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CHAIRMAN

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

July 17, 1984

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The Honorable Edward J. Markey, Chairman
Subcommittee on Oversight and Investigations
Committee on Interior and Insular Affairs
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

On June 4, 1984 the NRC staff provided you with draft answers to questions contained in your letter of March 13, 1984. Supplemental information on three of the answers was forwarded by the staff on June 20, 1984. The Commission has now completed its review of the draft responses, and attached are final responses to your questions. This does not include the response to question 10(b) of your letter which will be forwarded in separate correspondence.

Commissioner Asselstine adds:

I do not agree with all of the Commission's responses to your questions regarding the safety significance of the identified errors in the Technical Specifications. In my view, these responses present an incomplete picture of the safety significance of these violations and could leave the impression that the Technical Specification errors are of limited safety significance. See, for example, the responses to questions 1(E) and 2(D). Rather than insert my own response in each case, I would like to take this opportunity to respond to the thrust of your questions. The plant management repeatedly assured the NRC staff that the Technical Specifications for safe operation of the plant had been completely reviewed and errors corrected. Upon further inspection, staff repeatedly found errors and this has been going on for over two years. To me, this is a case where a licensee has casually, if not recklessly, approached a fundamental safety matter--the specifications under which the plant is to be maintained in a safe manner. That licensee attitude in itself is a matter of great safety significance quite apart from the details of the equipment affected by the Technical Specifications violations.

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Further, I doubt whether construction of the plant had been completed at the time of the license issuance. My doubts on this score derive from conversations with senior officials in the NRC staff, from a review of the documentation supporting issuance of the Grand Gulf and other recent licenses, and from the time it is taking to complete those activities necessary to support operation of the plant. For example, senior officials within the Agency have told me that this is the least complete plant licensed by the NRC since the Three Mile Island accident. In this regard, Grand Gulf appears to compare unfavorably with the other boiling water reactors licensed since the TMI accident, all of which have had much more successful start-up programs than Grand Gulf. As a general matter, there appears to be a good deal of variation in the extent of construction completion that is required by the NRC staff prior to the issuance of an operating license. The Commission should promptly develop and apply a uniform definition for construction completion for the issuance of an operating license for future cases.

In my view, a license should not have been issued in June 1982. Given what I have learned since then, I would order the plant shutdown until the staff can certify to the Commission that the plant meets the regulations (or appropriate exemptions have been issued) and that the Technical Specifications are in conformance with the as-built plant and safety analyses.

Commissioner Bernthal adds:

Commissioner Bernthal would not take issue with the general sense of Commissioner Asselstine's comments. But he also believes that the Commission's responses to your questions convey a largely balanced picture of the complex Grand Gulf Technical Specifications record.

Chairman Palladino and Commissioner Roberts add:

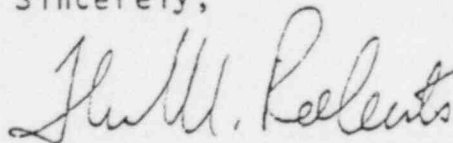
We do not agree with Commissioner Asselstine's view that our responses to your questions, contained in this letter, "...present an incomplete picture of the safety significance of these violations..." Our responses to the questions (specifically 1(E), 6(D) and 8 clearly state that: 1) while most of the

Technical Specifications errors were not safety significant, some errors, if they had not been identified, could have resulted in reduced safety margins during power operation; 2) the cumulative effect of the Technical Specifications errors could have led to operator confusion and operator error detrimental to safe operation; and 3) the NRC staff prioritized Technical Specifications errors based on their safety significance and has taken specific action to assure that all significant errors are corrected prior to Grand Gulf operation.

Additionally, we do not share Commissioner Asselstine's apparent concerns regarding the status of Grand Gulf construction at the time of license issuance. As stated in response to Question 8(A), Grand Gulf was essentially complete at the time the license was issued. Our position on this point conforms with the Commission's regulation 10 CFR § 50.57(a) which states that a license may be issued based upon, in part, a finding that the "construction of the facility has been substantially completed."

Lastly, we reiterate our view that the NRC is taking those actions which we believe are appropriate vis-a-vis licensing the Grand Gulf nuclear plant. Specifically we note and approve of NRC staff actions, including special inspections and the order issued April 18, 1984 (enclosed), to assure that necessary Technical Specifications issues are resolved prior to full power authorization. We agree with the NRC staff position that revocation or suspension of the low power license is not warranted.

Sincerely,



Thomas M. Roberts
Acting Chairman

Enclosure: Answers to Questions
cc: Rep. Ron Marlenee

QUESTION 1(A): With Respect to the efforts identified in the Technical Specifications and surveillance procedures submitted to the NRC by MP&L, please indicate: the nature or types of errors.

ANSWER.

The NRC staff has analyzed the Technical Specification changes requested through March 1, 1984 and determined that the requested changes generally fell into four categories: (1) Editorial or nomenclature corrections (37%), (2) Consistency with Technical Specifications (15%), (3) Conformance to the As-Built (45%), and (4) Changes to the Bases Section (3%). Categories (1) and (2) were purely administrative changes while Category (4) involved clarification statements for a better understanding of the reasons for the Technical Specifications. In accordance with 10 CFR 50.36, Category (4) items are not considered as part of the Technical Specifications. Since Categories (1), (2) and (4) were administrative in nature, we find that 55% of the proposed changes were administrative. The remaining 45% of the proposed changes were in Category (3). Most of the items in Category (3) were of the type that would not be normally reviewed by the NRC staff during its review of the proposed Technical Specifications. Rather, these items resulted from inaccuracies in detailed, plant-specific information for which we rely on the applicant to provide.

