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SCHWENCER,A. Licensing Branch 2

SUBJECT: Forwards revised responses to FSAR Questions 430.37, 430.45,430.61,430.74,430.77 & 430.86.Info will be included in next FSAR amend.

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NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

October 25, 1984
(NMP2L 0215)

Mr. A. Schwencer, Chief
Licensing Branch No. 2
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Re: Nine Mile Point Unit 2
Docket No. 50-410

Dear Mr. Schwencer:

Enclosed for your use and information are the Nine Mile Point Unit 2 revised responses to several Nuclear Regulatory Commission's Final Safety Analysis Report questions. This information has been previously discussed with your staff and is submitted to aid your review of the Unit 2 license application for the resolution of these questions. This information includes responses to questions 430.37, 430.45, 430.61, 430.74, 430.77 and 430.86.

The enclosed will be included in the next Final Safety Analysis Report Amendment.

Very truly yours,

T. E. Lempges
Vice President
Nuclear Generation

TEL/NLR:ja
Enclosure
xc: R. Gramm, NRC Resident Inspector
Project File (2)

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Niagara Mohawk Power Corporation	)	Docket No. 50-410
	)	
(Nine Mile Point Unit 2)	)	

AFFIDAVIT

T. E. Lempges, being duly sworn, states that he is Vice President of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the documents attached hereto; and that all such documents are true and correct to the best of his knowledge, information and belief.

Thomas E. Lempges

Subscribed and sworn to before me, a Notary Public in and for the State of New York and County of Onondaga, this 25 day of October, 1984.

Janis M. Macro
Notary Public in and for
Onondaga County, New York

My Commission expires:

JANIS M. MACRO
Notary Public in the State of New York
Qualified in Onondaga County No. 4784555
My Commission Expires March 30, 1985

QUESTION 430.37 (SRP 8.3)

Provide a detail discussion (or plan) of the level of training proposed for your operators, maintenance crew, quality assurance and supervisory personnel responsible for the operation and maintenance of the emergency diesel generators. Identify the number and type of personnel that will be dedicated to the operations and maintenance of the emergency diesel generators and the number and type that will be assigned from your general plant operations and mantenance groups to assist when needed.

In your discussion, identify the amount and kind of training that will be received by each of the above categories and the type of ongoing training program planned to assure optimum availability of the emergency generators.

Also discuss the level of education and minimum experience requirements for the various categories of operations and maintenance personnel associated with the emergency diesel generators. (SRP 8.3.1, Parts II and III)

RESPONSE

Nonlicensed operators will receive in-depth training in the theory of operation of diesel generators, engine support systems, operation procedures (normal and emergency) and electrical distribution. This will be covered as part of the nonlicensed operator training program which is an ongoing program covering a 24 month cycle.

License candidate training will also cover diesel generator operation, systems and components, along with simulator manipulation of controls for the diesel generators during startup, shutdown, abnormal and emergency operations and surveillance tesing.

License holders (both RO and SRO) will receive requalification lectures on diesel generators during their 24 months requalification program. The content of the lectures will be as in-depth as those in the license candidate training program. The requalification program will also contain simulator manipulation of the diesel generator controls.

Maintenance personnel will be trained in the theory of operation, engine support systems, maintenance procedures and electrical distribution for the diesel generators. Maintenance Procedures address routine maintenance. Major overhauls will be performed by or under the direct supervision of diesel vendor trained personnel. Therefore, maintenance personnal training will be provided for routine maintenance. This training will be conducted by the operations training group and personnel will receive requalification lectures on the diesel generators.

As a minimum, the maintenance supervisors, his assistants and the chief mechanic and chief electrician shall attend this training.

Certain Quality Assurance personnel will attend a six hour training lecture given by the operations training group. This lecture will have the content of the diesel generator lectures in the nonlicensed operator training program. Quality Assurance personnel performing surveillance and inspection tasks will receive this training and will be retrained on a two year cycle.

Any new personnel hired into the above job classifications will receive diesel generator training as specified above for that position.

