UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of GENERAL PUBLIC UTILITIES NUCLEAR CORPORATION (Three Mile Island Nuclear Station, Unit 2)	)	Docket No. 50-320

AMENDMENT OF ORDER

I.

GPU Nuclear Corporation, Metropolitan Edison Company, Jersey Central Power and Light C.mpany and Pennsylvania Electric Company (collectively, the licensee) are the holders of Facility Operating License No. DPR-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 previously used for the commercial generation of electricity.

II.

By Order for Modification of License, dated July 20, 1979, the licensee's authority to operate the facility was suspended and the licensee's authority was limited to maintenance of the facility in the present shut-down cooling mode (44 Fed. Reg. 45271). By further Order of the Director, Office of Nuclear Reactor Regulation, dated February 11, 1980, a new set of formal license requirements was imposed to reflect the post-accident condition of the facility and to assure the continued maintenance of the current safe, stable, long-term cooling condition of the facility (45 Fed. Reg. 11292).

Although these requirements were imposed on the licensee by an Order of the Director of Nuclear Reactor Regulation, dated February 11, 1980, the TMI-2 license has not been formally amended. The requirements are reflected in the Recovery Mode Proposed Technical Specifications (PTS) presently pending before the Atomic Safety and Licensing Board. The revisions that are the subject of this order do not give the licensee authorizations that may be needed to undertake specific cleanup activities. Hereafter in this Amendment of Order, the requirements in question are identified by the applicable Proposed Technical Specification.

III.

By letter dated October 31, 1984, GPU Nuclear Corporation (GPUNC) informed the NRC that certain containment penetration valve configurations presently in use at the Three Mile Island, Unit 2 (TMI-2) do not conform to the July 17, 1984 Amendment of Order which modified the PTS definition of containment integrity. In addition, these configurations do not conform to the staff's Approval of Alternate Design relative to 10 CFR 50, Appendix A, Criteria 55 and 56 also issued on July 17, 1984.

After reviewing the licensee's discussion in the subject letter and performing a safety evaluation addressing the containment isolation configurations, the staff has modified Section 1.7 of the PTS and added Table 3.6-2 which lists exceptions to containment penetration valve configurations.

The staff review concluded that; (1) The subject penetration valve configurations were previously concurred with by the NRC in NUREG-0107, (2) Many of the systems affected are not in use during the recovery period and are therefore depressurized, and (3) Those systems still in use are primarily used under emergency conditions and will not experience transients as extreme as those previously analyzed in NUREG-0107 for emergency or non-emergency use.

Based on the above, the addition of certain exceptions to the two valve isolation requirements of the PTS are warranted and will not have an adverse impact on the health and safety of the public. The staff's safety assessment of this matter as discussed above is set forth in the concurrently issued Safety Evaluation.

Since the February 11, 1980 Order imposing the Proposed Technical Specifications is currently pending before the Atomic Safety and Licensing Board, the staff will be advising the Licensing Board of this Amendment of Order through a Notice of Issuance of Amendment of Order and a Motion to Conform Proposed Technical Specifications in Accordance Herewith.

It is further determined that the modification does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. The staff has determined that this action is insignificant from the standpoint of environmental impact and neither an environmental impact statement nor an environmental assessment need be prepared.

IV.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, the Director's Order of February 11, 1980, is hereby revised to incorporate the deletions, additions, and modifications set forth in Enclosure 3 hereto. This Amendment of Order shall be effective on August 12, 1985.

For further details with respect to this action, see (1) Letter to B. J. Snyder, USNRC, from F. R. Standerfer, GPUNC, Containment Isolation Valves, and (2) the Director's Order of February 11, 1980.

All the above documents are available for inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, DC 20555, 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

Darrell G. Eisenhut, Deputy Director
Office of Nuclear Reactor Regulation

Effective Date: August 12, 1985
Dated at Bethesda, Maryland
Issuance Date: July 8, 1985

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

GPU NUCLEAR CORPORATION

METROPOLITAN EDISON COMPANY

PENNSYLVANIA ELECTRIC COMPANY

JERSEY CENTRAL POWER AND LIGHT COMPANY

DOCKET NO. 50-320

THREE MILE ISLAND NUCLEAR STATION UNIT NO. 2

INTRODUCTION

By letter dated October 31, 1984, GPU Nuclear Corporation (GPUNC) informed the NRC that certain penetration valve configurations did not comply with the definition for containment integrity stated in a July 17, 1984 Amendment of Order issued by the Director, Nuclear Reactor Regulation. The staff also compared the referenced penetration configurations to a July 17, 1984 Approval of Alternate Design for 10 CFR 50, Appendix A, for Criteria 55 and 56 type penetrations and concluded that the subject configurations were also not in compliance with these requirements.

