NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

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

January 20, 1972

Dr. Peter A. Morris, Director
Division of Reactor Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Dr. Morris:

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

On December 31, 1971 at 10:08 am, the Nine Mile Point Nuclear Station Unit #1 tripped off line as the result of surveillance testing.

Introduction:

Routine surveillance testing of the reactor protection high/low water level sensors was being conducted at the time of the trip. The sensor support was accidently bumped causing each high level trip sensor to operate resulting in a turbine trip. Because the turbine was above 45% load, an anticipatory trip signal was generated to scram the reactor on a turbine trip.

Following the reactor scram, the reactor water level decreased rapidly. The feedwater control system responded by overfeeding, as it should, when in the automatic mode. The feedwater system was left in the automatic mode for approximately 20 seconds after the trip, and then switched to the manual mode, because the feedwater flow to the reactor was high in the operator's opinion. Manual action was too slow and excessive feedwater flow continued to the reactor. Feedwater flow was reduced to zero at approximately the time the reactor level reached the main steam leads causing some water to go into these lines.

Analysis and sequence of events:

At 10:08:02 am, a turbine trip occurred from an erroneous high reactor water level signal caused by bumping the sensors.

At 10:08:02 am, the reactor scrammed from the turbine anticipatory trip. The turbine load was greater than 45%. All control systems followed the expected transient response characteristic for the first 18 seconds following the trip. There were three feedwater pumps all running in automatic mode. Two motor pumps, each delivering about 1.5 X $10^6$ lbs/hr and

the shaft pump which was delivering about $5.2 \times 10^6$ lbs/hr at 18 seconds after the trip. This accounts for the high flow the operator observed. The analysis show that the water level was beginning to recover and that the flow was backing down when switched to manual mode on the shaft pump. At 27 and 33 seconds, the motor pumps were placed in the manual mode. At 33 seconds, one of the motor pump's flow had already reduced to zero flow in response to the automatic signal. Operator action on this pump in the manual mode was to increase flow. At 70 seconds after the trip, the analysis showed the water level to be three feet above normal with flow being reduced manually on the shaft pump and a constant flow being maintained on both motor pumps. Flow on the shaft pump was reduced to zero at approximately 120 seconds after the trip. Flow on the motor pumps was reduced to zero at approximately 150 seconds after the trip. Analysis shows that some water may have spilled into the main steam leads at 131 seconds after the trip. This water flashed in the hot steam leads causing the steam line break sensors to operate.

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Conclusion:

The trip resulted during surveillance testing from an accidental bump to the level sensors.

The feedwater response in the automatic mode was normal for the transient conditions that existed.

Placing the feedwater system in manual when fast response is required may cause a level problem if the operator does not respond fast enough.

Corrective action:

A review of expected system responses will be given to the operators as part of the continuous educational program. This would help the operators in making the right decision during future trips.

Very truly yours,

P. Allister Burt

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Station Superintendent

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