MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

September 14, 1981

NORRIS L. STAMPLEY
SENIOR VICE PRESIDENT

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, D. C. 20555

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station
Units 1 and 2
Docket Nos. 50-416 and 50-417
File No. 0260/L-800.0
Compliance with 10CFR Parts
20, 50 and 100 at Grand Gulf
Nuclear Station
ALCM-81/202

This letter is in response to a request for assurance that Grand Gulf Nuclear Station will be in compliance with all applicable NRC regulations.

Attachment 1 to this letter directs the reader to pertinent sections or subsections of the FSAR, Plant Administrative Procedures, or Technical Specifications wherein regulations of Parts 20, 50 and 100 of 10CFR are addressed. We have limited ourselves to these three parts because of their significance to construction and operations of a nuclear facility in a manner that will ensure the radiological health and safety of the Public and Grand Gulf personnel. As you will see by examining Attachment 1, Middle South Energy, Inc. through its agent Mississippi Power & Light (MP&L), believes that Grand Gulf does comply with the applicable regulations, except in those cases where specific exemptions have been justified and approved by the Staff. We base our confidence in this conclusion on the references in Attachment 1, plus the lengthy review and licensing process that Grand Gulf has undergone. The design process of our architect-engineer, the review of MP&L's own personnel, the quality assurance programs of MP&L and the architect-engineer and NSSS vendor, and the independent review of the NRC Staff all together provide reasonable assurance that the public health and safety will be protected.

Yours truly,

Norris L Stampley

NLS:ad

Attachment

cc: (See Next Page)

B001
S 1/1

cc: Mr. R. B. McGehee (w/o)
Mr. T. B. Conner (w/o)
Mr. G. E. Taylor (w/o)

Mr. Victor Stello, Jr., Director (w/o)
Office of Inspection & Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. James P. O'Reilly, Director (w/o)
Office of Inspection & Enforcement
Region II
Atlanta, Georgia 30303

AFFIDAVIT

STATE OF MISSISSIPPI
COUNTY OF HINDS

N. L. Stampley being duly sworn, states that he is Senior Vice President - Nuclear, of Mississippi Power & Light Company; that he is authorized on the part of said Company to sign and file with the Nuclear Regulatory Commission this document of compliance on behalf of Company, Middle South Energy, Inc. and South Mississippi Electric Power Association; that he signed the foregoing document as Senior Vice President - Nuclear, of Mississippi Power & Light Company; and that the statements made and the matters set forth therein are true and correct to the best of his knowledge, information and belief.

N. L. Stampley

SUBSCRIBED AND SWORN TO before me, a Notary Public, in and for the County and State above named, this 14 day of Sept, 1981.

(SEAL)

Notary Public

My commission expires:

July 23, 1983

Attachment 1

COMPLIANCE OF GRAND GULF 1 WITH THE
NRC REGULATIONS OF 10CFR PARTS 20, 50 and 100

Regulation (10CFR)	Compliance
20.1(a)	This regulation merely states the general purpose for which Part 20 regulations are established and does not impose any independent obligations on licensees.
20.1(b)	The overall purpose of Part 20 regulations, herein described, to control possession, use and transfer of licensed material by any licensee, thereby insuring that the total dose to an individual will not exceed prescribed limits, imposes no independent obligation on licensees.
20.1(c)	Conformance to the ALARA principle, consistant with this regulation, has been insured by the implementation of company policies and appropriate Technical Specifications and Health Physics procedures. Chapter 11 and 12 of the FSAR describe the specific equipment and design features used in this effort.
20.2	This regulation merely establishes the applicability of the Part 20 regulations and imposes no independent obligations on licensees.
20.3	The definitions contained in this regulation are adhered to in all appropriate Technical Specifications and Procedures and in applicable Sections of the FSAR.
20.4	The units of radiation dose specified in this regulation are accepted and conformed to in all applicable station procedures.
20.5	The units of radioactivity specified in this regulation are accepted and conformed to in all applicable station procedures.
20.6	This regulation specifies the procedure for interpretation of regulations by NRC and the General Counsel and imposes no independent obligation on licensees.
20.7	This regulation is merely informative and gives the address to use when corresponding with NRC Headquarters and imposes no independent obligation on licensees.

Regulation (10CFR)	Compliance
20.101	The radiation dose limits specified in this regulation are complied with through implementation of and adherence to administrative policies and controls and appropriate health physics procedures. Conformance is documented by the use of appropriate personnel monitoring devices and the maintenance of all required records. Radiation exposure limits in compliance with this regulation are documented in Administrative Procedure, 01-S-08-3, Section 3.0.
20.102	Permits to exceed the exposure limits delineated in 20.101(a) are limited by the exposure record summarized in the individual's NRC Forms 4 and 5. Appropriate health physics procedures outlined in FSAR Subsection 12.5.3.6 and administrative policies control this process.
20.103(a)	Compliance with this regulation is ensured through the implementation of appropriate health physics procedures relating to air sampling for radioactive materials described in FSAR Subsection 12.5.3.1 and whole body counting and/or bioassay for internal contamination described in FSAR Subsection 12.5.3.6. Administrative policies and controls provide adequate margins of safety for the protection of individuals against intake of radioactive materials.
20.103(b)	Appropriate process and engineering controls and equipment, as described in FSAR Subsections 11.5.1 et seq and 12.3.1 et seq, are installed and operated to maintain levels of airborne activity as low as practical. When necessary, as determined by station administrative guidelines, additional precautionary procedures are used to limit the potential for intake of radioactive materials.
20.103(c)	Plant Administration Procedure, "Respiratory Protection Program", 01-S-08-7, implements the requirements of this regulation by ensuring the proper use of approved respiratory protection equipment. This program incorporates fully the stipulations of Regulatory Guide 8.15, "Acceptable Programs for Respiratory Protection."
20.103(d)	This regulation describes further restrictions which the Commission may impose on licensees. It does not impose any independent obligations on licensees.

Regulation (10CFR)	Compliance
20.103(e)	The notification specified by this regulation will be made, as required at least 30 days prior to the use of respiratory equipment.
20.103(f)	This application applies only to licensees who received authorization allowing use of respiratory equipment prior to December 20, 1976 and is not applicable to GGNS.
20.104	Conformance with this regulation is assured by appropriate company policies regarding employment of individuals under the age of 18 and Administrative Procedure 01-S-08-3, which is the Radiation Protection Manual, Subsection 3.1.1 restricting access to the station restricted areas of persons under the age of eighteen.
20.105(a)	Calculated maximum dose rates to individuals from liquid effluents are listed in FSAR Tables 11.2-11 and 11.2-12; airborne dose rates in FSAR Tables 11.3-11, 11.3-12, 11.3-13, 11.3-14 and 11.3-15; and skyshine in FSAR Table 12.4-9. The summation of dose rates is less than the requirements of this regulation.
20.105(b)	The radiation dose rate limits specified in this regulation are maintained through implementation of the program objective of FSAR Subsection 12.5.1.2, station procedures, Technical Specifications and administrative policies that control the use and transfer of radioactive materials. Appropriate surveys and monitoring devices document this compliance.
20.105(c)	Dose rates to a member of the population found in FSAR Table 11.3-12 and 11.3-13 are within the limits of 40 CFR190 required by this regulation.
20.106(a)	Conformance with the limits specified in this regulation is assured through the implementation of station procedures and applicable Technical Specifications which provide adequate sampling, analysis and monitoring of radioactive materials in effluents prior to and during their release. See FSAR Subsections 11.2.2.6, 11.2.3.1, 11.3.2.2.18 and 11.5 et seq. The level of radioactivity in station effluents is minimized to the extent practical by the use of equipment designed for the purpose as described in Chapter 11 of the FSAR.

Regulation (10CFR)	Compliance
20.106(b) 20.106(c)	MP&L has not and does not currently intend to include in any license or amendment applications proposed limits higher than those specified in 20.106(a).
20.106(d)	Appropriate allowances for dilution and dispersion of radioactive effluents are made in conformance with this regulation and are described in detail in FSAR subsection 11.2.3.2 and in appropriate reports required by Technical Specifications.
20.106(e)	This regulation provides criteria by which the Commission may impose further limitations on releases of radioactive materials made by a licensee. It imposes no independent obligation on licensees.
20.106(f)	This regulation states only that the provisions of 20.106 do not apply to disposal into sanitary sewer systems. It imposes no independent obligation on licensees.
20.106(g)	Effluent releases found in FSAR Tables 11.3-9 and 11.2-10 are within the limits of 40CFR190 as required by this regulation.
20.107	The regulation states only that the Part 20 regulations are not intended to apply to intentional exposure of patients during medical diagnosis or therapy. No independent obligations are imposed on licensees.
20.108	Necessary bioassay equipment and procedures, including whole body counting, are used at the station to determine exposure of individuals to concentrations of radioactive materials. Appropriate health physics procedures and administrative policies implement this requirement.
20.201	The surveys required by this regulation are conducted at adequate frequencies and contain such detail as to be consistent with the radiation hazard being evaluated. When necessary, the Radiation Work Permit System established at the station provides for detailed physical surveys of equipment, structures and work sites to determine appropriate levels of radiation protection as described in FSAR Subsection 12.5.3.1, the station Radiation Protection Manual and applicable health physics procedures require said surveys and provide for their documentation in such manner as to ensure compliance with the regulations of 10CFR 20.