DISCUSSION

On February 11, 1980, the Director of Nuclear Reactor Regulation issued an Order, modifying the pre-accident technical specifications to more appropriately reflect what was required at that stage of the TMI-2 recovery. As a part of that Order, the definition of containment integrity was made more restrictive by deleting the reference to any exceptions that could be taken by the licensee relative to isolation valve requirements.

As a result of the February 11, 1980 Order, the TMI-2 Proposed Technical Specifications (PTS), Section 1.7.a stated the following:

> "CONTAINMENT INTEGRITY shall exist when:
> a. All penetrations are closed by automatic valves, manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except those penetrations required open per approved procedures."

On July 17, 1984, an Amendment of Order modified the above wording to state as follows:

> "CONTAINMENT INTEGRITY shall exist when:
> a. All penetrations are maintained by two closed automatic or manual containment isolation valves or a double barrier in each penetration per procedures approved pursuant to specification 6.8.2.

On December 19, 1984, this section was revised to be even more specific by a subsequent Amendment of Order to:

> "CONTAINMENT INTEGRITY shall exist when:
> a. All penetrations required to be closed during accident conditions are either:
> 1. Capable of being closed by valves on each side of the penetration or by double valve isolation outside of the reactor building per procedures approved pursuant to Specification 6.8.2. Isolation valves inside the reactor building shall be capable of remote operation from a control station outside of the reactor building, or;
> 2. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions to provide double isolation of each penetration."

The July 17 and December 19, 1984 definitions clearly state that double isolation of containment penetrations is required. GPUNC informed the staff in their October 31, 1984 letter that two of the containment isolation valve configurations used at TMI-2 do not satisfy the July 17, 1984 criteria. Also, they do not satisfy the December 19, 1984 modification of containment integrity criteria. Since guidelines for containment integrity had to be maintained in the PTS and the fact that the staff was still

considering what actions would be taken as a result of the October 31, 1984 submittal, the NRC chose not to delay the December 19, 1984 Amendment of Order and therefore did not address the subject penetrations in that issuance. Subsequently, it has been recognized by the staff that as the pre-accident technical specifications originally stated, a number of the containment penetrations do not need double valve isolation. Therefore, we are again indicating in the PTS that the valve configurations on these penetrations are acceptable. One configuration consists of a check valve located inside containment in combination with either one locked closed isolation valve or one automatic isolation valve outside of containment. The other configuration consists of a single valve outside of containment (see attached Tables 1 and 2). All of the affected systems and their configurations were in place prior to the March 28, 1979 accident. The staff has previously reviewed these configurations and issued a September 1976 Safety Evaluation (NUREG-0107) which stated as follows:

> "We have reviewed the containment isolation system and we conclude that it conforms with the requirements [intent] of General Design Criteria 54, 55, 56 and 57 and Regulatory Guide 1.11, "Instrument Lines Penetrating Primary Reactor Containments," and therefore is acceptable."

The above conclusion was based on an operating reactor which has reactor coolant temperatures of approximately 600°F and an operating pressure of approximately 2150 psig. This temperature and pressure can provide a greater driving force for airborne and liquid radionuclides when compared to TMI-2's current maximum indicated RCS temperature of 96°F and atmospheric pressure of 0 psig.

Therefore, since the staff has previously accepted these configurations for operating conditions more severe than those now existing, the same configurations are acceptable for all plant conditions bounded by the staff's previous analysis.

Accordingly, based on TMI's current and anticipated RCS condition, the staff has decided to add a table to the Proposed Technical Specifications, listing the subject penetrations as exceptions to the "two isolation valve" criteria. The presently existing Limiting Conditions for Operation and Surveillance Requirements adequately address actions to be taken if the single isolation valve should fail. Similar wording was contained in the TMI-2 pre-accident technical specifications. This change will acknowledge the NRC's continued concurrence in these exceptions.

ENVIRONMENTAL CONSIDERATIONS

This action involves changes in the installation or use of facility components located within the restricted area. The staff has determined that this action involves no significant increase in the amounts of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupation radiation exposure. Therefore, this action meets the eligibility criteria for categorical exclusion set forth in 10 CFR Sec. 51.21(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of this action.

CONCLUSION

The staff therefore concludes that; (1) The subject penetration valve configurations were previously concurred with by the NRC in NUREG-0107, (2) Many of the systems affected are not in use during the recovery period and are therefore depressurized, and (3) Those systems still in use are primarily used under emergency conditions and will not experience transients as extreme as those previously analyzed in NUREG-0107 for emergency or non-emergency use. Therefore, the addition of exceptions to the two valve isolation requirements of the PTS is warranted and will not adversely impact the health and safety of the public.

