of the hydrogen injection test with the reactor power at greater than 20% rated power, the normal full-power radiation background level and associated trip and alarm setpoints may be changed based on a calculated value of the radiation level expected during the test. The background radiation level and associated trip and alarm setpoints may be adjusted during the test program based on either calculations or measurements of actual radiation levels resulting from hydrogen injection. The background radiation level shall be determined and associated trip and alarm setpoints shall be reset within 24 hours of re-establishing normal radiation levels after completion of the hydrogen injection or within 12 hours of establishing reactor power levels below 20% rated power, while these functions are required to be operable. At reactor power levels below 20% rated power, hydrogen injection shall be terminated and the injection system secured.

TABLE 3.6.2b (cont'd)

INSTRUMENTATION THAT INITIATES

PRIMARY COOLANT SYSTEM OR CONTAINMENT ISOLATION

Limiting Condition for Operation

Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels Per Operable Trip System	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable			
				Shutdown	Refuel	Startup	Run
(4) High Radiation Main Steam Line	2	2	$\leq$ 5 times normal background at rated power (e)			x	x
(5) Low Reactor Pressure	2	2	$\geq$ 850 psig				x
(6) Low-Low-Low Condenser Vacuum	2	2	$\geq$ 7 in. mercury vacuum			(a)	x
(7) High Temperature Main Steam Line Tunnel	2	2	$\leq$ 200F			x	x

NOTES FOR TABLES 3.6.2b and 4.6.2b

(a) May be bypassed in the refuel and startup positions of the reactor mode switch when reactor pressure is less than 600 psi.

(b) May be bypassed when necessary for containment inerting.

(c) May be bypassed in the shutdown mode whenever the reactor coolant system temperature is less than 215°F.

(d) Only the trip circuit will be calibrated and tested at the frequencies specified in Table 4.6.2b, the primary sensor will be calibrated and tested once per operating cycle.

(e) Within 24 hours prior to the planned start of the hydrogen injection test with the reactor power at greater than 20% rated power, the normal full-power radiation background level and associated trip and alarm setpoints may be changed based on a calculated value of the radiation level expected during the test. The background radiation level and associated trip and alarm setpoints may be adjusted during the test program based on either calculations or measurements of actual radiation levels resulting from hydrogen injection. The background radiation level shall be determined and associated trip and alarm setpoints shall be reset within 24 hours of re-establishing normal radiation levels after completion of the hydrogen injection or within 12 hours of establishing reactor power levels below 20% rated power, while these functions are required to be operable. At reactor power levels below 20% rated power hydrogen injection shall be terminated and the injection system secured.

Table 3.6.2h

VACUUM PUMP ISOLATION

Limiting Condition for Operation

Parameter	Minimum No. of Tripped or Operable Trip Systems	Minimum No. of Operable Instrument Channels Per Operable Trip System	Set Point	Reactor Mode Switch Position in Which Function Must Be Operable			
				Shutdown	Refuel	Startup	Run
VACUUM PUMP							
High Radiation Main Steam Line	2	2	$\leq$ 5 times normal background (a)		X	X	X

NOTES FOR TABLES 3.6.2h and 4.6.2h

(a) Within 24 hours prior to the planned start of the hydrogen injection test with the reactor power at greater than 20% rated power, the normal full-power radiation background level and associated trip and alarm setpoints may be changed based on a calculated value of the radiation level expected during the test. The background radiation level and associated trip and alarm setpoints may be adjusted during the test program based on either calculations or measurements of actual radiation levels resulting from hydrogen injection. The background radiation level shall be determined and associated trip and alarm setpoints shall be reset within 24 hours of re-establishing normal radiation levels after completion of the hydrogen injection or within 12 hours of establishing reactor power levels below 20% rated power, while these functions are required to be operable. At reactor power levels below 20% rated power hydrogen injection shall be terminated and the injection system secured.

6.12 High Radiation Area (Continued)

a. A radiation monitoring device which continuously indicates the radiation dose rate in the area.

b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rates in the area have been established and personnel have been made knowledgeable of them.

c. An individual qualified in radiation protection, with a radiation dose rate monitoring device, who is responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by the Radiation Protection Supervisor or designate in the Radiation Work Permit.