Mississippi Power and Light Company (MP&L), in a letter dated December 1, 1983, identified a number of areas in which problems had been identified with surveillance procedures. The following list identifies the nature and types of these problems:

- (1) Procedures did not exist to perform some of the surveillances required by Technical Specifications (10%);
- (2) Procedures did not provide for testing all the equipment required (20%);
- (3) Procedures did not include specific acceptance criteria for channel checks and other tests (10%);
- (4) Channel calibration procedures did not provide for checking the entire parameter sensing loop as required (12%);
- (5) Some equipment response times were not covered by procedures (2%);
- (6) Some procedures contained acceptance criteria less conservative than Technical Specifications (5%);
- (7) Some procedures contained incorrect surveillance frequency requirements (17%);

- (8) Some procedures incorrectly stated and/or did not include the operational conditions for which the surveillance was applicable (20%);
- (9) Some steps were not provided in surveillance procedures to return safety-related valves and switches to "normal" or "as found" positions upon completion of tests when the positions were changed as a result of a surveillance (4%).

QUESTION 1(B): With respect to the errors identified in the Technical Specifications and surveillance procedures submitted to the NRC by MP&L, please indicate: the cause(s) of the errors.

ANSWER.

Our evaluation of the Grand Gulf Technical Specification problems shows that there were two significant contributors to those problems. First, there was excessive informality by both the applicant and the NRC staff during the development of the grand Gulf Technical Specifications. Our evaluation showed that this excessive informality was not limited to just the Grand Gulf Technical Specifications, but was typical of the process used for the development of technical specifications for other applicants as well. Therefore, we have instituted a number of procedural changes to increase the formality of the technical specification development process to ensure that such problems will not recur.

The second significant contributor to the Grand Gulf Technical Specification problems was lack of sufficient review by the applicant's plant operations staff during the development of the Grand Gulf plant-specific Technical Specifications. Our experience shows that it is preferable to have plant-specific technical specification reviews performed by members of the applicant's plant operations staff since they are usually the most familiar with the plant's actual design, configuration and nomenclature and can make significant contributions to the development of accurate technical specifications. However, this was not the case with Grand Gulf. Grand Gulf's participation was primarily through a consultant acting as the contact for and on behalf of the applicant. Although provided to the reactor vendor and the architect engineer for their review and comment, the proposed plant-specific technical specifications were not reviewed in sufficient detail by the Grand Gulf plant operations staff during the initial development period up to and including the proof and review. Nevertheless, when the license was issued, the NRC staff, based on its review, believed that the Technical Specifications were reflective of actual plant nomenclature and that the Technical Specifications were consistent with the operational requirements of Grand Gulf.

A major reason for the inadequacies in the surveillance procedures was an incomplete review performed by MP&L. The review process did not include adequate technical reviews, independent quality reviews, and verification of the final approved Technical Specifications against procedures which had been developed from earlier draft Technical Specifications. there were very few programmatic controls over surveillance activities at the time of initial surveillance procedure preparation.

QUESTION 1(C): With respect to the errors identified in the Technical Specifications and surveillance procedures submitted to the NRC by MP&L, please indicate: what, if any, analysis NRC has done to discover the possible root cause(s) of the errors and the results of any such analysis.

ANSWER.

See response to Question 1(b).

QUESTION 1(D): With respect to the errors identified in the Technical Specifications and surveillance procedures submitted to the NRC by MP&L, please indicate: why the NRC did not discover these errors prior to issuing a license.

ANSWER:

The errors in the Technical Specifications were not discovered because, in some instances, they occurred in areas not normally reviewed in detail by the NRC staff during the licensing process (e.g., editorial or nomenclature corrections, and conformance to the as-built plant). We have also concluded that some of the errors (e.g., consistency within Technical Specifications) were the result of insufficient attention by the NRC staff during their review and approval of the Grand Gulf Technical Specifications.

Constraints on manpower resources and current practices limit our reviews to auditing surveillance procedures by Region inspections to determine whether or not Technical Specification requirements are addressed in the surveillance procedures. Two inspections of surveillance procedure compliance with Technical Specifications were conducted between license issuance and the commencement of initial criticality. Subsequent to initial criticality, a Region II team inspections revealed the existence of additional surveillance procedure errors. The license's previous corrective action was not sufficiently comprehensive.

QUESTION 1(E): With respect to the errors identified in the Technical Specifications and surveillance procedures submitted to the NRC by MP&L, please indicate: the safety significance of the errors (at both low power and normal operation).

ANSWER.

Technical specifications for nuclear power plants include items in the following categories: safety limits, limiting safety system settings, limiting conditions for operation, surveillance requirements, design features, and administrative controls. Of these categories, the first two have the most immediate safety significance since a violation of (or error in) these could represent unsafe operation. None of the Grand Gulf Technical Specification deficiencies involved errors in these two categories that would have caused unsafe operation. The third category, limiting conditions for operation, are the lowest functional capability or performance levels of equipment required for safe operation. The technical specifications in this category identify, among other things, the minimum set of equipment that must be operable in order to operate the plant safely at various power levels, and the actions to be taken in the event such equipment is not operable. For Grand Gulf, there were numerous errors in this section of the Technical Specifications. Most of the errors were unsubstantive and would not likely have caused an unsafe condition to exist during plant operation. However, in some cases the errors could have resulted in operation without assurance that equipment important to safety was, in fact, operational. An example is the error wherein only seven Automatic Depressurization System valves were identified in the technical specifications while eight such valves existed and credit for all valves operating was assumed in the accident analysis. Had this error not been identified, and if the unidentified valve was not operable, the reactor's response to an accident may not have provided the safety margins required by the NRC.