Regulation (10CFR)	Compliance
20.202(a)	FSAR Subsection 12.5.2.2.3, Administrative Procedure 01-S-08-3, which is the station Radiation Protection Manual, and health physics procedures set forth policies and practices that ensure all invividuals are supplied with and required to use, personnel monitoring equipment. The Radiation Work Permit System is established to provide additional control of personnel working in radiation areas and to ensure that the level of protection afforded these individuals is adequate for radiological hazards encountered.
20.202(b)	Station policy concerning the labeling of radiation zones delineated in FSAR subsection 12.3.1.2 is even more conservative than the requirements of this regulation.
20.203(a)	All materials used for labeling, posting or otherwise designating radiation hazards and/or radioactive materials, and using the radiation symbol, conform to the conventional design prescribed in this regulation.
20.203(b)	Control over ingress to and egress from high radiation areas required by this regulation is documented in Administration Procedure 01-S-08-3 Subsections 5.3.3 and 5.3.5.
20.203(c)	This regulation pertaining to cautions, labels, signals and controls for access to radiation areas is complied with by the guidelines of Administrative Procedure, 01-S-08-3, Section 5. The interlock requirements in (c)(6) of this regulation are not applicable to GGNS as sources having a radiation level greater than 500 rem at one meter are situated or used only as exempted in footnote 1 of this sub-regulation, as they are either always physically inaccessable to any individual and cannot create high levels of radiation in an area that is accessable to any individual, or, as in the case, of in-core neutron sources, are handled under scrict administrative controls with all transfers under water and health physics personnel monitoring all transfers.
20.203(d)	This regulation pertaining to the posting of areas having airborne activity is complied with by the guidelines of Administrative Procedure 01-S-08-3, the Radiation Protection Manual, Section 7.
20.203(e)	Compliance with this regulation concerning handling and storage of radioactive materials is documented in Administrative Procedure 01-S-08-3, Section 11.

Regulation (10CFR)	Compliance
20.203(f)	Compliance with this regulation pertaining to containers of licensed material may be found in Administrative Procedure 01-S-08-3, Section 11.
20.204	The post requirement exceptions described in this regulation are used where appropriate and necessary at the station. Adequate controls are provided within the station health physics procedures to ensure safe and proper application of these exceptions.
20.205	Procedures for receipt of licensed material, shipped to the facility, that are in compliance with this regulation are found in Administrative Procedure 01-S-09-2, Paragraph 6.6. Reporting requirements when excessive surface contamination is discovered on packages is delineated in Administrative Procedure 08-S-02-30.
20.206	Compliance with regulation 19.12, referenced in this regulation, is ensured by the periodic training of employees in Radiation Protection Administrative Procedure 01-S-08-2 and in Health Physics Procedures promulgated in the Radiation Protection Manual 01-S-08-3 and Subsection 12.5 FSAR.
20.207	Storage and control requirements for licensed materials in unrestricted areas are met by the provisions of Administrative Procedure 01-S-08-6.
20.301	Releases of gaseous and liquid wastes, limited by FSAR Subsections 11.2 and 11.3, and offsite shipments of radwaste governed by provisions of Systems Operations Procedures 04-S-05-4 are in compliance with this regulation.
20.302	No such application for proposed disposal procedure in a manner not otherwise authorized in 10CFR, Chapter I, has been made or is currently contemplated by MP&L.
20.303	The station does not contemplate disposal of radioactive waste into sanitary sewer systems.
20.305	The station does not contemplate disposal of radioactive waste by inceneration at present and would obtain NRC authorization prior to such disposal.
20.306	This regulation permits the disposal of small quantities of tritium or carbon if used in liquid scintillation counting or animal experimentation. Waste from liquid scintillation will be added to radwaste and disposed of under the quidelines of other regulations of this part. Grand Gulf does not propose to engage in animal experimentation.

Regulation (10CFR)	Compliance
20.401	Procedures for monitoring and keeping exposure records of personnel in compliance with this regulation are found in Administrative Procedure 01-S-08-4.
20.402	Notification of loss or theft of licensed material required in this regulation is provided for in Administrative Procedure 01-S-06-9, Attachment IV.
20.403	Notification of incidents described in this regulation is provided for in Administrative Procedure 01-S-06-5.
20.405	Written reports of overexposure of individuals or excessive levels or concentrations of radioactivity as required in this regulation are provided for in Administrative Procedure 01-S-06-9, Attachment IV, and Nuclear Services Administrative Procedures.
20.407	Routine personnel exposure and monitoring reports required in this regulation are provided for in Administrative Procedure 01-S-06-9, Attachment III, Page 1, and in Subsection 6.9.1.4 of the Technical Specifications.
20.408	Exposure records of terminated employees required in this regulation are provided for in Administrative Procedure 01-S-06-9, Attachment IV.
20.409	Compliance with this regulation concerning notification of exposure to individuals is required as found in Administrative Procedure 01-S-08-4, Section 6.9.4.
20.501	This regulation provides for the granting of exemptions from 10CFR Part 20 regulations, providing such exemptions are authorized by law and will not result in undue hazard to life or property. It imposes no independent obligations on licensees.
20.502	This regulation describes the means by which the Commission may impose upon any licensee requirements which are in addition to the regulations of Part 20. It imposes no independent obligations on licensees.
20.601	This regulation describes the remedies which the Commission may obtain in order to enforce its regulations, and sets forth those penalties or punishments which may be imposed for violations of its rules. It imposes no independent obligations on licensees.

Regulation (10CFR)	Compliance
50.1	This regulation merely states the purpose of the Part 50 regulations and does not impose any independent obligations on licensees.
50.2	This regulation defines various terms and does not impose independent obligations on licensees.
50.3	This regulation governs the interpretation of the regulations by the NRC and does not impose independent obligations on licensees.
50.4	This regulation gives the address of the NRC and does not impose independent obligations on licensees.
50.10	These regulations specify the types of activities relative to construction of a production or utilization facility, that may not be undertaken without a license from the NRC. MP&L does not propose to conduct any such activities at Grand Gulf Nuclear Station, Unit 1, without an NRC license.
50.11	This regulation applies to exemptions for Government Agencies and contractors acting on behalf of Government Agencies and is not applicable to Grand Gulf.
50.12	This regulation provides for the granting of exemptions from 10 CFR Part 50 regulations, provided such exemptions are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest. It does not impose independent obligations on licensees.
50.13	This regulation states that a license applicant need not design against acts of war. It imposes no independent obligations on licensees.
50.20 50.21 50.22 50.23	These regulations merely describe the types of licenses that the NRC issues. They do not address the substantive requirements that an applicant must satisfy to qualify for such licenses.
50.30	This regulation sets forth procedural requirements for the filing of license applications, such as the place of filing, oath or affirmation, number of copies of the application, filing fees, and requirement for an environmental report. The procedural requirements of this regulation have been met in the license application and will continue to be met for subsequent amendments to the license application.

Regulation (10CFR)	Compliance
50.31 50.32	These regulations merely permit more efficient organization of the license application and impose no independent obligations on licensees.
50.33	This regulation requires the license application to contain certain general information, such as an identification of the applicant, information about the applicant's financial qualifications, and a list of regulatory agencies with jurisdiction over the applicant's rates and services. This information is provided in the operating license application. The emergency response plans of state and local government entities are included in the Supporting Emergency Response Plan binder supplemental to the Grand Gulf Station, Units 1 and 2 Emergency Plan submitted to the NRC.
50.33a	This regulation requires applicants for construction permits to submit information required for the antitrust review. The requirements set forth by this regulation were satisfied at the time the application for a construction permit was submitted.
50.34(a)	This regulation sets forth requirements which govern the content of technical information in the Preliminary Safety Analysis Report and is relevant to the construction permit stage. The requirements of this regulation were satisfied as part of the construction permit application.
50.34(b)	A Final Safety Analysis Report (FSAR) has been prepared and submitted, which addresses in the chapters indicated the information required: 1. Site evaluation factors - Chapter 2. 2. Structures, systems, and components - Chapters 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12. 3. Radioactive effluents and radiation protection - Chapters 11 and 12. 4. Design and performance evaluation - ECCS performance is discussed and shown to meet the requirements of 10 CFR 50.46 in Chapters 6 and 15. 5. Results of research program - Chapter 1, Section 1.5.

