Docket

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Docket No. 50-220 NOVEMBER 27 1978

Niagara Mohawk Power Corporation
ATTN: Mr. Donald P. Dise
Vice President - Engineering
300 Erie Boulevard West
Syracuse, New York 13202

Gentlemen:

On October 17 through 20, 1978, the NRC staff visited the Nine Mile Point Unit 1 Nuclear Power Plant to review its fire protection program. The NRC staff concerns and related positions, which resulted from this review, were discussed with Niagara Mohawk personnel during the exit meeting on October 20. Enclosure 1 lists the attendees at this meeting.

Enclosure 2 itemizes the staff requests for additional information. Enclosures 3 and 4 itemize the staff concerns and positions; these were the result of our review of Niagara Mohawk submittals made prior to the site visit, from observations made during the visit, or from the review of information subsequent to the visit.

Enclosure 3 delineates those concerns discussed during the exit meeting for which Niagara Mohawk verbally agreed either to implement the stated staff position or to propose and justify an acceptable alternative solution. In an effort to resolve as many concerns as soon as possible and therefore be able to direct maximum effort toward the remaining outstanding issues, written commitments and implementation schedules for these items is requested within 30 days of receipt of this letter.

Enclosure 4 itemizes those staff concerns discussed during the exit meeting for which Niagara Mohawk indicated a need for additional time for further consideration. Niagara Mohawk is requested to address each of these items by: (1) A commitment to implement the staff position; (2) A proposal of an acceptable alternative resolution with the basis and/or justification for same; or (3) Provide basis by which the present fire protection program addresses the concern without further action. Your response as well as implementation schedule for these items is also requested within 30 days of receipt of this letter. Include in your response a schedule for completion of all modifications contemplated for the fire protection program at Nine Mile Point Unit 1 Nuclear Power Plant.

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OFFICE➤						
SURNAME➤						
DATE➤						

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Niagara Mohawk Power Corporation -2-

Our staff is presently reviewing the administrative control that you propose for your fire protection program. Any concerns and related positions that result from this review will be forwarded to you under separate cover.

If the NRC can be of assistance in the expeditious resolution of any of the enclosed concerns, please advise.

Sincerely,

Enclosures:
As stated

cc: w/enclosures

OFFICE➤	ORB #3	ORB #3				
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DATE➤	11/27/78	11/24/78				

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ENCLOSURE NO. 1

LIST OF PARTICIPANTS

NRC Staff

C. Brown
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NRC Consultant

J. Klevan

Niagara Mohawk Staff

J. Corcoran
F. Falise
T. Lempges
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T. Perkins
N. Rademacher
R. Raymond

ENCLOSURE No. 2

FIRE PROTECTION STAFF REVIEW
REQUESTS FOR ADDITIONAL INFORMATION

NINE MILE POINT UNIT 1

DOCKET No. 50-220

1. Provide test curves of your most recent fire pump tests.

2. Provide line drawings of your fire protection water system, showing the interfaces between plants 1 and 2. (Indicate the completion date for the system construction.)

3. Provide P and I diagrams for the atmospheric drain system.

4. Provide design basis for the protection of safety-related cable trays in the plant. Include the assumption made regarding burning rates and extent of fires involving cables in trays, exposure fires, and performance of detection and suppression devices.

5. Verify that flow of 100 gmp at a residual pressure of 65 psig is available at outlet of each hose station.

6. Provide the results of CO_2 extinguishing system discharge tests.

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7. Describe the location of the emergency compressor to be used for recharging the self-contained breathing units.

8. Provide the present fire resistance rating of all doors in fire barriers. Indicate which doors will be replaced and the fire resistance rating of the replacement doors.

9. Verify that the fire resistance rating of all piping penetrations is or will be three hours, or identify and justify the lesser rating.

10. Provide information relative to the emergency diesel generator day tank low-low level alarm setpoint and indicate how a break in the supply or discharge lines would be detected.

11. Describe the specific ways in which the proposed cable penetration fire stop qualification test(s) will differ from the staff position in the July 10, 1978 letter.