Deficiencies that existed in the remaining sections of the Grand Gulf Technical Specifications were of lesser immediate safety significance in terms of risk to public health and safety for operation of the reactor at full power. However, the cumulative effect of the numerous inconsistencies, inaccuracies, and lack of clarity represented the potential for operator errors or confusion detrimental to safe operation.

The surveillance procedures were deficient in that they did not provide for adequate demonstration of equipment operability. Had these deficiencies not been corrected, the plant would have been operated without the high degree of assurance necessary that important safety equipment was operable.

QUESTION 1(F): With Respect to the errors identified in the Technical Specifications and surveillance procedures submitted to the NRC by MP&L, please indicate what actions the NRC staff took upon learning of these errors.

ANSWER

The Grand Gulf Operating License, NPF-13, and associated Technical Specifications were issued on June 16, 1982, by the NRC. Actual fuel load began on July 1, 1982. Initial criticality at zero power was undertaken on August 18, 1982. Following criticality on that day, the plant was shut down and went into a major maintenance outage.

Shortly after issuance of the license, Region II inspections were conducted which concentrated on the technical adequacy of surveillance procedures used to demonstrate compliance with the Technical Specifications. Findings revealed that the procedures were not totally adequate to demonstrate compliance with the Technical Specifications. NRC was assured by plant management that these were isolated occurrences and that a complete review had been made of the surveillance procedures and that all errors had been corrected.

During the initial criticality on August 18, 1982, the reactor was operated for approximately one hour at essentially "zero" power. NRC inspectors were present during criticality and closely observed licensee actions and plant status to ensure that all applicable Technical Specifications were met. No discrepancies were observed during initial criticality. However, it was subsequently determined that two surveillances involving operability of the scram discharge volume drain and vent valves and operability of fire rated walls, floor/ceilings, and fire dampers were later identified as not being fully met.

The Region II Administrator met with MP&L on July 26, 1982, to discuss the number of problems identified with procedures and the Corporate Safety Review Committee's role in the safe operation of Grand Gulf. The Regional Administrator emphasized to MP&L the necessity of conducting a meticulous review of procedures to ensure that Technical Specifications were fully implemented by procedures.

During the period of September 27 to October 8, 1982, a special team inspection was conducted by Region II to verify: that changes to Technical Specifications were promptly incorporated into procedures and properly implemented; that surveillance procedures were in place to implement all Technical Specifications requirements; and that surveillance procedures were technically adequate.

The findings from this inspection included examples of Technical Specifications errors and caused a shift in inspection emphasis to ensure that the Technical Specifications were accurate and consistent with the as-built plant. An enforcement conference was held with MP&L on October 14, 1982, to further discuss these findings. The corrective actions agreed on during the enforcement conference were documented in a Confirmatory Action Letter (CAL) from the Region to MP&L on October 20,

1982. The CAL stated that MP&L had taken or would take the following actions prior to the achievement of the next reactor criticality:

- (1) Ensure that all surveillance procedures are technically adequate to establish an effective program to incorporate, control, and implement regulatory requirements. These actions are to include technical specification surveillance, ASME Section XI Code and 10 CFR 50 Appendix J requirements;
- (2) Prepare and submit license amendment requests to the NRC, where necessary, to correct administrative and technical deficiencies in the Technical Specifications;
- (3) Conduct formal training of operating and staff personnel on the proper implementation of Technical Specifications requirements, including procedure compliance;
- (4) Establish a formal quality assurance audit program to assure compliance with the above regulatory requirements; and
- (5) Conduct a review by the Off-site Safety Review Committee, of the adequacy of actions described above to assure compliance with regulatory requirements.

During the four month period from license issuance in June 1982 to full recognition of the Technical Specifications deficiencies, the plant did not operate, with the exception of the brief initial criticality on August 18, 1982, and posed no threat to the public health and safety. Also, the plant did not operate again until the licensee had completed activities in response to the October 20, 1982 Confirmatory Action Letter. The plant remained in cold shutdown to complete preparation of those systems required for full power operation, to review and revise the Technical Specifications, and to review and rewrite the surveillance procedures, until September 1983.

In order to assess the adequacy of the staff's review of the Grand Gulf Technical Specifications, the Staff took the following actions:

- (1) The Grand Gulf Technical Specifications were re-reviewed by the staff to determine conformance with FSAR requirements and the SER.
- (2) An audit review of selected portions of the Grand Gulf Technical Specifications was conducted by INEL and Region II. This review compared the Technical Specifications with the FSAR, the SER and the as-built plant.

QUESTION 1(G): When and by what process the Commission was informed of the errors.

ANSWER

By weekly status reports on the near term plants to be licensed, the Office of the Executive Director for Operations informs the Commission of the outstanding issues and reasons for delays on each specific plant. The Technical Specifications issue first appeared in these status reports for Grand Gulf on November 3, 1982 (copy enclosed). The basic reference for the staff action was a Confirmatory Action Letter from Region II to the licensee on October 20, 1982. The nature and extent of the problems with the Grand Gulf Technical Specifications were discussed in three status report Commission meetings, one held on December 8, 1983, the second on February 29, 1984, and the third on March 20, 1984.

