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February 10, 1989
4410-89-L-0008/0438P

John F. Stolz, Director
Plant Directorate I-4
Office of Nuclear Reactor Regulation
US Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Stolz:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Review of 10 CFR 50 Technical Regulatory Requirements

Amendment No. 30 to the Three Mile Island Nuclear Station Unit 2 (TMI-2) Technical Specifications, Appendix A, contains a requirement to submit a report, at least 90 days prior to entry into Facility Mode 2, that "evaluates the applicability of the technical provisions of 10 CFR 50 and the appendices thereto, to TMI-2 in Facility Mode 2 and thereafter, and demonstrates that necessary design features required for the protection of the public health and safety exist." The attached report provides that review for Facility Mode 2 and 3; the Post-Defueling Monitored Storage (PDMS) Safety Analysis Report (SAR) transmitted via GPU Nuclear letter 4410-88-L-0068, dated August 18, 1988, provides the salient information for PDMS (Mode 4).

All requirements of 10 CFR 50 have been reviewed; however, numerous articles were considered not to be technical provisions related to design features. Finally, the review shows that there are no additional exemptions required from the 10 CFR 50 technical requirements.

Sincerely,

M B Roche

M. B. Roche
Director, TMI-2

EDS/emf

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Enclosure

cc: D. M. Johnson - Acting Senior Resident Inspector, TMI
W. T. Russell - Regional Administrator, Region I
L. H. Thonus - Project Manager, TMI Site

REVIEW OF 10 CFR PART 50
TECHNICAL REGULATORY REQUIREMENTS

This report reviews the technical requirements contained in 10 CFR Part 50 and the associated appendices, evaluates the applicability of these requirements to TMI-2 during Facility Modes 2 and 3, and demonstrates that the necessary safety features exist. A summary of this evaluation is presented in Table 1.

As defined in Technical Specification Change Request (TSCR) 53, Mode 2 shall exist when the following conditions are met:

a. The Reactor Vessel and Reactor Coolant System are defueled to the extent reasonably achievable;
b. The possibility of criticality in the Reactor Building is precluded; and
c. There are no canisters containing core material in the Reactor Building.

Mode 3 shall exist when the conditions for Mode 2 are met and no canisters containing core material are stored on the TMI-2 site. It should be noted that the establishment of Modes 2 and 3 represents a significant achievement in the TMI-2 cleanup effort.

This submittal is required to comply with the condition of approval of TSCR 53 which required "At least 90 days prior to transition to Facility Mode 2, a report shall be submitted which evaluates the applicability of the technical provisions of 10 CFR 50 and the Appendices thereto to TMI-2 in Mode 2 and thereafter and demonstrates that necessary design features required for protection of the public health and safety exist."

All requirements of 10 CFR 50 have been reviewed; however, numerous articles were considered not to be technical provisions related to design features. Table 2 contains a list of those articles. Although some requirements (e.g., those relating to emergency planning) are not considered to be technical provisions related to design features, and, thus, not addressed here, GPU Nuclear will conform to those requirements where applicable. Finally, there were no additional exemptions required from the 10 CFR 50 technical requirements.

TABLE 1
REVIEW OF 10 CFR PART 50
TECHNICAL REGULATORY REQUIREMENTS
SUMMARY TABLE
MODES 2 AND 3

10 CFR 50 SECTION *	DESCRIPTION OF SECTION	TMI-2 APPLICABILITY** MODE 2	MODE 3	EVALUATION
50.34a	Design objectives to control releases of radioactive material in effluents	INTENT	INTENT	TMI-2 will have limited radioactive effluents, significantly below the 10 CFR 50 Appendix I numerical design objectives.
50.44	Standards for combustible gas control from a LOCA	NA	NA	TMI-2 does not have a potential for a LOCA under its present conditions.
50.46	Criteria for ECCS	NA	NA	TMI-2 does not have a potential for a LOCA under its present conditions.
50.48	Fire protection	INTENT	INTENT	Fire protection provided commensurate with hazard.
50.49	Environmental qualification of electrical equipment important to safety (ITS)	NA	NA	In accordance with criteria of 10 CFR 50.49(b), no electrical equipment classified as ITS under Mode 2 or 3 conditions at TMI-2.
50.54	Conditions of licenses			
50.54(a)	Implement a QA program to meet 10 CFR 50 Appendix B criteria	INTENT	INTENT	TMI-2 Recovery Quality Assurance Program remains in effect for Modes 2 and 3.
50.54(o)	Reactor containments subject to requirements of 10 CFR 50 Appendix J	NA	NA	During Modes 2 and 3, the worst case accident is a fire within containment. The releases have been shown to be less than numerical guidelines for normal releases given in 10 CFR 50 Appendix I.
50.55a	Codes and standards	NA	NA	Maintenance and surveillance requirements modified from original design requirements due to conditions of TMI-2 in Modes 2 and 3.

* Non-Technical 10 CFR 50 Requirements omitted

** A=Applicable; NA=Not Applicable; Intent=Not Applicable but appropriate capability provided considering the potential risk

TABLE 1 (Cont'd)
REVIEW OF 10 CFR PART 50
TECHNICAL REGULATORY REQUIREMENTS
SUMMARY TABLE
MODES 2 AND 3

10 CFR 50 SECTION *	DESCRIPTION OF SECTION	TMI-2 APPLICABILITY** MODE 2	MODE 3	EVALUATION
50.59	Changes, tests, and experiments	A	A	Evaluations will be performed as required under 10 CFR 50.59 for Mode 2 and 3 activities.
50.60	Fracture and material surveillance requirements for reactor coolant pressure boundary as specified in Appendices G and H	NA	NA	TMI-2 RCS is not pressurized and is open to containment building atmosphere.
50.61	Requirements for protection against pressurized thermal shock	NA	NA	TMI-2 RCS is not pressurized and is open to containment building atmosphere.
50.62	Requirements for reduction of risk from ATWS	NA	NA	Applicable only to operating nuclear power plants.
50.63	Requirements for loss of all alternating current	NA	NA	Applicable only to power plants licensed to operate.
Appendix A	General Design Criteria			
Criterion				
1	Quality standards and records	INTENT	INTENT	See 10 CFR 50.54(a).
2	Design basis for protection against natural phenomena	INTENT	INTENT	Protection to be maintained to isolate radioactivity from environment.
3	Fire protection	INTENT	INTENT	Limited fire protection provided.
4	Environmental and dynamic effects design bases	NA	NA	Non-operating status ensures no dynamic or environmental effects.
5	Sharing of structures, systems, and components	A	A	TMI-1 safety functions for shared structures are independent of TMI-2 use of these structures.
10	Reactor design	NA	NA	Applicable to operating and/or fueled nuclear power plants.

* Non-Technical 10 CFR 50 Requirements omitted

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REVIEW OF 10 CFR PART 50
TECHNICAL REGULATORY REQUIREMENTS
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MODES 2 AND 3

10 CFR 50 SECTION *	DESCRIPTION OF SECTION	TMI-2 APPLICABILITY** MODE 2	MODE 3	EVALUATION
Criterion				
11	Reactor inherent protection	NA	NA	Applicable to operating and/or fueled nuclear power plants.
12	Suppression of reactor power oscillations	NA	NA	Applicable to operating and/or fueled nuclear power plants.
13	Instrumentation and control	NA	NA	Applicable to operating and/or fueled nuclear power plants.
14	Reactor coolant pressure boundary	NA	NA	TMI-2 RCS is not pressurized and is open to the containment building atmosphere.
15	Reactor coolant system design	NA	NA	TMI-2 RCS is not pressurized and is open to the containment building atmopshere.
16	Containment design	A	A	Adequate containment maintained to isolate remaining radioactivity from environment. Most probable leakage paths controlled through monitored, filtered pathways.
17	Electric power systems	NA	NA	During Mode 2 adequate electric power will be provided to ensure safe fuel storage and shipping activities. Mode 3 power requirements will be maintained commensurate with the limited Mode 3 activities.
18	Inspection and testing of electric power systems	NA	NA	See Criterion 17
19	Control room	NA	NA	Applicable only to an operable reactor.
20	Protection system functions	NA	NA	Applicable only to an operable reactor.

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10 CFR 50 SECTION *	DESCRIPTION OF SECTION	TMI-2 APPLICABILITY** MODE 2	MODE 3	EVALUATION
Criterion				
21	Protection system reliability and testibility	NA	NA	Applicable only to an operable reactor.
22	Protection system independence	NA	NA	Applicable only to an operable reactor.
23	Protection system failure modes	NA	NA	Applicable only to an operable reactor.
24	Separation of protection and control systems	NA	NA	Applicable only to an operable reactor.
25	Protection system requirements for reactivity control malfunctions	NA	NA	Applicable only to an operable reactor.
26	Reactivity control system redundancy and capability	NA	NA	Defueling operations complete.
27	Combined reactivity control system capability	NA	NA	Applicable only to an operable reactor.
28	Reactivity limits	NA	NA	Applicable only to an operable reactor.
29	Protection against anticipated operational occurrences	NA	NA	Applicable only to an operable reactor.
30	Quality of reactor coolant pressure boundary	NA	NA	TMI-2 RCS is not pressurized and is open to the containment building atmopshere.
31	Fracture prevention of reactor coolant pressure boundary	NA	NA	See Criterion 30.
32	Inspection of reactor coolant pressure boundary	NA	NA	See Criterion 30.
33	Reactor coolant makeup	NA	NA	See Criterion 30.
34	Residual heat removal	NA	NA	See Criterion 30.
35	Emergency core cooling	NA	NA	See Criterion 30.
36	Inspection of emergency coolant system	NA	NA	See Criterion 30.

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10 CFR 50 SECTION *	DESCRIPTION OF SECTION	TMI-2 APPLICABILITY** MODE 2	MODE 3	EVALUATION
Criterion				
37	Testing of emergency coolant system	NA	NA	See Criterion 30.
38	Containment heat removal	NA	NA	Essentially all fuel removed from containment and residual materials do not generate enough decay heat to require a containment heat removal system.
39	Inspection of containment heat removal system	NA	NA	See Criterion 38.
40	Testing of containment heat removal system	NA	NA	See Criterion 38.
41	Containment atmosphere cleanup	NA	NA	Only minor radiological releases within containment are possible due to the limited sources remaining. All releases will be well below the numerical guidelines of 10 CFR 50 Appendix I.
42	Inspection of containment atmosphere cleanup systems	NA	NA	See Criterion 41.
43	Testing of containment atmosphere cleanup systems	NA	NA	See Criterion 41.
44	Coolant water	NA	NA	Applicable only to a fueled reactor.
45	Inspection of cooling water system	NA	NA	Applicable only to a fueled reactor.
46	Testing of cooling water system	NA	NA	Applicable only to a fueled reactor.
50	Reactor containment	INTENT	INTENT	Adequate containment maintained to isolate remaining radioactivity from environment as well as provide shielding. All piping systems penetrating containment have been isolated or are isolable by at least one isolation valve outside containment. The NRC Staff concluded in License Amendment

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10 CFR 50 SECTION *	DESCRIPTION OF SECTION	IMI-2 APPLICABILITY** MODE 2	MODE 3	EVALUATION
Criterion 50 (Cont'd)				No. 30 that this is an acceptable level of containment performance for the plant conditions that will exist after defueling when no potential for criticality exists.
51	Fracture prevention of containment pressure boundary	NA	NA	No potential for heating or pressurization events which could threaten a brittle fracture of the containment pressure boundary.
52	Capability for containment leakage rate testing	NA	NA	No possible events which could result in pressurization and subsequent containment leakage.
53	Provisions for containment testing and inspection	INTENT	INTENT	See Criterion 50.
54	Piping systems penetrating containment	INTENT	INTENT	See Criterion 50.
55	Reactor coolant pressure boundary penetrating containment	INTENT	INTENT	See Criterion 50.
56	Primary containment isolation	INTENT	INTENT	See Criterion 50.
57	Closed system isolation valves	INTENT	INTENT	See Criterion 50.
60	Control of releases of radioactive material to the environment	INTENT	INTENT	Although this requirement specifically applies to normal reactor operations, provisions are made to control releases of radioactive materials to the environment during Modes 2 and 3.
61	Fuel storage and handling and radioactivity control	A	A	During Mode 2, system and equipment for Fuel Pool A and the Fuel Handling Bldg. will be kept operational consistent with the Technical Specifications. Prior to Mode 3, all removable fuel will be

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TABLE 1 (Cont'd)
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10 CFR 50 SECTION *	DESCRIPTION OF SECTION	TMI-2 APPLICABILITY** MODE 2	MODE 3	EVALUATION
Criterion				
61 (Cont'd)				shipped off-site and remaining radioactive materials cannot generate sufficient decay heat to require residual heat removal capabilitities.
62	Prevention of criticality in fuel storage handling	A	NA	See Criterion 61.
63	Monitoring fuel and waste storage	INTENT	INTENT	Modes 2 and 3 decay heat minimal, no safety actions required. Waste storage and processing will be monitored and controlled.
64	Monitoring radioactivity releases	INTENT	INTENT	Applicable only to normal operations, anticipated operational occurrences and postulated accidents; see Criterion 16.
Appendix B	Quality assurance criteria for nuclear power plants	INTENT	INTENT	The TMI-2 Recovery Quality Assurance Program remains in effect for Modes 2 and 3.
Appendix G	Fracture toughness requirements	NA	NA	TMI-2 RCS is not pressurized and is open to the containment building atmopshere.
Appendix H	Reactor vessel material surveillance program requirements	NA	NA	See Appendix G.
Appendix I	Numerical guides for design objectives and limiting conditions for operation to meet ALARA criterion	A	A	Appendix I guidelines will be met for Modes 2 and 3.
Appendix J	Primary reactor containment leakage testing	NA	NA	See Criterion 50.
Appendix K	ECCS evaluation model	NA	NA	See Article 50.46.
Appendix R	Fire Protection program	INTENT	INTENT	Limited fire protection program to be provided, consistent with Modes 2 and 3 needs.

