



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

ENTERGY OPERATIONS, INC.

SYSTEM ENERGY RESOURCES, INC.

SOUTH MISSISSIPPI ELECTRIC POWER ASSOCIATION

ENTERGY MISSISSIPPI, INC.

DOCKET NO. 50-416

GRAND GULF NUCLEAR STATION, UNIT 1

RENEWED FACILITY OPERATING LICENSE

Renewed License No. NPF-29

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for renewed license filed by Mississippi Power & Light Company (MP&L), (now renamed Entergy Mississippi, Inc.), for itself and Middle South Energy, Inc., (now renamed System Energy Resources, Inc. (SERI) and South Mississippi Electric Power Association (SMEPA), as amended, (hereinafter referred to as the licensees) complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I, and all required notifications to other agencies or bodies have been duly made;
  - B. Construction of the Grand Gulf Nuclear Station, Unit 1 (the facility), has been substantially completed in conformity with Construction Permit No. CPPR-118 and the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission (except as exempted from compliance in Section 2.D. below);
  - D. There is reasonable assurance: (i) that the activities authorized by this renewed operating license can be conducted without endangering the health and safety of the public; and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I (except as exempted from compliance in Section 2.D. below);

- E. Entergy Operations, Inc. (EOI), is technically qualified to engage in the activities authorized by this renewed operating license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;
  - F. The licensees have satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements," of the Commission's regulations;
  - G. The issuance of this renewed license will not be inimical to the common defense and security or to the health and safety of the public;
  - H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of Renewed Facility Operating License No. NPF-29, subject to the conditions for protection of the environment set forth in the Environmental Protection Plan attached as Appendix B, is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied;
  - I. The receipt, possession, and use of source, by-product and special nuclear material as authorized by this renewed license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40, and 70; and
  - J. Actions have been identified and have been or will be taken with respect to (1) managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under 10 CFR 54.21(a)(1); and (2) time-limited aging analyses that have been identified to require review under 10 CFR 54.21(c), such that there is reasonable assurance that the activities authorized by this renewed license will continue to be conducted in accordance with the current licensing basis, as defined in 10 CFR 54.3, for the facility, and that any changes made to the facility's current licensing basis in order to comply with 10 CFR 54.29(a) are in accordance with the Act and the Commission's regulations.
2. Based on the foregoing findings regarding this facility and pursuant to Commission Order CLI-84-19, dated October 25, 1984, License NPF-13, as amended, is superseded by this Renewed Facility Operating License NPF-29 which is hereby issued to Entergy Operations, Inc., Entergy Mississippi, Inc., System Energy Resources, Inc., and South Mississippi Electric Power Association to read as follows:
- A. This renewed license applies to the Grand Gulf Nuclear Station (GGNS), Unit 1, a boiling water nuclear reactor and associated equipment (the facility), owned by System Energy Resources, Inc., and South Mississippi Electric Power Association and operated by Entergy Operations, Inc. The facility is located in Claiborne County, Mississippi, and is described in the licensees' "Final Safety Analysis Report," as supplemented and amended, and in the licensees' Environmental Report, as supplemented and amended.
  - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses:



- (1) Entergy Operations, Inc. (EOI) pursuant to Section 103 of the Act and 10 CFR Part 50, to possess, use, and operate the facility at the designated location in Claiborne County, Mississippi, in accordance with the procedures and limitations set forth in this renewed license;
- (2) System Energy Resources, Inc., and South Mississippi Electric Power Association to possess, but not operate, the facility at the designated location in Claiborne County, Mississippi, in accordance with the procedures and limitations set forth in this renewed license;
- (3) EOI, pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time at the facility site and as designated solely for the facility special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;
- (4) EOI, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (5) EOI, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (6) EOI, pursuant to the Act and 10 CFR Parts 30, 40, and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- (7) (a) SERI is authorized to transfer up to 15 percent of its 90.0 percent ownership share in Grand Gulf Nuclear Station, Unit 1 (GGNS Unit 1), to certain equity investors identified in the submissions of October 31, 1988 and November 11, 1988, and at the same time to lease back from such purchasers such interest sold in the facility. The term of the lease is for approximately 26 years subject to a right of renewal. Such sale and lease back transactions are subject to the condition that lessors and anyone else who may acquire an interest under these transactions are prohibited from exercising directly or indirectly any control over (i) GGNS Unit 1, (ii) power or energy produced by GGNS Unit 1, or (iii) the licensees of GGNS Unit 1. Further, any rights acquired under this authorization may be exercised only in compliance with and subject to the requirements and restrictions of this renewed operating license, the Atomic Energy Act of 1954, as amended, and the Commission's regulations. For purposes of this condition, the limitations of 10 CFR 50.81, as now in effect and as they may be subsequently

amended, are fully applicable to the lessors and any successors in interest to those lessors, as long as the renewed license of GGNS Unit 1 remains in effect.