QUESTION 2:

Did Grand Gulf reach criticality and operate without performing required and appropriate surveillance tests?

ANSWER

During initial criticality and the approximately one hour period of open vessel testing on August 18, 1983, two Technical Specification Surveillance Requirements involving operability of the scram discharge volume drain and vent valves, and operability of fire barriers had not been fully met.

QUESTION 2(A): Did Grand Gulf reach criticality and operate without performing required and appropriate surveillance tests? If yes, indicate: for what period of time this occurred.

ANSWER

The surveillance requirement related to scram discharge volume operability was not met throughout the period of the initial approach to criticality and open vessel physics testing; a period of less than two days. The licensee believed that previously performed preoperational tests had met the surveillance operability requirements. It was later determined that valve closure times had not been tested, therefore the complete operability surveillance had not been completed.

The surveillance requirement related to fire barrier operability was required to have been performed in June 1982, when the Technical Specifications were issued. Region II inspectors identified in July 1982 that certain cyclical fire barrier operability surveillances had not been implemented by surveillance procedures. In response to this finding, the licensee reviewed and documented the position that the successful completion of preoperational tests on these fire barriers, which were similar to the required operability surveillances, satisfied the Technical Specification required operability surveillances. In order to meet the Technical Specification operability surveillance, procedures were written, reviewed and performed.

QUESTION 2(B): Did Grand Gulf reach criticality and operate without performing required and appropriate surveillance tests? If yes, indicate: Whether this took place with the knowledge and/or approval or concurrence of any member of the NRC staff and if so, whom.

ANSWER.

Although NRC inspectors witnessed the initial criticality, the two missed surveillances were not in the sample surveillances audited by NRC. The failures to perform the two surveillance requirements did not take place with the knowledge, approval or concurrence of any member of the NRC staff.

QUESTION 2(C): Did Grand Gulf reach criticality and operate without performing required and appropriate surveillance tests? If yes, indicate: What, if any, NRC regulations were violated.

ANSWER.

Technical Specification surveillance requirements concerning verification of the operability of the scram discharge volume drain and vent valves, and verification of the operability of fire barriers were not fully met. Meeting Technical Specification requirements is a condition of the operating license.

QUESTION 2(D): Did Grand Gulf reach criticality and operate without performing required and appropriate surveillance tests? If yes, indicate: the safety significance.

ANSWER.

Although two surveillances were not performed at the intended stage of plant startup, the equipment had been successfully tested during pre-operational testing. Subsequent surveillances demonstrated the equipment to be operable. Therefore, there was no failure of equipment due to the missed surveillances; and no safety significance may be attached to unavailability of operable equipment. However, should any of the equipment have failed to function during the time the reactor was critical, the effects would also have been negligible because the reactor was being operated at zero power, producing negligible fission product inventory.

QUESTION 3: I have been informed that MP&L was exempted by the NRC from performing approximately 30 pre-operational tests. If true, please indicate what was the technical basis for providing these exemptions.

(A) If these tests had been performed rather than exempted, would any of the technical specifications or surveillance procedure errors have been discovered prior to criticality?

(B) Who at NRC is responsible for granting these exemptions and was a "no significant hazards consideration" determination made by the staff for some or all of these tests? Provide a list of all those that concurred in these decisions along with the Official Record Copy of the document(s) authorizing these exemptions.

ANSWER.

MP&L was not exempted from performing pre-operational tests. The Grand Gulf Nuclear Station, Unit 1, Facility Operating License NPF-13, dated, June 16, 1982, specifically identified nine preoperational tests and 19 post construction acceptance tests which MP&L was required to complete to the satisfaction of the NRC prior to exceeding five percent power. These tests were deferred at the request of MP&L as part of their phased startup program.

It is doubtful that performance of these deferred tests would have revealed technical specification or surveillance procedure errors due to the type of systems involved and the fact that the preoperational and acceptance tests are performed as a series of tests independent of the routine surveillance tests.

The deferral of these tests was requested by the licensee in their February 12, 1982 two-phased start-up program. The NRC staff performed a technical review/evaluation of this program and determined that satisfactory completion of all tests prior to the facility exceeding five percent power would, for the system being tested, demonstrate satisfactory performance and would not impact the health and safety of the public or result in any environmental impacts other than those evaluated in the Final Environmental Statement.

The technical basis for the deferrals was that none of the plant systems for which tests were deferred are required to support or are needed for any event during low power operation. As expected, many of these systems (i.e., certain turbine generator, feedwater control and steam systems) are not placed into operation until after the facility has achieved at least a five percent power level.

QUESTION 3: (CONTINUED)

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To ensure that the deferred tests were performed prior to exceeding a power level of five percent, the completion and evaluation of these tests were included as a license condition.

QUESTION 4: List those members of the NRC staff that approved of the erroneous technical specifications and surveillance procedures submitted by MP&L for Grand Gulf. Specifically requested is the Official Record Copy of the documents(s) indicating such approval or concurrence.

ANSWER.