6.12.2 In addition to the requirements of 6.12.1 areas accessible to personnel with radiation levels such that a major portion of the body could receive in one hour a dose greater than 1000 mrem** shall be provided with locked doors*** to prevent unauthorized entry, and the hard keys or access provided by magnetic keycard shall be maintained under the administrative control of the Station Shift Supervisor or designate on duty and/or the Radiation Protection Supervisor or designate. Doors shall remain locked except during periods of access by personnel under an approved RWP which shall specify in accordance with site approved procedures accordingly, the dose rate levels in the immediate work area and the maximum allowable stay time for individuals in that area. In lieu of the stay time specification of the RWP, continuous surveillance, direct or remote, such as use of closed circuit TV cameras, may be made by personnel qualified in radiation protection procedures to provide positive exposure control over the activities within the area. For individual areas accessible to personnel with radiation levels such that a major portion of the body could receive in one hour a dose in excess of 1000 mrem** that are located within large areas, such as the drywell, where no enclosure exists for purposes of locking, and no enclosure can be reasonably constructed around the individual areas, then that area shall be roped off, conspicuously posted and a flashing light shall be activated as a warning device.

* by accessible passage and permanently fixed ladders
** measurement made at 18" from source of radioactivity
*** The requirement for locked doors to prevent unauthorized entry does not apply to areas which may temporarily exceed 1000 mrem/hr during the hydrogen water chemistry tests to be conducted during approximately a six-week period following startup from the spring 1986 refueling outage.

ATTACHMENT B

NIAGARA MOHAWK POWER CORPORATION

LICENSE NO. DPR-63

DOCKET NO. 50-220

Supporting Information

Niagara Mohawk is investigating the implementation of Hydrogen Water Chemistry as a possible mitigator of intergranular stress corrosion cracking in reactor recirculation system piping. To demonstrate the feasibility of a permanent Hydrogen Water Chemistry System for Nine Mile Point Unit 1, a pre-implementation test will be conducted. The test is to be performed by Niagara Mohawk and General Electric and is similar in scope to hydrogen injection tests previously performed at other nuclear power plants. Experience gained from these programs will be incorporated into the Nine Mile Point Unit 1 test plan.

From the pre-implementation test, Niagara Mohawk will develop information on the:

1. Primary coolant system hydrogen and oxygen concentration relationships,
2. Changes to plant chemistry and electrochemical potential of the primary coolant,
3. Performance of the off-gas system during hydrogen injection,
4. In-plant and site boundary radiation increases due to N-16 activity,
5. Locations where additional shielding may be required to support a permanent hydrogen water chemistry program,
6. Adequacy of injection points,
7. Hydrogen addition system performance for controlling primary coolant oxygen levels,
8. Adequacy of sampling equipment and procedures, and
9. Feasibility of a permanent hydrogen injection system.

The pre-implementation test involves injecting hydrogen into the feedwater system from zero to approximately 45 standard cubic feet per minute in predefined increments of 2-4 standard cubic feet per minute. A stoichiometric amount of oxygen will be added upstream of the recombiner to aid in proper off-gas recombination. During this stage, various chemical and operating parameters (e.g., H_2,O_2, electrochemical potential) will be monitored to define the intergranular stress corrosion cracking immune regime for Nine Mile Point Unit 1.

The addition of hydrogen lowers the solubility of the nitrogen in the reactor water causing increased nitrogen carryover in the main steam; thereby resulting in approximately a one-to five-fold increase in the N-16 activity in the steam.

The resultant increase in the background radiation level necessitates a temporary change to the main steam line high radiation scram and isolation setpoints.

The changes made to the Technical Specifications are the inclusion of a note to the main steam line high radiation scram and isolation setpoints (Tables 3.6.2a, 3.6.2b) and vacuum pump isolation (Table 3.6.2h). This change will allow the setpoints initially to be changed based on a calculated value of the radiation level expected during the test. Once the test has begun, these setpoints may be changed based on either revised calculations or measurements of actual radiation levels resulting from hydrogen injection.

The test will be performed with the reactor power at greater than 20% rated power. The initial setpoint changes may be made within 24 hours prior to the planned start of the hydrogen injection test. The setpoints shall be re-established to five times normal rated power background within 24 hours following completion of the test or within 12 hours of establishing reactor power levels below 20% rated power, while these functions are required to be operable. Additionally, hydrogen injection shall be terminated and the injection system secured if reactor power is less than 20% rated power.

The only accident which takes credit for this setpoint is the control rod drop accident. This accident is most severe when it occurs at hot standby with the main steam lines wide open because:

(1) reactivity worths of the control rods are greater than at full power, and

(2) fission products released as a result of the excursion are transported to the main condenser, then to the high flow mechanical vacuum pump system and eventually offsite.

A bounding analysis (reference 1) has been performed to establish limits for incremental control rod worths to ensure that the peak fuel enthalpy does not exceed 280 cal gm (a limiting value) if the maximum worth control rod were to drop out. The analysis has shown that limits on control rod worths are necessary for power levels less than 20 percent of design rated. Above 20 percent of rated design power, inherent feedback mechanisms, primarily in the form of steam voids, limit the control rod worth to such an extent that the control rod drop accident need not be considered.

