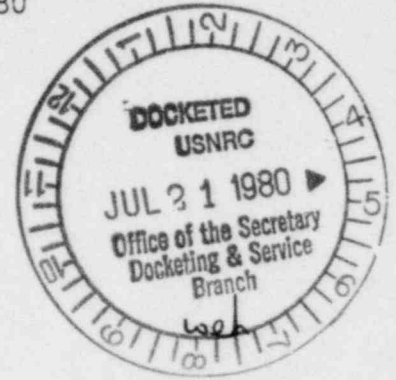


STAFF
7/18/80

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD



In the Matter of

METROPOLITAN EDISON COMPANY,
ET AL.

(Three Mile Island Nuclear Station
Unit 1)

)
)
)
)

Docket No. 50-289

NRC STAFF RESPONSE TO
LEWIS INTERROGATORIES ON THE SER

Pursuant to 10 C.F.R. § 2.720 and 10 C.F.R. § 2.744, the Staff has responded to Marvin I. Lewis' interrogatories based on the SER submitted on June 30, 1980. Each interrogatory is restated and a response provided. Affidavits identifying the individuals who prepared the responses and verifying them are attached.

Respectfully submitted,

Lucinda Low Swartz
Counsel for NRC Staff

Dated at Bethesda, Maryland
this 18th day of July, 1980

8007230500

G

SER #1

The lack of a bypass is not investigated in the SER. What means is provided to overcome the accident sequence in the Power Reactor Events P.7 vol 2 No 2 March 80 and IE Cir 79-21? Will this accident sequence harm the vent header and possibly cause leaks?

Response

The lack of a bypass in the TMI-1 auxiliary building ventilation system is not investigated in the SER because the Staff does not consider this to be a deficiency. A bypass around a filter system usually means that routine releases do not pass through the filter, with the result that routine releases are untreated and therefore cause larger doses to the offsite population than would be the case if routine releases were treated. Where a bypass exists, a mechanism must be provided to close the bypass in the event of an accident and to divert the release through the previously bypassed filter system. Since the actuation of bypass closure requires the operation of several devices and mechanisms in a short period of time, and since such mechanisms have measurable failure rates, such a system is less reliable than a non-bypassed system. The usual mechanism for closing a bypass and diverting flow into another path is a motor-operated damper; dampers often leak. It was for this specific reason that during preoperational testing the bypass dampers on the TMI-2 Auxiliary Building ventilation exhaust system were modified, i.e., to block off the bypass and route the airstream through the filter-adsorber system. Had such action not been taken, the accident releases of iodine and particulates at TMI-2 could have been much greater than they were.

The reference to Power Reactor Events, Vol. 2, No. 2, has no logical connection to the absence of a bypass around the TMI-1 Auxiliary Building ventilation treatment system. The subject event, which is more properly classified under the heading of an "anticipated operational occurrence" rather than "accident," involved a resin change operation at the Calvert Cliffs Unit 1. In this event an improperly closed valve resulted in radioactive water being forced into a vent pipe connected to the Auxiliary Building ventilation exhaust system, with attendant release of dissolved noble gases to the atmosphere. The event caused no reported damage to the ventilation exhaust system but did result in a release of Xe-133 to the atmosphere.

The term "vent header" can be applied to any of a number of venting systems in a nuclear power plant, but is normally used in reference to a portion of the waste gas collection and decay system used to furnish cover gas to primary coolant system liquid storage tanks. Such a system is essentially a closed loop circulating system and releases only occur after substantial delay, minimizing the total radioactive gas release through the process of radioactive decay. In a properly operating waste gas system release, sufficient decay time is provided to allow decay of all gases except Kr-85 and tritium vapor.

SER #2

Page C4-8(4) "ventilation system will be modified..."

"(items 3 and 4) will be completed prior to restart."

"(items 1 and 2) will be installed prior to commencing first refueling."

Has any more exact scheduling been agreed upon between NRC and Met Ed than "prior to?" Can NRC Staff provide dates or PERT diagram scheduling at this time?

Have engineering drawings of these modifications been approved by NRC staff? Are they available to Intervenor Lewis? Where? Page Number? (Drawings in Restart Report do not give sufficient detail (material, welds, installation diagrams and procedures.))

Response

More exact scheduling has not been agreed upon between the NRC Staff and the licensee. As stated, our requirement remains that these items be completed prior to performing the specified actions. The NRC does not have dates or PERT diagram scheduling.

As noted in the SER, the licensee has not yet submitted all the detailed design information on these modifications. The drawings would be available, if at all, from the licensee.

SER #3

In NRC 6/25/80 Response to Interrogatory 28.. explain what is meant by "there was no specific failure mechanism?" Who prepared the above answer? May I contact that person by phone to eliminate this confusion?