We have also concluded, based on the considerations discussed above, that:

(1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and

(2) such activities will be conducted in compliance with the Commission's regulations and the implementation of this change will not be inimical to the common defense and security or to the health and safety of the public.

TABLE 1 - PENETRATIONS WHICH UTILIZE A CHECK VALVE INSIDE CONTAINMENT AS A CONTAINMENT ISOLATION VALVE

Penetration	Service	System	Description
R-537	Nitrogen and Fill to Core Flooding Tank	CF	Plant Design uses a check valve inside as a Containment Isolation Valve. All manual isolation valves are located outside the Reactor Building.
R-539	Leakage Cooling	DC	Plant design uses a check valve inside as a Containment Isolation Valve. An automatic isolation valve is located outside containment.
R-542	Pressurizer Auxiliary Spray	DH	Plant design uses a check valve inside as a Containment Isolation Valve. A manual Isolation Valve is located outside containment.
R-544	Nitrogen and Fill to Core Flooding Tank	CF	Plant design uses a check valve inside as a Containment Isolation Valve. There is also a check valve located outside containment; however, a manual isolation valve outside the check valve is being verified closed.
R-557	Nuclear Services Closed Cooling Water to Reactor Coolant Pump Oil and Motor Coolers	NS	Plant design uses a check valve inside as a Containment Isolation Valve. An automatic isolation valve is located outside containment.
R-559	Intermediate Closed Cooling Water to Roller Nut Drive Cooling Coils	IC	Plant design uses a check valve inside containment as a Containment Isolation Valve. An automatic isolation valve is located outside containment.
R-563	Intermediate Closed Cooling System	IC	Plant design uses a check valve inside containment as a Containment Isolation Valve. An automatic isolation valve is located outside containment.
R-566	Service Air	SA	Plant design uses a check valve inside containment as a Containment Isolation Valve. An automatic isolation valve is located outside containment.
R-570/R-572	High Pressure Injection	NJ	Plant design uses a check valve inside containment as a Containment Isolation valve. An automatic isolation valve is located outside containment.

R-573/R-574 R-575/R-576	Reactor Coolant Pump Seal Water Supply	MU	Each of these penetrations, by plant design, utilizes a stop check valve inside containment as a Containment Isolation Valve. Each penetration has either an automatic or manual isolation valve located outside containment.
R-577/R-579/R-584 R-587/R-580	Reactor Building Air Cooling Unit Cooling Water	RR	Each of these penetrations, by plant design, utilizes a check valve inside containment as a Containment Isolation Valve. Penetrations R-577, R-579, R-584, and R-587 have a Containment Isolation Check Valve, by plant design, outside the penetration followed by an automatic isolation valve. Penetration R-580 has two (2) check valves, in parallel, located outside containment each of which is bounded by an automatic isolation valve.
R-583/R-586	Reactor Building Spray Inlet Line	BS	Plant design uses a check valve inside containment as a Containment Isolation Valve. Either an automatic isolation valve or a manual isolation valve is located outside containment.
R-589/R-590	Decay Heat Coolant Supply	DH	Plant design uses a check valve inside containment as a Containment Isolation Valve. An automatic isolation valve is located outside containment. Additionally, a test connection valve located between the check valve and the penetration is being verified. *
R-591/R-592	High Pressure Injection	MU	Plant design uses a check valve inside containment as a Containment Isolation Valve. An automatic isolation valve is located outside containment.

Codes:
- BS-- Reactor Building Spray
- CF-- Core Flooding
- DC-- Decay Heat Closed Cooling Water
- DH-- Decay Heat Removal
- EF-- Emergency Feedwater
- FW-- Feedwater
- IC-- Intermediate Closed Cooling Water
- MU-- Makeup and Purification
- RR-- Reactor Building Emergency Cooling - River Water
- SA-- Station Service Air

* Verification of valve position is performed on a routine basis.