Materials used to develop handouts and lessons plans were taken from plant drawings and vendor documents (tech manuals). This training will be done by the Niagara Mohawk Training Department - Nuclear and will be equivalent to that of the diesel generator vendor and also meets the intent of NUREG CR0660.

Training Department personnel who provide Diesel Generator courses shall be qualified instructors. A qualified instructor includes having comparable military or commercial large diesel work experience or training from a diesel vendor school.

Personnel experience levels are provided in Table 13.1-4.

ADMINISTRATIVE PROCEDURE

REFERENCES

APN	EDUCATIONAL REQUIREMENT	EXPERIENCE REQUIREMENT
APN-10A Licensed Operator Candidate	High School Diploma or equivalent (Section 3.2)	2 years at time of NRC exam (Section 3.2)
APN-10B Licensed NRC Operator Retraining	Same As APN-10A Holding Current NRC License	
APN-10L Training of Non-Licensed Operators	Meet Req. of APN-10A (Sections 3.1, 3.2, and 3.3)	
APN-10M Training for Mechanics	Section 3.2 Labor Agreement and Qualifications	Section 3.3 Progressive
APN-10N Training for Electricians	Section 3.2 Labor Agreement and Qualifications	Section 3.3 Progressive

LESSON PLAN OUTLINE

I. PURPOSE

II. SAFETY DESIGN BASES

III. GENERAL DESCRIPTION

- -Overall Operation
- -Basic Theory of Operation

IV. DETAILED DESCRIPTION

- -Starting Systems
- -Lube Oil Systems
- -Governoring Systems
- -Cooling Systems
- -Turbocharging System
- -Fuel Oil System
- -Electrical Generator System
- -Electrical Distribution System

V. INSTRUMENTATION AND CONTROLS

- -Control Room
- -Local

VI. PRECAUTIONS AND LIMITATIONS

VII. INTERLOCKS

VIII. TECHNICAL SPECIFICATIONS

IX. MITIGATION OF CORE DAMAGE

X. PROCEDURES

-Start Up

-Shut Down

-Normal OPS

This is a proposed outline that will coincide with text material found in the Operations Technology course.

MAINTENANCE
LESSON PLAN OUTLINE
DIESEL GENERATORS

I. PURPOSE

II. SYSTEM DESCRIPTION/DESIGN BASIS

III. GENERAL DESCRIPTION

- A) Engine
- B) Generators
- C) Power Panels/Loads Supplied

IV. DETAILED DESCRIPTION

- A) Starting Systems
- B) Fuel Oil System
- C) Cooling System
- D) Turbocharger Operation
- E) Lube Oile System
- F) System Interconnection
- G) Controls
- H) Protective Devices
  - 1) Overspeed
  - 2) Temperature
  - 3) Oil Pressure
  - 4) Low Water

IV. DETAILED DESCRIPTION (Continued)

5) Crankcase Pressure

6) Generator Protection Devices

7) Fire

V. STANDBY STATUS

VI. TECHNICAL SPECIFICATIONS

VII. MAINTENANCE PROCEDURES

The physical requirements are designated in APN-10M, and APN-10N.

QUESTION F430.45 (9.5.3)

IN FSAR Section 9.5.3.2, you state that the emergency lighting system is "treated" as Class 1E. Provide clarification for the term "treated." Are the emergency lighting system components, up to the lighting fixtures, i.e., MCC's, transformers, lighting panels, conduits, raceways, etc., actually certified Class 1E? If not, then to what standard have these components been fabricated and installed? Provide a detail discussion on this aspect of the lighting system.

RESPONSE

See revised Sections 9.5.3.2 and 9.5.3.3.

Essential Lighting System

The essential lighting system provides partial lighting for certain critical areas of the station requiring continuous lighting, such as the control room, relay and computer room, standby diesel generator rooms, emergency switchgear rooms, service water pump room, and for passageways to and from areas where safety-related equipment is located. The essential lighting system receives power from station normal UPS systems 2VBB-UPS1C and 2VBB-UPS1D. The UPS systems feed the main essential lighting distribution panels which feed the branch distribution panels located in the areas being lighted. The essential lighting system fixtures are constantly energized.

