AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL
(TEMPORARY FORM)

CONTROL NO: 5878

FILE: ~~ENVIRO~~ R10

FROM:	DATE OF DOC	DATE REC'D	LTR	TWX	RPT	OTHER
Metropolitan Edison Company Reading, Pa. 19603 R. C. Arnold	6-20-74	6-27-74	X			

TO:	ORIG	CC	OTHER	SENT AEC PDR	SENT LOCAL PDR
J. P. O'Reilly	1 signed			X	X

CLASS	UNCLASS	PROP INFO	INPUT	NO CYS REC'D	DOCKET NO:
	XXX			1	50-289

DESCRIPTION:
Ltr reporting enviro abnormal occurrence E. I. 50-289/74-6, regarding excessive free chlorine concentration at the plant river discharge.....

ENCLOSURES:

DO NOT REMOVE

ACKNOWLEDGED

PLANT NAME: Three Mile Island Unit #1

FOR ACTION/INFORMATION 7-1-74 GC

BUTLER (L) W/ CYS	✓SCHWENCER (L) W/1 CYS (info)	ZIEMANN (L) W/ CYS	✓REGAN (E) W/2 CYS
CLARK (L) W/ CYS	STOLZ (L) W/ CYS	DICKER (E) W/ CYS	W/ CYS
~~PARR (L)~~ W/ CYS	~~VASSALLO (L)~~ W/ CYS	~~KNIGHTON (E)~~ W/ CYS	W/ CYS
KNIEL (L) W/ CYS	PURPLE (L) W/ CYS	YOUNGBLOOD (E) W/ CYS	W/ CYS

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INTERNAL DISTRIBUTION

✓REG FILE	TECH REVIEW	✓DENTON	LIC ASST	A/T IND
✓AEC PDR	✓HENDRIE	GRIMES	DIGGS (L)	BRAITMAN
OGC	SCHROEDER	GAMMILL	GEARIN (L)	SALTZMAN
✓MUNTZING/STAFF	MACCARY	KASTNER	✓GOULBOURNE (L)	B. HURT
CASE	KNIGHT	✓BALLARD	KREUTZER (E)	
GIAMBUSSO	PAWLICKI	SPANGLER	LEE (L)	PLANS
BOYD	SHAO		MAIGRET (L)	MCDONALD
MOORE (L)(LWR-2)	STELLO	ENVIRO	✓REED (E)	CHAPMAN
DEYOUNG (L)(LWR-1)	HOUSTON	MULLER	SERVICE (L)	DUBE w/input
SKOVHOLT (L)	NOVAK	DICKER	SHEPPARD (L)	E. COUPE
GOLLER (L)	ROSS	KNIGHTON	SLATER (E)	
P. COLLINS	IPPOLITO	YOUNGBLOOD	SMITH (L)	D. THOMPSON (2)
DENISE	TEDESCO	REGAN	TEETS (L)	KLECKER
✓REG OPR	LONG	✓PROJECT MGR	WILLIAMS (E)	EISENHUT
FILE & REGION (2)	LAINAS	✓St. Mary (2)	WILSON (L)	
MORRIS	BENAROYA	HARLESS		
STEELE	VOLLMER			

7910240 753 S

EXTERNAL DISTRIBUTION

✓1 - LOCAL PDR Harrisburg, Pa.		
✓1 - TIC (ABERNATHY)	✓(1) ~~(XXXXXX)~~-NATIONAL LABS ANL	1-PDR-SAN/LA/NY
✓1 - NSIC (BUCHANAN)	1-ASLBP(E/W Bldg, Rm 529)	1-BROOKHAVEN NAT LAB
1 - ASLB	✓1-W. PENNINGTON, Rm E-201 GT	1-G. ULRIKSON, ORNL
1 - P. R. DAVIS	1-B&M SWINEBROAD, Rm E-201 GT	1-AGMED (RUTH GUSSMAN) Rm B-127 GT
16 - ACRS HOLDING	1-CONSULTANTS NEWMARK/BLUME/AGBABIAN	1-RD..MUELLER, Rm F-309 GT

Regulatory Docket File

METROPOLITAN EDISON COMPANY

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

June 20, 1974
GQL 0097

Mr. J. P. O'Reilly, Director
Regulatory Operations, Region 1
U. S. Atomic Energy Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

Dear Mr. O'Reilly:

Operating License DPR-50
Docket #50-289

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

(1) Reporting Number: E.I. 50-289/74-6

(2a) Report Date: June 20, 1974

(2b) Occurrence Date: June 13, 1974

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

(4) Identification of Incident:

Excessive Free Chlorine Concentration at the Plant River Discharge which is a violation of Environmental Technical Specifications, paragraph 2.2.1a, and constitutes exceeding a limiting condition for operation.