* Non-Technical 10 CFR 50 Requirements omitted

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TABLE 2

10 CFR 50 ARTICLES NOT RELATED TO DESIGN FEATURES

50.1 through 50.9	General provisions
50.10 through 50.13	Requirement of license, exceptions
50.20 through 50.23	Classification and description of licenses
50.24 through 50.39 (except for 50.34a)	Application for licenses, form, contents, ineligibility of certain applicants
50.40 through 50.43 and 50.45	Standards for licenses and construction permits
50.47	Emergency plans
50.50 through 50.53	Issuance and limitations of licenses
50.54 [except for parts (a) and (o)]	Conditions of licenses
50.55	Conditions of construction permits
50.56 through 50.58	Co[illegible]sion of construction permit; issuance of [illegible]rating license; and hearings and reports of the ACRS
50.64	Limitations on the use of highly enriched uranium in domestic non-power reactors
50.70 through 50.75	Inspections, records, reports, notifications
50.78	US/IAEA safeguards agreement
50.80 through 50.82	Transfers of licenses; creditors' rights; surrender of licenses
50.90 through 50.92	Amendment of license or construction permit at request of holder
50.100 through 50.103	Revocation, suspension, modification, amendment of licenses and construction permits, emergency operations by the Commission
50.109	Backfitting
50.110	Enforcement

TABLE 2 (Cont'd)

10 CFR 50 ARTICLES NOT RELATED TO DESIGN FEATURES

Appendix E	Emergency planning and preparedness for production and utilization facilities
Appendix F	Policy relating to the siting of fuel reprocessing plants and related waste management facilities
Appendix L	Information requested by the Attorney General for antitrust review of facility license applications
Appendix M	Standardization of design; manufacture of nuclear power reactors; construction and operation of nuclear power reactors manufactured pursuant to commission license
Appendix N	Standardization of nuclear power plant designs; licenses to construct and operate nuclear power reactors of duplicate design at multiple sites
Appendix O	Standardization of design; staff review of standard designs
Appendix Q	Pre-application early review of site suitability issues

REGULATORY REQUIREMENT:

10 CFR 50.34a - Design objectives for equipment to control releases of radioactive material in effluents-nuclear power reactors.

(a) An application for a permit to construct a nuclear power reactor shall include a description of the preliminary design of equipment to be installed to maintain control over radioactive materials in gaseous and liquid effluents produced during normal reactor operations, including expected operational occurrences. In the case of an application filed on or after January 2, 1971, the application shall also identify the design objectives, and the means to be employed, for keeping levels of radioactive material in effluents to unrestricted areas as low as is reasonably achievable. The term "as low as is reasonably achievable" as used in this part means as low as is reasonably achievable taking in account the state of technology, and the economics of improvements in relation to benefits to the public health and safety and other societal and socioeconomic considerations, and in relation to the utilization of atomic energy in the public interest. The guides set out in Appendix I to this part provide numerical guidance on design objectives for light-water-cooled nuclear power reactors to meet the requirements that radioactive material in effluents released to unrestricted areas be kept as low as is reasonably achievable. These numerical guides for design objectives and limiting conditions for operation are not to be construed as radiation protection standards.

(b) Each application for a permit to construct a nuclear power reactor shall include:

(1) A description of the preliminary design of equipment to be installed pursuant to paragraph (a) of this section:

(2) An estimate of:

(i) The quantity of each of the principal radionuclides expected to be released annually to unrestricted areas in liquid effluents produced during normal reactor operations; and

(ii) The quantity of each of the principal radionuclides of the gases, halides, and particulates expected to be released annually to unrestriced areas in gaseous effluents produced during normal reactor operations.

(3) A general description of the provisions for packaging, storage, and shipment off-site of solid waste containing radioactive materials resulting from treatment of gaseous and liquid effluents and from other sources.

(c) Each application for a license to operate a nuclear power plant reactor shall include (1) a description of the equipment and procedures for the control of gaseous and liquid effluents and for the maintenance and use of equipment installed in radioactive waste system, pursuant to paragraph (a) of this section; and (2) a revised estimate of the information required in paragraph (b)(2) of this section if the expected releases and exposures differ significantly from the estimates submitted in the application for a construction permit.

Applicability:

Article 50.34a requires that applications for construction permits and operating licenses include certain information relating to effluents from operating nuclear power reactors. Due to the non-operating and defueled status of TMI-2 during Modes 2 and 3, the requirements of this article will not strictly apply. However, the intent of this article [i.e., to limit effluents to levels as low as is reasonably achievable (ALARA)] is required by 10 CFR 20 and will be addressed by TMI-2 by providing equipment and procedures to accomplish the principal objectives of Article 50.34a. The specific effluent limits and the operability of the equipment necessary for the control and monitoring of effluents are defined in the TMI-2 Technical Specifications.

Safety Evaluation:

Except for the Krypton purge which occurred in 1981, TMI-2 has limited effluents during the cleanup period to extremely low levels. Liquid effluents have contained insignificant quantities of radioactive material and gaseous effluents have been controlled, filtered, and monitored through the various purge systems. Any routine rain or groundwater inleakage will be processed to ensure that liquid discharges through the Industrial Waste Treatment System are within the regulatory requirements of 10 CFR 20 and National Pollution Discharge Elimination System (NPDES).

Subsequent to the completion of defueling and the transition to Modes 2 and 3, the provisions and procedures for controlling effluents to the environment will continue to be utilized to maintain effluent releases ALARA.

The only planned effluent discharge to occur during Modes 2 and 3, which will not be directly associated with conventional cleanup activities, will be the evaporation process utilized to dispose of the "accident-generated water." The process is being thoroughly reviewed by the NRC and will be closely controlled to assure that all effluents from this activity will be "as low as is reasonably achievable."

REGULATORY REQUIREMENT:

10 CFR 50.44 - Standards for combustible gas control system in light-water-cooled power reactors.

(a) Each boiling or pressurized light-water nuclear power reactor fueled with oxide pellets within cylindrical zircaloy cladding, shall, as provided in paragraphs (b) through (d) of this section, include means for control of hydrogen gas that may be generated, following a postulated loss-of-coolant accident (LOCA), by

(1) Metal-water reaction involving the fuel cladding and the reactor coolant

(2) Radiolytic decomposition of the reactor coolant, and

(3) Corrosion of metals.

(b) Each boiling or pressurized light-water nuclear power reactor fueled with oxide pellets within cylindrical zircaloy cladding shall be provided with the capability for:

(1) Measuring the hydrogen concentration in the containment,

(2) Insuring a mixed atmosphere in the containment, and

(3) Controlling combustible gas concentrations in the containment following a postulated LOCA.

(c)(1) For each boiling or pressurized light-water nuclear power reactor fueled with oxide pellets within cylindrical zircaloy cladding, it shall be shown that during the time period following a postulated LOCA but prior to effective operation of the combustible gas control system either:

(i) An uncontrolled hydrogen oxygen recombination would not take place in the containment; or

(ii) The plant could withstand the consequences of uncontrolled hydrogen-oxygen recombination without loss of safety function.

(2) If the conditions set out in paragraph (c)(1) of this section cannot be shown, the containment shall be provided with an inerted or an oxygen deficient atmosphere in order to provide protection against hydrogen burning and explosions during the time period specified in paragraph (c)(1) of this section. (Text Continues...)

Applicability:

Article 50.44 requires a combustible gas control system be provided for all boiling and pressurized light-water nuclear power reactors fueled with oxide pellets within cylindrical zircaloy cladding. Due to the non-operating and defueled status of TMI-2 during Modes 2 and 3, the requirements of Article 50.44 will not be applicable.

Safety Evaluation:

Since the presumed conditions of zircaloy clad nuclear fuel and a LOCA could not occur at TMI-2 due to the absence of the zircaloy clad nuclear fuel and conditions under which LOCA could possibly occur, the generation of hydrogen resulting from a postulated accident will not be possible. Therefore, due to the fact that the presumed hydrogen generation cannot occur, the lack of hydrogen control system will not reduce the safety of TMI-2 during Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50.46 - Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors.

(a)(1) Except as provided in paragraphs (a)(2) and (3) of this section, each boiling and pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircaloy cladding shall be provided with an emergency core cooling system (ECCS) which shall be designed such that its calculated cooling performance following postulated LOCAs conforms to the criteria set forth in paragraph (b) of this section. ECCS cooling performance shall be calculated in accordance with an acceptable evaluation model, and shall be calculated for a number of postulated LOCAs of different sizes, locations, and other properties sufficient to provide assurance that the

entire spectrum of postulated LOCAs is covered. Appendix K, "ECCS Evaluation Models," sets forth certain required and acceptable features of evaluation models. Conformance with the criteria set forth in paragraph (b) of this section with ECCS cooling performance calculated in accordance with an acceptable evaluation model, may require that restrictions be imposed on reactor operation. (Text Continues)

Applicability:

Article 50.46 requires that each boiling and pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircaloy cladding shall be provided with an ECCS and establishes acceptance criteria for the evaluation of those systems. Due to the non-operating and defueled status of TMI-2 during Modes 2 and 3, the requirements of this article will not be applicable. In order to evaluate ECCS, the conditions for the postulation of accidents scenarios must exist and so must the need for such a system. TMI-2 during Modes 2 and 3 will not have a reactor fueled with uranium oxide pellets within cylindrical zircaloy cladding and, therefore, the necessity to have and evaluate an ECCS will not exist.

Safety Evaluation:

Since the presumed conditions of the existence of a nuclear core and the need to cool such a core following a presumed accident will not exist during Modes 2 and 3, the need for an ECCS and the attendant evaluation of such systems will not exist. Therefore, the lack of ECCS at TMI-2 during Modes 2 and 3 will not reduce the degree of safety associated with core cooling requirements.

REGULATORY REQUIREMENT:

10 CFR 50.48 - Fire protection.

(a) Each operating nuclear power plant shall have a fire protection plan that satisfies Criterion 3 of Appendix A to this part. This fire protection plan shall describe the overall fire protection program for the facility, identify the various positions within the licensee's organization that are responsible for the program, state the authorities that are delegated to each

of these positions to implement those responsibilities, and outline the plans for fire protection, fire detection and suppression capability, and limitation of fire damage. The plan shall also describe specific features necessary to implement the program described above, such as administrative controls and personnel requirements for fire prevention and manual fire suppression, automatic and manually operated fire detection and suppression systems, and the means to limit fire damage to structures, systems, or components important to safety so that the capability to safety shut down the plant is ensured. (Text Continues...)

Applicability:

Article 50.48 established that each operating nuclear power plant shall have a fire protection plan which meets the requirements of Criterion 3 of 10 CFR 50 Appendix A. Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Article 50.48 will not strictly apply. However, GPU Nuclear has considered the consequences of potential fires in various areas of the facility to assure that there will be no unacceptable consequences. For example, the potential for fire has been considered in high radiation areas to ensure that there would be no potential for unacceptable effluent results.

The Fire Protection Plan (FPP) and capabilities which are currently in place during Mode 1 (as modified by Technical Specification Change Request No. 57) will remain in place during Modes 2 and 3; however, the FPP could be modified in accordance with 10 CFR 50.59 requirements as long as no unreviewed safety question exists. These capabilities will be more than adequate for Modes 2 and 3. In addition, the Fire Hazards Analysis which is currently in place will remain subsequent to the completion of defueling and the transition to Modes 2 and 3.

Safety Evaluation:

Since the Fire Protection Plan and capabilities currently in place during Mode 1 (as modified by Technical Specification Change Request No. 57) will remain during Modes 2 and 3 or will be modified per 10 CFR 50.59 requirements, the level of fire protection safety during Modes 2 and 3 will be as good as that which currently exists during Mode 1.

REGULATORY REQUIREMENT:

10 CFR 50.49 - Environmental qualification of electric equipment important to safety for nuclear power plants.

(a) Each holder of or each applicant for a license to operate a nuclear power plant shall establish a program for qualifying the electric equipment defined in paragraph (b) of this section.

(b) Electric equipment important to safety covered by this section is:

(1) Safety-related electric equipment: This equipment is that relied upon to remain functional during the following design basis events to ensure: i) the integrity of the reactor coolant pressure boundary; ii) the capability to shutdown the reactor and maintain it in a safe shutdown condition; and iii) the capability to prevent or mitigate the consequences of accidents that could result in potential off-site exposures comparable to the 10 CFR Part 100 guidelines. Design basis events are defined as conditions of normal operation, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed to ensure functions (i) through (iii) of this paragraph.

(2) Nonsafety-related electric equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions specified in subparagraphs (i) through (iii) of paragraph (b)(1) of this section by the safety-related equipment.

(3) Certain post-accident monitoring equipment.

(Text Continues...)

Applicability:

Article 50.49 establishes that each holder of or applicant for a license to operate a nuclear power plant shall establish a program for qualifying the electric equipment defined in paragraph (b) of Article 50.49. The electric equipment defined in paragraph (b) of Article 50.49 is safety-related electric equipment, nonsafety-related electric equipment whose failure could prevent safety-related electric equipment from performing the defined safety functions, and certain post-accident monitoring equipment. The NRC has determined that the requirements of 10 CFR 50.49 do not apply to TMI-2 in its current condition and will not be applicable until 6 months prior to a restart

of TMI-2 (Reference NRC Letter dated July 22, 1983, B. J. Snyder to B. K. Kanga). Since GPU Nuclear does not have any plans to pursue any restart activities during Modes 2 and 3, the requirements of 10 CFR 50.49 will continue not to be applicable during Modes 2 and 3.

Safety Evaluation:

Since the requirements of Article 50.49 have been determined not to be applicable during Mode 1 while the Reactor Vessel is being defueled and will continue not to be applicable during Modes 2 and 3 when defueling has been completed, the overall safety of the plant will not be diminished by the transition to Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50.54 - Conditions of licenses.

Article 50.54 established a series of conditions applicable to holders of a license. The applicability of specific paragraphs of Article 50.54 is addressed in the following review.

50.54(a)

Paragraph 50.54(a) requires that each nuclear power plant or fuel reprocessing plant licensee subject to the criteria of 10 CFR Part 50 Appendix B implement a quality assurance program pursuant to 50.34(b)(6)(ii). Appendix B establishes quality assurance requirements for the safety-related functions of those structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public.

