



METROPOLITAN EDISON COMPANY SUBSIDIARY OF GENERAL PUBLIC UTILITIES CORPORATION

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50-289

50-320

September 22, 1972



Mr. Daniel R. Muller
Assistant Director for Environmental Projects
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Muller

Enclosed please find forty (40) copies of responses to comments made by Federal and State Agencies in connection with the Commission's Draft Impact Statement for Three Mile Island Nuclear Station Units 1 and 2.

This submittal includes only a partial response to these comments. The applicant will submit additional information with regard to these comments by September 29, 1972.

Very truly yours,

J. G. Miller
J. G. Miller
Vice President

Enclosure



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METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER & LIGHT COMPANY
AND
PENNSYLVANIA ELECTRIC COMPANY



THREE MILE ISLAND NUCLEAR STATION, UNITS 1 AND 2

Application For
Class 104b Utilization Facility Operating License

DOCKET NOS. 50-289 AND 50-320

Applicant herewith submits 40 copies of responses to comments made by Federal and State Agencies in connection with the Commission's Draft Impact Statement for Three Mile Island Nuclear Station Units 1 and 2.

METROPOLITAN EDISON COMPANY

ATTEST:
R. D. Holberg
Secretary

By [Signature]
Vice President

Sworn to and subscribed before me this 22nd day of September 1972.

[Signature]
Notary Public

62-185

RESPONSE TO EPA QUESTIONS ON
TMI ENVIRONMENTAL REPORT, AEC DRAFT
IMPACT STATEMENT

Radioactive Waste Management

Comment, Item #1

The intended procedure for handling radioactive liquids from sluicing and regeneration operations is considered "as low as practical" in that it is the intention of the Metropolitan Edison Company to process as much as these liquids, when radioactive, as can be handled by Units 1 miscellaneous radwaste evaporator. These wastes will be discharged only if they are non-radioactive or the quantity exceeds the capacity of the evaporator-demineralizer processing system.

Comment, Item #2

Space was provided in Unit 1 to add a deep bed demineralizer condensate polishing system. The addition is dependent upon whether the existing Powdex filter/demineralizer can effectively function with condenser tube leakage. In the event this system is added, the regenerate solution, when radioactive, will be treated by miscellaneous radwaste system to the extent practical.

Comment, Item #3

In general, liquid waste from the turbine building drains are not expected to contain significant radioactive contamination. The possibility of contamination does exist in the event of plant operation with both defective fuel and a primary to secondary system leak.

The quantity of liquids entering the turbine building drains had previously been estimated(1) to be 7200 gal/day for both Units 1 and 2. Assuming 0.1 percent defective fuel and 10 gpd primary to secondary leak, a conservative estimate of the activity content of this waste is approximately .001 uc/cc for mixed isotopes. These wastes will be discharged without treatment to the river via the effluent

(1) Source Term Input (Oak Ridge Questions)

from the tower blowdown and nuclear and secondary service systems. Under these conditions, the average annual concentration in the discharge, prior to dilution in the Susquehanna River, will be 4.5×10^{-10} uc/cc.

Effluent Monitoring

Comment, Item #5

The normal and potential paths for release of radioactive materials during normal reactor operations will be monitored. The release of liquids from the secondary coolant system (turbine building drains, powdex filter, demineralizer sluice water and deep bed demineralizer regenerate solutions) will be discharged via the flow and radiation monitor box. In the event of plant operation with defective fuel and a primary to secondary system leakage, these wastes will be sampled and analyzed on a regularly scheduled basis. It is the intention of the Metropolitan Edison Company to comply with the recommendations of Safety Guide 23 regarding effluent monitoring to the extent practicable.

A tabulation of the quantities of radionuclides which could be released undetected due to instrument sensitivity limitations from the various release points in the plant are as follows:

<u>Release Point</u>	<u>Undetected Quantity (uc) or Release Rate (uc/sec)</u>
1. Condenser Vacuum Pump Exhaust via Monitor Rm-A5	
Noble Gasses (Kr-85)	1.4×10^{-2} uc/sec
Iodine (I-131)	1.4×10^{-2} uc/sec
Particulates (Cs-137)	1.4×10^{-2} uc/sec

Note: Any one or combination of the above that results in a release rate of 1.4×10^{-2} uc/sec will be detected. Anything less than this activity flow rate could go undetected. If the release consists of iodine and/or particulates, this would be detected at the first scheduled sampling interval after the release occurs.

<u>Release Point</u>	<u>Undetected Quantity (uc) or Release Rate (uc/sec)</u>
2. Auxiliary and Fuel Handling Bldg. Exhaust-via Monitor Rm-A8	
Noble Gases (Kr-85)	225 uc/sec
Iodines (I-131)	160 uc*
Particulates (Cs-137)	800 uc*
*Between sampling intervals	
3. Reactor Building Purge Exhaust- via Monitor Rm-A9	
Noble Gases (Kr-85)	50 uc/sec
Iodines (I-131)	68 uc*
Particulates (Cs-137)	340 uc*
*Between sampling intervals	
4. Plant Liquid Effluent Discharge via Monitor Rm-L7	
Mixed Isotopes	4.5 uc/sec

This release rate corresponds to a concentration of 2×10^{-6} uc/cc in the plant discharge to the river. Anything less than this activity concentration will be released undetected.

Comment, Item #6

An analysis of flood discharge-frequency relationship was made using data gathered by the U.S. Geological Survey on past floods dating back to 1786. Until recently, the flood of record was that of March 19, 1936, which, according to the U.S. Geological Survey, was the highest known flood to have occurred since 1784 and probably the highest since 1740. The 1936 flood at Harrisburg was gaged at 740,000 cfs and resulted from a large scale snow melt over the entire area of Pennsylvania.