Regulation (10CFR)	Compliance
	6. Facility Operation
	i. Organizational Structure - Chapter 13.
	ii. Managerial and Administrative Controls - Chapters 13 and 17. Chapter 17 discusses compliance with the quality assurance requirements of 10 CFR 50, Appendix B.
	iii. Plans for preoperational testing and initial operations - Chapter 14.
	iv. Plans for conduct of normal operations - Chapters 13 and 17. Surveillance and periodic testing is specified in the Technical Specifications.
	v. Plans for coping with emergencies - Chapter 13.
	vi. Technical Specifications - Chapter 16.
	vii. Not applicable, since the operating license application was filed prior to February 5, 1979.
	7. Technical Qualifications - Chapter 13.
	8. A continuing requalification program for licensed operators and senior operators as required by this regulation, in accordance with 10CFR 55 Appendix A is documented in subsection 13.2.2.
50.34(c)	A Plant Security Plan that complies with the requirements of this section; Paragraph 2.790(d) of 10 CFR Part 2, "Rules of Practice"; applicable sections of 10 CFR 73, "Physical Protection of Plants and Materials"; and Regulatory Guide 1.17, "Protection of Nuclear Power Plants Against Industrial Sabotage," will be implemented as documented in the Security Plan transmitted with AECM-80/236 on October 1, 1980.
50.34(d)	The Safeguards Contingency Plan for Grand Gulf Nuclear Power Station, Report No. G. 6007.00.40, complies with this regulation and Appendix C, Part 73 of Chapter 10.
50.34a	This regulation sets forth the requirements for including in the construction permit application a description of the design objectives and the preliminary design of equipment to control the release of radioactive material in nuclear power reactor effluents. The requirements of this regulation were satisfied as part of the construction permit application.

Regulation (10CFR)	Compliance
50.35	This regulation is relevant to the construction permit stage rather than the operating license stage.
50.36	Technical Specifications have been prepared and submitted to the NRC for review. Items discussed include (1) safety limits and limiting safety settings, (2) limiting conditions for operation, (3) surveillance requirements, (4) design features, and (5) administrative controls.
50.36a	Radiological Effluent Technical Specifications (RETS) have been submitted to NRC prior to implementation by Grand Gulf, as required by this regulation.
50.37	This regulation requires the applicant to agree to limit access to restricted data. MP&L's agreement to do so is on page 10 of the operating license application.
50.38	This regulation prohibits the NRC from issuing a license to any person who is a citizen, national, or agent of a foreign country or any corporation or other entity which is owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. The Grand Gulf applicants are eligible to apply for and obtain a license as stated on page 10 in the operating license application. Therefore, the requirements of this regulation are not applicable.
50.39	This regulation provides that applications and related documents may be made available for public inspection. This imposes no direct obligations on applicants and licensees.
50.40	This regulation provides considerations to "guide" the Commission in granting licensees, as follow:
50.40(a)	The design and operation of the facility is to provide reasonable assurance that the applicant will comply with NRC regulations, including those in 10 CFR Part 20, and that the health and safety of the public will not be endangered. The basis for MP&L's assurance that the regulations will be met and the public protected is contained in this document, in the license application, and in the related correspondence over the years. Moreover, the lengthy process by which the plant is designed, constructed, and reviewed, including reviews by the architect-engineer, the NSSS vendor, MP&L's own staff, and the NRC Staff, provides a great deal of assurance that the public health and safety will not be endangered.
50.40(b)	This section requires that the applicant be both technically and financially qualified to engage in the proposed activities as specified in the license application. The level of technical and financial adequacy of MP&L will be determined during the operating license review.

Regulation (10CFR)	Compliance
50.40(c)	Another consideration is that the issuance of the license is not to be inimical to the common defense and security or to the health and safety of the public. The individual showings of compliance with particular regulations contained in this document, as well as the contents of the FSAR and related correspondence over the years, plus the lengthy process of design, construction, and review by MP&L, the architect-engineer, the NSSS vendor, and the staff of NRC, ensure that the license will not be inimical to the health and safety of the public. As for the common defense and security, there is considerable assurance that the license will not be inimical in that all directors and principal officers of MP&L are U.S. citizens, MP&L is not owned, dominated, or controlled by an alien, a foreign corporation, or a foreign government, and MP&L has agreed to safeguard all restricted data. Moreover, the NRC Staff and ACRS reached the same conclusion in the construction permit SER.
50.40(d)	The requirements set forth in this regulation have been satisfied by the Environmental Reports submitted in accordance with 10 CFR Part 51 as part of the operating license application.
50.41	This regulation applies to Class 104 licensees, such as those for devices used in medical therapy. The applicants have not applied for a Class 104 license; therefore, 50.41 is not applicable.
50.42	This regulation requires the Commission to consider additional standards in determining whether or not a Class 103 license should be issued, i.e., (1) that the proposed activities (electric power generator) will serve a useful purpose proportionate to the quantities of special nuclear material or source material to be utilized and (2) that due account will be taken of the antitrust advice provided by the Attorney General under Subsection 105C of the Atomic Energy Act. Information pertinent to these standards was made known to the Commission at the construction permit stage (1) by the licensing board verification of the need for power and (2) by the Attorney General's satisfactory review of the antitrust information.
50.43	This regulation imposes certain duties on the NRC and addresses the applicability of the Federal Power Act and the right of government agencies to obtain NRC licensees. It imposes no direct obligations on licensees.

Regulation (10CFR)	Compliance
50.44	The Grand Gulf combustible gas control system is described in FSAR Section 6.2.5. The system is designed to maintain the hydrogen concentrations in the drywell and the containment following a LOCA at a safe level, as specified in 10 CFR 50.44(e). The system consists of four hydrogen analyzers (two sensing the drywell and two sensing the containment), a drywell purge system, two 100 percent capacity recombiners, and a backup containment purge system. Subsection 6.2.5.3.2 of the FSAR indicates that the recombiners can be placed into operation in sufficient time to maintain the hydrogen concentration following a LOCA below the 4 percent lower hydrogen flammability limit. In accordance with 50.44(d), the hydrogen contribution of the core metal-water reaction is assumed to be 5 times the amount calculated in demonstrating compliance with 10 CFR 50.46(b)(3) for a total of 0.8 percent of the fuel cladding.
50.45	This regulation provides standards for construction permits rather than operating licenses and is therefore not pertinent to this operating license proceeding.
50.46	FSAR Section 6.3 describes the Emergency Core Cooling System and the methods used to analyze ECCS performance following a LOCA. The results of the LOCA analysis show (a) the calculated maximum fuel clad temperature would not exceed 2200°F as documented in FSAR Subsections 6.3.3.7.3. et sec and Table 6.3-6; (b) the calculated total local oxidation of the cladding shall nowhere exceed 17% of the cladding thickness as documented in FSAR Figure 6.3-8, Table 6.3-6 and Table 6.3-3; (c) the calculated total amount of hydrogen generated from a cladding-water reaction shall not exceed 1% of the hydrogen that would be generated if all the cladding, excluding that surrounding the plenum volume, were to have reacted as documented in FSAR Table 6.3-3; (4) calculated changes in core geometry shall be such that the core remains amenable to cooling and (5) calculated core temperature shall be maintained at an acceptably low value for an extended period; (4) and (5) have been demonstrated generically in FSAR Subsection 6.3.6 reference 2.
50.47	This regulation states that an operating license will not be issued unless the NRC finds that the state of onsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. This regulation also describes the standards the emergency response plans must meet. The GGNS final emergency response plan does meet these standards and has been submitted as an amendment to the operating license application.

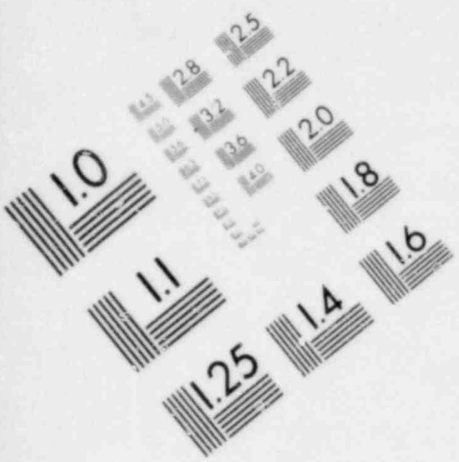
Regulation (10CFR)	Compliance
50.48	Compliance with this regulation requiring a fire protection plan compatible with criterion 3 of Appendix A of this Part may be found in FSAR Appendices 9A and 9B.
50.50	This regulation provides that the NRC will issue a license upon determining that the application meets the standards and requirements of the Atomic Energy Act and regulations, and that the necessary notifications to other agencies or bodies have been duly made. It imposes no direct obligations on licensees.
50.51	This regulation specifies the maximum duration of licenses. No independent obligation is imposed on licensees.
50.52	This regulation provides for the combining in a single license of a number of activities. It imposes no independent obligation on the license.
50.53	This regulation provides that licenses are not to be issued for activities that are not under or within the jurisdiction of the United States. The operation of Grand Gulf will be within the United States and subject to the jurisdiction of the United States, as is evident from the facility description in the operating license application.
50.54	This regulation specifies certain conditions that are incorporated in every license issued. Compliance is effected by including these conditions in the issued license.
50.55	This regulation addresses conditions of construction permits and is therefore not applicable to this operating license proceeding with the exception of the 50.55(e) reports that are processed according to procedures listed in Quality Assurance Procedure 16.20.
50.55a(a)(1)	FSAR Table 3.2-1 details the quality standards to which various structures, systems, and components are designed, fabricated, erected, constructed, tested, and inspected. Various chapters of the FSAR also address these areas as they apply to particular structures, systems, or components.
50.55a(a)(2)	This paragraph is a general paragraph leading into paragraphs (c) through (i) of the regulation.
50.55a(b)(1) 50.55a(b)(2)	These paragraphs provide guidance concerning the approved Edition and Addenda of Sections III and XI of the ASME B&PV Code.

