

NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

Nine Mile Point Nuclear Station
Post Office Box 32
Lycoming, New York 13093

July 24, 1972

Mr. Donald J. Skovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Skovholt:

Re: Provisional Operating License: DPR-17
Docket No.: 50-220

Enclosed is a report relating to malfunctions which occurred during the periodic testing of the core spray systems. The core spray systems at the Nine Mile Point Nuclear Station, Unit #1 consists of two automatically actuated, independent, double-capacity systems. Each core spray system has 100 percent cooling capacity from each spray header and each supply pump set.

Each core spray system has a redundant set of core spray and core spray topping pumps. Each set of pumps are independent and are powered from independent emergency power systems.

For the worst line break, resulting in a loss of coolant accident, a core spray flow of at least 3400 gpm is required. This requirement is met by one set of pumps in either core spray system. Although two sets of pumps failed during the test, two sets of pumps did perform their design function and provided a test flow in excess of 3400 gpm in each core spray system.

Although the failed pumps could not be operated automatically or remotely both pumps could have been operated locally. The type of breaker mechanism used on this system can be operated manually by using a tool to charge the closing spring. Two mechanical controls are available to close or trip the breaker. Therefore, the automatic controls are backed up with manual local control should loss of all redundancy occur.

*50-220
incident
4173*

8303010725 720816
PDR ADOCK 05000220
S PDR

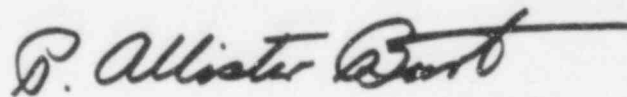
Mr. Donald J. Skovholt
Assistant Director for Reactor Operations
Division of Reactor Licensing
USAEC

July 24, 1972

Page 2

The problem with both sets of pumps was corrected and operationally tested the same day. The remaining set of pumps were inspected to insure operability when required.

Very truly yours,



P. Allister Burt
General Superintendent
Nuclear Generation

PAB:pw

Enclosure

FAILURE OF TWO SETS OF CORE SPRAY PUMPS TO START DURING A PERIODIC TEST -

Each set of pumps is powered from independent emergency power boards. The malfunctioned pumps were core spray pump #111 which is powered from bus #102 and core spray pump #122 which is powered from bus #103. Core spray pump #121 which is on bus #102 and core spray pump #112 on bus #103 started and operated as required. The problem with both pumps was associated with the pump motor air circuit breaker. The breakers are Magne-Blast Circuit Breaker type AM-4.16-350-1H manufactured by the General Electric Company.

CORE SPRAY PUMP #111

The problem with Core Spray #111 breaker was caused by a mechanical linkage which was binding. The mechanical linkage is spring loaded consisting of a roller follower and linkage which operates an interlock switch. The interlock switch is part of the breaker control circuit.

The purpose of the linkage and switch is to monitor the physical position of the breaker assembly which can be raised or lowered by an elevator mechanism. The interlock switch allows the breaker to operate only in the fully raised or lowered position. The binding mechanism would not operate which prevented the interlock switch from closing. The open interlock switch prevents the breaker control circuit from operating.

CAUSE OF THE MECHANICAL BINDING - #111 CORE SPRAY PUMP

The binding was caused by two identical linkage plates whose holes were slightly misaligned. The two linkage plates connect two lever arms together. The misalignment of the holes caused the connecting pins to bind between the lever arms and the linkage plates. The binding was great enough to resist the spring force.

CORRECTIVE ACTION - #111 CORE SPRAY PUMP

A rat tail file was used to align the holes since the misalignment was very slight. The mechanism was reassembled and free of any binding. Inspection of other breaker mechanisms showed no binding.

CORE SPRAY PUMP #122

The problem with core spray pump #122 was caused by a latch check switch in the breaker control circuit. This switch blocks recharging of the closing springs during a closing operation until the closing operation is completed.

CAUSE OF THE MALFUNCTION - CORE SPRAY PUMP #122

The latch check switch contacts were burned and would not complete the power circuit to the spring charging motor. Since the spring charging motor would not operate the closing spring were not compressed. The breaker can not be closed if the closing springs are not compressed.

FAILURE OF TWO SETS OF CORE SPRAY PUMPS TO START DURING A PERIODIC TEST (CONT'D)

CORRECTIVE ACTION - CORE SPRAY PUMP #122

The latch check switch was replaced and the breaker and core spray pump operated as required.