Although the electrical equipment in the essential lighting system may be of different dimensions than 1E equipment and lacks the qualification documentation of 1E emergency lighting equipment, in all other significant respects it is identical. Specifically, the essential lighting equipment was purchased from the same vendor and utilizes the same construction (although it may be dimensionally different), such as electrical box wall thickness, breakers, and terminal connectors. The essential lighting equipment is mounted the same as the emergency lighting system, that is, they are seismically mounted in Category 1 areas.

The essential lighting system is connectible to emergency diesel generators except during a LOCA condition. Also, the access and egress routes to and from any area needed for operation of any safe shutdown equipment are being provided with 8-hr battery packs.

Egress Lighting System

The egress lighting system provides adequate lighting for all egress signs inside the plant, exit doors, hallways, corridors, passageways, stairways, and other areas leading to the outside building exits. The system is designed specifically for inside building egress emergency conditions in accordance with OSHA requirements. Internally illuminated exit signs are located at those doorways and protected ways of travel which open onto station roads and walkways. All exit facilities are provided with adequate illumination, both vertical and horizontal. Minimum intensity of illumination, measured at the floor level, for all exit paths is maintained at 0.5 footcandle.

The egress lighting system receives power from the station normal UPS system as a part of the essential lighting system. The egress lighting fixtures are constantly energized.

If not provided with emergency lighting, 8-hr battery packs will provide necessary illumination in the access and egress routes to and from the areas required for operation of any safe shutdown equipment.

QUESTION F430.61 (9.5.4)

In Section 9.5.4.3 you state that diesel fuel oil is available from local distribution sources. Identify the sources where diesel quality fuel oil will be available and the distances required to be travelled from the source(s) to the plant. Also discuss how fuel oil will be delivered onsite under extremely unfavorable environmental conditions. (SRP 9.5.4, Part I)

Discuss the precautionary measures that will be taken to assure the quality and reliability of the fuel oil supply for emergency diesel generator operation. Include the type of fuel oil, impurity and quality limitations as well as diesel index number or its equivalent, cloud point, entrained moisture, sulfur, particulates and other deleterious insoluble substances; procedure for testing newly delivered fuel, periodic sampling and testing of onsite fuel oil (including interval between tests), interval of time between periodic removal of condensate from fuel tanks and periodic system inspection. In your discussion include reference to industry (or other) standard which will be followed to assure a reliable fuel oil supply to the emergency generators. (SRP 9.5.4, Parts II and III)

RESPONSE

See revised Sections 9.5.4.2 and 9.5.4.3 and Table 1.8-1, Regulatory Guide 1.137.

SUPPLEMENTAL RESPONSE

The following proposed technical specification addresses protection of the fuel oil storage tank from internal corrosion. These requirements will be incorporated in the Unit 2 Technical Specifications.

SURVEILLANCE REQUIREMENTS (Continued)

b. By sampling for accumulated water and removing accumulated water if present:

1) From the day tank at least once per 31 days and after each occasion when the diesel is operated for greater than one hour, and

2) From the storage tank at least once per 31 days.

c. By sampling new fuel oil in accordance with ASTM D4057-81 prior to addition to the storage tanks and:

1) By verifying it meets the requirements specified in ASTM D975-81 prior to addition to the storage tanks by the following:

a) An API Gravity of within 0.3 degrees at 60°F or a specific gravity of within 0.0016 at 60/60°F, when compared to the supplier's certificate or an absolute specific gravity at 60/60°F of greater than or equal to 0.83 but less than or equal to 0.89 or an API gravity at 60°F of greater than or equal to 27 degrees but less than or equal to 39 degrees,

b) Saybolt viscosity at 100°F of greater than or equal to 32.6 sus, but less than or equal to 40.1 sus when tested in accordance with ASTM D88-56,

c) A flash point equal to or greater than 125°F, and

d) A clear and bright appearance with proper color when tested in accordance with ASTM D4176-82.