Preparation of the technical specifications for power reactors is coordinated by the standard technical specifications (STS) section of the Standardization and Special Projects Branch of NRR. The Grand Gulf technical specifications and those for all other power reactors are reviewed by the NRR technical review branches and by the applicable Region before issuance. The results of these reviews are reported to and used by the STS Section in the preparation of the plant-specific technical specifications. The technical specifications are then finally approved and issued as Appendix A to the operating license. A copy of the Official Record Copy of the June 16, 1982 letter signed by Mr. Robert A. Purple for Mr. Darrell G. Eisenhut forwarding Facility Operating License NPF-13 with accompanying technical specifications to Mr. N. L. Stampley is enclosed.

The NRC does not formally approve or concur in surveillance procedures at Grand Gulf or any other facility. Such procedures are not submitted by licensees for review. Instead, the NRC inspects on a selected basis to assure that the procedures demonstrate compliance with the technical specifications. These inspections are conducted by the regional inspectors.

QUESTION 5: How many NRC personnel actually review technical specifications and surveillance procedures submitted by applicants and licensees? Please indicate the budget and staff power assigned to this task for each of the past five years. Indicate also whether the NRC staff and Commission believe the present funding, staffing and organization of this task is adequate.

ANSWER.

Proposed plant-specific Technical Specifications are prepared by the applicant and submitted to the NRC for review. The proposed plant-specific Technical Specifications are used by the Standard Technical Specifications (STS) Section of the Standardization and Special Projects Branch of NRR to prepare Technical Specifications for issuance as Appendix A to the facility operating license which, as noted in our response to Question 4, are reviewed by the NRR technical review branches and the applicable Region.

The STS Section presently consists of a Section Leader and three professionals. The STS Section has been staffed at this level for approximately the past two years. The STS Section was staffed with a Section Leader and approximately four professionals during the previous approximately eight years. Our experience has shown that approximately 0.3 professional staff years (PSY) of STS Section effort is required to prepare the Technical Specifications for each new facility operating license. Since approximately 17 new facility operating licenses are currently scheduled to be issued during the next 12 months, current staffing may be inadequate. If staff shortages in this area should occur, we will consider this need to augment the STS Section. In addition to the effort expended by the STS Section in preparing Technical Specifications, the various NRR technical review branches expend approximately another 0.3 PSY in their review and approval of plant-specific technical specifications. Also, each applicant's draft Technical Specifications are reviewed by the Senior Resident Inspector (approximately one staff-week), regionally based specialist inspectors (approximately one staff-week), and to a much lesser extent the regional based resident inspector's supervisor or project engineer. In addition, other senior resident inspectors, stationed at a similarly designed plant, and who have operating experience, may contribute to this review. In the case of Grand Gulf, the first BWR-6 with a Mark III containment, because there was no comparable facility already in operation, this supplemental review by other Senior Resident Inspectors was not performed.

QUESTION 5: (CONTINUED)

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As discussed in the response to Question 4, above, surveillance procedures are not submitted by the applicant to the NRC. Rather, the procedures, following their review and approval by the licensee, are normally reviewed onsite by the resident and regional inspection staffs as a part of the routine review of selected plant activities.

Additional program requirements for the Regions, which recognize the efforts now being expended on plants approaching the licensing stage, are being evaluated.

QUESTION 6(A): It is my understanding that MP&L agreed to discontinue operations at Grand Gulf in October 1982 in accordance with an NRC Confirmation of Action Letter issued by NRC's Region II office. Please explain: The reasons why the NRC staff asked MP&L to discontinue operations in October 1982.

ANSWER.

Events and staff actions leading to the CAL of October 20, 1982, are described in response to Question 1.f.

QUESTION 6(B): It is my understanding that MP&L agreed to discontinue operations at Grand Gulf in October 1982 in accordance with an NRC Confirmatory Action Letter issued by NRC's Region II office. Please explain: Why the license was not revoked or suspended instead.

ANSWER.

The NRC staff concluded in October 1982, as it still concludes today, that license suspension or revocation is not warranted.

The NRC had commitments from the licensee to maintain the plant in cold shutdown while the plant was in a maintenance outage. Region II personnel inspected the licensee on a continuing basis to verify operation in accordance with the operating restraints contained in the license. Although fuel was loaded in the reactor, there was no significant fission product inventory and the core was continuously monitored. No credible postulated conditions or sequence of events could have endangered the health and safety of the public during this time period. Therefore, it was considered not necessary to issue a formal order suspending or revoking the authority of the licensee to perform any critical operations.

QUESTION 6(C):

It is my understanding that MP&L agreed to discontinue operations at Grand Gulf in October 1982 in accordance with an NRC Confirmation of Action Letter (CAL) issued by NRC's Region II office. Please explain: when, why, and by whose authority MP&L was allowed to continue operations (please provide the Official Record Copy of the document authorizing the return to operations).

ANSWER.

When the licensee judged that all the actions required by the license and documented in the CAL were complete, Region II was so informed. On September 23, 1983, Region II issued a letter to MP&L stating the NRC concurrence with the planned schedule for recriticality and documenting certain other actions agreed to by MP&L. This letter was signed by Mr. James P. O'Reilly, Regional Administrator, Region II, and it identified other corrective actions to be taken by the licensee. (Official Record Copy enclosed). The Grand Gulf reactor was taken critical on September 25, 1983, and the planned testing conducted at less than 5% power. Low power operation and testing continued throughout October 1983 and was witnessed by various Regional inspectors. Following completion of the planned testing at less than 5% power, the reactor was shut down in early November 1983 to correct minor problems revealed by low power testing and to accomplish the operator recertification program.

