



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

October 22, 1979

Docket No. 50-320



Mr. R. C. Arnold
Senior Vice President
Metropolitan Edison Company
260 Cherry Hill Road
Parsippany, New Jersey 07054

Dear Mr. Arnold:

Based on the Commission's instructions in its Memorandum and Order dated October 16, 1979, the Director, Office of Nuclear Reactor Regulation, has issued the enclosed Order for Modification of License dated October 18, 1979, and Negative Declaration dated October 18, 1979. The Order amends Facility Operating License No. DPR-73 for Three Mile Island Nuclear Station, Unit No. 2.

These documents relate to the operation of an EPICOR-II filtration and ion exchange decontamination system to decontaminate intermediate-level radioactive waste water held in tanks in the TMI-2 auxiliary building.

Copies of this Order and the Negative Declaration are being filed with the Office of the Federal Register for publication.

Sincerely,

Richard H. Vollmer, Acting Assistant Director
for Systematic Evaluation Program
Division of Operating Reactors

Enclosures:

1. Order for Modification
of License
2. Negative Declaration

cc w/enclosures:
See next page

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

11590-01
RELATED CORRESPONDENCE

In the Matter of

METROPOLITAN EDISON COMPANY, ET AL.

Docket No. 50-320

(Three Mile Island Nuclear
Station, Unit 2)



ORDER FOR MODIFICATION OF LICENSE

I.

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Metropolitan Edison Company, Jersey Central Power and Light Company and Pennsylvania Electric Company (the licensee) are the holders of Facility Operating License No. DPF-73, which had authorized operation of the Three Mile Island Nuclear Station, Unit 2 (TMI-2) at power levels up to 2772 megawatts thermal. The facility, which is located in Londonderry Township, Dauphin County, Pennsylvania, is a pressurized water reactor used for the commercial generation of electricity.

II.

On October 16, 1979, the Commission issued a Memorandum and Order directing the licensee to operate an EPICOR-II filtration and ion exchange decontamination system to decontaminate intermediate-level radioactive waste water now held in tanks in the TMI-2 auxiliary building. The factual bases underlying this directive are set forth fully in the Memorandum and Order and will not be restated herein. Additionally, the Commission recog-

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nized that operation of EPICOR-II will add several gaseous effluent discharge paths to those previously listed in the TMI-2 operating license. The Commission further observed that its regulations in 10 C.F.R. Part 50, Appendix A, General Design Criteria for Nuclear Power Plants (GDC 64) require that the new discharge paths be monitored. Though the Commission deemed it not necessary as a legal matter to amend the TMI-2 operating license technical specifications to assure that monitoring will be conducted, it expressed the belief that the Commission's inspection and enforcement program would be simplified if the requirements for discharge path monitoring and those provisions set forth in paragraphs 1, 2 and 3 of its Order are spelled out in the operating license that can be readily referenced by the licensee and Commission inspectors. The Commission instructed the Director, Office of Nuclear Reactor Regulation (NRR) to promptly issue an order for modification of the TMI-2 operating license to (a) add EPICOR-II discharge paths to those presently listed in the Technical Specifications as requiring monitoring under GDC 64, and (b) include the provisions of paragraphs 1, 2 and 3 of its Order, and to provide that, within 20 days of the date of its Order, a hearing may be requested.

III.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission Memorandum and Order of October 16, 1979, IT IS ORDERED THAT:

Facility Operating License No. OPR-73 for the Three Mile Island Nuclear Station, Unit 2, be amended, in the manner hereinafter provided, to include the following conditions:

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(i) The technical specifications requiring monitoring under GDC 64 are hereby amended as reflected in the appendix hereto in order to add EPICOR-II discharge paths.

(ii) The licensee shall promptly begin the process of decontaminating the intermediate-level waste water from TMI-2 by operating EPICOR-II. Prior to operation, the licensee shall consult the Director of NRR for approval of the final operating procedures and design and construction details. In order to reduce the inherent risk from the contaminated water most expeditiously and prudently, the licensee should to the extent possible process all the water once through the EPICOR-II system.

(iii) The licensee shall maintain suitable tankage at TMI-1 that could be used to store waste water from TMI-2 at an appropriate state of readiness, should additional storage become necessary.

(iv) The licensee shall not ship spent resins offsite unless they have been solidified, and only then with the prior approval of the Director of NRR, provided however, that the licensee may ship non-solidified but dewatered spent resins offsite if it determines, and the Director of NRR concurs, that such shipment is required to assure continued operation of EPICOR-II or otherwise required to protect public health and safety. The licensee shall expeditiously construct a facility for solidification of the spent resins and shall use such facilities for resin solidification upon receiving the Director of NRR's concurrence with the design and operating procedures.