Response

In our response of 6/25/80, we stated that the waste gas header system had been in operation for several months with a number of small leaks, which under normal operating conditions resulted in a low order release of noble gases in the auxiliary building. Even with the leaks, the system was capable of reducing plant effluent noble gas concentrations to less than the Technical Specification limits. When the accident occurred, the existing leaks resulted in much higher releases, since the noble gas concentration in the leaked gas were correspondingly higher. In other words, there was not a volumetric increase in leakage from the system during the accident -- only an increase in concentration of noble gases. It was not a matter of sudden failure of gaskets or valve packings; it was not a broken or cracked pipe resulting from the accident, and it was not any of a number of possible failure mechanisms which could have been triggered or set off by the accident. Therefore, what was said in describing the condition was that "there was no specific failure mechanism." We would not have said that "failure mechanism is unknown at this time" because there was no failure mechanism per se.

Francis P. Cardile provided the original response to Interrogatory 28 (see attached affidavit). He is now assigned to another division of NRC. Parties are reminded that contact with the NRC Staff must be through the attorneys representing the Staff.

SER #4

Where in the NUREG 0680 is there a requirement to test and change filter media? How often will the adsorber stage be tested per time period? (ANSI N 010-1975 Page 13) Will all filter media in the gaseous waste system be tested and how often? Where is the requirement to change filter media that does not pass the testing? Is there any mention of testing of filter media in NUREG 0680? Page number?

Response

NUREG-0680 is an evaluation of the licensee's compliance with Section II of the NRC Order dated August 9, 1979, and does not originate or promulgate requirements concerning filter media. The requirements for testing of filter media are contained in the plant Technical Specifications. Adherence to the requirements of the Technical Specifications will be verified by the licensee under the station quality assurance programs noted on pages C6-11 and C6-19 of NUREG-0680 and by the Office of Inspection and Enforcement audit.

Information concerning the timing of testing of the adsorber stage and the filter media and filter media replacement can be found in the TMI-1 Technical Specifications which are available in the local public document rooms.

Testing of filter media is not specifically addressed in NUREG-0680.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of
METROPOLITAN EDISON COMPANY, et al.
(Three Mile Island, Unit 1)

}
} Docket No. 50-289
}

AFFIDAVIT OF PHILLIP G. STODDART

I, Phillip G. Stoddart, being duly sworn, do depose and state:

1. I am employed by the Effluent Treatment Systems Branch in the Office of Nuclear Reactor Regulation of the United States Nuclear Regulatory Commission.

2. The answers to Lewis Interrogatories 1, 2, 3, and 4 were prepared by me. I certify that the answers given are true and accurate to the best of my knowledge.

Phillip G. Stoddart
Phillip G. Stoddart

Subscribed and sworn to before
me this 16th day of July, 1980.

Eliza A. ...
Notary Public

My Commission Expires: July 1, 1982

Phillip G. Stoddart

Effluent Treatment Systems Branch
Division of Systems Integration
Office of Nuclear Reactor Regulation

My name is Phillip G. Stoddart. I am a senior nuclear engineer in the Effluent Treatment Systems Branch, Division of Systems Integration in the Office of Nuclear Reactor Regulation. I attended the New Mexico School of Mines from 1947 to 1949. From 1949 to 1953 I was on active duty with the United States Air Force, assigned as a radiological instrumentation specialist with the Armed Forces Special Weapons Command and as a radiological safety instructor with a Strategic Air Command special weapons unit.

From 1953 to 1973 I was on the radiation safety staff of the Argonne National Laboratory, working from 1953 to 1957 at Argonne's Illinois site and from 1957 to 1973 at Argonne's test facilities at the National Reactor Training Station, Idaho Falls, Idaho. My duties there included conduct of radiation safety programs, including effluent control and waste management, for several research and test reactors and a fuel recycle facility.

In 1973 I joined the Nuclear Regulatory Commission (formerly Atomic Energy Commission) as a nuclear engineer in the Effluent Treatment Systems Branch, Division of Systems Integration. In this position I am responsible for the review and evaluation of radioactive waste systems and for the calculation of releases of radioactivity from nuclear power reactors. I am also responsible for determining the adequacy of instrumentation provided for maintaining the radioactive discharges from nuclear power plants and for providing technical bases for guides and standards. I have participated in generic studies of the relationship between reactor operation and radioactive waste generation and in the preparation of staff reports related to effluent control technology and effluent monitoring.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

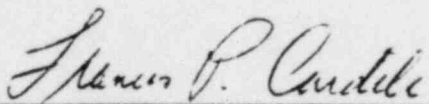
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
METROPOLITAN EDISON COMPANY, et al.) Docket No. 50-289
(Three Mile Island, Unit 1))

AFFIDAVIT OF FRANCIS P. CARDILE

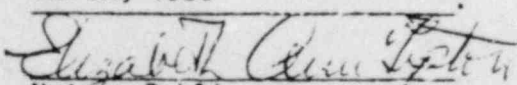
I, Francis P. Cardile, being duly sworn, do depose and state:

1. I am a Nuclear Engineer in the Office of Standards Development of the United States Nuclear Regulatory Commission. I am generally responsible for standards related to waste management. Previously, however, I was a Nuclear Engineer in the Office of Nuclear Reactor Regulation. I was responsible for review and evaluation of radwaste treatment systems and for the calculation of releases of radioactivity from nuclear power reactors. My professional qualifications statement is attached.
2. The answers to Lewis interrogatories 12, 13, 16, 17, 22, 28, 32c, 35; CEA interrogatories 6-8, 6-10; and ANGRY interrogatory 6 were prepared by me. I certify that the answers given are true and accurate to the best of my knowledge.