As documented in the CAL, MP&L had kept Region II informed by a series of letters as actions were completed. MP&L letters of August 29 (AECM-83/0580), and September 22, 1983 (AECM-83/0611), collectively stated that all actions were accomplished for operations up to 5% power and committed to milestone dates for completion of the remaining actions. The Region conducted several inspections to audit the licensee actions which supplemented the ongoing monitoring of general activities by the resident inspectors. A Regional inspection during the period August 15 through September 1, 1983, documents a team inspection which examined operational readiness.

QUESTION 6(D):

It is my understanding that MP&L agreed to discontinue operations at Grand Gulf in October 1982 in accordance with an NRC CAL issued by NRC's Region II office. Please explain: what errors have been discovered since MP&L has continued operations and why these errors were not discovered after the issuance of the CAL and prior to continued operation.

ANSWER.

MP&L's 1982-83 review identified approximately 200 Technical Specifications changes as necessary for recriticality and low power testing in September-October 1983. These changes were classified for action into three priorities by safety significance and plant operating condition. These were forwarded to NRR for review in a series of submittals ending September 9, 1983. Category 1 and 2 changes were reviewed by NRR and appropriate changes made prior to recriticality. Category 3 changes included editorial items, nomenclature, clarification, and other such changes of less immediate concern that were not required for recriticality or low power testing.

These errors were identified and processed prior to recriticality and performance of the low power tests as described above.

However, during the operator recertification period (approximately December 1983 - January 1984) the licensee continued to identify inconsistencies and ambiguities in the Technical Specifications. These items were compiled, tracked, and evaluated in preparation for future change requests.

To gain further confidence in the adequacy of the Technical Specifications, a further review was done by NRC in February 1984. The staff and consultants from Idaho National Engineering Laboratory (INEL) compare the Grand Gulf Technical Specifications, the Final Safety Analysis Report (FSAR), and the NRC Safety Evaluation Report (SER) for consistency in certain selected Technical Specifications areas. The INEL review identified several discrepancies which will be resolved.

In parallel, Region II conducted a special team inspection at the plant to compare the same Technical Specifications areas to the as-built plant design. Ten sections of the Technical Specifications were audited. No discrepancies were identified in two areas. In four areas, errors were found in the Technical Specifications, along with several Technical Specifications items that require additional follow-up to determine final resolution. Questions requiring resolution regarding acceptability of the Technical Specifications were identified in each of the remaining four areas. These findings were presented to the licensee in an exit interview on February 24, 1984 at the Grand Gulf site.

The inspectors were advised that approximately 50% of these errors had been identified by MP&L and action was in progress for resolution. MP&L has identified numerous other items in the Technical Specifications that need clarification or correction. However, none of these items, in the judgment of the NRC staff, were of such a nature to cause a significant hazard to the health and safety of the public.

Because of continuing questions concerning the accuracy of the technical specifications, the licensee established a program to perform another review of the Technical Specifications to identify and resolve any remaining Technical Specifications discrepancies. The program involved members from Bechtel (the Grand Gulf architect-engineer and constructor), General Electric (the reactor designer), and members of the plant operations staff holding Senior Reactor Operator licenses. The scope of this review included the entire Technical Specifications.

In parallel with the MP&L effort, the staff conducted another review of the Grand Gulf Technical Specifications. Prior to issuance of a full power license for Grand Gulf, all items identified by either review will be evaluated for safety significance by the NRC staff and the necessary Technical Specifications changes made.

The reason that these current items were not identified and addressed after the issuance of the CAL and prior to recriticality in September 1983, is due to the limited scope of the Technical Specifications review by MP&L prior to September 1983 and a misunderstanding between MP&L and NRC on the scope of the CAL. The NRC staff thought that MP&L was performing a comprehensive and detailed review of all aspects of the Technical Specifications as intended by the words of the CAL. MP&L states that their review concentrated on the surveillance test areas of Technical Specifications. Many of the Technical Specifications changes that MP&L requested as a result of their review were to change Limiting Conditions for Operation (LCO) and applicability statements to make the Technical Specifications conform to the as-built plant. Therefore, the NRC staff believed that the licensee was performing a comprehensive review of all aspects of the Technical Specifications.

During the operational readiness inspection, Region II inspectors examined many surveillance procedures and associated LCO statements in Technical Specifications. There were no significance discrepancies identified, although the inspection sample was small relative to the total Technical Specifications. These facts led the NRC staff to conclude that prior to recriticality in September 1983, all Technical Specifications errors were identified.

QUESTION 7:

Considering the serious problems identified with Transamerica Delaval (TDI) diesel generators at Shoreham in the summer of 1983, what was the technical basis for allowing Grand Gulf to operate at low power in September 1983? Additionally, was the cause of the September 4, 1983 diesel generator fire at Grand Gulf in any way related to the generic problems identified with Transamerica Delaval diesel generators at Shoreham?

ANSWER.

MP&L was fully informed by the NRC of the diesel engine crankshaft failures at Shoreham. Region II and MP&L representatives visually inspected the crankshaft of one of the Grand Gulf TDI diesels in August 1983 and observed no abnormal conditions. Throughout September, MP&L and Region II held numerous technical discussions to agree upon the relevance of the Shoreham failures to Grand Gulf, the future course of action, and the acceptability of proceeding with testing.