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ENCLOSURE NO. 3

FIRE PROTECTION STAFF POSITIONS (PF)
LICENSEE AGREED TO ADDRESS THE STAFF CONCERNS
SITE VISIT MEETING

NINE MILE POINT UNIT 1

DOCKET No. 50-220

PF-1	Portable Oil Centrifuge
PF-2	Fire Door Frames
PF-6	Penetration Seals
PF-7	Service Air Compressors
PF-9	Fire Pump Header Discharge Line
PF-10	Separation of Automatic and Backup Fire Protection
PF-11	Floor Penetration Fire Stops
PF-13	Hose Station Capability
PF-14	Control Room Fire Door(s)
PF-15	Combustable Material Stored Under Turbine Oil Storage Tank Room Floor
PF-16	Fire Dampers in Ventilation Ducts
PF-21(a)	Emergency Diesel Generator Output Cabling
PF-21(b)	Safety-Related Cable Separation
PF-23	Chemical Storage Area
PF-24	Floor Cleaning Machines
PF-31	Fire Brigade Chief Supplementary Training
PF-34	Advance Planning for Firefighting
PF-35	Portable CO_2 Extinguishers in Control Room

PF-36	Portable Smoke Ejectors
PF-37	Disposable Waste Storage Area
PF-38	Truck Port in Waste Storage Area
PF-39	Oil Accumulation in Waste Disposal Sump
PF-40	Wall Penetration Seals in Waste Disposal Area

PF-3 Portable Oil Centrifuge

Staff Concern:

A fire associated with the present location and the lack of protection afforded the portable oil centrifuge could damage safety-related cables.

Staff Position:

Relocate the centrifuge, presently in the corridor outside the turbine lube oil tank area, to a suitably protected location.

PF-2 Fire Door Frames

Staff Concern:

Fire door frames could yield precluding personnel access/egress and/or loss of fire barrier containment.

Staff Position:

Upgrade all non-rated fire door frames to frames rated equal to their respective fire doors.

PF-6 Penetration Seals

Staff Concern:

Penetration seals not designed to preclude the spread of fire in cables through the penetration.

Staff Position:

Provide adequately-rated and designed penetration seals between the #102 and #103 power boards and the 250' elevation.

PF-7 Service Air Compressor(s)

Staff Concern:

Oil fire from service air compressor(s) could involve other equipment and/or damage safety-related cabling.

Staff Position:

Protect against the flammable oil hazard that result on the 250' and 261' elevations from operation of the service air compressors.

PF-9 Fire Pump Header Discharge Line

Staff Concern:

The line connecting the fire loop and the fire pump header could rupture, eliminating the principal supply of water for the fire loop.

Staff Position:

Provide a separate connection from one fire pump discharge to the fire loop, to preclude the loss of the fire-water system via a single failure in the system.

PF-10 Separation of Automatic and Backup Fire Protection Systems

Staff Concerns:

A break in the line to an automatic suppression system could negate utilization of the manual backup system.

Staff Position:

Provide suitable modifications to preclude a single failure from disabling the fire suppression system and backup hose stations in areas that contain or expose related equipment. (i.e., the east loop of the fire suppression system, at the 261' elevation of the turbine building.).

PF-11 Floor Penetration Fire Stops

Staff Concern:

Suitable fire stops are necessary to preclude the spread of fire in cabling between floors in the reactor building.

Staff Position:

Provide suitable fire stops for vertical runs of cabling, at floor penetrations, in the reactor building.

PF-13 Hose Station Capability

Staff Concern:

Sufficient hose stations, with hoses not exceeding 100 feet should be available to provide manual coverage for all safety-related areas.

Staff Position:

Verify by a hose stretch test that all areas of the plant can be reached from existant hose stations with present hose lengths. Add additional hose stations/lengths (total not to exceed 100 feet) as required, if this cannot be satisfactorily accomplished.

PF-14 Control Room Fire Door(s)

Staff Concern:

Provide protection to reduce the probability of the spread of fire from adjacent areas to the reactor control room.

Staff Position:

Provide 3-hour rated fire doors between the control room and all adjoining areas that have entrances to the control room.

PF-15 Combustible Materials Stored Under Turbine Oil Storage Tank Room Floor

Staff Concern:

Fire in this area could involve the turbine oil storage tanks and subsequently damage safety-related cables.

Staff Position:

Remove combustible material from the area underneath the turbine oil storage tank room floor.

PF-16 Fire Dampers in Ventilation Ducts

Staff Concern:

Fires in contained areas could spread through ventilation ducts.

Staff Position:

Install UL rated fire dampers in the ventilation ducts at appropriate locations in the plane of the fire barriers through which the ducts pass.

Provide 3-hour rated UL listed fire dampers in the oil storage tank room.

PF-21(a) Emergency Diesel Generator Output Cabling

Staff Concern:

A single fire could damage the output cables from both emergency diesel generators.

Staff Position:

Relocate the #102 and/or #103 diesel generator output cables from within the same fire area under the diesel generators.