Francis P. Cardile

Subscribed and sworn to
before me this 17th day of

March, 1980


Notary Public

My Commission expires: July 1, 1982.

Francis P. Cardile
Professional Qualifications
Office of Nuclear Reactor Regulation

My name is Francis P. Cardile. I am a Senior Nuclear Engineer in the Effluent Treatment Systems Branch, Division of Site Safety and Environmental Analysis, Office of Nuclear Reactor Regulation.* I attended the University of Notre Dame and received a Bachelor of Science Degree in Mechanical Engineering in 1969. I attended the University of Illinois and received a Master of Science Degree in Nuclear Engineering in 1970.

After graduation I worked for the Bechtel Power Corporation which is an architect/engineering company engaged in the design and construction of nuclear power plants. I was responsible for assessing the effects of plant radioactive effluents on the environment and the preparation of Safety Analysis Reports and Environmental Reports. I also was responsible for the design of process systems and writing specifications for process equipment. My experience included work on both pressurized and boiling water reactors.

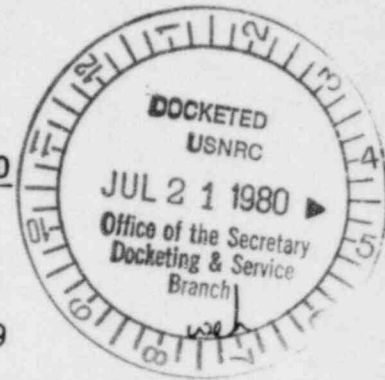
In 1974, I joined the Nuclear Regulatory Commission (formerly AEC) as a nuclear engineer in the Effluent Treatment Systems Branch. In this position I am responsible for the review and evaluation of radwaste treatment systems and for the calculation of releases of

radioactivity from nuclear power reactors. I have participated in generic studies of the relationship between reactor operation and radwaste generation and in the preparation of staff papers related to effluent control technology.

* Since February 1980, I have held the position of Nuclear Engineer in the Fuel Process Systems Standards Branch, Division of Engineering Standards, Office of Standards Development. In that position I am responsible for the development of standards related to reactor waste management.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD



In the Matter of

METROPOLITAN EDISON COMPANY,
ET AL.

(Three Mile Island, Unit 1)

)
Docket No. 50-289
)

CERTIFICATE OF SERVICE

I hereby certify that a copy of NRC STAFF RESPONSE TO LEWIS INTERROGATORIES ON THE SER dated July 18, 1980, in the above-captioned proceeding, has been served on Marvin I. Lewis by deposit in the United States mail, Federal Express, this 18th day of July, 1980

Lucinda Low Swartz
Lucinda Low Swartz
Counsel for NRC Staff

Allen R. Carter, Chairman
Joint Legislative Committee on Energy
Post Office Box 142
Suite 513
Senate Gressette Building
Columbia, South Carolina 29202

Robert Q. Pollard
609 Montpelier Street
Baltimore, Maryland 21218

Chauncey Kepford
Judith H. Johnsrud
Environmental Coalition on Nuclear Power
433 Orlando Avenue
State College, Pennsylvania 16801

Ms. Frieda Berryhill, Chairman
Coalition for Nuclear Power Plant
Postponement
2610 Grendon Drive
Wilmington, Delaware 19808

Holly S. Keck
Anti-Nuclear Group Representing York
245 W. Philadelphia Street
York, Pennsylvania 17404

*Atomic Safety and Licensing Appeal Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

*Secretary
U.S. Nuclear Regulatory Commission
ATTN: Chief, Docketing & Service Br.
Washington, D.C. 20555

Susan R. Barley
1751 E. Granada Avenue, Apt 2
Hershey, Pennsylvania 17033

John Levin, Esq.
Pennsylvania Public Utilities Comm.
Box 3265
Harrisburg, Pennsylvania 17120

Jordan D. Cunningham, Esq.
Fox, Farr and Cunningham
2320 North 2nd Street
Harrisburg, Pennsylvania 17110

Theodore A. Adler, Esq.
WIDOFF REAGER SELKOWITZ & ADLER
Post Office Box 1547
Harrisburg, Pennsylvania 17105

Ms. Ellyn R. Weiss
Harmon & Weiss
1725 I Street, N.W.
Suite 505
Washington, D.C. 20006

Ms. Marjorie M. Aamodt
R.D. #5
Coatesville, Pennsylvania 19320

Lucinda Lee Swartz
Counsel for NRC Staff