2) By verifying within 31 days of obtaining the sample that the other properties specified in Table 1 of ASTM D975-81 are met when tested in accordance with ASTM D975-81 except that the analysis for sulfur may be performed in accordance with ASTM D1552-79 or ASTM D2622-82.

d. At least once every 92 days by obtaining a sample of fuel oil from the storage tanks in accordance with ASTM D4057-81 and verifying that total particulate contamination is less than 10 mg/liter when checked in accordance with ASTM D2276-78, Method A and that the other properties specified in Table 1 of ASTM D975-81 are met when tested in accordance with ASTM D975-81 except that the analysis for sulfur may be performed in accordance with ASTM D1552-79 or ASTM D2622-82.

TABLE 1.8-1 (Cont)

Regulatory Guide 1.137, Revision 1 (October 1979)

Fuel-Oil Systems for Standby Diesel Generators

FSAR Section 9.5.4

Position

The Unit 2 project complies with this Regulatory Position (Paragraph C) of this guide except for the alternate approach described in response to Question F 430. 61, which is incorporated in the Unit 2 Technical Specifications.

insertion into the sounding tube furnished in each storage and day tank. The possible accumulation of water at the bottom of each diesel fuel oil storage and day tank is also checked by applying a water-indicating paste to the sounding rod. The paste changes color when it comes in contact with water. Should the water level be excessive, water is removed from the storage tanks by the use of a portable pump and from the day tanks by opening a drain valve located near the bottom of each tank.

Adequate sources of diesel quality fuel oil are available in the cities of Oswego (8 mi), Belgium (25 mi), and Syracuse (35 mi). Under extremely unfavorable environmental conditions, fuel oil will be delivered onsite via tanker truck escorted by highway snow removal equipment.

This will permit each standby diesel generator system to supply uninterrupted emergency power. Fuel oil meets or exceeds the quality requirements of the technical specifications and the diesel engine manufacturer's recommendations.

The growth of algae in the fuel oil storage tank is determined by measuring the oxidative stability in accordance with ASTM D2274-74. If it is more than 2 mg/100 ml, the fuel oil in the affected storage tank will be appropriately treated (filtration or biocides) to reduce the level to acceptable concentrations.

9.5.4.4 Inspection and Testing Requirements

The standby diesel generator fuel oil storage and transfer system is designed to permit periodic inspection and maintenance of active components. Local display and indicating devices are provided for periodic inspection of tank oil level and operating parameters such as pump discharge pressure and pressure drop across each fuel oil strainer.

Fuel oil storage and day tanks and piping are hydrostatically tested prior to filling with fuel oil. System operability is tested in conjunction with the diesel generator. Continued system integrity is verified with periodic testing with the diesel generator.

the respective diesel generator for a period of 1 hr or longer. Water accumulation in the diesel generator fuel oil storage and day tanks is checked monthly and after each operation of the diesel engine. Samples of fuel oil from every tank are analyzed quarterly to ensure that the fuel meets the appropriate quality requirements of the technical specifications and the diesel engine manufacturer's recommendations. New fuel will be tested for specific gravity, the presence of water and sediment, and viscosity prior to addition to ensure that the limits of the technical specifications are not exceeded. Analysis of the other properties of the fuel oil will be completed within two weeks of the fuel addition.

9.5.4.5 Instrumentation Requirements

Description

Safety-related instruments and controls are provided for automatic and manual control of the standby diesel generator fuel oil storage and transfer system. Except where noted otherwise, controls and the instruments described below are located in the associated diesel generator room. The control logic is shown on Figure 9.5-41.

Operation

Each duplex set of standby diesel generator fuel oil transfer pumps is controlled automatically by the oil level in its associated day tank. Each pump can also be controlled manually.

Monitoring

Indication is provided for each of the following:

1. Fuel oil storage tank level.
2. Fuel oil day tank level.

An alarm is provided for each of the following:

1. Fuel system trouble (annunciated in main control room).
2. Fuel system inoperable (annunciated in main control room).
3. Fuel oil storage tank level low/high.
4. Fuel oil day tank level low-low/high-high.