- (b) SERI is required to notify the NRC in writing prior to any change in (i) the terms or conditions of any new or existing sale or lease agreements executed as part of the above authorized financial transactions, (ii) the GGNS Unit 1 operating agreement, (iii) the existing property insurance coverage for GGNS Unit 1 that would materially alter the representations and conditions set forth in the Staff's Safety Evaluation Report dated December 19, 1988 attached to Amendment No. 54. In addition, SERI is required to notify the NRC of any action by a lessor or other successor in interest to SERI that may have an effect on the operation of the facility.

- C. The renewed license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

- (1) Maximum Power Level

Entergy Operations, Inc. is authorized to operate the facility at reactor core power levels not in excess of 4408 megawatts thermal (100 percent power) in accordance with the conditions specified herein.

- (2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 211 are hereby incorporated into this renewed license. Entergy Operations, Inc. shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

During Cycle 19, GGNS will conduct monitoring of the Oscillation Power Range Monitor (OPRM). During this time, the OPRM Upscale function (Function 2.f of Technical Specification Table 3.3.1.1-1) will be disabled and operated in an "indicate only" mode and technical specification requirements will not apply to this function. During such time, Backup Stability Protection measures will be implemented via GGNS procedures to provide an alternate method to detect and suppress reactor core thermal hydraulic instability oscillations. Once monitoring has been successfully completed, the OPRM Upscale function will be enabled and technical specification requirements will be applied to the function; no further operating with this function in an "indicate only" mode will be conducted.



(3) Antitrust Conditions

- (a) Entergy Mississippi, Inc. and SERI shall comply with the antitrust conditions delineated in Appendix C. SERI is authorized to transfer its rights to possess, to use and to operate the facility to EOI, provided however, that until further authorization of the Commission, Entergy Mississippi, Inc. and SERI shall continue to be responsible for compliance with the obligations imposed on the licensees in these antitrust conditions, and provided further that EOI accepts the right to possess, use and operate the facility and SERI accepts the right to possess the facility subject to the outcome of the pending separate antitrust review of the antitrust considerations related to the application dated September 2, 1986. SERI is authorized to transfer its rights to operate the facility to EOI.
- (b) Entergy Mississippi, Inc. and SERI are responsible and accountable for the actions of their respective agents to the extent said agent's actions contravene the antitrust conditions in Appendix C.

(4) Independent Verification of Staff Performance and Other Plant Activities  
(Section 13.4, SER, SSER #2)

- (a) MP&L<sup>1</sup> shall establish a subcommittee of the Corporate Safety Review Committee to review and evaluate the:
  - 1. Status and readiness of the plant and systems needed to support intended modes of operation and/or testing;
  - 2. Readiness of personnel to conduct intended operation and testing;
  - 3. Morale and attitudes of plant personnel that have a bearing on safe plant operation;
  - 4. Past performance in plant operations and adherence to procedures and administrative controls;
  - 5. Changes in current organization with regard to experience and qualifications of plant management and supervisory personnel since the last evaluation;
  - 6. Results and effectiveness of the Plant Safety Review Committee (PSRC),

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<sup>1</sup> The original license authorized Mississippi Power & Light Company (MP&L) to operate the facility. Amendment 27 authorized SERI to operate the facility. Amendment 125 resulted in a name change for Mississippi Power & Light Company (MP&L) to Entergy Mississippi, Inc.

7. Status of plant as compared to other BWR startups based on the subcommittee's knowledge and experience.

Reviews shall be conducted prior to exceeding 50 percent of full power and within 30 days following completion of the 100 hour warranty run. The subcommittee shall be composed of a minimum of three professionals not employees of MP&L, with experience which will be responsive to the concerns presented above. In conducting these evaluations, the subcommittee shall conduct interviews of representatives of all levels of plant staff management. The subcommittee shall report directly to the Chairman of the Corporate Safety Review Committee and, in turn, MP&L shall submit the report of these reviews to NRC.

- (b) The Plant Safety Review Committee shall review all Unit 1 Preoperational Testing and System Demonstration activities performed concurrently with the Unit 1 Startup Test Program to assure that the activity will not affect the safe performance of the portion of the Unit 1 Startup Program being performed. The review shall address, as a minimum, system interaction, span of control, staffing, procedures, security and health physics, with respect to performance of the activities concurrent with the portion of the Unit 1 Startup Program being performed.

(5) Deferred Preoperational Deficiencies

MP&L shall satisfactorily resolve those deficiencies which were deferred from the preoperational testing program on a schedule that shall assure that the capability of a system required to be operable by Technical Specification is not degraded.

(6) Soil Structure Interaction (Section 3.7.1, SER, SSER #2)

Prior to startup following the first refueling outage, MP&L shall complete structural modifications, if required, as a result of the NRC staff's completion of its review of MP&L\* responses.

(7) Seismic Instrumentation (Section 3.7.4, SER, SSER #2)

Prior to startup following the first refueling outage, the installation of triaxial strong motion accelerometers on reactor supports shall be completed.

(8) Masonry Walls (Section 3.8.3, SER, SSER #2)

Prior to startup following the first refueling outage, MP&L shall complete structural modifications, if required, as a result of the NRC staff's completion of its review of the MP&L response to IE Bulletin 80-11.