PF-21(b) Safety Related Cable Separation

Staff Concern:

A single fire could damage redundant safety-related cables.

Staff Position:

Verify that no other redundant sets of safety-related cables are routed through the same fire area under the diesel generators. If other redundant cabling exists in this fire area, relocate the cabling as necessary to provide suitable separation.

PF-23 Chemical Storage Area

Staff Concern:

A fire in the chemical storage area could involve safety-related cables.

Staff Position:

The designated chemical storage area in the turbine building should be far enough removed from the safety-related electrical cable trays to eliminate the stored chemicals as a fire hazard to the cables without depending upon the proposed fire suppression system.

PF-24 Floor-Cleaning Machines

Staff Concern:

Operation of and/or charging the batteries in the floor-cleaning machines provides a potential ignition source in the chemical storage area.

Staff Position:

Designate another storage area for the floor-cleaning machines, away from the chemical storage area in the turbine building.

PF-31 Supplementary Training For Fire Brigade Chief

Staff Concern:

The Fire Brigade Chief should be trained to direct fire-fighting operations.

Staff Position:

Provide supplementary fire training to the leader of the fire brigade, if necessary, beyond that received by the other members of the brigade in accordance with the NFPA codes.

PF-34 Advance Planning For Firefighting

Staff Concern:

Preplanning (includes firefighting strategies) is essential to provide assurance of the capability to control fires in vital areas.

Staff Position:

Provide documentation to verify that you have planned your firefighting defenses in safety-related and areas presenting a hazard to safety-related equipment.

PF-35 Portable CO_2 or Halon 1211 Extinguishers in Control Room

Staff Concern:

Sufficient portable extinguishers should be available to readily extinguish a fire in cables inside the control cubicles.

Staff Position:

Provide additional portable CO_2 or Halon 1211 extinguishers in the control room. Each entrance to the walk-in control cabinets is expected to have an extinguisher adjacent to it.

PF-36 Portable Smoke Ejectors

Staff Concern:

The products of combustion may need to be exhausted manually to permit fire brigade access in fire area where a controlled ventilation system has not been provided.

Staff Position:

Three 5,000 CFM portable explosion-proof, fire service type smoke ejectors with suitable ducting should be provided.

PF-37 Disposable Waste Storage Area

Staff Concern:

A fire from the drums of waste oil stored in the radioactive waste disposal area could result in an uncontrolled release of radioactive materials.

Staff Position:

Provide additional sprinkler protection in the container storage bin in the waste disposal area to protect the drums of waste oil stored there.

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PF-38 Truck Port in Waste Storage Area

Staff Concern:

Protection is needed from possible flamable material sources to preclude the uncontrolled release of radioactive materials and for the protection of safety-related equipment.

Staff Position

Provide fire doors in the 261' elevation, in the waste disposal area, to protect the remainder of the area from the truck port.

PF-39 Oil Accumulation in Waste Dispoasal Sump

Staff Concern:

A fire in waste dispoasl sump could result in an uncontrolled release of radioactive materials.

Staff Position:

Determine the cause of the oil accumulation in the sump at the 229' elevation in the waste disposal area, and eliminate it or protect against it.

PF-40 Wall Penetration Seals in Waste Disposal Area

Staff Concern:

Penetration seals may not be adequate to act as a fire barrier.

Staff Position:

Provide permanent wall penetration seals in place of the two temporary ones now in place at the 251' elevation in the waste disposal area. Determine if the steel-plated permanent wall penetration adjacent to the two temporary ones has sufficient fire rating.

ENCLOSURE NO. 4

FIRE PROTECTION STAFF POSITIONS

LICENSEE AGREED TO CONSIDER STAFF CONCERN

SITE VISIT MEETING

NINE MILE POINT UNIT 1

DOCKET NO. 50-220

PF-3	Hose Houses
PF-4	Diesel Generator Room Isolation
PF-5	Fire Barriers Around Diesel Generator Rooms
PF-8	MG Set Curbing
PF-12	Control Cabinets Overheating
PF-17	Cable Separation - Power Boards #17 and #155
PF-18	Untreated Wood
PF-19	Storage of Rags
PF-20	Storage Areas - Refueling Deck
PF-21(c)	Separation of Safety-Related Cables - #103 Diesel Generator Room
PF-21(d)	Redundant Fuel Lines to Diesel Generators
PF-22	Hydrogen Seal Oil Unit
PF-25	Control Room False Ceiling
PF-26	Feedwater Pump Separation
PF-27	Procedure to Take Plant to Cold Shutdown
PF-28	Emergency Shutdown Panel
PF-29	"Safe Shutdown" Cable Protection
PF-30	Electrical Separation
PF-32	Separation of Power and Control Cables
PF-33	Control Room Ventilation
PF-37	Oil Drum Storage - Waste Disposal Area
PF-41	Cable Separation for #102 and #103 Power Boards

PF-3 Hose Houses

Staff Concern:

A hose house, equipped with hose, combination nozzle and other auxiliary equipment recommended in NFPA 24 "outside protection" should be provided as needed but at least every 1,000 feet.