Regulation (10CFR)	Compliance
50.55a(c)	Design and fabrication of the reactor vessel was carried out in accordance with ASME Section III, 1971 Edition, up to and including the Winter 1972 addenda. Compliance with this regulation is formulated in FSAR Subsections 5.2.1.2 and 5.3.3.1.1.1.
50.55a(d)	Reactor coolant pressure boundary piping meets the requirements of ASME Section III, 1971 Edition, up to and including the Winter 1972 addenda. See Subsection 5.2.1.2 of the FSAR.
50.55a(e)	Reactor coolant pressure boundary pumps meet the requirements of ASME Section III, 1971 Edition, up to and including the Winter 1972 addenda. See Subsection 5.2.1.2 of the FSAR.
50.55a(f)	Reactor coolant pressure boundary valves comply with the requirements found in ASME Section III, 1971 Edition, up to and including the Winter 1972 addenda. See Subsection 5.2.1.2 of the FSAR.
50.55a(g)	Inservice Inspection (ISI) requirements delineated in this regulation are found in Subsection 4.0.5 of the Unit 1 Technical Specifications except as specific written relief has been granted by the Commission pursuant to Section 50.55 a (g) (6) (1) of this Chapter. Exemptions were requested in letters to NRC on October 2, 1980, AECM-80/238; on April 6, 1981, AECM-81/131; on April 6, 1981, AECM-81/132; and on September 3, AECM-81/334.
50.55a(h)	As discussed in FSAR Subsection 7.1 and summarized in Table 7.1-3, the protection systems meet the requirements of IEEE 279-1971.
50.55a(i)	Fracture toughness requirements are set forth in Appendices G and H of 10 CFR 50. Section 5.3 of the FSAR details vessel material specifications. Fracture toughness surveillance procedures are delineated in FSAR Subsections 5.3.1.5 et seq.
50.56	This regulation provides that the Commission will, in the absence of good cause shown to the contrary, issue an operating license upon completion of a facility in compliance with the terms and conditions of the construction permit. This imposes no independent obligations on the applicant.
50.57(a)	This regulation requires the Commission to make certain findings prior to the issuance of an operating license.
50.57(b)	The license, as issued, will contain appropriate conditions to ensure that items of construction or modification are completed on a schedule acceptable to the Commission.

Regulat' (10C	Compliance
50.[illegible](c)	This regulation provides for a low-power testing license, where a hearing is held in connection with a pending proceeding.
50.58	This regulation provides for the review and report of the Advisory Committee on Reactor Safeguards.
50.59	This regulation provides for the licensing of certain changes, tests, and experiments at a licensed facility. Technical Specifications and procedures provide implementation of this regulation.
50.70	The Commission has assigned a resident inspector to the Grand Gulf Nuclear Station. Space has been provided in accordance with 50.70(b), (1) through (3).
50.71	Records are and will be maintained in accordance with the requirements of sections (a), (c) and (d) of this regulation as specified in Unit 1 Technical Specifications Subsection 6.10. In addition, the requirements of section (e) for periodic updating of the FSAR will be implemented and annual financial reports will be issued as required by section (b).
50.72	This regulation requires the licensee to notify the NRC Operations Center as soon as possible and in all cases within one hour by telephone of the occurrance of any of the events described in items (1) through (12) of section (a). MP&L will comply with this requirement as specified in Administrative Procedure 01-S-06-5, Reportable Events.
50.78	This regulation requires construction permit holders to permit, if requested by the Commission, verification of installation information by the International Atomic Energy Agency. MP&L has not received such a request but will comply if such a request is received.
50.80	This regulation provides that licenses may not be transferred without NRC consent. No application for transfer of a license has been made by Grand Gulf.
50.81	This regulation permits the creation of mortgages, pledges, and liens on licensed facilities, subject to certain provisions. The regulation prohibits secured creditors from violating the Atomic Energy Act and the Commission's regulations. To the best of MP&L's knowledge, none of MP&L's creditors has attempted to violate the applicable provisions of law.

Regulation (10CFR)	Compliance
50.82	This regulation provides for applications for termination of license. It does not apply to Grand Gulf because no termination of a license has been requested.
50.90	This regulation governs applications for amendments to licenses. Future requests for license amendments will be made in accordance with these requirements.
50.91	This regulation provides guidance to the NRC in issuing license amendments.
50.100 50.101 50.102 50.103	These regulations govern the revocation, suspension, and modification of licenses by the Commission under unusual circumstances. No such circumstances are present in the Grand Gulf proceeding, and these regulations are not applicable.
50.109	This regulation specifies the conditions under which the NRC may require the backfitting of a facility. It imposes no independent obligations on a licensee unless the NRC proposes a backfitting requirement; therefore, this regulation is not applicable.
50.110	This regulation discloses the remedies the commission may seek in the event of a violation by a licensee. It imposes no independent obligation on licensees.
Appendix A	
GDC 1	Structures, systems, and components important to safety are listed in Table 3.2-1 of the FSAR. Codes and standards utilized for the unit are specified throughout the FSAR. Chapter 17 describes the quality assurance program and the provisions for maintenance of records.
GDC 2	FSAR Subsection 3.1.2.1.2 addresses the design considerations for natural phenomena, which are described in detail in Chapters 2 and 3. Appropriate considerations have been made in the design basis for historical data, combined effects of normal and accident conditions with the effects of natural phenomena, and the importance of the safety functions to be performed.
GDC 3	FSAR Subsection 3.1.2.1.3 describes, in general, the measures which have been taken to minimize the probability and effects of fires and explosions. FSAR Subsection 9.5.1 and Appendices 9A and 9B describe the fire protection systems and programs in detail. An evaluation of the Grand Gulf design with respect to the requirements of BTP-APCSSB 9.5-1, Appendix A, is provided in FSAR Table 9A-1. See discussion of Appendix R below.

Regulation (10CFR)	Compliance
GDC 4	Structures, systems, and components important to safety have been designed to accommodate the effects of and be compatible with the environmental conditions associated with all modes of operation and postulated accidents. FSAR Sections 3.5 and 3.6 provide information concerning the specific design features for protection against missiles, jet impingement and pipe rupture. Section 3.11 describes the provisions for qualification of equipment for all postulated environments. In addition, a review of qualification of all safety-related electrical equipment, in a harsh environment, against the criteria in NUREG-0588 has been submitted to NRC on July 1, 1981.
GDC 5	Those structures, systems, and components which will be shared with Unit 2 are detailed in FSAR Subsection 3.1.2.1.5. It is concluded that safety functions are not significantly impaired by such sharing.
GDC 10	FSAR Subsection 3.1.2.2.1 indicates that the reactor core and associated systems are designed to function throughout the design lifetime without exceeding fuel damage limits, using protection criteria specified in FSAR Chapters 4, 5 and 15.
GDC 11	FSAR Subsection 3.1.2.2.2 indicates that prompt compensatory reactivity feedback effects are assured by unit design and operational limit considerations. The inherent core reactivity control methods are described in FSAR Sections 4.3 and 4.4.
GDC 12	FSAR Subsection 3.1.2.2.3 describes the inherent and design features which eliminate or limit the various types of oscillations. Further descriptions are in FSAR Sections 4.3, 4.4, and 7.7, and Chapter 15.
GDC 13	As indicated in FSAR Subsection 3.1.2.2.4, and described in more detail in Chapter 7, instrumentation and control systems have been provided to monitor and maintain plant variables, including those variables which affect the fission process, integrity of the reactor core, the reactor coolant pressure boundary, and the containment, over their prescribed ranges for normal operations, anticipated occurrences, and under accident conditions.