(9) Dynamic Testing (Section 3.9.2, SER, SSER #2, SSER #4, SSER #5)

MP&L shall conduct vibrational measurement and inspection programs during preoperational and initial startup testing in accordance with the guidelines of Regulatory Guide 1.20, "Comprehensive Vibration Assessment Program for Reactor Internals During Preoperational and Initial Startup Testing," for prototype reactors. An evaluation report demonstrating satisfactory results shall be provided to the NRC for review and approval no later than 6 months after completion of the startup test program.

(10) Dynamic Qualification (3.10, SER, SSER #1, SSER #2, SSER #4, SSER #5)

- (a) Prior to startup following the first refueling outage, MP&L shall complete any modifications or replacement of equipment found necessary as a result of the fatigue evaluation. In the interim, MP&L shall document the occurrence of every safety relief valve actuation into the suppression pool; the associated cumulative damage factors shall be calculated for typical representative equipment and kept up-to-date; and EOI shall report to NRC any malfunction of equipment that occurs due to any safety relief valve discharge.
- (b) MP&L shall perform an in-situ test of the High Pressure Core Spray (HPCS) service water pump and evaluate the effects of flow induced vibration on the HPCS service water pump. This evaluation shall be provided to the NRC for review and approval. Prior to startup following the first refueling outage, MP&L shall complete all modifications as a result of the NRC staff's review of the test results and evaluation.
- (c) Prior to actual use in fuel handling operations, MP&L shall qualify the fuel-handling and auxiliary platform, in-vessel rack, and storage container for defective fuel.

(11) Environmental Qualification (Section 3.11, SER; SSER #1; Appendix H, SSER #2; SSER #5)

Prior to March 31, 1985, MP&L shall environmentally qualify all electrical equipment as required by 10 CFR 50.49.

(12) Surveillance of Control Blade (Section 4.2.3.14, SER)

Within 30 days after plant startup following the first refueling outage, System Energy Resources, LLC shall comply with items 1, 2 and 3 of Bulletin No. 79-26 and submit a written response to NRC on item 3.

(13) Core Stability Analysis and Prohibition of Natural Circulation (Section 4.4.1, SER)

- (a) Prior to startup following the first refueling outage, MP&L shall submit a new core stability analysis for operation beyond cycle 1.
- (b) Natural circulation shall be prohibited as an operating mode.

(14) Loose Parts Monitoring (Section 4.4.1, SER)

Prior to startup following the first refueling outage, MP&L shall submit an evaluation of the Loose Parts Monitoring System to address conformance to R.G. 1.133, Rev. 1, dated May 1981.

(15) Scram Discharge Volume (Sections 4.6, SER)

Prior to startup following the first refueling outage, MP&L shall incorporate the following additional modifications into the scram discharge volume system:

- (a) Redundant vent and drain valves, and
- (b) Diverse and redundant scram instrumentation for each instrumented volume, including both delta pressure sensors and float sensors.

(16) Containment Purge (Section 6.2.4, SSER #5)

(Deleted)

(17) Containment Pressure Boundary (Section 6.2.8, SER)

Prior to startup following the first refueling outage, MP&L shall replace the feedwater check valve disc with a disc made from a suitable material.

(18) Pressure Interlocks on Valves Interfacing at Low and High Pressure (Section 6.3.4, SSER #2)

Prior to startup following the first refueling outage, MP&L shall implement isolation protection against overpressurization of the low pressure emergency core cooling systems (RHR/LPCI and LPCS) at the high and low pressure interface containing a check valve and a closed motor-operated valve.

(19) IE Information Notice 79-22, Qualification of Control System (Section 7.8.C, SER, SSER #2)

Prior to startup following the first refueling outage, MP&L shall complete any design changes found necessary as a result of this review.



- (20) Standby Service Water System (Section 9.2.1 SER, SSER #2)

(Deleted)

- (21) Spent Fuel Pool Ventilation System (Section 9.4.2, SER, SSER #2)

If spent irradiated fuel is placed in the spent fuel pool prior to installation and operability of the safety related backup fuel pool cooling pump room coolers, the plant shall be placed in shutdown condition and remain shut down with the RHR System dedicated to the fuel pool cooling mode.

- (22) Remote Shutdown Panel (Section 9.5.4.1, SER, SSER #2)

Prior to startup following the first refueling outage, MP&L shall install electrical isolation switches between the control room and the Division 1 remote shutdown panel.

- (23) Fire Protection Program (Section 9.5.9, SER)

Replaced by Paragraph 2.C (41).

- (24) Interplant Communication Systems (Section 9.6.1.2, SER, SSER #2, SSER #4, SSER #5)

Tests of the communication systems used to mitigate the consequences of an event and attain a safe plant shutdown shall be completed during preoperational and startup tests. An evaluation of the test results shall be provided for NRC review within 90 days after test completion. Any system modifications found necessary as a result of NRC review shall be completed prior to startup following the first refueling outage.