As stated in Chapter XV, Section C.4.5.2 of the Final Safety Analysis Report for Nine Mile Point Unit 1, the doses resulting from this accident are well below 10CFR100 limits. Hence, even assuming a five-fold increase in background level following hydrogen injection, the resulting off-site radiological effects would conservatively remain below 10CFR100 limits.

The bases for 3.6.2 and 4.6.2, Protective Instrumentation, indicates that in addition to the control rod drop accident, the radioactivity at the main steam line radiation monitor, due to the gross failure of one rod with complete fission product release from the rod, would exceed the normal background at the monitor. This function of the main steam line radiation monitor can also be provided by the condenser air ejector radioactivity

monitor and the stack monitor, which must meet the operability requirements of Specification 3.6.14. These monitors can detect lower levels of radioactivity than the main steam line radiation monitor.

In addition to the above, a note is being added to Specification 6.12 to indicate that certain areas may temporarily exceed 1000 mrem/hr during the hydrogen water chemistry test without having access controlled by locked doors under the administrative control of the Station Shift Supervisor.

An ALARA review will be performed prior to beginning the injection test. The hydrogen water chemistry tests will be conducted at night to minimize potential exposure to plant personnel. Extensive in-plant and site radiation surveys will be conducted at regular intervals during the test to monitor the actual doses. As required, radiation protection measures will be implemented to maintain doses as-low-as-reasonably achievable.

10CFR50.91 requires that at the time a licensee requests an amendment, it must provide to the Commission its analysis, using the standards in Section 50.92, about the issue of no significant hazards consideration. Therefore, in accordance with 10FR50.91 and 10CFR50.92, the following analysis has been performed:

Operation of Nine Mile Point Unit 1 in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The only accident which takes credit for the Main Steam Line High Radiation trip is the design basis control rod drop accident (Technical Specification Bases for 3.6.2 and 4.6.2, Protective Instrumentation). As stated in the FSAR, Chapter XV, Section C.4, a control rod drop accident occurring at power greater than 20%, regardless of the rod pattern, will never result in a peak fuel enthalpy that will result in fuel damage. Since the Main Steam Line High Radiation Monitor setpoints will be increased for hydrogen injection at power levels of 20% or higher, there is no affect on the Technical Specification Bases and the design function of the Main Steam Line High Radition Monitor trip will remain valid.

If the reactor drops below 20% rated power prior to setpoint readjustment, the hydrogen injection shall be terminated and the system secured. The necessary setpoint readjustment shall be made within 12 hours, while these functions are required to be operable. At all times the capability to monitor for fuel failures, which is the purpose of the Main Steam Line Radiation trip setpoint, will be maintained by: i) the continued operability of the main steam radiation monitors which provide signals to the reactor protection and primary containment isolation systems; ii) routine radiation surveys; iii) the performance of primary coolant water analysis; and iv) the continued operability of the condenser air ejector radioactivity monitor and stack monitor. Due to these continued monitoring capabilities, the proposed license amendment does not involve a significant increase in the consequences of an accident previously evaluated.

The addition of the note to Specification 6.12 to allow certain areas to exceed 1000 mrem/hr without having access controlled by locked door (gates) under the administrative control of the Station Shift Supervisor is an administrative control to maintain personnel exposure ALARA. Since additional administrative controls are being taken during the hydrogen water

chemistry test, personnel exposure will still be maintained ALARA and the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Operation of Nine Mile Point Unit 1 in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

As stated above, the only event affected by the temporary increase on the main steam line High Radiation scram and isolation setpoints is the control rod drop accident, which has been previously evaluated. This proposed amendment will result only in the changing of a setpoint; which by itself, cannot introduce a new or different kind of accident from any previously evaluated.

The addition of the note to Specification 6.12 is an administrative control to assist in maintaining personnel exposure ALARA. Therefore, this proposed change also cannot create the possibility of a new or different kind of accident from any previously evaluated.

Operation of Nine Mile Point Unit 1 in accordance with the proposed amendment will not involve a significant reduction in a margin of safety.

A temporary increase in the Main Steam Line High Radiation scram and isolation setpoints will not affect any FSAR Chapter 15 accident or transient analysis, other than the control rod drop accident, which is the only event that takes credit for this signal. Also, since the Main Steam Line Radiation monitor setpoint will be increased only for hydrogen injection at power levels of 20% or higher, the Technical Specification Bases and the design function of the Main Steam Line High Radiation trip will remain valid.

The addition of the note to Specification 6.12 has no affect on any margins of safety.

As determined by the analysis above, this proposed amendment involves no significant hazards considerations.

References

1. FSAR (Updated) Revision 3, Chapter XV, Section C.4, Control Rod Drop Accident