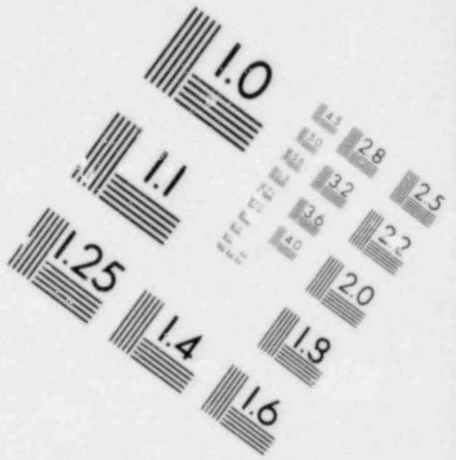
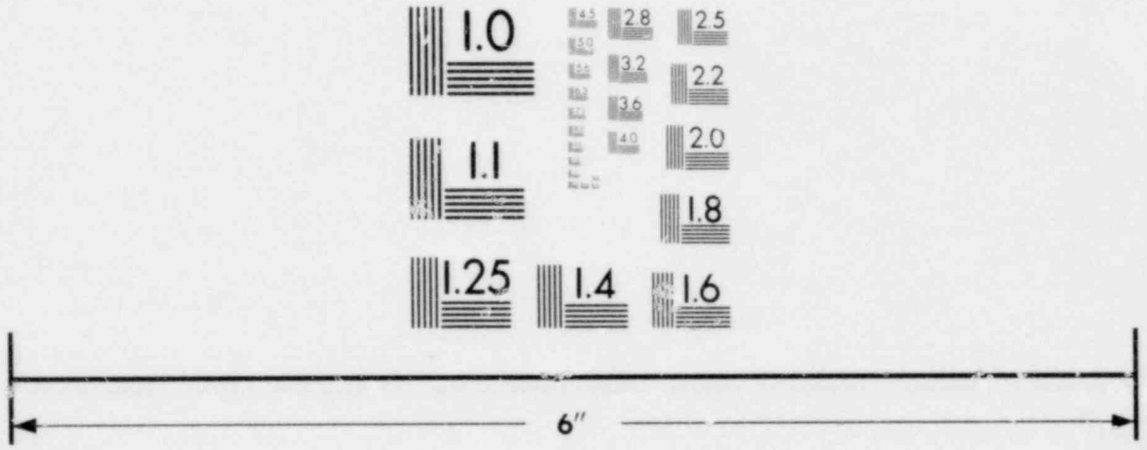
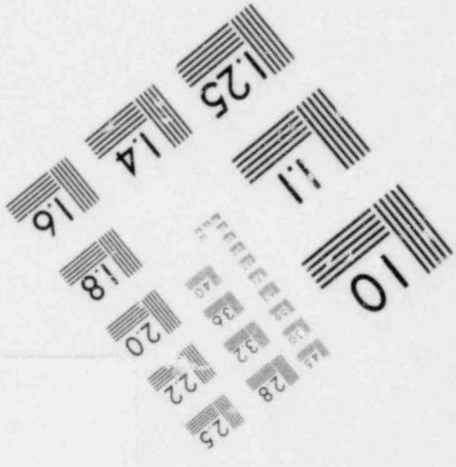
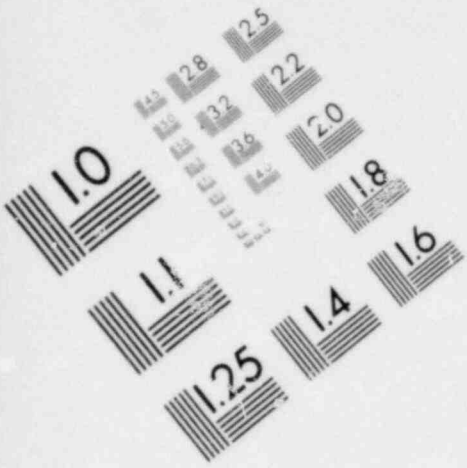


IMAGE EVALUATION
TEST TARGET (MT-3)







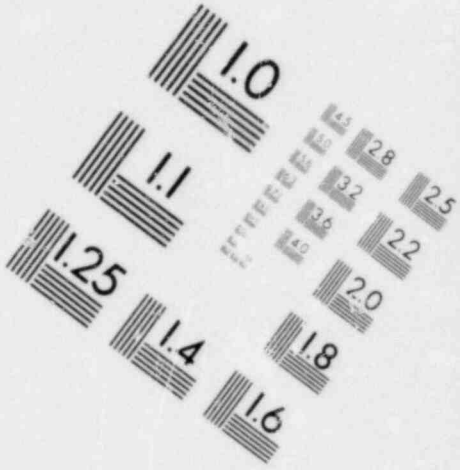
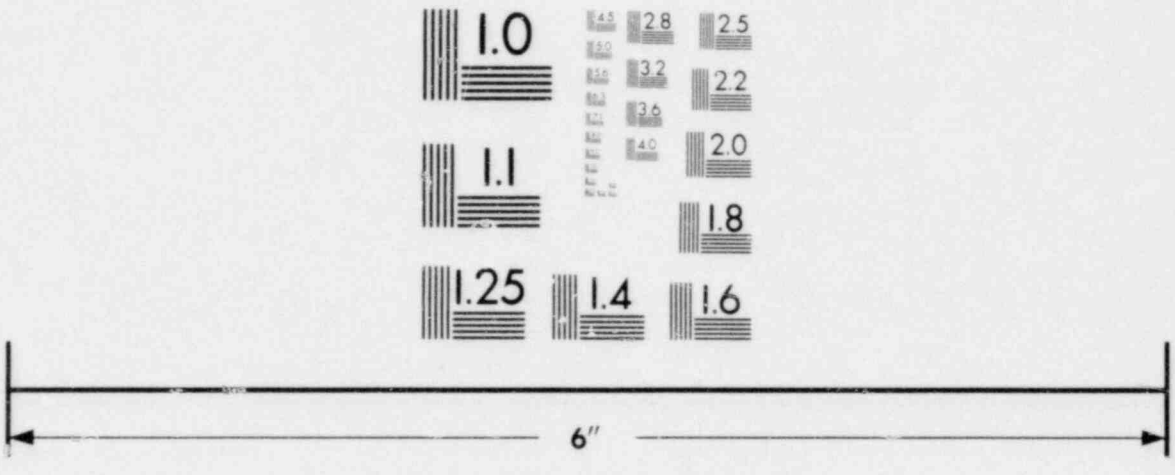
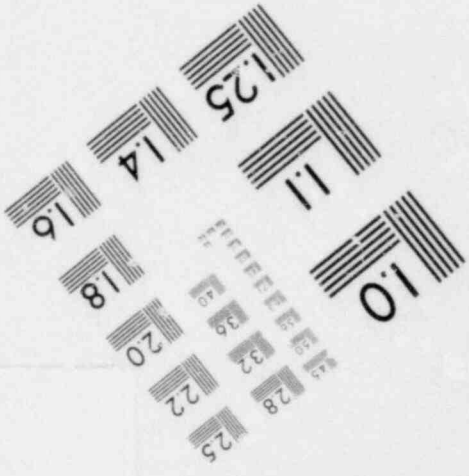


IMAGE EVALUATION
TEST TARGET (MT-3)





Regulation (10CFR)	Compliance
GDC 14	FSAR Subsection 3.1.2.2.5 indicates that the reactor coolant pressure boundary has been designed to accommodate the system temperatures and pressures attained under all expected operational modes and anticipated transients, and to maintain stresses within acceptable limits. Design criteria and methods are described in FSAR Chapter 3 and Section 1.2, 5.2, 5.3, and 5.4.
GDC 15	As indicated in FSAR Subsection 3.1.2.2.6, the reactor coolant system and associated auxiliary, control and protection systems are designed to ensure the integrity of the reactor coolant pressure boundary with adequate margins during normal operations and anticipated transients. The design codes used for the reactor coolant system are described in FSAR Chapter 3. Details concerning the protection system are provided in FSAR Section 7.2.
GDC 16	As described in FSAR Subsection 3.8.1 and Chapter 6, the primary containment is a concrete, steel-lined structure. It is designed to sustain, without loss of required integrity, all effects of gross equipment failures, up to and including the rupture of the largest pipe in the reactor coolant system. As such it is the major barrier to uncontrolled release of radioactivity after an accident. Any radiation which leaves the primary containment is collected and filtered by the Standby Gas Treatment System in the secondary containment, which is composed of the enclosure building and the auxiliary building. The containment and its associated engineered safety features thus meet the required functional capability with this criterion.
GDC 17	As described in FSAR Subsection 3.1.2.2.8, onsite and offsite power systems are provided which can independently supply the electric power required for the operation of safety-related systems. This capability is maintained even with the failure of any single active component in either system. FSAR Chapter 8 provides the design details of the power systems and their compliance with this criterion.
GDC 18	As described in FSAR Subsection 3.1.2.2.9 and Sections 8.1, 8.2, and 8.3, the redundant electric power systems important to safety are continuously monitored and energized during normal plant operation from redundant offsite power sources. Redundant onsite diesel generators provide automatic backup power sources. Periodic tests of the diesel generators, the transfer system and the DC system will be made, as required by the Technical Specifications.