Applicability:

Due to the non-operating and defueled condition of the plant during Modes 2 and 3, TMI-2 will not have any safety-related equipment that prevent or mitigate the consequences of accidents that could cause undue risk to the health and safety of the public. Therefore, the requirements of Appendix B will not strictly apply during Modes 2 and 3. However, TMI-2 currently has in place an NRC-approved quality assurance plan and will continue to maintain an

NRC-approved quality assurance plan which addresses the intent of Article 50.54(a) during Modes 2 and 3 to ensure that the TMI-2 Technical Specifications and 10 CFR requirements are implemented. However, this plan may be modified as allowed by 10 CFR 50.54(a).

Safety Evaluation:

Since TMI-2 will continue to maintain a quality assurance plan which addresses the intent of Article 50.54(a) during Modes 2 and 3, the level of safety assured by the quality assurance plan during Modes 2 and 3 will be as good as that which exists during Mode 1.

50.54(o)

Primary reactor containments for water cooled power reactors shall be subject to the requirements set forth in Appendix J to this part.

Applicability:

The requirements of Appendix J have been determined by the NRC not to be applicable to TMI-2 (Reference NRC Letter dated September 2, 1981, B. J. Snyder to G. K. Hovey). This exemption will continue to be in effect during Modes 2 and 3.

Safety Evaluation:

The overall safety of TMI-2 during Modes 2 and 3 will not be diminished by the continuation of the Appendix J exemption. In fact, the overall risk will be reduced by the completion of defueling and the transition to Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50.55a - Codes and standards.

Article 50.55a requires that structures, systems, and components be designed, fabricated, erected, constructed, tested and inspected commensurate with the importance of the safety function to be performed. Article 50.55a then continues to identify those codes and standards to which the various structures, systems, and components must adhere.

Applicability:

TMI-2 was originally designed, fabricated, erected, constructed, tested, and inspected in accordance with the codes and standards in effect during the construction phase. TMI-2 has requested and received exemption from a substantial portion of the requirements of Article 50.55a as it relates to inservice inspection of pumps and valves (Reference NRC Letter dated April 27, 1981, B. J. Snyder to G. K. Hovey). This exemption has been in effect for much of the cleanup period. As the functions provided by various systems were no longer required, these systems were removed from service and the attendant inservice inspections no longer performed. As a result of the existing Article 50.55a exemptions, the requirements of Article 50.55a currently apply to a limited scope of category B and C valves. These valves are those associated with the operation of the control room HVAC system and that portion of the Decay Heat Removal System associated with the gravity feed of water from the BWST to the reactor vessel. Due to the completion of defueling operations, subsequent to Mode 1, the functions required by the remaining equipment necessitating inservice inspections will no longer be required and the remaining inservice inspections will no longer be necessary.

Safety Evaluation:

If a component is not required to perform any protective function, then it is not necessary to perform any inspections or tests to ensure operability of that component. Therefore, not performing inservice inspections on equipment no longer required to perform any protective function does not represent any reduction in the safety functions provided by that equipment. Thus, it can be concluded that the deleting of the inservice inspections on the equipment taken out of service during Modes 2 and 3 as a result of the reactor being defueled will not represent any reduction in safety during these modes.

REGULATORY REQUIREMENT:

10 CFR 50.59 - Changes, tests and experiments.

Article 50.59 establishes the requirements for changes, tests, or experiments which affect the facility.

Applicability:

Article 50.59 will remain in effect during Modes 2 and 3 as it is currently.

Safety Evaluation:

Changes, tests, or experiments which affect the facility will be evaluated during Modes 2 and 3 using the criteria established by Article 50.59. Changes tests, or experiments are currently evaluated using the criteria established by Article 50.59, therefore, there will be no change in the overall level of safety resulting from continuing to use the criteria of Article 50.59 for the evaluation of changes, tests, or experiments during Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50.60 - Acceptance criteria for fracture prevention measures for light-water nuclear power reactors for normal operations.

(a) Except as provided in paragraph (b) of this section, all light-water nuclear power reactors must meet the fracture toughness and material surveillance program requirements for the reactor coolant pressure boundary set forth in Appendices G and H to this part.

Proposed alternatives to the described requirements in Appendices G and H of this part or portions thereof may be used when an exemption is granted by the Commission under Article 50.12.

Applicability:

Article 50.60 requires compliance with Appendices G and H to ensure that the pressure retaining components of the Reactor Coolant System during pressurized conditions are not subject to brittle fracture. TMI-2 is currently depressurized during the defueling operations and will continue to be depressurized during Modes 2 and 3 subsequent to defueling operations. Since the Reactor Coolant System will not be fueled and pressurized during Modes 2 and 3, the physical conditions of temperature, pressure, and neutron fluence which require the implementation of Appendices G and H will not exist. Therefore, the requirements of Article 50.60 and Appendices G and H will not be applicable during Modes 2 and 3.

Safety Evaluation:

The physical conditions of temperature, pressure, and fluence which require the implementation of Article 50.60 do not currently exist during Mode 1 and will not exist during Modes 2 and 3. Therefore, the need to implement the requirements of Article 50.60 will not exist following the completion of defueling and the transition to Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50.61 - Fracture toughness requirements for protection against pressurized thermal shock events.

Article 50.61 establishes requirements for the protection against pressurized thermal shock in pressurized water nuclear power reactors.

Applicability:

GPU Nuclear requested and received an exemption from the requirements of Article 50.61 (Reference NRC Letter dated December 30, 1984, W. D. Travers to F. R. Standerfer). GPU Nuclear is not expecting to take any action which would negate the basis of this exemption subsequent to Mode 1. Therefore, the exemption from the requirements of Article 50.61 will continue in effect during Modes 2 and 3.

Safety Evaluation:

Continuing the exemption from the requirements of Article 50.61 during Modes 2 and 3 will not reduce any level of safety attributable to the protection from pressurized thermal shock. A pressurized thermal shock event is described as an event or transient in a pressurized water reactor causing severe overcooling concurrent with or followed by significant pressure in the Reactor Vessel. Since the Reactor Vessel defueling operations will be completed as a prerequisite to entering Modes 2 and 3 and there will be no means to heat, cool, or pressurize the Reactor Vessel, there will be no risk of pressurized thermal shock subsequent to Mode 1. Consequently, the level of safety maintained by preventing a pressurized thermal shock event will not be reduced by the completion of defueling and the transition to Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50.62 - Requirements for reduction of risk from anticipated transients without scram (ATWS) events for light-water-cooled nuclear power reactors.

(a) Applicability. The requirements of this section apply to all commercial light-water-cooled nuclear power plants.

(b) Definition. For purposes of this section, "Anticipated Transient Without Scram" (ATWS) means an anticipated operational occurrence as defined in Appendix A of this part followed by the failure of the reactor trip portion of the protection system specified in General Design Criterion 20 of Appendix A of this part.

(c) Requirements.

(1) Each pressurized water reactor must have equipment from sensor output to final actuation device, that is diverse from the reactor trip system, to automatically initiate the auxiliary (or emergency) feedwater system and initiate a turbine trip under conditions indicative of an ATWS. This equipment must be designed to perform its function in a reliable manner and be independent (from sensor output to the final actuation device) from the existing reactor trip system.

(2) Each pressurized water reactor manufactured by Combustion Engineering or by Babcock and Wilcox must have a diverse scram system from the sensor output to interruption of power to the control rods. This scram system must be designed to perform its function in a reliable manner and be independent from the existing reactor trip system (from sensor output to interruption of power to the control rods). (Text Continues...)

Applicability:

Article 50.62 establishes ATWS requirements for commercial "light-water-cooled nuclear power plants" which, in the context of this rule, are clearly intended to refer to operating reactors. Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, an ATWS event could not occur. Therefore, the requirements of Article 50.62 will not apply to TMI-2 during this period.

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, an ATWS event as defined by Appendix A of 10 CFR 50 and referred to in Article 50.62 could not occur. Since defueling operations will be completed prior to Modes 2 and 3, there is no possibility of any criticality event which would require the mitigation capabilities described in Article 50.62. Therefore, the need to maintain ATWS mitigation capabilities in accordance with Article 50.62 will not exist following completion of defueling and the transition to Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50.63 - Loss of all alternating current power.

(a) Requirements.

(1) Each light-water-cooled nuclear power plant licensed to operate must be able to withstand for a specified duration and recover from a station blackout as defined in Article 50.2. The specified station blackout duration shall be based on the following factors:

(i) The redundancy of the on-site emergency AC power sources;

(ii) The reliability of the on-site emergency AC power sources;

(iii) The expected frequency of loss of off-site power; and

(iv) The probable time needed to restore off-site power.

(Text Continues...)

Applicability:

Due to the non-operating and defueled condition of TMI-2, the requirements for coping with a station blackout as established by Article 50.63 will not be applicable during Modes 2 and 3. Article 50.63 requires that "Each light-water-cooled nuclear power plant licensed to operate..." must meet the requirements as specified. TMI-2, by order of the Commission, is not licensed to operate; therefore, the requirements of Article 50.63 will not be applicable during Modes 2 and 3. This is also the position of the NRC as stated in the statements of consideration for Article 50.63, "Since TMI-2 is not licensed to operate, likewise the rule would not apply to that plant." In addition, the requirements for coping with a station blackout are based on

sustaining core cooling and other core protective actions. Since TMI-2 during Modes 2 and 3 will have no reactor core due to the completion of defueling activities, the requirements specified will have no meaning.

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements of Article 50.63 will not be applicable since the requirements for coping with a station blackout are based on sustaining core cooling and other core protective actions. During Modes 2 and 3, TMI-2 will have no reactor core; therefore, there will be no need to establish capabilities to cope with a station blackout as required by Article 50.63.

10 CFR 50 APPENDIX A - GENERAL DESIGN CRITERIA FOR NUCLEAR POWER PLANTS

The General Design Criteria were established principally for the design, fabrication, construction, testing, and performance of structures, systems, and components of a nuclear power unit which are important to safety. TMI-2 was originally designed and constructed in accordance with the 70 general design criteria as listed in Appendix A of 10 CFR 50 dated July 11, 1967. In addition, TMI-2 has addressed the criteria as revised on July 15, 1971, as they applied to the original design of the plant.

Appendix A defines a nuclear power unit as "a nuclear power reactor and associated equipment necessary for electric power generation..." During Modes 2 and 3, TMI-2 will be an inoperable nuclear power reactor lacking the necessary equipment for electric power generation and, by definition, the General Design Criteria will not apply in most instances. However, the intent of some of the criteria, such as those which address quality standards, natural phenomena, and containment, will have limited applicability. The following evaluation addresses the intent of the functional aspects of those criteria which will have limited application during Modes 2 and 3.

REGULATORY REQUIREMENT:

Criterion 1 - Quality standards and records.

Structures, systems, and components important to safety shall be designed, fabricated, erected, and tested to quality standards commensurate with the importance of the safety function to be performed. Where generally recognized codes and standards are used, they shall be identified and evaluated to determine their applicability, adequacy, and sufficiency and shall be supplemented or modified as necessary to assure a quality product in keeping with the required safety function. A quality assurance program shall be established and implemented in order to provide adequate assurance that these structures, systems, and components will satisfactorily perform their safety functions. Appropriate records of the design, fabrication, erection, and testing of structures, systems, and components important to safety shall be maintained by or under the control of the nuclear power unit licensee throughout the life of the unit.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Criterion 1 will not strictly apply. Since the Reactor Vessel and Reactor Coolant System will be defueled in Modes 2 and 3, there will not be any specific nuclear safety functions for the existing structures, systems, and components. However, TMI-2 has in place an NRC-approved quality assurance plan and will continue to maintain an NRC-approved quality assurance plan which addresses the intent of Criterion 1 during Modes 2 and 3. However, this plan may be modified as allowed by 10 CFR 50.54(a) to reflect plant conditions.

Appropriate records of the original design, fabrication, erection, and testing of structures, systems, and components important to safety will be retained as required by Criterion 1.

Safety Evaluation:

Since an NRC-approved quality assurance plan will be maintained in effect during Modes 2 and 3, the level of safety attributable to the quality assurance plan will not be diminished by the completion of defueling and the

transition to Modes 2 and 3. Due to the defueled condition during Modes 2 and 3, the overall level of safety as well as that attributable to the quality assurance program will be improved.

REGULATORY REQUIREMENT:

Criterion 2 - Design bases for protection against natural phenomena.

Structures, systems, and components important to safety shall be designed to withstand the effect of natural phenomena, such as earthquakes, tornadoes, hurricanes, floods, tsunami, and seiches without loss of capability to perform their safety functions. The design bases for these structures, systems and components shall reflect: (1) Appropriate consideration of the most severe of the natural phenomena that have been historically reported for the site and surrounding area, with sufficient margin for the limited accuracy, quantity, and period of time in which the historical data have been accumulated; (2) appropriate combinations of the effects of normal and accident conditions with the effects of the natural phenomena; and (3) the importance of the safety functions to be performed.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Criterion 2 will not strictly apply. However, the same degree of protection from natural phenomena as has been provided during Mode 1 will continue to be provided during Modes 2 and 3. The protection from natural phenomena is principally to maintain the isolation of the residual radioactive material which remains at the facility. During Modes 2 and 3, the threat of a release due to the combination of the effects of normal and accident conditions with the effects of natural phenomena is significantly reduced due to the much smaller fission product inventory. In addition, GPU Nuclear has received an exemption from the requirements of Criterion 2 for modified containment penetrations (Reference NRC Letter dated July 17, 1984, B. J. Snyder to B. K. Kanga).

Safety Evaluation:

Those structures, systems, and components necessary for the level of protection required for Modes 2 and 3 were originally designed and constructed to criteria which exceed the necessary requirements for Modes 2 and 3. In fact, some of the existing protections (e.g., against seismic occurrences) will not be necessary during Modes 2 and 3 since there is no implicit threat to the peformance of any safety function related to accident mitigation. However, the level of safety provided by the structures, systems, and components during Mode 1 will be maintained during Modes 2 and 3. Therefore, the level of safety during Mode 1 with respect to the protection from natural phenomena will not be diminished by the completion of defueling and the transition to Modes 2 and 3. Rather, the overall level of safety will be improved during Modes 2 and 3 due to the completion of defueling.