- (25) Reliability of Diesel-Generators (Sections 8.3.1, 9.6.3 through 9.6.7, SER, SSER #2, SSER #4, SSER #6)

- (a) Prior to startup following the first refueling outage, a heavy duty turbocharger gear drive assembly shall be installed on all EMD diesel-generators

- (26) Turbine Disc Integrity (Section 10.2.1, SER, SSER #1)

(DELETED)

- (27) Circulating Water System (Section 10.4.5, SER)

EOI shall not fill the Unit 2 circulating water system (including the natural draft cooling tower basin) until Unit 1 flooding concerns related to this system are resolved to the satisfaction of the NRC staff.

(28) Advisor to the Vice President

MP&L shall have on its nuclear operations staff, one or more corporate management officials or advisors (who may be either permanent employees or contracted consultants) who have substantial commercial nuclear power plant operating management experience and who will advise on all decisions affecting safe operation of the plant. This requirement shall be in effect until the plant has accumulated at least 6 months at power levels above 90 percent of full power.

(29) Operating Shift Advisor (Section 13.1.2, SER)

At least one individual on each operating shift shall have substantive previous BWR operating experience, including startup and shutdown of a BWR and under conditions that one might expect to encounter during the initial startup and power escalation at Grand Gulf plant. This individual is not required to be licensed on Grand Gulf Unit 1 and need not be a MP&L employee, but as a minimum shall be retained on a contract basis to act as a consultant or advisor to the GGNS shift crew. Such an experienced person shall be assigned to each operating shift until the plant achieves and demonstrates full power operation.

(30) Training Instructors (Section 13.2, SER)

[DELETED]

(31) Initial Test Program (Section 14, SER)

MP&L shall conduct the post-fuel-loading initial test program (set forth in Section 14 of the Final Safety Analysis Report, as amended) without making any major modifications of this program unless such modifications have been identified and have received prior NRC approval. Major modifications are defined as:

- (a) Elimination of any test identified in Section 14 of the Final Safety Analysis Report, as amended, as being essential;
- (b) Modification of test objectives, methods or acceptance criteria for any test identified in Section 14 of the Final Safety Analysis Report, as amended, as being essential;
- (c) Performance of any test at a power level different from that described in the program; and
- (d) Failure to complete any tests included in the described program (planned or scheduled for power levels up to the authorized power level).

(32) Deleted



(33) NUREG-0737 Conditions (Section 22.2)

The following conditions shall be completed to the satisfaction of the NRC. These conditions reference the appropriate items in Section 22.2, "TMI Action Plan Requirements for Applicants for Operating Licenses", in the Safety Evaluation Report and Supplements 1, 2, 3, 4, and 5 to NUREG-0831.

(a) Control Room Design Review (I.D.1, SER; Appendix E, SSER #2, SSER #4, SSER #5)

Prior to startup following the first refueling outage, SERI shall demonstrate the ability to maintain an "effective temperature" condition of 85°F or less in the remote shutdown panel (RSP) room for at least 8 hours with an ambient outdoor temperature of at least 95°F.

(b) Training During Low-Power Testing (I.G.1, SER)

Prior to restart following the first refueling outage, MP&L shall complete the additional training and testing related to TMI Action Plan I.G.1 as described in Section 2.3 of the MP&L submittal dated April 3, 1986.

(c) Deleted

(d) Hydrogen Control (Section II.B.7, SER, SSER #2, SSER #3, SSER #4, SSER #5)

1. During the first cycle of operation, MP&L shall maintain a suitable program of analysis and testing of the installed hydrogen ignition system. EOI shall submit to the NRC quarterly reports on the status of their research programs.

(i) EOI shall amend its research program on hydrogen control measures to include, but not be limited to, the following items:

1. Perform containment sensitivity analysis to determine the adequacy of the hydrogen control system for a spectrum of degraded core accidents including the determination of accident sequences for which equipment survivability is assured;
2. Research to investigate the conditions leading to and consequences resulting from hydrogen combustion in the wetwell and containment. Testing shall be performed in a larger scale

facility such as the one-quarter scale test facility proposed by MP&L;

3. Research to investigate the conditions leading to and consequences resulting from hydrogen combustion in the drywell;
4. Confirmatory tests on thermal response of selected equipment exposed to hydrogen burns.

(ii) EOI shall perform feasibility studies to examine the options for enhancing equipment survivability for essential equipment located in the vicinity of the suppression pool or other regions subjected to severe environments. The options to be studied in such feasibility studies shall include thermal shielding, additional cooling, and relocation of essential equipment.

2. (i) EOI shall complete its research program on hydrogen control to show that the hydrogen control system will perform its intended function in a manner that provides adequate safety margins. This research program shall be completed on a schedule which reflects the requirements of 10 CFR 50.44.

(ii) If it is determined that plant modifications are required to obtain NRC approval that an adequate hydrogen control system for Grand Gulf is installed, then these modifications shall be completed on a schedule which is approved by the NRC.

(e) Instrumentation for Detection of Inadequate Core Cooling  
(II.F.2, SER, SSER #2)

MP&L shall submit a report addressing the analysis performed by the BWR Owners' Group regarding additional instrumentation relative to inadequate core cooling and shall implement the staff's requirements after the completion of the staff's review of this report. These modifications shall be completed on a schedule acceptable to the staff.