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IV.

The licensee or any person whose interest may be affected may, on or before November 5, 1979, request a hearing on the proposed amendment pursuant to 10 C.F.R. 52.714 to be held prior to the adoption of the formal license amendment. This amendment will become effective on the expiration of the period during which the licensee or other person may request a hearing, or in the event a hearing is requested, on the date specified in an order made following the hearing.

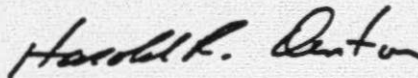
In the event a hearing is requested, the issues to be considered at such hearing shall be whether the actions taken under this order (a) are necessary and sufficient to protect health and safety or to minimize danger to life and property, and (b) would significantly affect the quality of the human environment.

A request for a hearing by the licensee or another person must be filed with the Office of the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Section, by the above date. A copy of the request for a hearing should also be sent to the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, DC 20555 and to Mr. George F. Trowbridge, Shaw, Pittman, Potts, and Trowbridge, 1300 M Street, NW, Washington, DC 20036, attorney for the licensee. Any questions regarding the contents of this Order should be directed to the Chief Hearing Counsel, Office of the Executive Legal Director, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

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For further details with respect to this action, see the Commission's Memorandum and Order, dated October 16, 1979, and the documentary references cited therein. This information is available for inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, DC and at the Commission's Local Public Document Room at the State Library of Pennsylvania, Government Publications Section, Education Building, Commonwealth and Walnut Streets, Harrisburg, Pennsylvania.17126.

FOR THE NUCLEAR REGULATORY COMMISSION



Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Appendix

Dated at Bethesda, Maryland
this 18th day of October, 1979.

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APPENDIX

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INSTRUMENTATION

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.10 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3-13 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-13.

ACTION:

With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3-13.

SURVEILLANCE REQUIREMENTS

4.3.3.10 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3-13 (per occupational exposure considerations and detector sensitivity in ambient radiation areas).

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TABLE 3.3-13

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABILITY</u>	<u>ACTION</u>
10. EPICOR-II VENTILATION SYSTEM			
a. Noble Gas Activity Monitor	1	*	37
b. Iodine Sampler	1	*	41
c. Particulate Sampler	1	*	41
d. Flow Rate Monitor	1	*	36
e. Sampler Flow Rate Monitor	1	*	36

TABLE NOTATION

* At all times.

ACTION 36 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided the flow rate is estimated at least once per 4 hours.

ACTION 37 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue for up to 30 days provided grab samples are taken at least once per 8 hours and these samples are analyzed for gross activity within 24 hours.

ACTION 41 - With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via the affected pathway may continue for up to 30 days provided samples are continuously collected with auxiliary sampling equipment as required in Table 4.11-2.

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TABLE 4.3-13

**RADIOACTIVE GASEOUS EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS**

<u>INSTRUMENT</u>	<u>CHANNEL CHECK</u>	<u>SOURCE CHECK</u>	<u>CHANNEL CALIBRATION</u>	<u>CHANNEL FUNCTIONAL TEST</u>
10. EPICOR-II VENTILATION SYSTEM				
a. Noble Gas Activity Monitor	D	H	R(3)	Q(2)
b. Iodine Sampler	W	N.A.	N.A.	N.A.
c. Particulate Sampler	W	N.A.	N.A.	N.A.
d. Flow Rate Monitor	O	N.A.	SA	SA
e. Sampler Flow Rate Monitor	O	N.A.	SA	SA

TABLE NOTATION

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- (2) CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if any of the following conditions exist:
1. Instrument indicates measured levels above the alarm setpoint.
 2. Circuit failure (alarm function only).
 3. Instrument indicates a downside failure (alarm function only).
 4. Instrument controls not set in operate mode or the switch position administratively monitored and controlled.
- (3) The initial CHANNEL CALIBRATION shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards shall permit calibrating the system over its intended range of energy and measurement range. For subsequent CHANNEL CALIBRATION sources that have been related to the initial calibration shall be used.

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APPENDIX B TECHNICAL SPECIFICATIONS

GASEOUS EFFLUENTS

2.1.2.J The release rate of radioactive materials, other than noble gases, in gaseous effluents shall be determined to be within the limits calculated in accordance with this specification by obtaining representative samples and performing analyses in accordance with the sampling and analysis program, specified in Table 4.11-2.