REGULATORY REQUIREMENT:

Criterion 3 - Fire protection.

Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. Non-combustible and heat resistant materials shall be used whenever practical throughout the unit, particularly in locations such as the containment and control room. Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to minimize the adverse effects of fires on structures, systems, and components important to safety. Firefighting systems shall be designed to assure that their rupture or inadvertent operation does not significantly impair the safety capability of these structures, systems, and components.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Criterion 3 will not strictly apply. However, a fire protection program commensurate with the hazards will be maintained during Modes 2 and 3.

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Criterion 3 will not be applicable. However, TMI-2 will maintain a fire protection program commensurate with the hazards present at the facility during Modes 2 and 3. This program reduces the potential for a fire by minimizing combustible materials and ignition sources and provides for a system of detection and suppression suitable to deal with any potential fire. Thus, the level of safety attributable to the fire protection program at TMI-2 will not be diminished by the completion of defueling and the transition to Modes 2 and 3.

REGULATORY REQUIREMENT:

Criterion 4 - Environmental and missile design bases.

Structures, systems, and components important to safety shall be designed to accommodate the effects of and be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. These structures, systems, and components shall be appropriately protected against dynamic effect, including the effects of missiles, pipe whipping and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit. However, the dynamic effects associated with postulated pipe ruptures of primary coolant loop in pressurized water reactors may be excluded from the design basis when analyses demonstrate the probability of rupturing such piping is extremely low under design basis conditions.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements of Criterion 4 associated with the dynamic effect, including the effects of missiles, pipe whip, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit will not apply.

Safety Evaluation:

The capabilities of structures, systems, and components with respect to the requirements of Criterion 4 will be the same in Modes 2 and 3 as they are currently in Mode 1. Since the capabilities of structures, systems, and components with respect to the requirements of Criterion 4 will be the same in Modes 2 and 3 as they are currently in Mode 1, and defueling activities will be completed, the level of safety attributable to addressing the requirements of Criterion 4 will not be diminished by the completion of defueling and the transition to Modes 2 and 3. In fact the risk of an event occurring due to the fuel debris which currently exists during Mode 1 will be reduced by the completion of defueling and the transition to Modes 2 and 3.

REGULATORY REQUIREMENT:

Criterion 5 - Sharing of structures, systems, and components.

Structures, systems, and components important to safety shall not be shared among nuclear power units unless it can be shown that such sharing will not significantly impair their ability to perform their safety function, including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will be no safety functions associated with any TMI-2 structure, system, or component that are dependent on any TMI-1 structure, system, or component. Those TMI-2 structures and systems which are shared with TMI-1 (e.g., fuel handling building and fire suppression system) will not be essential to the safe shutdown condition of TMI-2. The required TMI-1 safety functions associated with the few structures and systems shared by TMI-1 and TMI-2 will be independent of any TMI-2 function for the respective structure or system.

Safety Evaluation:

There are no functions essential to the safe shutdown condition of TMI-2 which are associated with any TMI-2 structure, system, or component that are

dependent on any TMI-1 structure, system, or component during Modes 1, 2, or 3. Likewise, the required TMI-1 safety functions associated with the few structures and systems shared by TMI-1 and TMI-2 are independent of any TMI-2 function for the respective structure or system during Mode 1 and will remain so during Modes 2 and 3. Thus, the completion of defueling and the transition to Modes 2 and 3 will not degrade the level of safety of the facility.

REGULATORY REQUIREMENT:

Criterion 10 - Reactor design.

The reactor core and associated coolant, control, and protection systems shall be designed with appropriate margin to assure that specified acceptable fuel design limits are not exceeded during any condition of normal operation, including the effects of anticipated operational occurrences.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will be no reactor core; therefore, the requirements of Criterion 10 will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2. Therefore, there will be neither a need to implement the requirements of Criterion 10 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 11 - Reactor inherent protection.

The reactor core and associated coolant systems shall be designed so that in the power operating range, the net effort to the prompt inherent nuclear feedback characteristics tends to compensate for a rapid increase in activity.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will no reactor core; therefore, the requirements of Criterion 11 will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2. Therefore, there will be neither a need to implement the requirements of Criterion 11 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 12 - Suppression of reactor power oscillations.

The reactor core and associated coolant, control, and protection systems shall be designed to assure that power oscillations which can result in conditions exceeding specified acceptable fuel design limits are not possible or can be reliably and readily detected and suppressed.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will be no reactor core; therefore, the requirements of Criterion 12 will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2. Therefore, there will be neither a need to implement the requirements of Criterion 12 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 13 - Instrumentation and control.

Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operations occurrences, and for accident

conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operation ranges.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will be no reactor core; therefore, the requirements of Criterion 13 will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2. Therefore, there will be neither a need to implement the requirements of Criterion 13 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 14 - Reactor coolant pressure boundary.

The reactor coolant pressure boundary shall be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of propagating failure, and of gross rupture.

Applicability:

The Reactor Coolant Pressure Boundary was originally designed to criteria consistent with the requirements of Criterion 14. However, due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will be no Reactor Coolant Pressure Boundary; therefore, the requirements of Criterion 14 will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no Reactor Coolant Pressure Boundary. Therefore, there will be neither a need to implement the requirements of Criterion 14 nor will

the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 15 - Reactor coolant system design.

The reactor coolant system and associated auxiliary, control, and protection systems shall be designed with sufficient margin to assure that the design conditions of the reactor coolant pressure boundary are not exceeded during any condition of normal operation, including anticipated operational occurrences.

Applicability:

The Reactor Coolant System was originally designed to criteria consistent with the requirements of Criterion 15. However, due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will be no Reactor Coolant System; therefore, the requirements of Criterion 15 will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no Reactor Coolant System. Therefore, there will be neither a need to implement the requirements of Criterion 15 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 16 - Containment design.

Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require.

Applicability:

The Containment and some associated systems will be maintained during Modes 2 and 3 to prevent the uncontrolled release of the contamination which remains inside the Containment. In addition, the Containment serves as the primary environmental shielding of the residual radioactive materials inside the Containment. Essentially, all effluents to the environment during Mode 1 have been and, during Modes 2 and 3, will continue to be through the Containment Purge System. The Containment Purge System has both a monitoring system and a HEPA filter system.

Safety Evaluation:

The Containment is now being maintained, during Mode 1, as an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment. Although only single barrier isolation on Containment penetrations will be utilized during Modes 2 and 3, the Containment will continue to be maintained as an essentially leak-tight barrier. Since the Containment will be maintained during Modes 2 and 3 as an essentially leak-tight barrier, the level of safety attributable to the Containment requirements described in Criterion 16 will not be diminshed.

The NRC Staff has concluded in their approval of single barrier isolation for Modes 2 and 3 in License Amendment No. 30, "...that this is an acceptable level of containment performance for the plant conditions that will exist after defueling when no potential for criticality in the reactor building exists." Additionally, the risk associated with retaining the relatively large quantity of fuel and other radioactive materials during Mode 1 will be substantially reduced due to the completion of defueling operations in the Containment prior to the transition to Modes 2 and 3.

REGULATORY REQUIREMENT:

Criterion 17 - Electric power systems.

An on-site electric power system and an off-site electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and

capability to assure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

The on-site electric power supplies, including the batteries, and the on-site electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

Electric power from the transmission network to the on-site electric distribution system shall be supplied by two physically independent circuits (not necessarily on separate rights of way) designed and located so as to minimize to the extent practical the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. A switchyard common to both circuits is acceptable. Each of these circuits shall be designed to be available in sufficient time following a loss of all on-site alternating current power supplies and the other off-site electric power circuits to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. One of these circuits shall be designed to be available within a few seconds following a loss-of-coolant accident to assure that core cooling, containment integrity, and other vital safety functions are maintained.

Provisions shall be included to minimize the probability of losing electric power from any of the remaining supplies as a result of, or coincident with, the loss of power generated by the nuclear power unit, the loss of power from the transmission network, or the loss of power from the on-site electric power supplies.

Applicability:

Prior to Modes 2 and 3, the reactor will have been defueled and there will not be an operable nuclear reactor; therefore, there will be no safety functions to be provided by electric power systems. Since there will be no safety functions to be provided by electric power systems during Modes 2 and 3, the requirements of Criterion 17 will not be applicable during Modes 2 and 3. In addition, the NRC has granted GPU Nuclear an exemption from the

requirements of Criterion 17 (Reference NRC Letter dated February 9, 1987, W. D. Travers to F. R. Standerfer).

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no safety functions to be provided by the electric power systems. Additionally, the exemption from Criterion 17, referenced above, will continue to remain in effect during Modes 2 and 3. Therefore, it can be concluded that the level of safety of the facility will not be diminished by not implementing these requirements.

This conclusion was supported by the NRC Staff in their review of the proposal by TMI-2 to delete the A.C. and D.C. electrical distribution systems operability requirements for Modes 2 and 3. The NRC Staff concluded in their approval of License Amendment No. 30 that, "The purpose of these specifications is to assure that the power sources and associated distribution systems are available to supply the safety related equipment required to maintain the unit in a stable condition. Once Mode 1 defueling is completed no safety related equipment will be required to maintain the unit in a safe and stable condition, consequently, the power sources and distribution systems would not be required. The staff finds the proposed changes acceptable."

REGULATORY REQUIREMENT:

Criterion 18 - Inspection and testing of electric power systems.

Electric power systems important to safety shall be designed to permit appropriate periodic inspection and testing of important areas and features, such as wiring, insulation, connections, and switchboards, to assess the continuity of the systems and the condition of their components. The systems will be designed with a capability to test periodically (1) the operability and functional performance of the components of the systems, such as on-site power sources, relays, switches, and buses, and (2) the operability of the systems as a whole and, under conditions as close to design as practical, the full operation sequence that brings the systems into operation, including operation of applicable portions of the protection system, and the transfer of power among the nuclear power unit, the off-site power system, and the on-site power system.

Applicability:

Prior to Modes 2 and 3, the Reactor Vessel defueling operations will have been completed and there will not be an operable nuclear reactor; therefore, there will be no safety functions to be provided by electric power systems during Modes 2 and 3. Since it has been determined that the requirements of Criterion 17 will not be applicable during Modes 2 and 3, the requirements of Criterion 18 which require the capabilities for inspection and testing of electric power systems provided in accordance with Criterion 17 also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, there will be no safety functions to be provided by electric power as discussed above for Criterion 17. Therefore, there will be neither a need to implement the requirements of Criterion 18 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 19 - Control room.

A control room be provided from which actions can be taken to operate the nuclear power unit safely under normal conditions and to maintain it in safe condition under accident conditions, including loss-of-coolant accidents. Adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body, or its equivalent to any part of the body, for the duration of the accident.

Equipment at appropriate locations outside the control room shall be provided (1) with a design capability for prompt hot shutdown of the reactor, including necessary instrumentation and controls to maintain the unit in a safe condition during hot shutdown, and (2) with a potential capability for subsequent cold shutdown of the reactor through the use of suitable procedures.

Applicability:

Criterion 19 requires a control room to be provided from which actions can be taken to operate the nuclear power unit. Since TMI-2 will be in a

non-operating and defueled condition during Modes 2 and 3, there will be no nuclear power unit to operate. Therefore, the requirements of Criterion 19 will not apply during Modes 2 and 3. Consequently, TMI-2 will not maintain the manning of the control room during Modes 2 and 3.

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, control room manning will not be required. This conclusion is supported by the NRC Staff who concluded in their approval of License Amendment No. 30 that, "The requirements for licensed operators are specified in 10 CFR 50.54 for fueled nuclear power plants. Upon transition from Mode 1, the facility will no longer be considered fueled and these requirements will not longer apply. The staff finds the proposed change acceptable."

REGULATORY REQUIREMENT:

Criterion 20 - Protection system functions.

The protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operation occurrences, and (2) to sense accident conditions and to initiate the operation of systems and components important to safety.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for a protection system as established by Criterion 20 will not be applicable. Criterion 20 establishes requirements for systems to protect the reactor fuel and initiate protective actions in the event of an accident. Since the reactor building defueling operations will be completed, there will be no reactor core and no reactor accident conditions to sense.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no need for a protection system. Therefore, there will be

neither a need to implement the requirements of Criterion 20 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 21 - Protection system reliability and testability.

The protection system shall be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function, and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, it has been determined that the requirements for a protection system as established by Criterion 20 will not be applicable. Since Criterion 20 has been determined to not be applicable during Modes 2 and 3, the requirements of Criterion 21 which establish criteria for protective system reliability and testability also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a protection system, as specified in Criterion 20, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 21 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 22 - Protection system independence.

The protection system shall be designed to assure that the effects of natural phenomena, and of normal operating, maintenance, testing, and postulated accident conditions on redundant channels do not result in loss of the protection function, or shall be demonstrated to be acceptable on some other defined basis. Design techniques, such as functional diversity to diversity in component design and principles of operation, shall be used to the extent practical to prevent loss of the protection function.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, it has been determined that the requirements for a protection system as established by Criterion 20 will not be applicable. Since Criterion 20 has been determined to not be applicable during Modes 2 and 3, the requirements of Criterion 22 establishing criteria for protective system independence also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a protection system, as specified in Criterion 20, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 22 nor will the level of safety of the facility be diminshed by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 23 - Protection system failure modes.

The protection system shall be designed to fail into a safe state or into a state demonstrated to be acceptable on some other defined basis if conditions such as disconnection of the system, loss of energy (e.g., electric power, instrument air), or postulated adverse environments (e.g., extreme heat or cold, fire, pressure, steam, water, and radiation) are experienced.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, it has been demonstrated that the requirements for protection systems as established by Criterion 20 will not be applicable. Since Criterion 20 has been determined to not be applicable during Modes 2 and 3, the requirements of Criterion 23 establishing criterion for protection system failure modes also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a protection system, as specified in Criterion 20, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 23 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 24 - Separation of protection and control systems.