NRC determined that it was acceptable to continue low power testing at Grand Gulf during October for the following reasons:

- . Although made by TD, the Grand Gulf Division I and II diesels are a V-16 design which is different from the Shoreham design.
- . In addition to these diesels being a different configuration (Shoreham diesels are a straight-eight design) the Grand Gulf diesels have a larger crankshaft.
- . No evidence of crankshaft failure had been observed at Grand Gulf or any other TDI V-16 engine.
- . This crankshaft design has been successfully operated in many applications for several years with no crankshaft failures.
- . Prior to the Grand Gulf recriticality in October, all evidence of the Shoreham failure pointed toward a design error by TDI on the specific Shoreham crankshaft design.
- . The Grand Gulf diesels were run for seven consecutive days to demonstrate their reliability.

The comprehensive list of TDI problems developed by the TDI owners group had not been compiled prior to the September 1983 recriticality. However, each problem, as identified, was addressed by MP&L and prompt corrective action

taken. NRC believed then, and continues to believe, that there was no safety hazard associated with operation of Grand Gulf at low power with the installed TDI diesels.

The diesel engine fire at Grand Gulf on September 4, 1983 was caused by a broken fuel line between the low pressure fuel pump and the fuel distribution header. The licensee conducted a metallurgical examination of the broken fuel line and determined it to be a cyclic fatigue failure. The probable cause was excessive vibration of the fuel line. The fuel line was replaced and, with the concurrence of TDI, a support bracket was installed on that line on both Grand Gulf diesels to reduce vibration. The vendor manuals from TDI pictured such a bracket on the V-16 engine, but none was supplied on either Grand Gulf engine. The staff concluded that this failure was not indicative of a generic design problem but rather a failure of TDI quality control to assure installation of the bracket.

QUESTION 8:

In a March 10, 1984 telephone conversation with the staff of the Subcommittee, Harold Denton, Director of NRC's Office of Nuclear Reactor Regulation, made remarks that my staff has related as follows:

- Grand Gulf is the "least built" plant ever to receive a low power license. NRC issued the license because the applicant was in a hurry -- apparently because it wanted to get the plant in the rate base -- and assured NRC that it could complete those things necessary for full power operation without any risk to the public after the plant was critical;
- NRC has not determined the safety significance of the inaccurate technical specifications and surveillance procedures for full power operation;
- The NRC staff did not consider, and is not now considering, revoking or suspending the low power license because of the problems identified at Grand Gulf; and
- The NRC staff believes that the training records of some of the operators at Grand Gulf were falsified.

Please comment on the above characterization of what are apparently the views of the NRC staff.

ANSWER.

MP&L recognized that Grand Gulf had a number of systems for which all preoperational testing had not yet been completed, and thus could not be declared operational. Since some of these systems need not be operational prior to or during initial fuel loading and low power testing, MP&L requested and the NRC staff agreed that completion of the preoperational testing on specific systems could be deferred, but that the deferral must be limited such that the systems would be operational prior to their actual need to protect the health and safety of the public. While it is certainly true that there were more such deferrals than typically found at the time of initial licensing of nuclear plants, all of these deferrals were assessed by the NRC staff as having no safety significance prior to issuance of the license.

With regard to the safety significance of Technical Specification deficiencies that have been identified, some clarification is in order. As noted in our response to Question 6.D, the approximately 200 Technical Specifications changes identified by MP&L's 1982-83 review were classified into three priorities. Category 1 and 2 changes were reviewed by NRR and

appropriate changes made prior to recriticality for low power testing in September-October 1983. Category 3 changes were of less immediate concern and were not required to be changed prior to recriticality for low power testing. However, during the operator recertification period (approximately December 1983 - January 1984), the licensee continued to identify inconsistencies and ambiguities in the Technical Specifications. Twenty-three items identified during this review were deemed significant and an immediately effective order was issued on April 18, 1984 (enclosed), requiring that the affected Technical Specifications be changed prior to the next criticality.

The NRC staff did not and is not considering revoking, or suspending, the low power license because of the problems identified at Grand Gulf. However, as noted above, certain changes have already been incorporated (by license amendments and by the April 18, 1984 order) in the Grand Gulf Technical Specifications. All remaining Technical Specification deficiencies must be evaluated and all necessary Technical Specifications changes made prior to operation above 5% of rated power.

As indicated in the response to Question 10.B below, the Commission has under review the question of whether or not the information provided on the operator license applications constitutes a material false statement.

QUESTION 8(A):

Please explain why a license was issued to a plant that was essentially incomplete and state what, if any, analysis was done by the NRC staff to determine independently whether significant hazards were involved in low power operation at Grand Gulf considering this fact:

ANSWER.

See first paragraph of response to Question 8.

We disagree with the characterization that this plant was essentially incomplete when the low power license was issued. The plant was essentially complete at the time of license issuance. This was in keeping with 10 CFR §50.57(a) which states that a license may be issued based upon, in part, a finding that the "construction of the facility has been substantially completed."

QUESTION 8(B):

Please explain what the average amount of time is between issuance of a low power license and a full power license.

ANSWER.

For those plants issued both low power and full power licenses post-TMI, the average amount of time between low power and full power license issuance is just under five months.

QUESTION 8(C):

(Please explain) what the findings are of the NRC's Office of Investigations inquiry into the possible falsification of operator's qualifications (please provide a copy of the OI report).

ANSWER.

A copy of the OI Report is being provided under separate cover.