Regulation (10CFR)	Compliance
GDC 19	The main control room, as indicated in FSAR Subsection 3.1.2.2.10, contains the controls and instrumentation necessary for safe operation of the unit during normal and accident conditions. Sufficient shielding, distance, structural integrity, and ventilation systems are provided to ensure that control room personnel will not receive more than 5 rem whole body or 30 rem thyroid from occupancy of the control room for eight hours per day for 30 days. In the event that access to the main control room is restricted, remote shutdown panels have been provided, within the protected envelope, which may be used to bring the plant to a cold shutdown condition as discussed in FSAR Subsection 7.4.1.4.
GDC 20	FSAR Subsection 3.1.2.3.1 discusses the design criteria for the protection system and engineered safety features actuation, to ensure that the requirements of this criterion are met. Further details are supplied in FSAR Sections 4.6, 5.2, 6.3, 7.2, and 7.6
GDC 21	As indicated FSAR Subsection 3.1.2.3.2, the protection system is designed for the high functional reliability commensurate with the safety functions to be performed. FSAR Sections 4.6, 6.2, 6.3, 7.2, and 7.3 and Subsections 5.4.5 and 5.4.7 further describe the design features provided to ensure redundancy and testability.
GDC 22	FSAR Subsection 3.1.2.3.3 indicates that the protection system meets the design requirements for functional and physical independence as required by this criterion. Further details are specified in FSAR Sections 6.3, 7.2 and 7.3 and Subsections 5.4.5 and 5.4.7.
GDC 23	As indicated in FSAR Subsection 3.1.2.3.4, the protection system is designed to fail into a safe state. Further details are supplied in FSAR Sections 6.3, 7.2 and 7.3
GDC 24	FSAR Subsection 3.1.2.3.5 discusses separation of the protection and control systems, such that the failure of any single control system component or channel or the failure or removal from service of any protection system component or channel which is common to the protection and control systems, leaves intact a system satisfying all redundancy, reliability, and independence requirements of the protection system. Details concerning separation of protection and control systems are provided in FSAR Sections 4.6, 6.3, 7.2, 7.3, and 7.6.

Regulation (10CFR)	Compliance
GDC 25	FSAR Subsection 3.1.2.3.6 indicates that the protection system has been designed to assure that specified acceptable fuel design limits are not exceeded in the event of any single reactivity control system malfunction. Further details are provided in FSAR Sections 4.3, 4.4, 4.6, 7.2 and 7.7.
GDC 26	As indicated in FSAR Subsection 3.1.2.3.7, two independent reactivity control systems of different design principles are provided. One of the systems uses control rod assemblies; the second system effects reactivity changes by using the reactor coolant recirculation system to vary reactor coolant flow. Reactivity control system redundancy and capability are described further in FSAR Section 4.6, 7.7.1.2 and 7.7.1.3.
GDC 27	As described in FSAR Subsection 3.1.2.3.8, means are provided for shutdown reactivity for cooling the core under any anticipated condition and with appropriate margin for contingencies. The control rods, even assuming that the control rod of highest worth does not insert, are still capable of keeping the core subcritical. However, if subcriticality cannot be maintained, the Standby Liquid Control System will insert soluble boron into the core. These methods of reactivity control are discussed further in FSAR Sections 4.3, 4.4, 4.6, 7.2, and Subsection 7.4.1.2.
GDC 28	FSAR Subsection 3.1.2.3.9 indicates that core reactivity is controlled by control rod assemblies. The maximum reactivity insertion rates due to control rod withdrawal are limited. The maximum worth of control rods and the maximum rates of reactivity insertion using control rods are limited to values which prevent rupture of the coolant pressure boundary or disruption of the core internals to a degree which would impair core cooling capacity. Further details are provided in FSAR Sections 4.2, 4.3, 4.6, 5.2, and 5.3 and Subsections 3.9.4, 5.4.4, and 5.4.5.
GDC 29	As indicated in FSAR Subsection 3.1.2.3.10, the protection and reactivity control systems are designed to assure extremely high probability of performing their required safety functions in the event of anticipated operational occurrences. Further discussion of these systems is contained in FSAR Sections 6.2, 6.3, and 7.3 and Subsections 5.4.5, 5.4.7 and 7.2.3.1.

Regulation (10CFR)	Compliance
GDC 30	As described in FSAR Subsection 3.1.2.4.1, reactor coolant pressure boundary components are designed, fabricated, inspected and tested in accordance with recognized industry codes and standards. These codes and standards are detailed in FSAR Chapter 5. Means provided for detecting small reactor coolant leaks are temperature changes, increased frequency of sump pump operation, and measuring of fission product concentration in the containment atmosphere. In addition to these means of detection, large leaks are detected by changes in process line flow rates and changes in reactor water level. Further details are contained in FSAR Sections 5.2, 5.3, 5.4, 7.6, and 7.7.
GDC 31	As indicated in FSAR Subsection 3.1.2.4.2, brittle fracture control of pressure-retaining ferritic materials has been provided to ensure protection against non-ductile fracture of the reactor coolant pressure boundary. The Reactor Pressure Vessel (RPV) has been designed to meet the requirements of ASME Code, Section III, Appendix G, which considers material properties, steady-state and transient stresses, and the size of flaws. The nil-ductility transition (NDT) temperature shifts due to irradiation have been accounted for in the operational limitations set for reactor operation. Operating procedures and Technical Specifications ensure that these pressure-temperature limits are not exceeded. Further details can be found in FSAR Chapter 3 and Section 5.2.
GDC 32	FSAR Subsection 5.2.4 describes how the design of the reactor vessel and its arrangement in the system provides the capability for accessibility during service life to the entire internal and external surfaces of the vessel. The reactor arrangement within the drywell provides sufficient space for inspection of the external surfaces of the reactor coolant piping, except for the area of pipe within the drywell shield wall. FSAR Subsection 5.2.4.3 et sec describes examination techniques and procedures. Otherwise, inaccessable areas will be inspected remotely by ultrasonic transducers as described in FSAR Subsection 5.2.4.3.1. Surveillance specimens of the reactor vessel weld, heat-affected zone, and base materials will be encapsulated and installed in the reactor vessel to enable periodic monitoring of material properties with exposure in accordance with Appendix H of 10 CFR 50. Further details are contained in FSAR Section 3.9 and Subsections 5.2.4 and 5.3.1.6.

Regulation (10CFR)	Compliance
GDC 33	As indicated in FSAR Subsection 3.1.2.4.4, the plant is designed to provide ample reactor coolant makeup for protection against small leaks in the reactor coolant pressure boundary for anticipated operational occurrences and postulated accident conditions. Details of the system design are provided in FSAR Sections 5.2, 5.4, and 6.3 and details of the electrical power systems that insure the availability of onsite power are given in Sections 8.2 and 8.3.
GDC 34	FSAR Subsection 3.1.2.4.5 indicates that the Residual Heat Remmoval (RHR) System provides the means to remove decay heat and residual heat so that refueling and nuclear system servicing can be performed and to condense steam so that decay heat and residual heat may be removed if the normal heat sink is unavailable. Redundancy is provided by two independent, separated loops of heat exchangers, main system pumps, service water pumps, and associated valves, piping, and controls and instrumentation. The RHR System is able to operate on either onsite or offsite electrical power. Further details of the system are provided in FSAR Section 6.3, 8.3, and 9.2 and Subsection 5.4.7.
GDC 35	FSAR Subsection 3.1.2.4.6 describes the systems which comprise the Emergency Core Cooling Systems (ECCS). These systems are: (1) the High Pressure Core Spray (HPCS) System, (2) the Automatic Depressurization System (ADS), (3) the Low Pressure Core Spray (LPCS) System, and (4) the Low Pressure Coolant Injection (LPCI) System. These systems either function to deliver cooling water to the core in the event of LOCA, or in the case of ADS, function to reduce the Reactor Pressure Vessel pressure so that the low pressure systems may function. This limits the fuel clad temperature and thereby ensures that the core will remain substantially intact and in place, with its essential heat transfer geometry preserved. Further details are provided in FSAR Section 5.4, 6.3, [illegible], and 9.2.
GDC 36	As indicated in FSAR Subsection 3.1.2.4.7, design provisions are made for inspection, to the extent practicable, of all components of the ECCS. FSAR Subsection 5.2.4 defines the Inservice Inspection Plan, access provisions, and areas of restricted access. To the extent possible, particular attention will be given to the reactor nozzles, core spray, and feedwater spargers. Non-destructive inspection will be performed where such techniques are desirable and appropriate. Technical Specifications will require inservice inspection in accordance with applicable ASME Codes. Further details are provided in FSAR Section 6.6.