The protection system shall be separated from control systems to the extent that failure of any single control system components or channel, or failure or removal from service of any single protection system component or channel which is common to the control and protection systems leaves intact a system satisfying all reliability, redundancy, and independence requirements of the protection system, interconnection of the protection and control systems shall be limited so as to assure that safety is not significantly impaired.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, it has been determined that the requirements for protection systems as established by Criterion 20 will not be applicable. Since Criterion 20 has been determined to not be applicable during Modes 2 and 3, the requirements of Criterion 24 establishing criteria for separation of protection systems from control systems also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a protection system, as specified in Criterion 20, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 24 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 25 - Protection system requirements for reactivity control malfunctions.

The protection system shall be designed to assure that specified acceptable fuel design limits are not exceeded for any single malfunction of the reactivity control systems, such as accidental withdrawal (not ejection or dropout) of control rods.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, it has been established that the requirements for protection systems as established by Criterion 20 will not be applicable. Since Criterion 20 has been determined to not be applicable during Modes 2 and 3, the requirements of Criterion 25 establishing criteria for protection systems for reactivity control system malfunctions also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a protection system, as specified in Criterion 20, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 25 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 26 - Reactivity control system redundancy and capability.

Two independent reactivity control systems of different design principles shall be provided. One of the systems shall use control rods, preferably including a positive means for inserting rods, and shall be capable of

reliably controlling reactivity changes to assure that under conditions of normal operation, including anticipated operational occurrences, and with appropriate margin for malfunctions such as stuck rods, specified acceptable fuel design limits are not exceeded. The second reactivity control system shall be capable of reliably controlling the rate of reactivity changes resulting from planned, normal power changes (including xenon burnout) to assure acceptable fuel design limits are not exceeded. One of the systems shall be capable of holding the reactor core subcritical under cold conditions.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements of Criterion 26 will not be applicable. Reactor Coolant System defueling operations will be completed during Mode 1 prior to the transition to Modes 2 and 3. Since the Reactor Coolant Cystem defueling operations will have been completed prior to Modes 2 and 3, there will be no reactor core to require reactivity control. In addition, the Defueling Completion Report will contain an analysis of the residual fuel which will demonstrate that a nuclear criticality at TMI-2 is not possible. This report will be submitted prior to Mode 2 to support the change from Mode 1. Therefore, the requirements for a reactivity control system will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no need for a reactivity control system. Therefore, there will be neither the need to implement the requirements of Criterion 26 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 27 - Combined reactivity control systems capability.

The reactivity control systems shall be designed to have a combined capability, in conjunction with poison addition by the emergency core cooling system, of reliably, controlling reactivity changes to assure that under

postulated accident conditions and with appropriate margin for stuck rods the capability to cool the core is maintained.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, it has been determined that the requirements of Criterion 26 will not be applicable. Since Criterion 26 has been determined to not be applicable during Modes 2 and 3, the requirements of Criterion 27 for combined reactivity control systems capability also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a reactivity control system, as specified in Criterion 26, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 27 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 28 - Reactivity limits.

The reactivity control systems shall be designed with appropriate limits on the potential amount and rate of reactivity increase to assure that the effects of postulated reactivity accidents can neither (1) result in damage to the reactor coolant pressure boundary greater than limited local yielding nor (2) sufficiently disturb the core, its support structures of other reactor pressure vessel internals to impair significantly the capability to cool the core. These postulated reactivity accidents shall include consideration of rod ejection (unless prevented by positive means), rod dropout, steam line rupture, changes in reactor coolant temperature and pressure, and cold water addition.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, it has been determined that the requirements of Criterion 26 will not be applicable. Since Criterion 26 has been determined not to be applicable during Modes 2 and 3, the requirements of Criterion 28 for the reactivity

control systems to be designed with appropriate limits on reactivity capability also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a reactivity control system, as specified in Criterion 26, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 28 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 29 - Protection against anticipated operational occurrences.

The protection and reactivity control systems shall be designed to assure an extremely high probability of accomplishing their safety functions in the event of anticipated operational occurrences.

Applicability:

It has been determined that the requirements of Criterion 20 for protection system functions and the requirements of Criterion 26 for a reactivity control system will not be applicable to TMI-2 during Modes 2 and 3 due to the non-operating and defueled condition. In addition, due to the non-operating and defueling condition of TMI-2, there will be no possibility of "anticipated operational occurrences" or the activation of any safety functions associated with protection and reactivity control systems. Therefore, the requirements of Criterion 29 also will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, neither a protection system, as specified in Criterion 20, nor a reactivity control system, as specified in Criterion 26, will be required at TMI-2. Therefore, there will be neither the need to implement the requirements of Criterion 29 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 30 - Quality of reactor coolant pressure boundary.

Components which are part of the reactor coolant pressure boundary shall be designed, fabricated, erected, and tested to the highest quality standards practical. Means shall be provided for detecting and, to the extent practical, identifying the location of the source of reactor coolant leakage.

Applicability:

The Reactor Coolant Pressure Boundary was originally designed, fabricated, erected, and tested to quality standards consistent with the intent of Criterion 30. Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements of Criterion 30 will not be applicable. Since the Reactor Vessel and Reactor Coolant System defueling operations will be completed prior to Modes 2 and 3, there will be no reactor core and no Reactor Coolant Pressure Boundary. Consequently, the requirements for the quality of the Reactor Coolant Pressure Boundary as established by Criterion 30 will have no meaning and will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no Reactor Coolant Pressure Boundary. Therefore, there will be neither the need to implement the requirements of Criterion 30 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 31 - Fracture prevention of reactor coolant pressure boundary.

The reactor coolant pressure boundary shall be designed with sufficient margin to assure that when stressed under operating, maintenance, testing, and postulated accident conditions (1) the boundary behaves in a non-brittle manner, and (2) the probability of rapidly propagating fracture is minimized. The design shall reflect consideration of service temperatures and other

conditions of the boundary material under operating, maintenance, testing, and postulated accident conditions and the uncertainties in determining (1) material properties, (2) the effects of irradiation on material properties, (3) residual, steady state and transient stresses, and (4) size of flaws.

Applicability:

The Reactor Coolant Pressure Boundary was originally designed consistent with the intent of Criterion 31. Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements of Criterion 31 will not be applicable. Since the Reactor Vessel and Reactor Coolant System will be defueled prior to Modes 2 and 3, there will be no reactor core and no Reactor Coolant Pressure Boundary. Consequently, the requirements for fracture prevention of the Reactor Coolant Pressure Boundary as established by Criterion 31 will have no meaning and will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no Reactor Coolant Pressure Boundary. Therefore, there will be neither the need to implement the requirements of Criterion 31 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 32 - Inspection of reactor coolant pressure boundary.

Components which are part of the reactor coolant pressure boundary shall be designed to permit (1) periodic inspection and testing of important areas and features to assess their structural and leak-tight integrity, and (2) an appropriate material surveillance program for the reactor pressure vessel.

Applicability:

The Reactor Coolant Pressure Boundary was originally designed to accommodate inspection requirements consistent with the intent of Criterion 32. Due to the non-operating and defueled condition of TMI-2 during

Modes 2 and 3, the requirements of Criterion 32 will not be applicable. Since the Reactor Vessel and Reactor Coolant System will be defueled prior to Modes 2 and 3, there will be no Reactor Coolant Pressure Boundary. Consequently, the requirements for inspection of the Reactor Coolant Pressure Boundary as established by Criterion 32 will have no meaning and will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no Reactor Coolant Pressure Boundary. Therefore, there will be neither the need to implement the requirements of Criterion 32 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 33 - Reactor coolant makeup.

A system to supply reactor coolant makeup for protection against small breaks in the Reactor Coolant Pressure Boundary shall be provided. The system safety function shall be to assure that specified acceptable fuel design limits are not exceeded as a result of reactor coolant loss due to leakage from the Reactor Coolant Pressure Boundary and rupture of small piping or other small components which are part of the boundary. The system shall be designed to assure that for on-site electric power system operation (assuming off-site power is not available) and for off-site electric power system operation (assuming on-site power is not available) the system safety function can be accomplished using the piping, pumps, and valves used to maintain coolant inventory during normal reactor operation.

Applicability:

The Reactor Coolant System was originally designed to accommodate reactor coolant makeup requirements consistent with the intent of Criterion 33. Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements of Criterion 33 will not be applicable. Since the Reactor Vessel and Reactor Coolant System will be defueled in Modes 2 and 3, there will be no

reactor core and, thus, no requirement for reactor coolant. Consequently, the requirements for reactor coolant makeup as established by Criterion 33 will have no meaning and will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no reactor coolant. Therefore, there will be neither the need to implement the requirements of Criterion 33 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 34 - Residual heat removal.

A system to remove residual heat shall be provided. The system safety function shall be to transfer fission product decay heat and other residual heat from the reactor core at a rate such that specified acceptable fuel design limits and the design conditions of the reactor coolant pressure boundary are not exceeded.

Suitable redundancy in components and features, and suitable interconnections, leak detection, and isolation capabilities shall be provided to assure that for on-site electric power system operation (assuming off-site power is not available) and for off-site electric power system operation (assuming on-site power is not available) the system safety function can be accomplished, assuming a single failure.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for a residual heat removal system as established by Criterion 34 will not be applicable. Prior to the transition to Modes 2 and 3, the Reactor Vessel and the Reactor Coolant System defueling operations will be completed; therefore, there will be no reactor core from which to remove decay heat. Since there will be no reactor core and, consequently, no core decay heat, the requirements of Criterion 34 will have no meaning and will not be applicable during Modes 2 and 3. In addition, the NRC has previously granted TMI-2 an exemption from the requirements of Criterion 34 (Reference NRC Letter dated August 8, 1985, B. J. Snyder to F. R. Standerfer).

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements of Criterion 34 will not be applicable. Additionally, the NRC has granted an exemption from the requirements of Criterion 34. Since TMI-2 currently has in effect an exemption from the requirements of Criterion 34, it has been determined that the requirements of Criterion 34 will not be applicable during Modes 2 and 3. Therefore, the level of safety of the facility will not be diminished by not implementing the requirements of Criterion 34.

REGULATORY REQUIREMENT:

Criterion 35 - Emergency core cooling.

A system to provide abundant emergency core cooling shall be provided. The system safety function shall be to transfer heat from the reactor core following any loss of reactor coolant at a rate such that (1) fuel and clad damage that could interfere with continued effective core cooling is prevented, and (2) clad metal-water reaction is limited to negligible amounts.

Suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities shall be provided to assure that for on-site electric power system operation (assuming on-site power is not available), the system safety function can be accomplished, assuming a single failure.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for an emergency core cooling system as established by Criterion 35 will not be applicable. Prior to the transition to Modes 2 and 3, the Reactor Vessel and the Reactor Coolant System defueling operations will be completed. Since there will be no reactor core which could require emergency cooling, the requirements of Criterion 35 will have no meaning and will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor will not exist at TMI-2; thus, there will be no need to supply emergency core cooling. Therefore, there will

be neither the need to implement the requirements of Criterion 35 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 36 - Inspection of emergency core cooling system.

The emergency core cooling system shall be designed to permit appropriate periodic inspection of important components, such as spray rings in the reactor pressure vessel, water injection nozzles, and piping to assure the integrity and capability of the system.

Applicability:

It has been determined that due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for an emergency core cooling system as established by Criterion 35 will not be applicable. Therefore, the requirements for inspection of the emergency core cooling system as established by Criterion 36 also will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no need for an emergency core cooling system. Therefore, there will be no need to implement the requirements of Criterion 36 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 37 - Testing of emergency core cooling system.

The emergency core cooling system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leak-tight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole and, under conditions as close to design as practical, the performance

of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system.

Applicability:

It has been determined that due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements of an emergency core cooling system, as established by Criterion 35, will not be applicable. Therefore, the requirements for testing of the emergency core cooling system as established by Criterion 37 also will not be applicable during Modes 2 and 3. In addition, the NRC has granted GPU Nuclear an exemption from the requirements of Criterion 37 (Reference NRC Letter dated August 8, 1985, B. J. Snyder to F. R. Standerfer).

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements of Criterion 37 will not be applicable. Additionally, the NRC has granted an exemption from the requirements of Criterion 37. Since TMI-2 currently has in effect an exemption from the requirements of Criterion 37, it has been determined that the requirements of Criterion 37 will not be applicable during Modes 2 and 3. Therefore, the level of safety of the facility will not be diminished by not implementing the requirements of Criterion 37.

REGULATORY REQUIREMENT:

Criterion 38 - Containment heat removal.

A system to remove heat from the reactor containment shall be provided. The system safety function shall be to reduce rapidly, consistent with the functioning of other associated systems, the containment pressure and temperature following any LOCA and maintain them at acceptably low levels.

Suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities shall be provided to assure that for on-site electric power system operation

(assuming off-site power is not available) and for off-site electric power system operation (assuming on-site power is not available), the system safety function can be accomplished, assuming a single failure.

Applicability:

Due to the non-operating and defueled condition of TMI-2, the requirements for a containment heat removal system as established by Criterion 38 will not be applicable during Modes 2 and 3. The Reactor Vessel and Reactor Coolant System defueling operations will be completed prior to the transition from Mode 1 to Modes 2 and 3. Since the Reactor Vessel and the Reactor Coolant System defueling operations will be completed prior to Modes 2 and 3, there will be no possibility of a LOCA which could heat or pressurize the containment. Therefore, the requirements for a containment heat removal system as established by Criterion 38 will have no meaning and will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, there will be no possibility of containment heating or pressurization resulting from a LOCA at TMI-2. Therefore, there will be neither the need to implement the requirements of Criterion 38 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 39 - Inspection of containment heat removal system.

The containment heat removal system shall be designed to permit appropriate periodic inspection of important components, such as torus, sumps, spray nozzles, and piping to assure the integrity and capability of the system.

Applicability:

Due to the non-operating and defueled condition of TMI-2, the requirements for a containment heat removal system as established by Criterion 38 will not be applicable during Modes 2 and 3. Since it has been determined that the requirements of Criterion 38 will not be applicable during

Modes 2 and 3, the requirements for inspection capabilities in accordance with Criterion 39 also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a containment heat removal system, as specified in Criterion 38, will not be required. Therefore, there will be neither a need to implement the requirements of Criterion 39 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 40 - Testing of containment heat removal system.