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TABLE 2.1.1-1
RADIOACTIVE GASLUNG WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) ($\mu\text{Ci/ml}$) ^a
C. Epicore II Ventilation	H ^e Grab Sample	N	Principal Gamma Emitters ^g	1×10^{-4}
			H-3	1×10^{-6}

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TABLE 2.1-1 (Continued)

TABLE NOTATION

- a. The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95% probability with 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66 s_b}{E \cdot V \cdot 2.22 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

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Where

LLD is the lower limit of detection as defined above (as picocurie per unit mass or volume),

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute),

E is the counting efficiency (as counts per transformation),

V is the sample size (in units of mass or volume),

2.22 is the number of transformations per minute per picocurie,

Y is the fractional radiochemical yield (when applicable),

λ is the radioactive decay constant for the particular radionuclide, and

Δt is the elapsed time between midpoint of sample collection and time of counting (for plant effluents, not environmental samples).

The value of s_b used in the calculation of the LLD for a detection system shall be based on the actual observed variance of the background counting rate or of the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicted variance. In calculating the LLD for a radionuclide determined by gamma-ray spectrometry, the background shall include the typical contributions of other radionuclides normally present in the samples. Typical values of E, V, Y, and Δt shall be used in the calculation. The background count rate is calculated from the background counts that are determined to be with \pm one FWHM (Full-Width-at-Half-Maximum) energy band about the energy of the gamma ray peak used for the quantitative analysis for that radionuclide.

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TABLE 2.1-1 (Continued)

TABLE NOTATION

- e. Tritium grab samples shall be taken at least once per 7 days from the ventilation exhaust from the spent fuel pool area.
- g. The principal gamma emitters for which the LLD specification applies exclusively are the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses shall be reported as "less than" the nuclide's LLD and shall not be reported as being present at the LLD level for that nuclide. The "less than" values shall not be used in the required dose calculations.

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BASES

3/4.3.3.10 RADIOACTIVE GASEOUS EFFLUENT INSTRUMENTATION

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases of gaseous effluents. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criterion 64 of Appendix A to 10 CFR Part 50.

2.1.2 GASEOUS EFFLUENTS

This specification is provided to ensure that the dose at any time at the site boundary from gaseous effluents from all units on the site will be within the annual dose limits of 10 CFR Part 20 for unrestricted areas. The annual dose limits are the doses associated with the concentrations of 10 CFR Part 20, Appendix B, Table II, Column 1. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of an individual in an unrestricted area, either within or outside the site boundary, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20 (10 CFR Part 20.105(b)). For individuals who may at times be within the site boundary, the occupancy of the individual will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the site boundary. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual at or beyond the site boundary to less than or equal to 500 mrem/yr to the total body or to less than or equal to 3000 mrem/yr to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an infant via the cow-milk-infant pathway to less than or equal to 1500 mrem/yr for the nearest cow to the plant.

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UNITED STATES NUCLEAR REGULATORY COMMISSION
NEGATIVE DECLARATION
REGARDING USE OF EPICOR-II SYSTEM
FOR DECONTAMINATION OF INTERMEDIATE LEVEL
RADIOACTIVE WASTE WATER AT
THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 2
DOCKET NO. 50-320

The U. S. Nuclear Regulatory Commission has been considering the use of an EPICOR-II ion exchange decontamination system to decontaminate the intermediate level radioactive waste water which has been held in tanks at Three Mile Island since the accident at the facility on March 28, 1979.

The Commission's Office of Nuclear Reactor Regulation (NRR) prepared an Environmental Assessment, "Use of EPICOR-II at Three Mile Island, Unit 2," NUREG-0591, which concluded that the use of this system will not significantly affect the quality of the human environment, and therefore an Environmental Impact Statement need not be prepared. This Assessment was issued for public comment on August 20, 1979 (44 FR 48829). Comments were received, analyzed and presented to the Commission. Based on the Commission's review of the facts and analysis in NRR's Environmental Assessment and written and oral discussion of the comments, the Commission has determined in its Memorandum and Order, dated October 16, 1979, that the operation of EPICOR-II and the attendant solidification and handling of EPICOR-II resins will not have a significant effect on the environment. Thus, in accordance with the foregoing finding of the Commission, no Environmental Impact Statement for the proposed action will be prepared.

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DUPLICATE

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The Environmental Assessment (NUREG-0591) and the Commission's Memorandum and Order issued October 16, 1979, are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., and at the Three Mile Island Unit No. 2 Local Public Document Room in the Government Publications Section, State Library of Pennsylvania, Education Building, Commonwealth and Walnut Streets, Harrisburg, Pennsylvania. Copies may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Richard Vollmer, Director, TMI-2 Support, NRR.

FOR THE NUCLEAR REGULATORY COMMISSION



Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Witnessed at Bethesda, Maryland
this 3th day of October, 1979

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