Regulation (10CFR)	Compliance
GDC 37	FSAR Subsection 3.1.2.4.8 indicates that each of the Emergency Core Cooling Systems (HPCS, ADS, LPCS, LPCI) will be provided with sufficient test connections and isolation valves to permit appropriate periodic pressure testing to assure the structural and leaktight integrity of its components and are designed to permit periodic testing to assure the operability and performance of the active components of each system. In addition, pumps and valves of these systems will be tested periodically to verify operability, and flow rate tests will be conducted on each system. For further discussion see FSAR Section 6.3 and Subsection 3.9.6.
GDC 38	As described in FSAR Subsection 3.1.2.4.9, containment heat removal is accomplished by the RHR System. Following a loss-of-coolant accident, the suppression pool and/or containment spray cooling modes of the RHR would be initiated. Further details can be found in FSAR Sections 6.2, 8.3, and 9.2 and Subsection 5.4.7.
GDC 39	As indicated in FSAR Subsection 3.1.2.4.10, provisions will be made to facilitate periodic inspection of active components and other important equipment of the containment heat removal systems. Futher discussion is provided in FSAR Sections 6.2, 6.3, and 9.2 and Subsection 5.4.7.
GDC 40	As discussed in FSAR Subsection 3.1.2.4.11, the RHR System is provided with sufficient test connections and isolation valves to permit periodic pressure and flow rate testing. Pumps and valves of the RHR System will be operated periodically to verify operability. For further details, refer to FSAR Subsection 6.2.2.
GDC 41	As indicated in FSAR Subsection 3.1.2.4.12, systems are provided to control hydrogen and fission products generated by a design basis accident. The hydrogen concentration is controlled by completely mixing the drywell and containment volumes and using recombiners to limit the hydrogen concentrations to less than 4 volume percent. Fission products are scrubbed from the drywell and containment by the suppression pool and containment sprays as described in FSAR Subsection 6.5.2. The systems performing these functions are sufficiently redundant to meet the single failure criterion and are operable with either onsite or offsite power. Fission product removal is also facilitated by the Standby Gas Treatment System. FSAR Subsections 5.2.3, 6.2.5, 6.5.1, and 6.5.3 discuss these systems in more detail.

Regulation (10CFR)	Compliance
GDC 42	FSAR Subsection 3.1.2.4.13 indicates that the systems described for containment and drywell atmosphere cleanup in Criterion 41 can be inspected periodically for visible indications of damage or potential failure. Exceptions to this would be small lengths of piping or ducting passing through concrete shielding. Additional discussion is provided in FSAR Subsection 5.2.4.
GDC 43	FSAR Subsection 3.1.2.4.14 indicates that inspection and testing for the Standby Gas Treatment System is discussed in Subsections 6.2.3 and 6.5.1, and for the compressors and components for the Combustible Gas Control System, in Subsection 6.2.5.4. Inspection and testing of the containment is discussed in FSAR Subsections 3.8.1.7, 3.8.3.7, and 6.2.6.
GDC 44	FSAR Subsection 3.1.2.4.15 indicates that the Standby Service Water System transfers heat from structures, systems, and safety-related components to the ultimate heat sink during conditions when the normal heat sink is unavailable. This system is described in detail in FSAR Subsection 9.2.1. The ultimate heat sink is described in detail in FSAR Subsection 9.2.5. Two independent, redundant systems with interties, system leak detection and isolation capabilities have been provided to assure that, if offsite power is unavailable, the system safety function can be accomplished, assuming a single failure. A single failure analysis of the Standby Service Water System is provided in FSAR Tables 9.2-1 and 9.2.2.
GDC 45	FSAR Subsection 3.1.2.4.16 indicates that the Standby Service Water System has been designed to permit periodic inspection of all important components, including pumps, cooling tower fans, heat exchangers, and isolation valves, to assure the integrity and capability of the system. Further details are given in FSAR Subsection 9.2.1.
GDC 46	FSAR Subsection 3.1.2.4.17 indicates that the Standby Service Water System has been designed to permit appropriate periodic pressure and functional testing to assure (1) the structural and leaktight 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 loss-of-coolant accidents, including operation of applicable portions of the protection system and the transfer between normal and emergency power sources. Further details are discussed in FSAR Subsection 9.2.1.

Regulation (10CFR)	Compliance
GDC 50	FSAR Subsection 3.1.2.5.1 indicates that the principal design parameters and safety-design bases were obtained from calculations of post-LOCA pressure and temperature conditions and NRC guides. The design internal pressure is at least 15 percent greater than the peak calculated pressure. Further details are discussed in FSAR Subsections 6.2.1, 6.2.1.3, and 3.8.1.
GDC 51	As indicated in FSAR Subsection 3.1.2.5.2, the materials used in the construction of safety-related structures and components provide adequate safety margins to account for variations in properties, residual stresses, and size of flaws. This complies with codes and standards listed in FSAR Subsection 3.8.1.2. The operational testing and postulated accident temperatures are combined with appropriate pressures and other loads in the load combination equations discussed in FSAR Subsection 3.8.1.3. The implementation of the requirements of the codes and standards was supplemented by the QA/QC program discussed in Chapter 17 of the FSAR.
GDC 52	FSAR Subsection 3.1.2.5.3 indicates that the primary containment can and will be tested periodically to determine the actual leakage rate at appropriate pressures as described in Subsection 3.6.1.2 Technical Specifications. Provisions in containment design for the performance of the tests are described in FSAR Subsections 6.2.1.6 and 6.2.6.
GDC 53	FSAR Subsection 3.1.2.5.4 indicates that the containment design includes provisions for testing of penetrations, liner plate areas, and areas of seals and bellows or applicable penetrations. Penetrations are visually inspected and pressure tested for leaktightness at periodic intervals. Inspections are performed as specified in, and at the intervals required by, Appendix J of 10 CFR 50. Types B and C penetration tests are conducted in accordance with Appendix J of 10 CFR 50, as discussed in Subsection 4.6.1.2 of the Technical Specifications. Testing and inspection is further discussed in FSAR Subsections 3.8.1.7 and 6.2.6 and Subsection 4.6.1.2 of the Technical Specifications.
GDC 54	As indicated in FSAR Subsection 3.1.2.5.5, penetrations which must be closed for containment isolation have redundant valving and associated apparatus. Automatic isolation valves with air or motor operators, which do not restrict normal plant operation, are periodically tested to assure operability. The isolation valve arrangements are discussed in Subsection 6.2.4. All piping penetrations in the containment have been equipped with test connections and test vents or have other provisions to allow periodic leak rate testing to ensure that

Regulation (10CFR)	Compliance
GDC 54 (Con't.)	leakage is within the acceptable limit as defined by the Technical Specifications and Appendix J of 10 CFR 50. This is further discussed in FSAR Subsection 6.2.6. Containment isolation features are seismic Category I and are protected against potential environmental effects, including missiles. All containment penetrations are designed according to the requirements of the ASME Boiler and Pressure Vessel Code, Section III, Class 2, and are inspected periodically as required by the ASME Boiler and Pressure Vessel Code, Section XI.
GDC 55	FSAR Subsection 3.1.2.5.6 indicates that, in general, the four items listed in this criterion are followed. In certain cases, other acceptable defined bases for isolation that deviate from items (1) through (4) of this criterion are followed. Due to the large number of containment isolation valves, FSAR Subsection 6.2.4 and the associated tables and figures show these four items or other acceptable design bases are met. The isolation valving is shown schematically in FSAR Figures .2-76 through 6.2-79, and is summarized, with valve actuation, in FSAR Table 6.2-44. In addition, all such piping meets the requirements of the ASME Boiler and Pressure Vessel Code, Section III, Nuclear Power Plant Components, Class 2 (or better), and are periodically inspected in accordance with Section XI of the Code. Penetration piping is designated as seismic Category I and is protected against possible environmental effects including missiles. Instrument lines are designed according to the criteria of Regulatory Guide 1.11.
GDC 56	As indicated in FSAR Subsection 3.1.2.5.7, the four items listed in this criterion are followed in most cases. In certain instances, other acceptable defined bases for isolation which deviate from items (1) through (4) of this criterion are followed. Due to the large number of containment isolation valves, FSAR Subsection 6.2.4 and the associated tables and figures are referenced to show how these four items or other acceptable design bases are met. The isolation valving is shown schematically in FSAR Figures 6.2-76 through 6.2-79 and is summarized, with valve actuation, in FSAR Table 6.2-44. Simple check valves are not used as automatic isolation valves outside the containment. Instrument lines satisfy the criteria set by Regulatory Guide 1.11.

Regulation (10CFR)	Compliance
GDC 57	FSAR Subsection 3.1.2.5.8 indicates that the Grand Gulf Nuclear Station containment isolation valve arrangement does not make use of the provisions of Criterion 57. Grand Gulf does not use a "closed system inside containment criteria" to qualify any systems as isolation barriers. FSAR Subsection 6.2.4.2.
GDC 60	As indicated in FSAR Subsection 3.1.2.6.1, Grand Gulf has incorporated waste handling systems in the plant design for processing and/or retention of radioactive wastes from normal plant operations to ensure that the effluent releases to the environment are as low as practicable and within the limits of 10 CFR 20. The plant is also designed with provisions to prevent radioactivity releases during accidents from exceeding the limits of 10 CFR 100. These wastes are processed in accordance with 10 CFR 50, Appendix I, requirements. Sufficient capacity exists for the retention of liquid and gaseous effluents until release can be safely made. Further details are contained in FSAR Chapter 11 and Subsection 12.3.4.
GDC 61	FSAR Subsection 3.1.2.6.2 discusses the storage and handling of new and spent fuel and the radioactive waste systems used to collect, process, and prepare for disposal all radioactive liquids, gases, and solid waste produced as a result of reactor operation. Further details can be obtained from FSAR Chapters 11 and 12, Sections 6.2 and 9.4, and Subsections 5.4.7, 9.1.1, 9.1.2, and 9.1.3.
GDC 62	FSAR Subsection 3.1.2.6.3 indicates that criticality in the fuel storage and handling system is prevented by geometrically safe fuel storage rack configurations and a handling system designed to minimize the possibility of mishandling or maloperation. A further discussion is contained in Subsections 7.6.1.1, 9.1.1, and 9.1.2.
GDC 63	As indicated in FSAR Subsection 3.1.2.6.4, appropriate systems have been provided to monitor water level, temperature, and radiation levels of the spent fuel pool. Area radiation and tank and sump levels are monitored and alarmed to give an indication of conditions which may result in excessive radiation levels in radioactive waste system areas. Further details are contained in FSAR Sections 7.6, 11.2, 11.3, 11.4, and 11.5 and in Subsection 9.1.3.
GDC 64	FSAR Subsection 3.1.2.6.5 indicates that means have been provided for monitoring radioactivity releases resulting from normal and anticipated operational occurrences. Further discussion of the means and equipment used for monitoring these releases is contained in FSAR Chapter 11 and Subsection 5.2.5.