The containment heat removal system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leak-tight integrity of its components, (2) the operability and performance of the active components of the system, and (3) the operability of the system as a whole, and under conditions as close to the design as practical the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources and the operation of the associated cooling water system.

Applicability:

Due to the non-operating and defueled condition of TMI-2, the requirements for a containment heat removal system as established by Criterion 38 will not be applicable during Modes 2 and 3. Since it has been determined that the requirements of Criterion 38 will not be applicable during Modes 2 and 3, the requirements for testing capabilities in accordance with Criterion 40 also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a containment heat removal system, as specified in Criterion 38, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 40 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 41 - Containment atmosphere cleanup.

Systems to control fission product, hydrogen, oxygen, and other substances which may be released in the reactor containment shall be provided as necessary to reduce, consistent with the functioning of other associated systems, the concentration and quality of fission products released to the environment following postulated accidents, and to control the concentration of hydrogen or oxygen and other substances in the containment atmosphere following postulated accidents to assure that containment integrity is maintained.

Each system shall have suitable redundancy in components and features, and suitable interconnections, leak detection, isolation, and containment capabilities to assure that for on-site electric power system operation (assuming off-site power is not available) and for off-site electric power system operation (assuming on-site power is not available), its safety function can be accomplished, assuming a single failure.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will be no postulated accidents which could result in the generation of fission products, hydrogen, oxygen, or other substances which would require containment atmosphere cleanup systems as described in Criterion 41. Therefore, design of systems for containment atmosphere cleanup in accordance with the requirements of Criterion 41 will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, systems to control various conditions following postulated accidents involving the reactor will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 41 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 42 - Inspection of containment atmosphere cleanup systems.

The containment atmosphere cleanup systems shall be designed to permit appropriate periodic inspection of important components, such as filter frames, ducts, and piping to assure the integrity and capability of the systems.

Applicability:

It has been determined that due to non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will be no postulated accidents which could result in the generation of fission products, hydrogen, oxygen, or other substances which would require containment atmosphere cleanup systems as described in Criterion 41. Since the requirements of Criterion 41 will not be applicable during Modes 2 and 3, the requirements for inspection of containment atmosphere cleanup systems in accordance with the requirements of Criterion 42 also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, containment atmosphere cleanup systems, as specified in Criterion 41, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 42 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 43 - Testing of containment atmosphere cleanup systems.

The containment atmosphere cleanup systems shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leak-tight integrity of its components, (2) the operability and performance of the active components of the systems, such as fans, filters, dampers, pumps, and valves, and (3) the operability of the systems as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the systems into operation, including

operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of associated systems.

Applicability:

It has been determined that due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, there will be no postulated accidents which could result in the generation of fission products, hydrogen, oxygen, or other substances which require containment atmosphere cleanup systems as described in Criterion 41. Since the requirements of Criterion 41 will not be applicable during Modes 2 and 3, the requirements for the testing of containment atmosphere cleanup systems in accordance with the requirements of Criterion 43 also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, containment atmosphere cleanup systems, as specified in Criterion 41, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 43 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 44 - Cooling water.

A system to transfer heat from structures, systems and components important to safety, to an ultimate heat sink shall be provided. The system safety function shall be to transfer the combined heat load of these structures, systems, and components under normal operation and accident conditions.

Suitable redundancy in components and features, and suitable interconnections, leak detection, and isolation capabilities shall be provided to assure that for on-site electric power system operation (assuming off-site power is not available) and for off-site electric power system operation (assuming on-site power is not available), the system safety function can be accomplished, assuming a single failure.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for cooling water systems as established by Criterion 44 will not be applicable. Prior to the transition to Modes 2 and 3, the Reactor Vessel and Reactor Coolant System defueling operations will be completed. Since the Reactor Vessel and Reactor Coolant System defueling operations will be completed, there will be no reactor core to generate heat during either normal operation or as result of an accident. Therefore, the cooling water requirements established in Criterion 44 will have no meaning and will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no heat generation requiring removal by a cooling water system. Therefore, there will be neither the need to implement the requirements of Criterion 44 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 45 - Inspection of cooling water system.

The cooling water system shall be designed to permit appropriate periodic inspection of important components, such as heat exchangers and piping, to assure the integrity and capability of the system.

Applicability:

It has been determined that due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for cooling water systems as established by Criterion 44 will not be applicable. Since the requirements of Criterion 44 will not be applicable during Modes 2 and 3, the requirements for inspection capabilities of the cooling water system in accordance with the requirements of Criterion 45 also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a cooling water system, as specified in Criterion 44, will not be required. Therefore, there will be neither the need to

implement the requirements of Criterion 45 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 46 - Testing of cooling water system.

The cooling water system shall be designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leak-tight integrity of its components, (2) the operability and the performance of the active components of the system, and (3) the operability of the system as a whole and, under conditions as close to design as practical, the performance of the full operational sequence that brings the system into operation for reactor shutdown and for LOCA, including operation of applicable portions of the protection system and the transfer between normal and emergency power sources.

Applicability:

It has been determined that due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for cooling water systems as established by Criterion 44 will not be applicable. Since the requirements of Criterion 44 will not be applicable during Modes 2 and 3, the requirements for testing capabilities of the cooling water system in accordance with the requirements of Criterion 46 also will not be applicable.

Safety Evaluation:

During Modes 2 and 3, a cooling water system, as specified in Criterion 44, will not be required. Therefore, there will be neither the need to implement the requirements of Criterion 46 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 50 - Containment design basis.

The reactor containment structure, including access openings, penetrations, and the containment heat removal system, shall be designed so

that the containment structure and its internal compartments can accommodate, without exceeding the design leakage rate and with sufficient margin, the calculated pressure and temperature conditions resulting from any LOCA. This margin shall reflect consideration of (1) the effects of potential energy sources which have not been included in the determination of the peak conditions, such as energy in steam generators and as required by Article 50.44 energy from metal-water and other chemical reactions that may result from degradation but not failure of emergency core cooling functioning, (2) the limited experience and experimental data available for defining phenomena and containment responses, and (3) the conservatism of the calculation model and input parameters.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for a containment structure capable of withstanding a LOCA in accordance with the criteria established in Criterion 50 will not be applicable. Prior to the transition to Modes 2 and 3, the Reactor Vessel and Reactor Coolant System defueling operations will be completed. Thus, there will be no reactor core and no possibility of a LOCA. The bases for the requirements of Criterion 50 are the potential energy sources which could result from the existence of a nuclear reactor. However, since the Reactor Vessel will be in defueled condition during Modes 2 and 3 with no possibility of the potential energy sources as described in Criterion 50; therefore, the requirements of Criterion 50 will not strictly apply.

Although it has been shown that the specific requirements of Criterion 50 will not be applicable during Modes 2 and 3, the Containment will continue to be maintained, as an essentially leak-tight barrier, to provide an environmental barrier to the residual radioactive materials which remain inside.

In addition, the NRC has granted GPU Nuclear an exemption from the requirements of Criterion 50 for up to 40 ft^2 of modified penetrations (Reference NRC Letter dated July 17, 1984, B. J. Snyder to B. K. Kanga).

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no possibility of achieving the calculated pressure and

temperature conditions resulting from a LOCA. However, as discussed in the Safety Evaluation for Criterion 16, the Technical Specifications for Modes 2 and 3 will require single barrier isolation which the NRC Staff concluded "...is an acceptable level of containment performance for the plant conditions that will exist after defueling when no potential for criticality in the reactor building exists." Since the plant conditions during Modes 2 and 3 preclude the possibility of a LOCA, the level of safety of the facility will not be diminished by not implementing the requirements of Criterion 50.

REGULATORY REQUIREMENT:

Criterion 51 - Fracture prevention of containment pressure boundary.

The reactor containment boundary shall be designed with sufficient margin to assure that under operation, maintenance, testing, and postulated accident conditions (1) its ferritic materials behave in a non-brittle manner, and (2) the probability of rapidly propagating fracture is minimized. The design shall reflect consideration of service temperatures and other conditions of the containment boundary material during operation, maintenance, testing, and postulated accident conditions, and the uncertainties in determining (1) material properties; (2) residual, steady state, and transient stresses; and (3) size of flaws.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the fracture prevention requirements for the containment pressure boundary as established by Criterion 51 will not be applicable. Although the containment was originally designed and constructed to criteria consistent with the requirements of Criterion 51, due to the completion of the Reactor Vessel and Reactor Coolant System defueling operations, there will be no heating or pressurization events which could threaten a brittle fracture of the containment pressure boundary. Therefore, the requirements of Criterion 51 will not be applicable during Modes 2 and 3.

In addition, the NRC has granted GPU Nuclear an exemption from the requirements of Criterion 51 for modified penetrations (Reference NRC Letter dated July 17, 1984, B. J. Snyder to B. K. Kanga).

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no possibility of achieving the pressure and temperature conditions which could threaten a brittle fracture of the containment pressure boundary. Therefore, there will be neither the need to implement the requirements of Criterion 51 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 52 - Capability for containment leakage rate testing.

The reactor containment and other equipment which may be subjected to containment test conditions shall be designed so that periodic integrated leakage rate testing can be conducted at containment design pressure.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for containment leakage rate testing capabilities in accordance with the criteria as established by Criterion 52 will not be applicable. The Reactor Vessel and Reactor Coolant System will be defueled prior to Modes 2 and 3; therefore, there will be no possible events, such as LOCA or criticality, which could result in pressurization and subsequent containment leakage. Since the requirements for leakage testing capability as established in Criterion 52 assume the possibility of pressurization events and the consequent potential for leakage of fission products, these requirements will not be applicable during Modes 2 and 3. Although the specific requirements of Criterion 52 will not be applicable during Modes 2 and 3, TMI-2 will continue to maintain the containment to prevent uncontrolled leakage consistent with the containment function as an unpressurized fission product barrier during Modes 2 and 3.

In addition, the NRC Staff has concluded that the requirements for containment leakage rate testing are not applicable (Reference NRC Letter dated September 21, 1981, B. J. Snyder to G. K. Hovey).

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no possibility of achieving the pressure and temperature conditions resulting from a LOCA. Therefore, there will be neither the need to implement the requirements of Criterion 52 nor will the level of safety of the facility be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 53 - Provisions for containment testing and inspection.

The reactor containment shall be designed to permit (1) appropriate periodic inspection of all important areas, such as penetrations, (2) an appropriate surveillance program, and (3) periodic testing at containment design pressure of the leak-tightness of penetrations which have resilient seals and expansion bellows.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for containment testing and inspection capabilities in accordance with the criteria as established by Criterion 53 will not strictly apply. The Reactor Vessel and Reactor Coolant System will be defueled prior to Modes 2 and 3; therefore, there will be no possible events, such as LOCA or criticality, which could result in pressurization and subsequent containment leakage.Although the specific requirements of Criterion 53 will not be applicable during Modes 2 and 3, TMI-2 will continue to maintain the containment to prevent uncontrolled leakage consistent with the containment function as an unpressurized fission product barrier during Modes 2 and 3. The appropriate surveillance requirements are reflected in License Amendment No. 30.

Safety Evaluation:

During Modes 2 and 3, containment leakage rate testing, as specified in Criterion 52, will not be required. Since the containment will be maintained as an unpressurized fission product barrier during Modes 2 and 3, the level of safety of the facility will not be diminished by not implementing these

requirements. However, TMI-2 will continue to perform surveillances of containment penetrations, as reflected in License Amendment No. 30, in order to prevent uncontrolled leakage consistent with the containment function as an unpressurized fission product barrier.

REGULATORY REQUIREMENT:

Criterion 54 - Piping systems penetrating containment.

Piping systems penetrating primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for piping systems penetrating containment as established by Criterion 54 will not strictly apply. Although there will be piping penetrations in the containment during Modes 2 and 3, all will be passively isolated, fluid systems will be depressurized, and only a limited number will be maintained operational for periodic use. Since the Reactor Vessel will be defueled and the fluid systems will be drained, the specific criteria established by Criterion 54 will not strictly apply during Modes 2 and 3. However, the intent of Criterion 54 with respect to containment isolation capabilities will be maintained commensurate with the needs during Modes 2 and 3. All systems will be passively isolated, fluid systems depressurized, and isolation will be surveilled periodically.

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the need to implement the specific requirements of Criterion 54 will not be applicable. TMI-2 will maintain single valve containment isolation during Modes 2 and 3 consistent with the intent of Criterion 54. The NRC

Staff has reviewed this provision as part of License Amendment No. 30 and has concluded that this is an acceptable level of containment performance for the plant conditions that will exist after defueling has been completed and no potential for criticality in the Reactor Building exists. Therefore, the level of safety of the facility will not be diminished by not implementing the requirements of Criterion 54.

REGULATORY REQUIREMENT:

Criterion 55 - Reactor coolant pressure boundary penetrating containment.

Each line that is part of the reactor coolant pressure boundary and that penetrates primary reactor containment shall be provided with containment isolation valves as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:

1. One locked closed isolation valve inside and one locked closed isolation valve outside containment; or
2. One automatic isolation valve inside and one locked closed isolation valve outside containment; or
3. One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or
4. One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Isolation valves outside containment shall be located as close to containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

Other appropriate requirements to minimize the probability of consequences of an accidental rupture of these lines or of lines connected to them shall be provided as necessary to assure adequate safety. Determination of the appropriateness of these requirements, such as higher quality in design, fabrication, and testing, additional provisions for inservice

inspection, protection against more severe natural phenomena, and additional isolation valves and containment, shall include consideration of the population density, use characteristics, and physical characteristics of the site environs.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the requirements for Reactor Coolant Pressure Boundary penetration containment in accordance with Criterion 55 will not strictly apply. Since the Reactor Vessel and Reactor Coolant System will be defueled, there will be no reactor core and, consequently, no Reactor Coolant Pressure Boundary. Therefore, the requirements for isolation of the Reactor Coolant Pressure Boundary in accordance with Criterion 55 will not be applicable during Modes 2 and 3. However, TMI-2 will maintain single barrier isolation capability for all lines penetrating containment during Modes 2 and 3. In addition, the NRC has granted TMI-2 an exemption from the requirements of Criterion 55 for modified penetrations (Reference NRC Letter dated July 17, 1984, B. J. Snyder to B. K. Kanga).