(f) Modification of Automatic Depressurization System Logic - Feasibility for Increased Diversity for Some Event Sequences  
(II.K.3.18, SER, SSER, #2, SSER #4)

Prior to startup following the first refueling outage, MP&L shall provide, for NRC review, justification for the timer delay settings, revisions to the emergency procedures covering the use of the



manual inhibit switch, proposed Technical Specification surveillance procedures for the timer and switch, and shall implement alternative logic modification (Option 4) of the automatic depressurization system.

(g) Qualification of ADS Accumulators (II.K.3.28, SSER #5)

Prior to startup following the first refueling outage, MP&L shall perform an integrated leak test on the ADS air system, perform sampling to establish instrument air quality, provide instrumentation to monitor ADS air receiver pressure, establish suitable surveillance procedures for the ADS air system and provide proposed changes to the Technical Specifications associated with the surveillance procedures.

(34) SRV Test Program (Section A-39, Appendix C, SER, SSER #1, SSER #2)

During Cycle 1, an inplant SRV test program shall be carried out to confirm that the containment building response to SRV loads is acceptable. Results of these tests shall be provided to NRC no later than four months after test completion.

(35) Post-LOCA Vacuum Breaker Position Indicators

Prior to startup following the first refueling outage, MP&L shall install position indicators with redundant indication and alarm in the control room for the check valves associated with the drywell post-LOCA vacuum breakers.

(36) Emergency Response Facilities (Generic Letter 82-33, NUREG-0737 Supplement 1, SSER #5)

EOI shall complete the emergency response capabilities, as required by Attachment 1.

(37) Evaluation of Licensee's Technical Specification Problem Sheets (Section 16.3, SSER #6)

Prior to startup following the first refueling outage, MP&L shall implement the following modifications:

- (a) Include an emergency override of the test mode of the Division 3 HPCS diesel generator to permit response to emergency signals and to return the control of the diesel generator to the emergency standby mode. (Item No. 333, T.S. 4.8.1.1.2.d.12.b)
- (b) Provide the second level undervoltage protection for Division 3 power supply (Item No. 373, T.S. Table 3.3.3-2).

- (c) Incorporate a bypass or coincident logic in all Division 1 and 2 diesel generator protective trips, except for trips on diesel engine overspeed and generator differential current (Item No. 808, T.S. 4.8.1.1.2.d.16.d).

(38) Control Room Leak Rate (Section 6.2.6, SSER #6)

EOI shall operate Grand Gulf Unit 1 during Modes 1 through 3 with an allowable control room leak rate not to exceed 2000 cfm (not including ingress/egress leakage of 10 cfm).

(39) Temporary Secondary Containment Boundary Change

For a period of time not to exceed 144 cumulative hours, the provisions of Specification 3/4.6.6.1 may be applied to the rail-road bay area including the exterior railroad bay door on the auxiliary building in lieu of the present secondary containment boundaries that isolate the railroad bay area. While the railroad bay area is being used as a secondary containment boundary, the railroad bay door may be opened for the purpose of moving trucks in and out provided the four hour limitation in ACTION a of Technical Specification 3.6.6.1 is reduced to one hour. A fire watch shall be established in the railroad bay area while the door is being used as a secondary containment boundary.

(40) Temporary Ultimate Heat Sink Change

With the plant in OPERATIONAL condition 4, SSW cooling tower basin A may be considered OPERABLE in accordance with Technical Specification 3.7.1.3 with less than a 30 day supply of water (without makeup) during the time that SSW basin B is drained to replace its associated service water pump provided:

- (a) SSW basin A water level is maintained greater than or equal to 87".
- (b) At least two sources of water (other than normal makeup with one source not dependent on offsite power) are available for makeup to SSW basin A.

This renewed license condition may remain in effect until plant startup following the outage scheduled for fall 1985.

(41) Fire Protection Program

Entergy Operations, Inc. shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in Revision 5 to the Updated Final Safety Analysis Report, and as approved in the Safety Evaluations dated August 23, 1991, and September 29, 2006, subject to the following provisions:



The licensee may make changes to the approved Fire Protection Program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

(42) Mitigation Strategy Renewed License Condition

The Licensee shall develop and maintain strategies for addressing large fires and explosions and that include the following key areas:

- (a) Fire fighting response strategy with the following elements:
  - 1. Pre-defined coordinated fire response strategy and guidance
  - 2. Assessment of mutual aid fire fighting assets
  - 3. Designated staging areas for equipment and materials
  - 4. Command and control
  - 5. Training of response personnel
- (b) Operations to mitigate fuel damage considering the follow:
  - 1. Protection and use of personnel assets
  - 2. Communications
  - 3. Minimizing fire spread
  - 4. Procedures for implementing integrated fire response strategy
  - 5. Identification of readily-available pre-staged equipment
  - 6. Training on integrated fire response strategy
  - 7. Spent fuel pool mitigation measures
- (c) Actions to minimize release to include consideration of:
  - 1. Water spray scrubbing
  - 2. Dose to onsite responders