Nine Mile Point Unit 2 FSAR

QUESTION F430.74 (9.5.5)

In FSAR Section 9.5.5.2, you state that antifreeze compounds are not used in the diesel generator cooling water systems because they are located in a heated building. Consider a loss of heating to one or more diesel generator rooms, and describe the provisions in your system(s) design to prevent freezing of the diesel engine cooling water.

PSB COMMENTS

The response will be acceptable if:

a. The applicant will establish procedures to start and adequately load the DG's to maintain proper engine temperature in the event DG room heating is lost, and

b. The Unit 2 design is such that DG's in test mode will isolate from the grid and revert to automatic mode, ready to accept safety loads, on a LOOP and/or SI signal.

RESPONSE

Each diesel generator room is provided with multiple nonsafety-related electric unit heaters, designed to maintain a space temperature of not less than 65°F in the winter. The unit heaters are controlled with thermostats. Each room also has a separate QA Category I thermostat, with dual high (120°F) and low (65°F) temperature settings, for the purpose of annunciating an alarm in the main control room if space temperature falls below 65°F or rises above 120°F.

In the unlikely event that all unit heaters in a given room are inoperable due to mechanical/electrical failure, and this happens concurrent with a subfreezing outdoor condition, either additional portable heating will be used or the associated diesel engine would be started and run to maintain the temperature. Should loss of offsite power occur, concurrent with a subfreezing outdoor condition, the diesel engines will start automatically, thereby maintaining temperature.

RESPONSE TO PSB COMMENTS

a. Technical Specifications will be provided to address starting the diesel generators if the room temperature cannot be maintained above 65°F.

b. Unit 2 emergency diesel generators controls are so designed that an emergency start signal will isolate the diesel generator from test mode and put it on automatic mode. See Section 8.3.1.1.2.

Nine Mile Point Unit 2 FSAR

QUESTION F430.77 (9.5.5)

For the Division III diesel generator, provide the results of a test which demonstrates that the "thermosyphon" design in your keep warm system will maintain a uniform temperature within the diesel engine jacket water and throughout the cooling water system of at least 120°F. Provide the lowest ambient temperature (diesel generator room) at which the keep warm system can maintain this temperature. Also, what provisions have been made to warn the operator if room ambient falls below the above minimum temperature?

PSB COMMENTS

Not acceptable. The referenced FSAR Section does not answer the question.

RESPONSE

See revised Section 9.5.5.2.2.

RESPONSE TO PSB COMMENTS

EMD's test data has shown that the EMD diesel can be started in a 66°F environment while the engine jacket cooling water was heated by the immersion heater through natural circulation. Also see Section 9.5.5.2.2. and response to question F430.74.

QUESTION F430.86 (9.5.7)

Your discussion of the prelubrication systems for the fuel oil Division I/II and Division III diesel generators indicates that prelubrication is provided to the upper parts of the diesel engines (valves, rocker arms, rocker shafts, etc). For some diesel engine designs, excessive or continuous prelubrication to the upper engine areas could result in lube oil entering and collecting in the cylinders with the potential for causing extensive engine damage when called on to start. Revise your FSAR to specifically address the design of all diesel generators with regard to this potential problem, and the applicable design considerations to preclude this from occurring.

PSB COMMENTS

Not acceptable. The revised FSAR Section referenced in the response does not address the question (for Division I and II). No response is provided for the Division III DG.

RESPONSE

See revised Section 9.5.7.5 for Divisions I and II. For Division III, see revised Section 9.5.7.3.

RESPONSE TO PSB COMMENTS

For Divisions I and II see Section 9.5.7.5. For the Division III diesel generator, EMD recommended maintenance instruction 9644 will be implemented in accordance with NUREG/CR-0660. Additionally, Niagara Mohawk will perform a weekly manual prelubrication program for the Division III Diesel Generator.