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2; thus, there will be no Reactor Coolant Pressure Boundary. Therefore, there will be neither the need to implement the specific requirements of Criterion of 55 nor will the level of safety of the facility be diminished by not implementing these requirements.

Further, the general subject of containment isolation during Modes 2 and 3 was evaluated in License Amendment No. 30. The NRC Staff concluded in their approval of License Amendment No. 30 that single barrier isolation of lines penetrating containment is an acceptable level of Containment performance for the plant conditions that will exist after defueling when no potential for criticality in the Reactor Building exists.

REGULATORY REQUIREMENT:

Criterion 56 - Primary containment isolation.

Each line that connects directly to the atmosphere and penetrates primary reactor containment shall be provided with containment isolation valves as follows, unless it can be demonstrated that the containment isolation provisions for a specific class of lines, such as instrument lines, are acceptable on some other defined basis:

1. One locked closed isolation valve inside and one locked closed isolation valves outside containment; or
2. One automatic isolation valve inside and one locked closed isolation valve outside containment; or
3. One locked closed isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment; or
4. One automatic isolation valve inside and one automatic isolation valve outside containment. A simple check valve may not be used as the automatic isolation valve outside containment.

Isolation valve outside containment shall be located as close to containment as practical and upon loss of actuating power, automatic isolation valves shall be designed to take the position that provides greater safety.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the need to implement the specific isolation configurations of Criterion 56 will not strictly apply. However, as permitted by Criterion 56, TMI-2 will maintain single barrier isolation of all lines penetrating Containment during Modes 2 and 3. This isolation provision was found to be acceptable by the NRC Staff in License Amendment No. 30; thus, consistent with the intent of Criterion 56, containment isolation provisions have been determined to be acceptable on "some other defined basis."

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the need to implement the specific isolation configuration of Criterion 56 will not be applicable. TMI-2 will continue to maintain single barrier isolation of lines penetrating Containment consistent with the intent of Criterion 56 and commensurate with the hazard associated with the residual contamination remaining inside the Containment. The NRC Staff has concluded in their approval of single barrier isolation for Modes 2 and 3 in License Amendment No. 30, "...that this is an acceptable level of Containment performance for the plant conditions that will exist after defueling when no potential for criticality in the reactor building exists." Thus, the NRC Staff accepted the containment isolation provisions of Modes 2 and 3 on another defined basis as permitted by Criterion 56.

REGULATORY REQUIREMENT:

Criterion 57 - Closed system isolation valves:

Each line that penetrates primary reactor containment and is either part of the reactor coolant pressure boundary or connected directly to the containment atmosphere shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote manual operation. This valve shall be outside containment and located as close to the containment as practical. A simple check valve may not be used as the automatic isolation valve.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Criterion 57 will not strictly apply. Since the Reactor Vessel and Reactor Coolant System will be defueled, there will be no "primary reactor containment" or "Reactor Coolant Pressure Boundary." Therefore, the isolation requirements established by Criterion 57 will not be applicable during Modes 2 and 3. However, TMI-2 will continue to maintain single barrier isolation of all lines penetrating Containment consistent with the intent of Criterion 57 and commensurate with radiation hazards which will exist during Modes 2 and 3. In addition, the NRC has

granted TMI-2 an exemption from the requirements of Criterion 57 (Reference NRC Letter dated July 17, 1984, B. J. Snyder to B. K. Kanga).

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor will not exist at TMI-2; thus, there will be no Reactor Coolant Pressure Boundary or reactor related accidents that could generate significant quantities of fission products. Therefore, the need to implement the specific requirements of Criterion 57 will not be applicable. TMI-2, however, will continue to maintain single barrier isolation of lines penetrating containment consistent with the intent of Criterion 57 and commensurate with the hazard associated with the residual contamination remaining inside the Containment. The NRC Staff has concluded in their approval of single barrier isolation for Modes 2 and 3 in License Amendment No. 30, "...that this is an acceptable level of Containment performance for the plant conditions that will exist after defueling when no potential for criticality in the reactor building exists." Therefore, the level of safety of the facility will not be diminished by not implementing these requirements.

REGULATORY REQUIREMENT:

Criterion 60 - Control of releases of radioactive materials to the environment.

The nuclear power unit design shall include means to control suitably the release of radioactive materials in gaseous and liquid effluents and to handle radioactive solid wastes produced during normal operation, including anticipated operational occurrences. Sufficient holdup capacity shall be provided for retention of gaseous and liquid effluent containing radioactive materials, particularly where unfavorable site environmental conditions can be expected to impose unusual operational limitations upon the release of such effluents to the environment.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Criterion 60 will not strictly apply. Since the Reactor Vessel and Reactor Coolant System will be defueled prior to

Modes 2 and 3, there will be no reactor core; therefore, there will be no radioactive effluents or waste associated with "normal reactor operation" or "anticipated operational occurrences." However, TMI-2 currently controls the releases of radioactive materials to the environment consistent with the intent of Criterion 60 and the requirements of 10 CFR 20 and will continue to do so during Modes 2 and 3.

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Criterion 60 will not be applicable, as there will be no radioactive effluents or waste associated with "normal reactor operation" or "anticipated operational occurrences." However, TMI-2 will control the releases of radioactive effluents and wastes consistent with the intent of Criterion 60 during Modes 2 and 3.

REGULATORY REQUIREMENT:

Criterion 61 - Fuel storage and handling and radioactivity control.

The fuel storage and handling, radioactive waste, and other systems which may contain radioactivity shall be designed to assure adequate safety under normal and postulated conditions. These systems shall be designed (1) with a capability to permit appropriate periodic inspection and testing of components important to safety, (2) with suitable shielding for radiation protection, (3) with appropriate containment, confinement, and filtering systems, (4) with a residual heat removal capability having reliability and testability that reflects the importance to safety of decay heat and other residual heat removal, and (5) to prevent significant reduction in fuel storage coolant inventory under accident conditions.

Applicability:

Although the Reactor Vessel and Reactor Coolant System will be defueled prior to Mode 2, there will be canisters containing residual core debris in the spent fuel pool. These canisters and the associated handling systems have incorporated in their design, features consistent with the requirements as established by Criterion 61. In addition, there will remain a very small

quantity of residual fuel distributed in various places in the Reactor Coolant System and trace amounts in other areas of the Reactor Building. These residual fuel quantities will have been identified and demonstrated to be substantially subcritical with no possibility of becoming critical and personnel accessibility, potential exposure and other protective features will be provided consistent with the requirements of Criterion 61.

Safety Evaluation:

During Mode 2, system and equipment for Fuel Pool A and the Fuel Handling Building will be kept operational consistent with the Technical Specifications. Prior to Mode 3, all removable fuel will be shipped off-site and remaining radioactive materials cannot generate sufficient decay heat to require residual heat removal capabilities. Design provisions and Technical Specifications have been previously reviewed by the NRC Staff and found acceptable.

REGULATORY REQUIREMENT:

Criterion 62 - Prevention of criticality in fuel storage and handling.

Criticality in the fuel storage and handling system shall be prevented by physical systems or processes, preferably by use of geometrically safe configurations.

Applicability:

During Mode 2, canisters containing core debris will be stored in the TMI-2 spent fuel pool in specially designed fuel storage racks. These canisters and storage racks have incorporated in the design, suitable criticality prevention consistent with the requirements established by Criterion 62. During Mode 3, there will not be any fuel stored in the fuel storage and handling system; therefore, the requirements for the prevention of criticality in the fuel storage and handling system as established by Criterion 62 will not be applicable during this mode.

Safety Evaluation:

During Mode 2, TMI-2 will have canisters containing core debris stored on-site. Since the canisters and the associated fuel pool storage racks have incorporated in the design, suitable criticality prevention consistent with the requirements established by Criterion 62, the level of safety consistent with addressing the requirements of Criterion 62 will have been provided. TMI-2 will not have any fuel stored in the fuel storage and handling system during Mode 3; therefore, the requirements of Criterion 62 will not be applicable. Since TMI-2 will not have any fuel stored in the fuel storage and handling system during Mode 3, the level of safety of the facility will not be diminished by not implementing these requirements during Mode 3.

REGULATORY REQUIREMENT:

Criterion 63 - Monitoring fuel and waste storage.

Appropriate systems shall be provided in fuel storage and radioactive waste systems and associated handling areas (1) to detect conditions that may result in loss of residual heat removal capability and excessive radiation levels, and (2) to initiate appropriate safety actions.

Applicability:

At TMI-2, the high level of decay heat associated with short lived fission product decay has diminished to the point that the minimal amount of decay heat associated with the residual radioactive materials is dissipated by loss to local ambient conditions. Therefore, the requirements of Criterion 63 associated with decay heat removal will not strictly apply. Radioactive waste storage and processing during Modes 2 and 3 will be monitored and controlled consistent with the Technical Specifications and the intent of the requirements for detection of excessive radiation levels as established by Criterion 63.

Safety Evaluation:

During Modes 2 and 3, the amount of decay heat will be at minimal levels and will be dissipated by loss to local ambient conditions; therefore, active decay heat detection and removal capabilities will not be required.

Radioactive waste storage and processing during Modes 2 and 3 will be monitored and controlled consistent with the Technical Specifications and the intent of the requirements for detection of excessive radiation levels as established by Criterion 63. Therefore, during Modes 2 and 3, the level of safety of the facility will be maintained consistent with the intent of Criterion 63.

REGULATORY REQUIREMENT:

Criterion 64 - Monitoring radioactivity releases.

Means shall be provided for monitoring the reactor containment atmosphere, spaces containing components for recirculation of LOCA fluids, effluent discharge paths, and the plant environs for radioactivity that may be released from normal operation, including anticipated operational occurrences, and from postulated accidents.

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements for monitoring radioactivity releases in accordance with criteria as established by Criterion 64 will not strictly apply. Since the plant will not be operating and will be defueled during Modes 2 and 3, the conditions of plant operation, anticipated operational occurrences, and postulated accidents which require monitoring radioactivity releases will not be applicable. However, TMI-2 will continue to monitor the radioactive effluents during Modes 2 and 3 as required by the Technical Specifications.

Safety Evaluation:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Criterion 64 will not be applicable. Since the conditions of plant operation, anticipated operational occurrences, and postulated accidents on which the requirements for monitoring radioactivity releases will not exist during Modes 2 and 3, the level of safety of the facility will not be diminished by not implementing the requirements of Criterion 64. However, the TMI-2 Technical Specifications

will continue to require monitoring and control of the radioactive effluents from TMI-2 during Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50 APPENDIX B - QUALITY ASSURANCE CRITERIA FOR NUCLEAR POWER PLANTS AND FUEL PROCESSING PLANTS

Introduction:

Every applicant for a construction permit is required by the provisions of Article 50.34 to include in its preliminary safety analysis report a description of the quality assurance program to be applied to the design, fabrication, construction, and testing of the structures, systems, and components of the facility. Every applicant for an operating license is required to include, in its final safety analysis report, information pertaining to the managerial and administrative controls to be used to assure safe operation. Nuclear power plants and reprocessing plants include structures, systems, and components that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. This appendix establishes quality assurance requirements for the design, construction, and operation of those structures, systems, and components. The pertinent requirements of this appendix apply to all activities affecting the safety-related functions of those structures, systems, and components; these activities include designing, purchasing, fabrication, handling, shipping, storing, cleaning, erecting, installing, inspection, testing, operation, maintaining, repairing, refueling, and modifying.

As used in this appendix, "quality assurance" comprises all those planned and systematic actions necessary to provide adequate confidence that a structure, system, or component will perform satisfactorily in service. Quality assurance includes quality control, which comprises those quality assurance actions related to the physical characteristics of a material, structure, component, or system which provide a means to control the quality of the material, structure, component or system to predetermined requirements. (Text Continues)

Applicability:

Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, TMI-2 will not have any safety-related equipment that prevent or mitigate the consequences of accidents that could cause undue risk to the health and safety of the public. Therefore, the requirements of Appendix B will not strictly apply during Modes 2 and 3. However, TMI-2 currently has in place an NRC-approved quality assurance plan and will continue to maintain an NRC-approved quality assurance plan which addresses the intent of Appendix B during Modes 2 and 3 to ensure that the TMI-2 Technical Specifications and 10 CFR requirements are implemented. However, this plan may be modified as allowed by 10 CFR 50.54(a) to reflect plant conditions.

Safety Evaluation:

Since TMI-2 will continue to maintain a quality assurance plan which addresses the intent of Appendix B during Modes 2 and 3, the level of safety assured by the quality assurance plan during Modes 2 and 3 will be as good as that which currently exists during Mode 1.

REGULATORY REQUIREMENT:

10 CFR 50 APPENDIX G - FRACTURE TOUGHNESS REQUIREMENTS

Introduction:

This appendix specifies fracture toughness requirements for ferritic materials of pressure-retaining components of the reactor coolant pressure boundary of light water nuclear power reactors to provide adequate margins of safety during any condition of normal operation, including anticipated operational occurrences and system hydrostatic tests, to which the pressure boundary may be subjected over its service lifetime.

The ASME Code forms the basis for the requirements of this appendix. "ASME Code" means the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. If no section is specified, the reference is to Section III, Division 1, "Rules for Construction of Nuclear Power Plant Components." "Section IV" means Section IV, Division 1, "Rules for Inservice Inspection of Nuclear Power Plant Components." If no edition or addenda is

specified, the applicable ASME Code edition and addenda and any limitation and modifications thereof are specified in Article 50.55a of this part.

The ASME Boiler and Pressure Vessel Code has been approved for incorporation by reference by the Director of the Federal Register. A notice of any changes made to the material incorporated by reference will be published in the Federal Register. Copies of the ASME Boiler and Pressure Vessel Code may be purchases from the American Society of Mechanical Engineers, United Engineering Center, 345 East 47th St., New York, NY 10017. It is also available for inspection at the Nuclear Regulatory Commission's Public Document Room, 1717 H Street NW, Washington, DC 20555.

The requirement of this appendix apply to the following materials:

NOTE - The adequacy of the fracture toughness of other ferritic materials not covered in this section shall be demonstrated to the Director, Office of Nuclear Reactor Regulation, on an individual case basis.