(43) Control Room Habitability

Upon implementation of Amendment No. 178 adopting TSTF-448, Revision 3, the determination of Control Room Envelope (CRE) unfiltered

air leakage as required by SR 3.7.3.4, in accordance with TS5.5.13.c.(i), and the assessment of CRE habitability as required by Specification 5.5.13.c.(ii), shall be considered met. Following implementation:

- (a) The first performance of SR 3.7.3.4, in accordance with Specification 5.5.13.c.(i), shall be within the specified Frequency of 6 years, plus the 18-month allowance of SR 3.0.2, as measured from March 2005, the date of the most recent successful tracer gas test, as stated in the June 30, 2005 letter response to Generic Letter 2003-01, or within the next 18 months if the time period since the most recent successful tracer gas test is greater than 6 years.
  - (b) The first performance of the periodic assessment of CRE habitability, Specification 5.5.13.c. (ii), shall be within 3 years, plus the 9-month allowance of SR 3.0.2, as measured from March 2005, the date of the most recent successful tracer gas test, as stated in the June 30, 2005 letter response to Generic Letter 2003-01, or within the next 9 months if the time period since the most recent successful tracer gas test is greater than 3 years.
  - (c) The first performance of the periodic assessment of the CRE boundary, Specification 5.5.13.d, shall be within the next 18 months, plus the 136 days allowed by SR 3.0.2, as measured from the date of issuance of this amendment.
- (44) Leak rate tests associated with Surveillance Requirements (SR) 3.6.1.1.1, 3.6.1.3.5, and 3.6.1.3.9, as required by TS 5.5.12 and in accordance with 10 CFR 50, Appendix J, Option B, and SRs 3.6.5.1.1 and 3.6.5.1.2 are not required to be performed until their next scheduled performance dates. The tests will be performed at the EPU calculated peak containment pressure or within EPU drywell bypass leakage limits, as appropriate.
- (45) Deleted
- (46) This renewed license condition provides for monitoring, evaluating, and taking prompt action in response to potential adverse flow effects as a result of power uprate operation on plant structures, systems, and components (including verifying the continued structural integrity of the



steam dryer) for power ascension from the CLTP (3898 MWt) to the EPU level of 4408 MWt (or 113 percent of CLTP or 115 percent of OLTP).

(a) The following requirements are placed on operation of the facility before and during the power ascension to 3898 MWt:

1. GGNS shall provide a Power Ascension Test (PAT) Plan for the Steam Dryer testing. This plan shall include:
  - (i) Criteria for comparison and evaluation of projected strain and acceleration with on-dryer instrument data.
  - (ii) Acceptance limits developed for each on-dryer strain gauge and accelerometer.
  - (iii) Tables of predicted dryer stresses at CLTP, strain amplitudes and PSDs at strain gauge locations, acceleration amplitudes and PSDs at accelerometer locations, and maximum stresses and locations.

The PAT plan shall provide correlations between measured accelerations and strains and the corresponding maximum stresses. The PAT plan shall be submitted to the NRC Project Manager no later than 10 days before start-up.

2. GGNS shall monitor the main steam line (MSL) strain gages and on-dryer instrumentation at a minimum of three power levels up to 3898 MWt. Based on a comparison of projected and measured strains and accelerations, GGNS will assess whether the dryer acoustic and structural models have adequately captured the response significant to peak stress projections.

If the measured strains and accelerations are not within the CLTP acceptance limits, the new measured data will be used to re-perform the full structural re-analysis for the purposes of generating modified EPU acceptance limits.

3. GGNS shall provide a summary of the data and evaluation of predicted and measured pressures, strains, and accelerations. This data will include the GGNS-specific bias and uncertainty data and transfer function, revised peak stress table and any revised acceptance limits. The predicted pressures shall include those using both PBLE methods (that is, Method 1 using on-dryer data, and Method 2 using MSL data). It shall be provided to the NRC Project Manager upon completion of the evaluation.

GGNS shall not increase power above 3898 MWt until the NRC PM notifies GGNS the NRC accepts the evaluation or NRC questions regarding the evaluation have been addressed. If no questions are identified within 240 hours after the NRC receives the evaluation, power ascension may continue.

- (b) The following requirements are placed on operation of the facility during the initial power ascension from 3898 MWt to the approved EPU level (4408 MWt):
1. GGNS shall increase power in increments of approximately 102 MWt, hold the facility at approximately steady state conditions and collect data from available main steam line (MSL) strain gages and available on-dryer instrumentation. This data will be evaluated, including the comparison of measured dryer strains and accelerations to acceptance limits and the comparison of predicted dryer loads based on MSL strain gage data to acceptance limits. It will also be used to trend and project loads at the next test point and to EPU conditions to demonstrate margin for continued power ascension.
  2. Following the data collection and evaluation at the plateaus at approximately 4102 MWt, 4306 MWt, and 4408 MWt, GGNS shall provide a summary of the data and the evaluation performed in Section b.1 above to the NRC Project Manager. GGNS shall not increase power above these power levels for up to 96 hours to allow for NRC review of the information.
  3. Should the measured strains and accelerations on the dryer exceed the level 1 acceptance limits, or alternatively if the dryer instrumentation is not available and the projected load on the dryer from the MSL strain gage data exceeds the Level 1 acceptance limits, GGNS shall return the facility to a power level at which the limits are not exceeded. GGNS shall resolve the discrepancy, evaluate and document the continued structural integrity of the steam dryer, and provide that documentation to the NRC Project Manager prior to further increases in reactor power. GGNS shall not increase power for up to 96 hours to allow for NRC review of the information.
    - (i) In the event that acoustic signals (in MSL strain gage signals) are identified that challenge the dryer acceptance limits during power ascension above 3898 MWt, GGNS shall evaluate dryer loads, and stresses, including the effect of  $\pm 10\%$  frequency shift, and re-establish the acceptance limits and



determine whether there is margin for continued power ascension.