TABLE 2 - PENETRATIONS WHICH HAVE SINGLE VALVE ISOLATION

Penetration	Service	System	Description
R-545A/R-554C/ R-571C	Building Pressure	BS	Plant design uses a single manual isolation valve outside containment.
R-562C	Building Spray System Pressure System	BS	Plant design uses a single manual isolation valve outside containment.
R-593/R-594	Sump Penetration Sleeve and Drain Line	DH	By plant design, a Containment Isolation Valve is not located inside containment. A single automatic isolation valve is located outside each penetration.
R-616/R-623/ R-617/R-618	Auxiliary Feedwater Lines Feedwater Lines	EF FW	By plant design, a Containment Isolation Valve is not located inside containment. A check valve is located outside each penetration followed by an automatic isolation valve. Test connection isolation valves located inside containment are being verified.*
R-619/R-620/ R-621/R-622	Steam Lines	MS	By plant design, a Containment Isolation Valve is not located inside containment for each of these penetrations. An automatic isolation valve is located outside containment. Various test connection isolation valves, located on both sides of the penetrations are being verified. * Additionally, there are relief valves located between the penetration and the outboard isolation valve.

Codes:
- BS-- Reactor Building Spray
- CF-- Core Flooding
- DC-- Decay Heat Closed Cooling Water
- DH-- Decay Heat Removal
- EF-- Emergency Feedwater
- FW-- Feedwater
- IC-- Intermediate Closed Cooling Water
- MU-- Makeup and Purification
- RR-- Reactor Building Emergency Cooling - River Water
- SA-- Station Service Air

* Verification of valve position is performed on a routine basis.

Enclosure 3

FACILITY OPERATING LICENSE NO. DPR-73

DOCKET NO. 50-320

The following list of pages of the Appendix "A", Proposed Technical Specifications have been modified as a result of this Amendment of Order. Therefore, you should replace your present pages with those enclosed.

1-2

3.6-4

3.6-5

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

a. All penetrations required to be closed during accident conditions, except those listed in Table 3.6.2, are either:

1. Capable of being closed by valves on each side of the penetration or by double valve isolation outside of the reactor building per procedures approved pursuant to Specification 6.8.2. Isolation valves inside the reactor building shall be capable of remote operation from a control station outside of the reactor building, or;

2. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions to provide double isolation of each penetration.

b. The Equipment Hatch is closed and sealed.

c. Each airlock is OPERABLE pursuant to Specification 3.6.1.3.

d. The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE.

CHANNEL CALIBRATION

1.8 A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. CHANNEL CALIBRATION may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated.

CHANNEL CHECK

1.9 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

TABLE 3.6-2

PENETRATIONS WITHOUT DOUBLE ISOLATION

Penetration	Function	System
R-537* R-574* R-575* R-576*	Reactor Coolant Pump Seal Water Supply	MU
R-577* R-579* R-584* R-587* R-580*	Reactor Building Air Unit Cooling Water	RR
R-583* R-586*	Reactor Building Spray Inlet Line	BS
R-589* R-590*	Decay Heat Coolant Supply	DH
R-591* R-592*	High Pressure Injection	MU
R-537*	Nitrogen and Fill to Core Flooding Tank	CF
R-539*	Leakage Cooling	DC
R-542*	Pressurizer Auxiliary Spray	DH
R-544*	Nitrogen and Fill to Core Flooding Tank	CF
R-577*	Nuclear Services Closed Cooling Water to Reactor Coolant Pump Oil and Motor Coolers	NS
R-559*	Intermediate Closed Cooling Water to Roller Nut Drive Cooling Coils	IC
R-563*	Intermediate Closed Cooling System	IC
R-566*	Service Air	SA
R-570* R-572*	High Pressure Injection	MU

Penetration	Function	System
R-545A# R-554C# R-571C#	Building Pressure	BS
R-562C#	Building Spray System Pressure System	BS
R-593# R-594#	Sump Penetration Sleeve and Drain Line	DH
R-616# R-623#	Auxiliary Feedwater Lines	EF
R-617# R-618#	Feedwater Lines	FW
R-619# R-620# R-621# R-622#	Steam Lines	MS

Codes:
- BS-- Reactor Building Spray
- CF-- Core Flooding
- DC-- Decay Heat Closed Cooling Water
- DH-- Decay Heat Removal
- EF-- Emergency Feedwater
- FW-- Feedwater
- IC-- Intermediate Closed Cooling Water
- MU-- Makeup and Purification
- RR-- Reactor Building Emergency Cooling - River Water
- SA-- Station Service Air
- MS-- Main Steam
- NS-- Nuclear Services Closed Cooling Water

* Penetrations which utilize a check valve inside containment as a containment isolation valve

Penetrations which have single valve isolation

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. 50-320 OLA
	)	
(Three Mile Island Nuclear Station, Unit 2)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF NOTICE OF ISSUANCE OF AMENDMENT OF ORDER AND MOTION TO CONFORM PROPOSED TECHNICAL SPECIFICATIONS IN ACCORDANCE THEREWITH" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or as indicated by an asterisk through deposit in the Nuclear Regulatory Commission's internal mail system, this 23rd day of July, 1985:

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