A. Carbon and low-alloy ferritic steel plate, forgings, castings, and pipe with specified minimum yield strengths not over 50,000 psi (345 MPa), and to those with specified minimum yield strengths greater than 50,000 psi (345 MPa) but not over 90,000 psi (621 MPa) if qualified by using methods equivalent to those described in paragraph II.A. of this appendix. The latest edition and addenda permitted by paragraph 50.55(b) of this part at the time the analysis is made to be used for the purpose of the paragraph.

B. Welds and welded heat-affected zones in the materials specified in paragraph I.A. of this appendix.

C. Materials for bolting and other types of fasteners with specified minimum yield strengths not over 130,000 psi (896 MPa). (Test Continues).

Applicability:

Article 50.60 requires compliance with Appendices G and H to ensure that the pressure retaining components of the reactor coolant system during pressurized conditions are not subject to brittle fracture. TMI-2 is currently depressurized during the defueling operations and will continue to be depressurized during Modes 2 and 3 subsequent to defueling operations. Since the Reactor Coolant System will be defueled and not pressurized during

Modes 2 and 3, the conditions which require the implementation of Appendices G and H will not exist. Therefore, the requirements of Article 50.60 and Appendices G and H will not be applicable during Modes 2 and 3.

Safety Evaluation:

The physical conditions of temperature, pressure, and fluence which require the implementation of Article 50.60 and Appendices G and H do not currently exist during Mode 1 and will not exist during Modes 2 and 3. Since the conditions which require the implementation of Appendices G and H will not exist during Modes 2 and 3, the requirements of these Appendices will not be applicable during Modes 2 and 3. Therefore, the level of safety of the facility represented by the implementation of Article 50.60 and Appendices G and H will not be diminished by not implementing these requirements during Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50 APPENDIX H - REACTOR VESSEL MATERIAL SURVEILLANCE PROGRAM REQUIREMENTS

Introduction:

The purpose of the material surveillance program required by this appendix is to monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region of light-water nuclear power reactors resulting from exposure of these materials to neutron irradiation and the thermal environment. Under the program, fracture toughness test data are obtained from material specimens exposed in surveillance capsules, which are withdrawn periodically from the reactor vessel. The data will be used as described in Section IV and V of Appendix G to this part.

ASTM E 185-73, -79, and -82, "Standards Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels," which are referenced in the following paragraphs, have been approved for incorporation by reference by the Director of the Federal Register. A notice of any change made to the material incorporated by reference will be published

in the Federal Register. Copies of ASTM E 185-73, -79, and -82 may be obtained from the American Society for Testing and Materials, 1916 Race St., Philadelphia, PA 19103. Copies will be available for inspection at the Nuclear Regulatory Commission's Public Document Room, 1717 H Street NW, Washington, DC 20555.

Applicability:

Article 50.60 requires compliance with Appendices G and H to ensure that the pressure retaining components of the Reactor Coolant System during pressurized conditions are not subject to brittle fracture. TMI-2 is currently depressurized during the defueling operations and will continue to be depressurized during Modes 2 and 3 subsequent to defueling operations. Since the Reactor Coolant System will be defueled and not pressurized during Modes 2 and 3, the conditions which require the implementation of Appendices G and H will not exist. Therefore, the requirements of Article 50.60 and Appendices G and H will not be applicable during Modes 2 and 3.

Safety Evaluation:

The physical conditions of temperature, pressure, and fluence which require the implementation of Article 50.60 and Appendices G and H do not currently exist during Mode 1 and will not exist during Modes 2 and 3. Since the conditions which require the implementation of Appendices G and H will not exist during Modes 2 and 3, the requirements of these Appendices will not be applicable during Modes 2 and 3. Therefore, the level of safety of the facility represented by the implementation of Article 50.60 and Appendices G and H will not be diminished by not implementing these requirements during Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50 APPENDIX I - NUMERICAL GUIDES FOR DESIGN OBJECTIVES AND LIMITING CONDITIONS FOR OPERATION TO MEET THE CRITERION "AS LOW AS IS REASONABLY ACHIEVABLE" FOR RADIOACTIVE MATERIAL IN LIGHT-WATER-COOLED NUCLEAR POWER REACTOR EFFLUENTS

Introduction:

Section 50.34a provides that an application for a permit to construct a nuclear power reactor shall include a description of the preliminary design of equipment to be installed to maintain control over radioactive materials in gaseous and liquid effluents produced during normal reactor operations, including expected operational occurrences. In the case of an application filled on or after January 2, 1971, the application must also identify the design objectives, and the means to be employed, for keeping levels of radioactive material in effluents to unrestricted areas as low as practicable.

Section 50.36a contains provisions designed to assure that releases of radioactive material from nuclear power reactors to unrestricted areas during normal reactor operational occurrences are kept as low as practicable.

This appendix provides numerical guides for design objectives and limiting conditions for operation to assist applicants for, and holders of, licenses for light-water-cooled nuclear power reactors in meeting the requirements of Articles 50.34a and 50.36a that radioactive material in effluents released from these facilities to unrestricted areas be kept as low as reasonably achievable. Design objectives and limiting conditions for operation conforming to the guidelines of the appendix shall be deemed a conclusive showing of compliance with the "as low as is reasonably achievable" requirements of 10 CFR 50.34a and 50.36a. Design objectives and limiting condition for operation differing from the guidelines may also be used, subject to a case-by-case showing of a sufficient basis for the findings of "as low as is reasonably achievable" required by Articles 50.34a and 50.36a. The guides presented in this appendix are appropriate only for light-water-cooled nuclear power reactors and not for other types of nuclear facilities. (Text Continues)

Applicability:

Article 50.34a requires that applications for construction permits and operating licenses include certain information relating to effluents from operating nuclear power reactors and references Appendix I as providing numerical guidance on design objectives. Due to the non-operating and defueled status of TMI-2 during Modes 2 and 3, the requirements of Article 50.34a will not strictly apply. However, the intent of this article

[i.e., to limit effluents to levels as low as is reasonably achievable (ALARA)], as defined in Appendix I, is required by 10 CFR 20 and will be addressed by TMI-2 by providing equipment and procedures to accomplish the principal objectives of Article 50.34a.

Safety Evaluation:

Except for the Krypton purge which occurred in 1981, TMI-2 has limited effluents during the cleanup period to extremely low levels. Liquid effluents have contained insignificant quantities of radioactive material and gaseous effluents have been controlled filtered and monitored through the various purge systems. Any routine rain or groundwater inleakage will be processed to ensure that liquid discharges through the Industrial Waste Treatment System are within the regulatory requirements of 10 CFR 20 and National Pollution Discharge Elimination System (NPDES).

Subsequent to defueling the reactor and the transition to Modes 2 and 3, the provisions and procedures for controlling effluents to the environment will continue to be utilized to maintain effluent releases ALARA, thus, the level of safety of the facility will be maintained.

The only planned effluents discharge expected to occur during Modes 2 and 3 which will not be directly associated with conventional cleanup activities is the evaporation process utilized to dispose of the "accident generated water." This process is the subject of a licensing hearing which is specifically reviewing this issue.

REGULATORY REQUIREMENT:

10 CFR 50 APPENDIX J - PRIMARY REACTOR CONTAINMENT LEAKAGE TESTING FOR WATER-COOLED POWER REACTORS

Introduction:

One of the conditions of all operating licenses for water-cooled power reactors as specified in Article 50.34(o) is that primary reactor containments shall meet the containment leakage test requirements set forth in this appendix. These test requirements provide for preoperational and periodic verification by test of the leak-tight integrity of the primary reactor

containment, and systems and components which penetrate containment of water-cooled power reactors, and establish the acceptance criteria for such tests. The purpose of the tests are to assure that (a) leakage through the primary reactor containment and systems and components penetrating primary containment shall not exceed allowable leakage rate values as specified in the technical specifications or associated bases, and (b) periodic surveillance of reactor containment penetrations and isolation valves is performed so that proper maintenance and repairs are made during the service life of the containment, and systems and components penetrating primary containment. These test requirements may also be used for guidance in establishing appropriate containment leakage test requirements in technical specifications or associated basis for other types of nuclear power reactors. (Text Continues)

Applicability:

The NRC has granted TMI-2 an exemption from the requirements of Appendix J, with the exception of leak testing the containment door seals. (Reference NRC Letter dated September 2, 1981, B. J. Snyder to G. K. Hovey). This exemption will continue to be effect as will the leak testing of the containment doors seals during Modes 2 and 3.

Safety Evaluation:

The overall safety of TMI-2 during Modes 2 and 3 will not be diminished by the continuation of the Appendix J exemption. In fact, the overall safety of the facility will be enhanced by the completion of defueling and the transition to Modes 2 and 3.

REGULATORY REQUIREMENT:

10 CFR 50 APPENDIX K - ECCS EVALUATION MODELS

10 CFR 50.46 requires in part:

(a)(1) Except as provided in paragraph (a)(2) and (3) of this section, each boiling and pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircaloy cladding shall be provided

with an emergency core cooling system (ECCS) which shall be designed such that its calculated cooling performance following postulated LOCAs conforms to the criteria set forth in paragraph (b) of this section. ECCS cooling performance shall be calculated in accordance with as acceptable evaluation model, and shall be calculated for a number of postulated LOCAs of different sizes, locations, and other properties sufficient to provide assurance that the entire spectrum of postulated LOCAs is covered. Appendix K, ECCS Evaluation Models, sets forth certain required and acceptable features of evaluation models. Conformance with the criteria set forth in paragraph (b) of this section with ECCS cooling performance calculated in accordance with an acceptable evaluation model may require that restrictions be imposed on reactor operation.

Applicability:

Article 50.46 requires that each boiling and pressurized light-water nuclear power reactor fueled with uranium oxide pellets within cylindrical zircaloy cladding be provided with an ECCS and established acceptance criteria for the evaluation of those systems. Due to the non-operating and defueled status of TMI-2 during Modes 2 and 3, the requirements of this article will not be applicable. In order to evaluate ECCS, the conditions for the postulation of accidents scenarios must exist and so must the need for such a system. TMI-2 during Modes 2 and 3 will not have a reactor fueled with uranium oxide pellets within cylindrical zircaloy cladding and the necessity to have and evaluate an ECCS will not exist. Therefore, the requirements of 10 CFR 50.46 and Appendix K will not be applicable during Modes 2 and 3.

Safety Evaluation:

During Modes 2 and 3, a nuclear reactor per se will not exist at TMI-2. Since the presumed conditions of the existence of a nuclear core and the need to cool such a core following a presumed accident will not exist during Modes 2 and 3, the need for an ECCS and the attendant evaluation of such systems in accordance with Appendix K will not exist. Therefore, the lack of ECCS at TMI-2 during Modes 2 and 3 will not be diminished the level of the safety of the facility.

REGULATORY REQUIREMENT:

10 CFR 50 APPENDIX R - FIRE PROTECTION PROGRAM FOR NUCLEAR POWER FACILITIES OPERATING PRIOR TO JANUARY 1, 1979

Introduction:

This appendix applies to licensed nuclear power electric generation stations that were operating prior to January 1, 1979, except to the extent set forth in Article 50.48(b) of this part. With respect to certain generic issues for such facilities, it sets forth fire protection features required to satisfy Criterion 3 of Appendix A to this part.

Criterion 3 of Appendix A to this part specified that "Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions."

When considering the effect of fire, those systems associated with achieving and maintaining safe shutdown conditions assume major importance to safety because damage to them can lead to core damage from loss of coolant through boil off.

The phrases "important to safety" and "safety-related" will be used throughout this Appendix R as applying to all safety functions. The phrase "safe shutdown" will be used throughout this appendix as applying to both hot and cold shutdown functions.

Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of design basis accidents under postfire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of design basis accidents. Three levels of fire damage limits are established according to the safety functions of the structure, system, or component:

Safety Function	Fire Damage Limits
Hot Shutdown	One train of equipment necessary to achieve hot shutdown from either the control room or emergency control station(s) must be maintained free of fire damage by a single fire, including an exposure fire.
Cold Shutdown	Both trains of equipment necessary to achieve cold shutdown may be damaged by a single fire, including an exposure fire, but damage must be limited so that at least one train can be repaired to made operable within 72 hours using on-site capability.
Design Basis	Both trains of equipment necessary for mitigation of consequences following design basis accidents may be damaged by a single exposure fire.

The most stringent fire damage limit shall apply for those systems that fall into more than one category. Redundant systems used to mitigate the consequences of other design basis accidents but not necessary for safe shutdown may be lost to single exposure fire. However, protection shall be provided so that a fire within only one such system will not damage the redundant system. (Text Continues)

Applicability:

Article 50.48 established that each operating power plant shall have a fire protection plan which meets the requirements of Criterion 3 of 10 CFR 50 Appendix A. Due to the non-operating and defueled condition of TMI-2 during Modes 2 and 3, the specific requirements of Article 50.48 will not strictly apply; therefore, the requirements of Appendix R also will not strictly apply. In addition, the NRC has granted TMI-2 an exemption from the schedular requirements of 10 CFR 50.48(c) for 10 CFR 50 Appendix R Sections III.G and III.O (Reference NRC Letter dated May 18, 1984, B. J. Snyder to B. K. Kanga).

Although the specific requirements of Article 50.48 and Appendix R will not be applicable during Modes 2 and 3, it is prudent to consider the consequences of potential fire in various areas of the facility to assure that there would be no unacceptable consequences. For example, the potential for fire should be considered in high radiation areas to assure that there would be no unacceptable effluent releases.

This potential has been considered in the current TMI-2 fire protection plan and capabilities to mitigate the consequences of these fires is provided. The Fire Hazards Analysis which is currently in place will remain subsequent to the completion of defueling and the transition to Modes 2 and 3.

Safety Evaluation:

Since the Fire Protection Plan (FPP) and capabilities in place during Mode 1 (as modified by Technical Specification Change Request No. 57) will remain during Modes 2 and 3, the fact that the Reactor Vessel has been defueled assures that the level of fire protection safety during Modes 2 and 3 will be as good as that which currently exists during Mode 1. The FPP could be modified in accordance with 10 CFR 50.59 requirements as long as no unreviewed safety question exists.