Staff Position:

Provide at least one hose house for every two fire hydrants, containing equipment essentially duplicating that of present hose carts.

PF-4 Diesel Generator Room Isolation

Staff Concern:

A diesel oil spill fire could spread under doors to adjoining areas containing safety-related equipment.

Staff Position:

Provide a means, in addition to floor drains, to contain a diesel oil spill within each diesel generator room.

PF-5 Fire Barriers Around Diesel Generator Rooms

Staff Concern:

Diesel generators should be separated from each other and other areas of the plant by fire barriers having minimum fire resistance rating of three hours. Exposed structural steel can warp and become non-supporting in intense fire.

Staff Position:

Provide protection for exposed structural steel in each diesel generator room.

PF-8 MG Set Curbing

Staff Concern:

An oil spill fire in one MG set could result in an oil system failure and resultant oil spill from adjacent MG set, expanding the potential for effecting safety-related cables.

Staff Position:

Provide curbing, or other suitable protection for oil spills, for each recirculating motor-generator.

PF-12 Control Cabinet Overheating

Staff Concern:

The practice of leaving the MCC doors open negates protection of the switch gear from exposure fires and/or fire water.

Staff Position:

Provide sufficient ambient cooling for cabinets containing safety-related electrical/electronic equipment ro preclude the need for additional ventilation via open cabinet doors and portable fans.

PF-17 Cable Separation For #17 and #155 Power Boards

Staff Concern:

A fire in one of the power boards could lead to the failure of the redundant power board.

Staff Position:

Verify that the cable trays above power boards #17 and #155 do not contain cables from redundant safety-related systems. If

a cable tray does contain redundant cabling, propose suitable modifications to provide general compliance with the separation criteria of Regulatory Guide 1.75. Justify any exceptions to the separation criteria that you consider unfeasible to modify.

PF-18 Untreated Wood

Staff Concern:

To reduce the potential for unacceptable fire loading, the use of wood inside buildings containing safety-related systems or equipment should be permitted only when suitable non-combustible substitutes are not available. If wood must be used, only fire retardant treated wood (scaffolding, lay down blocks) should be permitted.

Staff Position:

Remove untreated wooden boards and planking from the turbine and reactor buildings, except for that stored in specially designated automatic fire suppression areas. Untreated timbers (8" x 8" cross-section and larger) used in either of these buildings should be coated with a flame retardant paint having a flame spread rating of 25 or less.

PF-19 Storage of Rags

Staff Concern:

Ordinary combustibles should be located and/or contained so that a fire or affects of a fire, including smoke, will not adversely affect any safety-related systems or equipment.

Staff Position:

Control storage of cleanup rags in safety-related areas with fire-proof containers, fire-suppression systems, or other suitable means.

PF-20 Storage Areas on Refueling Floor

Staff Concern:

Combustibles should be so located and/or contained such that a fire or affects of a fire, including smoke, will not adversely affect any safety-related systems or equipment.

Staff Position:

Identify storage areas on the refueling floor for combustible material. Provide suitable fire-suppression equipment for these areas.

PF-21(c) Separation of Safety-Related Cables in #103 Diesel Generator Room

Staff Concern:

If safety-related cabling for diesel generator #102 runs through the #103 diesel generator room, a fire in #103 diesel generator room could lead to the failure of the #102 diesel generator.

Staff Position:

Verify that the redundant cables, located in trays in the #103 diesel generator room, are in separate cable trays. Propose suitable modifications if this is not the case.

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PF-21(d) Redundant Fuel Lines to Diesel Generators

Staff Concern:

A diesel oil fire in the #103 fuel line could involve the #102 fuel line, disabling both diesel generators.

Staff Position:

Provide 3-hour rated (minimum) fire barriers between the redundant fuel lines to the diesel generators.

PF-22 Hydrogen Seal Oil Unit

Staff Concern:

A fire associated with the hydrogen seal oil unit and piping could spread and effect safety-related cables and/or equipment in adjacent areas.

Staff Position:

Enclose hydrogen seal oil unit and associated oil pipes in 3-hour rated (minimum fire barriers, or provide alternate suitable protection.

