

50-220

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TO: Mr. George Lear

FROM: Niagara Mohawk Power Company
Syracuse, New York
Gerald K. Rhode

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ENCLOSURE

Consists of information on degraded voltage conditions for emergency power systems.....

PLANT NAME: Nine Mile Point Unit No. 1

RJL 7/18/77

SAFETY

FOR ACTION/INFORMATION

ENVIRONMENTAL

ASSIGNED AD: (6) LEAR

BRANCH CHIEF: NOWICKI

PROJECT MANAGER: PARRISH

LICENSING ASSISTANT: B. HARLESS

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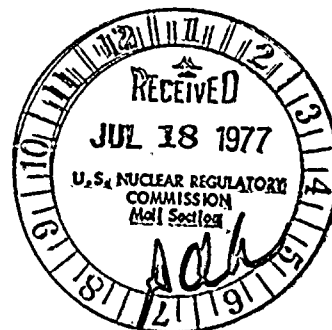
300 ERIE BOULEVARD, WEST
SYRACUSE, N. Y. 13202

July 14, 1977

Regulatory

File-Cy

Director of Nuclear Reactor Regulation
Attn: Mr. George Lear, Chief
Operating Reactors
Branch #3
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555



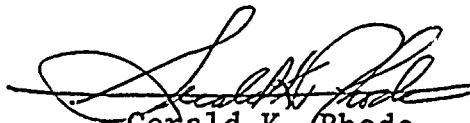
Re: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Gentlemen:

Your letter of June 2, 1977 requested information concerning undervoltage protection at Nine Mile Point Unit 1. The enclosure to this letter addresses itself to the staff positions on degraded voltage conditions for emergency power systems. Proposed technical specifications are being forwarded under separate cover.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION


Gerald K. Rhode
Vice President-Engineering

MGM/szd

Enclosure

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Enclosure

EMERGENCY POWER SYSTEMS

Introduction

The onsite emergency power systems for Nine Mile Point Unit 1 has been reviewed to assess the susceptibility of redundant safety-related electrical equipment to:

- Sustained degraded voltage conditions at the offsite power source; and
- Interaction of the offsite and onsite emergency power systems.

References 1 and 2 contain analyses which indicated that voltage levels at safety related buses have been optimized for all conditions throughout the anticipated ranges of voltage variations for off-site power sources. This has been accomplished by the addition of a second level of undervoltage protection, as described in those submittals.

1. Letter dated October 18, 1976 from G. K. Rhode to George Lear
2. Letter dated November 30, 1976 from G. K. Rhode to George Lear

Position 1 - Second Level of Under-or-Over Voltage Protection
With a Time Delay

Two levels of undervoltage protection exist at Nine Mile Point Unit 1. The first level is associated with Loss of Offsite Power. The second level of undervoltage protection was installed during the Spring 1977 refueling outage. The relays installed for this second level of protection have inverse time and fast reset characteristics.

Detailed information regarding items a-d of this position have previously been discussed in References 1 and 2. This is summarized below:

Reference 1 included a voltage profile analysis from which the set points and time delays were chosen in order that voltage requirements for safety related loads were maintained. The time delay as described in Reference 2 is such that emergency core cooling will be available within the required 35 seconds as required by the FSAR. In addition, the inverse time at fast reset characteristics of the undervoltage relays will minimize the effect of short duration disturbances from reducing the availability of offsite power sources. They also ensure that failures of safety related systems will not occur. These relays also will automatically trip the off-site power sources when set point and time delays have been exceeded. The coincident logic along with the associated trip set points and time delays precludes spurious offsite power trips.

The new relays were designed to meet the applicable requirements of IEEE-279, 1971, in accordance with Item e of this position.

Proposed Technical Specifications which include limiting conditions for operation, surveillance requirements for first and second levels of undervoltage protection are being forwarded under separate cover. These include trip set points with minimum and maximum limits.

Compliance with General Design Criteria 17 "Electric Power Systems" for Nine Mile Point Unit 1 is summarized as follows:

"An onsite electrical power system and an offsite electrical power system are provided to permit functioning of structures, systems, and components important to safety. The safety function for each system provides sufficient capacity and capability to ensure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and the containment integrity and other vital functions are maintained in the event of postulated accidents.

Two completely independent and redundant emergency diesel-generator systems are provided as well as two completely separate and independent Station battery systems.

Two 115-kv transmission lines from remote generating stations feed the 115-kv reserve bus at Nine Mile Point. In the event of permanent fault on one line, the other line has the necessary capacity to supply all the power required to ensure that acceptable fuel and reactor coolant pressure boundary design limits are not exceeded during anticipated operational occurrences. Two physically independent circuits are provided from the 115-kv bus to the reserve station-service transformers.

Each of the on-site power systems are tested according to the Technical Specifications, to ensure their capability to perform their intended safety function.

Loss of power from one source will not cause loss of power from one of the other sources. The Niagara Mohawk System is designed such that the 115-kv transmission system will not be lost if Nine Mile Point Unit No. 1 goes off the line."

Position 2 - Interaction of Onsite Power Sources with Load
Shed Feature

Justification for retaining the load shed feature at Nine Mile Point Unit 1 is discussed in Reference 1. In addition, testing was performed after installation of the second level of undervoltage protection. Results of this testing verified that the system operated within the design requirements.

Proposed Technical Specification changes are being submitted under separate cover.

Position 3 - Onsite Power Source Testing

Technical Specification Surveillance Requirement 4.6.3.a requires a simulation of a loss-of-coolant accident during each major refueling outage.

Operator Surveillance Test No. R2 - "Loss of Coolant and Emergency Diesel Generator Simulated Automatic Initiation Test" verifies the following:

- 1) On loss of off-site power that the engineered safeguard loads are shed from the emergency buses and
- 2) that the diesel generators start automatically and sequentially pick up the engineered safeguard loads.

The load shedding feature for the emergency diesels at Nine Mile Point Unit 1 remains intact throughout operation as described in Reference 1.

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