- (ii) During power ascension above 3898 MWt, if an engineering evaluation for the steam dryer is required because a Level 1 acceptance limit is exceeded, GGNS shall perform the structural analysis using the Steam Dryer Analysis Report, Appendix A methods to address frequency uncertainties up to  $\pm 10\%$  and assure that peak responses that fall within this uncertainty band are addressed.

- 4. Following the data collection and evaluation at the EPU power level, GGNS shall provide a final load definition and stress report of the steam dryer, including the results of a complete re-analysis using the GGNS-specific bias and uncertainties and transfer function. The GGNS-specific bias and uncertainties summary shall include both PBLE Method 1 and Method 2. This report shall be transmitted to the NRC within 90 days of achieving the EPU power level. Should the results of this stress analysis indicate the allowable stress in any part of the dryer is exceeded, GGNS shall reduce power to a level at which the allowable stress is met, evaluate the dryer integrity, and assess any shortcomings in the predictive analysis. The results of this evaluation, including a recommended resolution of any identified issues and a demonstration of dryer integrity at EPU conditions, shall be provided to the NRC prior to return to EPU conditions.

- (c) Entergy shall implement the following actions:

- 1. Entergy shall revise the post-EPU monitoring and inspection program to reflect long-term monitoring of plant parameters potentially indicative of steam dryer failure; to reflect consistency of the facility's steam dryer inspection program with GE SIL 644, "BWR Steam Dryer Failure," Revision 2; and with BWRVIP-139, "Steam Dryer Inspection and Flaw Evaluation Guidelines."

- (d) Entergy shall prepare the EPU PATP to include the following and provide it to the NRC project manager before increasing power above 3898 MWt:

- 1. Level 1 and Level 2 acceptance limits for on-dryer strain gages, on-dryer accelerometers, and for projected dryer loads from MSL strain gauge data, to be used up to 113 percent of CLTP.

2. specific hold points and their duration during EPU power ascension
  3. activities to be accomplished during hold points
  4. plant parameters to be monitored
  5. inspections and walkdowns to be conducted for steam, feedwater, and condensate systems and components during the hold points
  6. methods to be used to trend plant parameters
  7. acceptance criteria for monitoring and trending plant parameters and conducting the walkdowns and inspections
  8. actions to be taken if acceptance criteria are not satisfied
  9. verification of the completion of commitments and planned actions specified in the Entergy application and all supplements to the application in support of the EPU LAR pertaining to the steam dryer before power increase above 3898 MWt
  10. identify the NRC PM as the NRC point of contact for providing PAT plan information during power ascension
  11. methodology for updating limit curves
- (e) The key attributes of the PAT Plan shall not be made less restrictive without prior NRC approval. Changes to other aspects of the PAT Plan may be made in accordance with the guidance of NEI 99-04, "Guidelines for Managing NRC Commitments," issued July 1999.
- (f) During the first two scheduled refueling outages after reaching full EPU conditions, Entergy shall conduct a visual inspection of all accessible, susceptible locations of the steam dryer in accordance with BWRVIP-139 and GE inspection guidelines. Entergy shall report the results of the visual inspections of the steam dryer to the NRC staff within 60 days following startup.
- (g) At the end of the second refueling outage following the implementation of the EPU, the licensee shall submit a long-term steam dryer inspection plan based on industry operating experience along with the baseline inspection results for NRC review and approval.



- (h) This renewed license condition shall expire upon satisfaction of the requirements in paragraph (f) provided that a visual inspection of the steam dryer does not reveal any new unacceptable flaw or unacceptable flaw growth that is caused by fatigue.

- (47) Commitments made as required by standard TSTF safety evaluation, as discussed in the notice of availability, will be maintained as described in UFSAR Section 16, Technical Specifications. This condition applies to the following TSTFs as approved.

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Changes to the commitments can be made in accordance with 10CFR50.59.

- (48) Feedwater Heaters Out-of-Service (FWHOOS)

Operation with FWHOOS in the Maximum Extended Load Line Limit Analysis Plus (MELLLA+) region is prohibited.