On June 24, 1972, a record flood of approximately 1,000,000 cfs occurred at Harrisburg as the result of tropical storm "Agnes" moving slowly up the eastern seaboard and depositing an average rainfall of 8 inches on the Susquehanna River basin. Maximum rainfall depth in the basin totaled 17.7 inches during a period of 48 hours. During this period, about 12 inches was incident on the site at Three Mile Island.

Preliminary estimates of the 1972 flood at Harrisburg place the frequency of occurrence at approximately once in 500 years, as indicated by the curve shown in Figure 2.5-12.

The design flood established for the site is 1,100,000 cfs, which was based upon the provisional probable maximum flood established by the Corps of Engineers prior to 1969. The hydraulic design of the plant inundation protection facilities is based upon the design flood to provide adequate protection with an ample margin of freeboard. The generating station and its facilities will not have any significant effect on local conditions during the design flood.

The conservatism used in designing the facilities to protect the plant from the design flood was evidenced during tropical storm "Agnes", which in effect produced a flood approaching the design flood in magnitude. The maximum water surface in the river at the site during the 1972 flood was at elevation 300.5. The curves

shown on Figure 2.5-13 of the Environmental Report indicate that for a flow of 1,000,000 cfs the water surface at the site (Goldsboro) would be at elevation 302. Thus a 3.5 foot freeboard has been provided in design against overtopping for an Agnes flood, since the Lewis dike elevation south of the site is 304. Had Three Mile Island Nuclear Station been completed and operable during the 1972 flood, it would not have experienced any adverse effects, since the dike system would have afforded adequate flood protection.

Metropolitan Edison Company and Pennsylvania Power and Light Company are planning a joint pumped storage project on Stony Creek, approximately 13 miles northeast of Harrisburg. The project consists of a lower dam and reservoir on Stony Creek and an upper reservoir between Stony and Sharp Mountains, providing a head of 975 ft. for peak-power generation of 1,100 MW. The project will have no known adverse effect on Three Mile Island, but will improve conditions on the Susquehanna River by affording some degree of flood protection and augmentation of low flows.

The Stony Creek Pumped Storage Project is in the preliminary design state. Final design is expected to begin in about two years, based upon a presently planned in-service date of 1983-84. Detailed design data is therefore not available; however, it is planned to provide sufficient spillway capacity to pass its local probable maximum flood, based upon the applicable basin PMF. Consideration will also be given in the design to enable the dams to withstand seismic effects, but neither the design criteria or material properties has been established.

Stony Creek dam will be approximately 100 feet in maximum height and will impound about 24,000 acre feet of water depending upon the final pool elevation. The dam will be an earth embankment constructed with local materials and have a concrete spillway. Assuming a seismically-induced dam failure at times of normal stream flow, and the consequent loss of the reservoir volume during a conservative one-hour period, the resulting average downstream flow would be in the order of 300,000

cfs. The 24-mile flow route to the plant site would serve to attenuate both the peak flow and flood wave, especially in the broad 4,000 ft-wide Susquehanna River. A flow increase of 300,000 cfs at the plant site would raise the river level about 7 feet above the normal elevation of 280. Such an occurrence will not have any adverse effect on the plant since the dikes are at a minimum elevation of 304 and provide a 24 foot protection for such an event.

Page 3.7-2 of the Environmental Report states that, "The filters pass 2,000 gph each of the clear filtered water to the cooling water discharge." The flow from two filters will be 66 gpm maximum. This water is essentially the same or better than that taken from the river except suspended matter is removed. It will be blended with 36,000 gpm of plant cooling water. The effect on the river will be insignificant unless a high concentration of any particular contaminant is present in the filtrate. This is not the case.

Radioactivity to the sludge treatment building from spent Powdex waste solution will be controlled. If there is a primary to secondary steam generator tube leak, the contaminated Powdex waste will not be transferred to the sludge treatment building. It will be pumped to the radwaste system for treatment.

RESPONSE TO PARAGRAPH 4 OF THE
JULY 26th LETTER OF REAR ADMIRAL
W. M. DENKERT TO MR. DANIEL R. MULLER

It is here pointed out as a matter of record and clarification that the plumes which will emanate from the cooling towers at Three Mile Island are not smoke, in the most commonly accepted usage of that word, which has to do with some sort of combustion or other particle producing process. The effluent from the cooling towers consists of water, in the form of very small droplets and as a vapor, mixed with atmospheric air which merely passes through the tower.

With regard to the potential effect of the estimated 39 hours per year, this may be more accurately described as a persistent but elevated plume rather than fogging which infers a ground level effect. Experience at other locations with operating towers comparable to those at Three Mile Island indicates there is a very minimal effect on even the lightest air craft in penetrating the plume, comparable to penetration of a cumulus cloud. The persistent plume will be adequately elevated (of the order of 700 to 1,000 feet above grade) to permit VFR landing and because of the relative position of the towers with respect to the airport approaches it is not conceivable that the plumes would align their longest dimension with the approaches. Due to the random direction of wind it may sometimes be necessary for approaching aircraft to penetrate the plumes, but this will be along their short dimension for a very brief interval, and they will emerge from the plume well before any lower limit of VFR restrictions. This is the potential effect which is estimated to be 39 hours per year.

We concur with the opinion of Rear Admiral Denkert that this impact is minimal and that an operating license should be issued.