METROPOLITAN EDISON COMPANY

POST OFFICE BOX 542 READING, PENNSYLVANIA 19603 TELEPHONE 215 - 929-3601

February 3, 1975
GQL 0717

Director
Directorate of Licensing
Nuclear Regulatory Commission
Washington, D. C. 20555



Dear Sir:

Operating License DPR-50
Docket #50-289

In accordance with the Technical Specifications for our Three Mile Island Nuclear Station, Unit 1, we are reporting the following abnormal occurrence:

(1) Report Number: AO 50-289/75-04

(2a) Report Date:

(2b) Occurrence Date: January 23-24, 1975

(3) Facility: Three Mile Island Nuclear Generating Station, Unit 1

(4) Identification of Occurrence:

Title: Unplanned Radioactive Release, Caused by an Inadvertent Loss of the Reclaimed Boric Acid Tank Loop Seal

Type: An abnormal occurrence as defined by the Technical Specifications, paragraph 1.d., in that the Unplanned Radioactive Release, Caused by the Inadvertent Loss of the Reclaimed Boric Acid Tank Loop Seal, was in an amount which was of significance with respect to the limits prescribed in the Technical Specifications, Appendix B, paragraph 2.3.2.a.

(5) Conditions Prior to Occurrence: The reactor was in a hot standby condition with major plant parameters as follows:

Power: Core: 1%

Elec: 0 MW (Gross)

RC Flow: $138 \times 10^6$ lb/hr

RC Pressure: 2155 psig

RC Temp.: 535°F

PRZR Level: 210 in.

PRZR Temp. 650°F



(6) Description of Occurrence:

The pressurizer spray valve (RC-V1) was backseated to allow replacement of its Limitorque operator. The pressurizer spray block valve (RC-V3) was, therefore, closed and was to be operated only if required to control reactor coolant system pressure. When the block valve (RC-V3) was closed, valve stem leak off to the vent header in the Reactor Building increased to approximately 10 gpm. This increased valve stem leak off caused an overpressure condition in the vent header nitrogen cover gas which blankets the R.C. Drain Tank and "A" Reclaimed Boric Acid Tank, as well as other tanks within the Waste Disposal System. This overpressure in the reclaimed Boric Acid Tank cover gas caused the water loss from the tank overflow loop seal and the subsequent release of radioactive cover gas to the Auxiliary Building Ventilation System. The Auxiliary Building Ventilation System subsequently discharged the released radioactive cover gas through the station vent to the atmosphere.

The "A" Reclaimed Boric Acid Tank Loop Seal was refilled to terminate the gas release from the vent header, the Limitorque operator was replaced, RC-V1 was returned to its normal shut condition, and the motor operated pressurizer spray block valve (RC-V3) was backseated to stop the valve stem leak off. As a result, the source of the unplanned gas release was terminated.

(7) It is believed that the apparent cause of the inadvertent loss of the Reclaimed Boric Acid Tank Loop Seal, and resultant unplanned radioactive release, may be due to inadequate design of the nitrogen cover gas system and/or related systems, in that if the system(s) would have had sufficient capacity to handle the valve stem leak-off, the occurrence would not have happened.

(8) Analysis of Occurrence:

Analysis of station vent radiation effluent recorder charts and local air samples from the station vent indicate that 60 curies of predominately Xe-133 (86%) were released with a maximum release rate of $1.26 \times 10^5$ $M^3$/sec. The average release rate over the three hour and 37 minute duration of the release was $1.65 \times 10^4$ $M^3$/sec. The 24 hour average concentration in the affected area of the

Auxiliary Building was 1.25 x $10^{-3}$ uCi/ml, which constitutes an incident reportable in accordance with 10 CFR 20.403 (b) (2), and additional information will be forwarded in accordance with 10 CFR 20.405 (a). The average concentration is based on a measured 1200 CFM air flow through the area of the release. Calculated concentrations at the nearest downwind unrestricted area, based on a dilution factor of $\chi/Q = 7.6 \times 10^{-5}$ sec/$M^3$ are $2.6 \times 10^{-5}$ uCi/ml for the 10 minute maximum and $3.44 \times 10^{-7}$ uCi/ml for the three hour and 37 minute duration of the release.

No station personnel were in the area of the release, therefore no exposures occurred during the peak times of the release. Station personnel utilized to investigate the causes of the release were dressed in protective clothing and self-contained breathing apparatus. Dosimetric devices worn by these individuals indicated only slight exposures (< 15 mrem).

Based on the above discussion, it has been determined that the health and safety of no individual was endangered as a result of this occurrence.

(9) Corrective Action:

As has been described above, immediate corrective actions consisted of refilling the affected loop seal, restoring RC-V1 to its normal shut condition, and terminating the source of the release by back-seating RC-V3 open.

The Plant Operations Review Committee met shortly after the occurrence, approved the immediate corrective actions, and as a long term preventative action recommended to the Station Superintendent that an evaluation be conducted of the nitrogen cover gas system, and related systems, to determine if there is a design inadequacy, and/or operational procedural inadequacy, that could have caused this occurrence, and if so, what can be done to prevent it from happening again.

The Station Superintendent concurred with PORC's findings, a consultant has been contracted, and the investigation is in progress.

(10) Failure Data:

Not applicable.

Sincerely,

Signed-R. C. ARNOLD

R. C. Arnold
Vice President

RCA:DNG:eg

AO 75-04

cc: Directorate of Regulatory Operations, Region 1
Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

File 20.1.1/7.7.3.5.1



bcc: Mr. G. A. Olson, Secretary
Prime Movers Committee
Edison Electric Institute
90 Park Avenue
New York, NY 10016

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J. J. Colitz
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