- (49) Time Critical Operator Action Commitments made as required for the MELLLA+ LAR will be converted to a Renewed License Condition as follows:

Prior to Operation in the MELLLA+ Domain, Entergy will:

Train all active operating crews to perform the following three MELLLA+ time-critical operator actions:

- (a) Initiate Reactor Water Level Reduction (90 seconds following failure to scram concurrent with no reactor recirculation pumps in service and CTP > 5%).
- (b) Initiate Standby Liquid Control Injection (300 seconds if CTP > 5% or before Suppression Pool Temperature reaches 110 degrees F).
- (c) Initiate Residual Heat Removal Suppression Pool Cooling (660 seconds).

GGNS will validate that all active operating crews have met the time requirements for the three MELLLA+ time-critical operator actions during evaluated scenarios.

GGNS will report any MELLLA+ time-critical actions that are converted to "immediate actions" to the NRC Project Manager.

The following are one-time actions which expire after the first report:

The results of the three MELLLA+ time-critical operator actions training will be reported to the NRC Project Manager within 60 days of completion of the training.

The reported results will include the full range of response times for each time-critical action and the average times for each crew.

Any MELLLA+ time-critical operator training failures during evaluated scenarios will be reported to the NRC within 60 days of any failures with a plan for resolution.

(50) License Renewal Conditions

- (a) The information in the UFSAR supplement, submitted pursuant to 10 CFR 54.21(d), as revised during the license renewal application review process, and licensee commitments as listed in Appendix A of the "Safety Evaluation Report Related to the License Renewal of Grand Gulf Nuclear Station, Unit 1," are collectively the "License Renewal UFSAR Supplement." This Supplement is henceforth part of the UFSAR, which will be updated in accordance with 10 CFR 50.71(e). As such, the licensee may make changes to the programs, activities, and commitments described in this Supplement, provided the licensee evaluates such changes pursuant to the criteria set forth in 10 CFR 50.59, "Changes, Tests and Experiments," and otherwise complies with the requirements in that section.
- (b) The License Renewal UFSAR Supplement, as defined in license condition 50(a) above, describes certain programs to be implemented and activities to be completed prior to the period of extended operation (PEO).
  - 1. The licensee shall implement those new programs and enhancements to existing programs no later than 6 months prior to the PEO
  - 2. The licensee shall complete those activities by the 6-month date prior to the PEO operation or the last refueling outage prior to the PEO, whichever occurs later
  - 3. The licensee shall notify the NRC in writing within 30 days after having accomplished item (b)1 above and include the status of those activities that have been or remain to be completed in item (b)2 above.

- D. The facility required exemptions from certain requirements of Appendices A and J to 10 CFR Part 50 and from certain requirements of 10 CFR Part 100. These include: (a) exemption from General Design Criterion 17 of Appendix A until startup following the first refueling outage, for (1) the emergency override of the test mode for the Division 3 diesel engine, (2) the second level undervoltage



protection for the Division 3 diesel engine, and (3) the generator ground over current trip function for the Division 1 and 2 diesel generators (Section 8.3.1 of SSER #7) and (b) exemption from the requirements of Paragraph III.D.2(b)(ii) of Appendix J for the containment airlock testing following normal door opening when containment integrity is not required (Section 6.2.6 of SSER #7). These 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. In addition, by exemption dated December 20, 1986, the Commission exempted licensees from 10 CFR 100.11(a)(1), insofar as it incorporates the definition of exclusion area in 10 CFR 100.3(a), until April 30, 1987 regarding demonstration of authority to control all activities within the exclusion area (safety evaluation accompanying Amendment No. 27 to Renewed License (NPF-29). This exemption is authorized by law, and will not present an undue risk to the public health and safety, and is consistent with the common defense and security. In addition, special circumstances have been found justifying the exemption. Therefore, these exemptions are hereby granted pursuant to 10 CFR 50.12 with the granting of these exemptions, the facility will operate, to the extent authorized herein, in conformity with the application, as amended, the provisions of the Act and the rules and regulations of the Commission.

- E. The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The plans, which contain Safeguards Information protected under 10 CFR 73.21, are entitled: "Physical Security, Safeguards Contingency and Training and Qualification Plan," and were submitted to the NRC on May 18, 2006.

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved cyber security plan (CSP), including changes made pursuant to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The licensee's CSP was approved by License Amendment No. 186 as supplemented by a change approved by License Amendment Nos. 192, 200 and 210.

- F. EOI shall report any violations of the requirements contained in Section 2, Items C. (1), C.(4) through C.(38) of this renewed license within twenty-four (24) hours. Initial notification shall be made in accordance with the provisions of 10 CFR 50.72 with written follow-up in accordance with the procedures described in 10 CFR 50.73(b), (c), and (e).
- G. The licensees shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.
- H. This renewed license is effective as of the date of issuance and shall expire at midnight on November 1, 2044.

FOR THE NUCLEAR REGULATORY COMMISSION

ORIGINAL SIGNED BY:

A handwritten signature in dark ink, appearing to read 'W. M. Dean', followed by a long horizontal line extending to the right.

William M. Dean, Director  
Office of Nuclear Reactor Regulation

Attachments:

1. Attachments 1 and 2
2. Appendix A – Technical Specifications (NUREG-0934)
3. Appendix B – Environmental Protection Plan
4. Appendix C - Antitrust Conditions

Date of Issuance: December 1, 2016