PF-25 Control Room False Ceiling

Staff Concern:

A fire in the control room false ceiling could develop quickly, negating any potential for manual fire fighting control.

Staff Position:

Provide the NRC with the flame-spread rating and smoke-development rating of the false ceiling in the control room.

Verify that the ceiling material has a flame spread and smoke development rating of 25 or less by the ASTM E-84 test method or replace with a suitable material.

PF-26 Feedwater Pump Separation

Staff Concern:

Oil spillage and fire from one feedwater pump could involve the redundant feedwater pump needed for HPSI.

Staff Position:

Provide suitable fire containment and automatic fire suppression to prevent an oil fire in one feedwater pump from spreading to a redundant feedwater pump.

PF-28 Emergency Shutdown Panel

Staff Concern:

There is no separation of safety-related channels within the cabinets in the main control room. Panel switches that control safety-related equipment are adjacent to each other. Wires from redundant switches are tied together and, in some instances, utilize the same cable tray runs within the control cabinets. A fire in the control cabinet could negate operation of redundant safety-related equipment from the control room.

Staff Position:

Provide an emergency shutdown panel for principal control of equipment with sufficient monitoring information, including emergency condensor and reactor pressure vessel fluid levels, to effect safe shutdown of the reactor considering loss of the control room and loss of offsite power.

The effect of a fire in other areas of the plant or redundant safety-related equipment should also be considered in the overall design for control of the safe shutdown system.

PF-29 "Safe Shutdown" Cable Protection

Staff Concern:

Those cables necessary for "safe shutdown" should not be disabled in the event of a cable fire or exposure fire.

Staff Position:

Provide suitable fire protection (such as automatic sprinklers, fire-protective coating, or fire barriers) for all electrical cabling needed for safe shutdown (to "cold shutdown").

PF-30 Electrical Separation

Staff Concern:

The separation of power supplies from control circuits, the separation between redundant ESF safety trains, and the separation of safety from non-safety trains (or suitable associated circuit criteria in consonance with R.G. 1.75) is unclear. Niagara Mohawk has indicated formally by letter dated October 6, 1978 that the electrical systems are "generally separated functionally" by voltage level, and that "sufficient isolation" exists. The review team was not able to verify these statements since neither trays nor cabling were clearly marked with respect to redundancy and safety divisions.

Staff Position:

NRC letter dated July 10, 1978 requested Niagara Mohawk to "describe the separation criteria used for the routing of electrical cable" (Question #24). Niagara Mohawk response dated October 6, 1978 stated: "Cables are generally separated functionally" and "...cables are routed to provide sufficient isolation between similar, functionally duplicated devices..." Provide the specifics of your criteria as they relate to the separation criteria defined in BTP 9.5-1, Appendix A and/or the associated criteria defined in Regulatory Guide 1.75. (Of particular interest are your separation criteria for power and control cables.)

PF-32 Separation of Power and Control Cables

Staff Concern:

Nonsafety-related power cables may be routed in and could affect safety-related instrument and control cables.

Staff Position:

Identify any power cables in the reactor building not previously identified in your FSAR. Verify that they are not routed through cable trays containing safety-related instrument and control cables. If they are routed through such cable trays, indicate how you intend to separate the power cables from the other cables.

PF-33 Control Room Ventilation

Staff Concern:

Modifications to the control room HVAC system are being proposed which have not been reviewed by the staff. These modifications may change system boundries. It is desired that the proposed modifications will generally meet the requirements of Regulatory Guides 1.78 and 1.95.

Staff Position:

Detail the proposed modification to the HVAC system necessitated by your planned modification to the auxiliary control room-control room interface (which provides a CO_2 seal to the auxiliary control room). Verify that the HVAC system modification meets the requirements of Regulatory Guides 1.78 and 1.95, to the maximum extent that is practical.

PF-39 Oil Drum Storage - Waste Disposal Area

Staff Concern:

Fire in oil drum storage area in the waste disposal facility could result in an uncontrolled release of radioactive materials.

Staff Position:

Provide additional sprinkler protection in the container storage bin in the waste disposal area, to protect the drums of waste oil stored there.

PF-41 Cable Separation For #102 and #103 Power Boards

Staff Concern:

A fire in #102 power board cable trays could short offsite power cables leading to the #103 power board, thereby disabling the redundant power board.

Staff Position:

Verify that a fire in the #102 cable trays, in the basement of the turbine building, will not disable the #103 power board by shorting the offsite power line to the #103 power board. Propose suitable modifications if this is not the case.