(5) Conditions Prior to Occurrence: Hot shutdown with major plant parameters as follows:

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Power:	Core:	0
	Elec:	0
RC Flow:		100%
RC Pressure:		2155 psig

8870

RC Temperature: 532°F

PRZR Level: 100 in.

PRZR Temp.: 650°F

(6) Description of Incident: During a periodic evolution conducted to chlorinate the systems cooled by the mechanical draft cooling tower, the plant river discharge sample taken 10 minutes after commencement of the evolution indicated a free chlorine concentration of .13 ppm.

In that chlorine addition had been terminated about 15 minutes after commencement of the evolution, it was determined that there were no additional actions which could be taken to get the reading within the specification limit.

(7) Designation of Apparent Cause of Incident:

a. Material: It is considered likely that the instrument used to measure chlorine in the grab samples does not have the design capability to accurately determine chlorine at concentrations below about .10 ppm. This problem was suspected when it was found that the readings for both free and total chlorine in the 10-minute grab sample were identical. If these readings are to be believed, then there was no combined chlorine in the sample, which, from past experience, is highly unlikely.

The amperometric analytical technique used to determine chlorine relies on the ability of the analyst to detect a very slight fluctuation of a needle. Consequently, it is easy to suspect having seen a fluctuation and to add more titrant than was actually required to reach the end-point. Because the chlorine concentration is determined directly from the amount of titrant added, a higher-than-actual reading results.

b. Procedure. An additional, possibly contributing factor is that there are no guidelines to aid in determining how the chlorine feed rate should be varied as a function of existing conditions. Some of the conditions which can affect the amount of free chlorine consumed as it passes through the systems include:

1. River cooling water transit time from the river cooling water pump discharge to the cooling tower discharge, which is in turn a function of the number of systems and pumps in use, and

2. Various river water conditions such as temperature, pH, and organic composition. It is also possible that there is a random variation in the concentration of chlorine in the river water.

(8) Analysis of Incident: It is believed that the level of free chlorine in the discharge water was not high enough and did not exist for a long enough period of time to have caused any environmental damage or to have endangered the health and safety of the public. This belief is based on the following significant points of information:

a. Chlorine addition was secured about 5 minutes after collection of the 10-minute sample. Free chlorine in the 30- and 50-minute samples was measured as .00 ppm.

b. Total chlorine in the 10-, 30-, and 50-minute grab samples was measured as .13, .00, and .00 ppm, respectively. All of these values are well below the .20 ppm limit given in the Technical Specifications.

(9) Corrective Action: Immediate corrective action involving termination of chlorine addition was not possible because chlorine addition had already been terminated by the time it was realized the limiting value for free chlorine would be exceeded, and no other immediate actions were taken.

The Station Superintendent was notified of the incident. He in turn informed the Vice President-Generation and, to provide for an additional precautionary measure, it was then decided to decrease the chlorination feed rate to less than 175 lbs/day prior to the next chlorination period.

A thorough check of the instrument on which the chlorine analyses were performed was conducted by a trained instrument technician. The results of this check were negative. An instrument performance evaluation was also conducted by supervisory personnel, who concluded that the instrument has a marginal performance capability at chlorine concentrations less than about .10 ppm.

Additional long-term corrective actions relating to this same problem were stated in EI 50-289/74-2 seven-day letter dated June 5, 1974, and EI 50-289/74-3 seven-day letter dated June 12, 1974, and will consist of:

a. further discussing with a consultant terms of a contract to evaluate

   1. if and how chlorine addition rates should be established as a function of existing conditions, and

   2. the reliability of the chlorine monitoring apparatus, and

b. utilizing the yet-to-be-established 90-day period referenced in the Environmental Technical Specifications, paragraph 2.2.1.b, to further evaluate (9)a.1. and (9)a.2. above.

With regard to Item a., Met-Ed representatives did meet on Monday, June 17, with a consultant. The consultant's bid proposal is expected within the week.

(10) Failure Data:

a. Previous Failures: Although actual malfunctioning of the instrument used to measure chlorine in the grab samples is not believed to be the cause of this incident, this possibility has been previously noted in EI 50-289/74-2 seven-day letter dated June 5, 1974; EI 50-289/74-3 seven-day letter dated June 12, 1974; EI 50-289/74-4 seven-day letter dated June 13, 1974; and EI 50-289/74-5 seven-day letter dated June 14, 1974.

b. Equipment Identification: It will not be possible to ascertain if the instrument actually failed until the additional technical analyses mentioned in (9)a. and (9)b. above are completed; however, on the basis of what information is available, it is believed that without some kind of modifications the instrument is just not capable of measuring low chlorine concentrations accurately.

Sincerely,

R. C. Arnold
Vice President-Generation

RCA:JFV:sh

cc: Director
Directorate of Licensing
U. S. Atomic Energy Commission
Washington, D. C. 20545

File 20.1.1
7.7.3.11.1

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