Regulation (10CFR)	Compliance
Appendix B	The Quality Assurance Program, delineated in Topical Report MPL-TOP-1A, "Operational Quality Assurance Manual" Revision 1, was accepted by NRC September 17, 1979. Revision 2 was accepted by NRC on May 22, 1981.
Appendix C	This appendix provides a guide for establishing the applicant's financial qualifications. MP&L's financial qualifications were established at the construction permit stage and in an amendment, dated October 29, 1980, to the operating license application. This amendment describes the financing agreement between the Federal Financing Bank, the Rural Electrification Administration, and MP&L. Therefore, there is reasonable assurance that the funds needed to operate the facility in compliance with the Commission's regulations are available.
Appendix D	This Appendix has been superseded by 10 CFR Part 51. As noted in the discussion for 10 CFR 50.40(d), the requirements of Part 51 have been satisfied.
Appendix E	The Grand Gulf Nuclear Station Emergency Plan, FSAR Subsection 13.3 was submitted to NRC for approval on May 15, 1981.
Appendix F	This Appendix applies to fuel reprocessing plants and related waste management facilities, not to power reactors such as Grand Gulf. It is, therefore, not applicable to this proceeding.
Appendix G	Fracture toughness requirement compliance is discussed in FSAR Subsections 5.3.1.5 and 5.3.2. Assurance of adequate fracture toughness of ferritic materials in the reactor coolant pressure boundary (ASME Code, Section III, Class 1 components) is provided by compliance with the requirements for fracture toughness testing included in Subsection NB-2300 to Section III of the ASME Code and this Appendix.
Appendix H	Reactor vessel material surveillance program requirements are delineated in this part. Technical Specifications and operating procedures will be established to implement the requirements of this Appendix. Further details are provided in FSAR Subsection 5.3.1.6.
Appendix I	This Appendix provides numerical guides for design objectives and limiting conditions for operation to meet the criteria "as low as is reasonably achievable" for radioactive material in light water-cooled nuclear power reactor effluents. FSAR Chapters 2, 11, and 12 discuss compliance with the criteria in this Appendix.

Regulation (10CFR)	Compliance
Appendix J	Reactor containment leakage testing for water-cooled power reactors is delineated in this Appendix. These requirements are given in Subsections 3/4.4.3.1 and 3/4.4.3.2 of the Technical Specifications. Additional information concerning compliance can be found in FSAR Subsection 6.2.6.
Appendix K	This Appendix specifies required and acceptable features of ECCS evaluation models. FSAR Subsection 6.3.3 indicates that the performance of the ECCS is determined through application of the evaluation models of this Appendix and conformance to the acceptance criteria of 10 CFR 50.46. NEDO-20566, "General Electric Company Analytical Model for Loss-of-Coolant Accident Analysis in Accordance with 10 CFR 50 Appendix K," provides a complete description of the methods used to perform the calculations.
Appendix L	This Appendix identifies the information required to be submitted by the applicant to the Attorney General to satisfy the requirements when applying for a facility operating license. The requirements of this Appendix were satisfied at the time of application for the operating license.
Appendix M	This Appendix lists guidelines for the licensing of plants whose site requirements are not considered in the design of the plant structures. Since the Grand Gulf site was considered in the plant design, this Appendix is not applicable.
Appendix N	This Appendix states the requirements applicable to duplicate plant designs at multiple sites. It is not applicable to Grand Gulf.
Appendix O	This Appendix states guidelines for the NRC Staff in reviewing standardization of design. It imposes no independent obligation on the licensee.
Appendix P	Reserved - Not applicable to Grand Gulf.
Appendix Q	This Appendix states guidelines for the NRC Staff in evaluating early site reviews and does not deal with the operating license review. It is, therefore, not applicable to this proceeding.
Appendix R	This Appendix concerning Fire Protection is applicable only to facilities operating prior to January 1, 1979 and is not applicable to Grand Gulf. However, as stated in the MP&L/NRC meeting of June 30, 1981, and AECM-81/331, dated August 27, 1981, an evaluation of the Grand Gulf design with respect to the requirements of Appendix R will be provided at a later date.

Regulation (10CFR)	Compliance
100.1	This regulation is explanatory and no independent obligation is imposed on licensees.
100.2	While this reactor, the first domestic BWR-6-Mark III, is somewhat at different in design, the unique features are not those that would be expected to introduce problems that would necessitate using site criteria different from those used for operating power plants.
100.3	The definitions contained in this regulation are adhered to in all appropriate Technical Specifications and Procedures and in applicable sections of the FSAR.
100.10	The factors listed related to both unit design and the site have been provided in the application. Site specifics are delineated in the FSAR: Seismology, Subsection 2.5.2-2.5.4; meterology, Section 2.3; geology, Section 2.5; and hydrology, Section 2.4. The exclusion area, Subsection 2.1.2; low population zone, Subsection 2.1.3.4; and population center distance, Subsection 2.1.3.5, are identified and described. The FSAR also describes the characteristics of reactor design and operation.
100.11	An exclusion area has been established as described in the FSAR. Subsection 2.1.2. The low population zone required by (a) (2) of this regulation has been established, FSAR, Subsection 2.1.3.4, as an area within a radius of 2.0 miles from the Unit 1 reactor containment. As indicated in FSAR, Subsection 2.1.3.5, the nearest population center, as defined in 10 CFR 100.3 (c), is Vicksburg, Mississippi, which is 25 miles north-northeast of the site. This distance is well in excess of the requirements. The FSAR accident analysis in Chapter 15 demonstrates that offsite doses resulting from postulated accidents would not exceed the criteria in this section of the regulation. While there will eventually be two operating reactor units each reactor is independent to the extent that an accident in one reactor will not initiate an accident in the other reactor affecting the safety of the public. Effluent releases listed in FSAR, Table 11.2-11 and Table 11.3-12 are low enough to permit simultaneous operation of both units and still be well below the allowable limits of Regulation 20.106(a) of this Chapter.

Regulation (10CFR)	Compliance
Appendix A	In compliance with parts IV, V, and VI of the guidelines of this Appendix, the pertinent sections or subsections of the FSAR where the results of investiga' ns required are tabulated.

IV(a)(1) Lithography: 2.5.1.1 et. seq.
Stratification: 2.5.1.1.3 - 2.5.1.1.3.3 incl. and 2.5.1.2.2.1
Hydrology: 2.4
Structural Geology: 2.5.1.2.3
Geological History: 2.5.1.1.2

(2) Techtonic Structures: 2.5.1.1.4 et. seq. and Figures 2.5-3 and 2.5-4
Effects of Man's Activities: 2.5.1.1.6

(3) Effects of Prior Earthquakes: 2.5.1.2.8.2

(4) Static and Dynamic Properties: 2.5.4
i seismic wave velocity. Table 2.5.7
ii density. Table 2.5.9
iii water content. 2.4.13
iv porosity. 2.5.1.2.2.1.1.1
v strength. 2.5

(5) Historically Reported Earthquakes 2.5.2.1 and Figure 2.5-58

(6) Correlation of Epicenters with Techtonic Structures 2.5.2.3

(7) Evaluation of Capable Faults 2.5.3.2 2.5.1.1.4.7 et. sec.

(8) Discussion of the parameters called for in this section covered in Sections: IV(1) through '6) above.

IV(b) Surface Faulting. 2.5.3 et. seq.

IV(c) Grand Gulf is not a coastal site hence investigation of Tsunami not needed.

V The Vibratory Ground Motion is covered in 2.5.2, Safe Shutdown Earthquake in 2.5.2.6, Operating Base Earthquake in 2.5.2.7 and need for design for Surface Faulting in 2.5.3.

VI Response spectra for Safe Shutdown Earthquake, and Operating Basis Earthquake are found in Figures 2.5-59 through 2.6-61. Other features referred to in this Appendix may be found in Section 2.5. or have been specifically tabulated in IV through V above.