QUESTION 9 . Given the large number of errors identified in the Technical Specifications and surveillance procedures, and considering the fact that reviews and subsequent reviews by the licensee, contractors and the NRC have all been inadequate, is the Commission going to require a 100 percent re-review of the FSAR, the SER and the Technical Specifications? If not, please explain why. Additionally, please indicate that, if any, errors have been identified in the FSAR or the SER and their significance.

ANSWER.

The licensee has identified various inconsistencies between the FSAR and the technical specifications in submittals of problem sheets received since early March 1984. These problem sheets are attached. None of these inconsistencies have called into question the validity of the safety analysis of the plant, as recorded in either the FSAR or the NRC's SER. For this reason, there is no basis to require an extensive re-review of these documents at this time. NRC regulations require each licensee to periodically update the FSAR to assure that the information contained therein contains the latest material developed. In the case of Grand Gulf, we anticipate the licensee will conduct a thorough review of the FSAR, as part of its required update, to ensure that it accurately reflects the as-built plant.

On June 1, the licensee determined that the plant, as currently designed and constructed and without operable Unit 2 pumps, was unable to provide a 30 day water supply for the ultimate heat sink, as specified in the FSAR. The Company shut the plant down at that time. In recognition of the fact that this represented a different type of occurrence in which the plant did not conform to the application, the licensee directed its contractors, General Electric and Bechtel, to review all other shared or common features of Units 1 and 2 and to certify whether there were any other similar problems. Region II will audit these reviews.

QUESTION 10(A):

The Commission's regulations at 10 CFR §50.100 state that a license may be revoked or suspended "for any material false statement in the application for a license or in the supplemental or other statements of fact required of the applicant," or, because of "conditions revealed ... that would warrant the Commission to refuse to grant a license on an original application" Does the Commission consider that the erroneous technical specifications and surveillance procedures submitted by MP&L for Grand Gulf constitute either a material false statement or a false statement of fact?

ANSWER.

The staff has not yet made determination as to whether or not the erroneous Technical Specifications submittal constitutes a material false statement. This matter is under consideration.

QUESTION 10(B):

The Commission's regulations at 10 CFR §50.100 state that a license may be revoked or suspended "for any material false statement in the application for a license or in the supplemental or other statement of fact required of the applicant," or, because of "conditions revealed ... that would warrant the Commission to refuse to grant a license on an original application...." Does the Commission consider that the information submitted by MP&L concerning the qualifications of operators at Grand Gulf constitutes a material false statement?

ANSWER.

The answer to this question will be forwarded under separate cover.

QUESTION 11: In light of the errors discovered in the information submitted to the NRC for the Grand Gulf low power license, what, if any, steps does the Commission plan to take in order to establish that MP&L has the management integrity and management competence required to operate Grand Gulf? Additionally, please specify what the Commission presently requires of MP&L before it will vote on the proposed full power license.

ANSWER.

The NRC staff will continue to inspect in detail the activities of the Grand Gulf licensee. Matters of safety significance in which management attention is needed to achieve resolution will be promptly brought to the attention of the highest levels of MP&L management. The Region II Administrator has frequently met during the last two years with the top management of MP&L as well as meeting with the President of Middle South Utilities to discuss problems at Grand Gulf. These meetings have produced positive changes in the problem areas identified in your letter.

Since the discovery of the identified problems, MP&L has made significant management and personnel changes.

For example, the Assistant Plant Manager-Operations, has been promoted to the position of Plant Manager. He previously had nuclear power experience at two TVA nuclear facilities. An Assistant Plant Manager for reactor operations was recently hired. This individual was licensed as a Senior Reactor Operator at Georgia Power's Hatch Nuclear Power Plant and had previous operational experience in a responsible position with the Navy nuclear power program. These management personnel changes have enhanced plant management operating experience at the plant level.

Recently, a senior executive with considerable nuclear experience was transferred from another nuclear facility owned by Middle South Utilities (Arkansas Power and Light) to become the President of MP&L. A new Senior Vice President for Nuclear Operations was also assigned to MP&L approximately one year ago. This individual has had experience with Middle South Utilities and with the Navy's nuclear power program. Additionally, the former manager of Nuclear Operations at TVA is a special corporate consultant. This additional nuclear management experience at the corporate level of MP&L gives increased confidence that management capabilities are acceptable and will continue to improve.

MP&L has also taken steps to substantially expand and strengthen management controls in the operator staffing and training area, and to recertify all operators performing licensed duties. Changes to management controls included elevating the training function to report directly to an Assistant Plant Manager, consolidating the training staff, assigning additional personnel to the training department, establishing a special financial incentive program to improve the staff retention rate, and adding to the staff a Corporate Nuclear Human Resource Manager responsible for increasing the number and level of competence of personnel entering the training pipeline. A number of management personnel changes have also been made including assignment of an additional Assistant Plant Manager who is responsible for training, and the assignment of a new supervisor of operations training.

Before issuing a full power license to Grand Gulf, the NRC staff will require that the current Technical Specifications review be completed by MP&L and all necessary Technical Specifications changes will be made. Additionally, the question of TDI diesel generator reliability and acceptability of onsite emergency power sources at Grand Gulf will be addressed before issuance of a full power license. The Commission may require other actions in their consideration of authorization of MP&L to operate Grand Gulf at full power.

Enclosure 2

Documents in Response to Questions

- 1) November 3, 1982, T. Rehm Memorandum to Commission on NRR Licensing Actions (NTOL Status)
- 2) Region II Memo to NRR on Plant Readiness for Licensing, June 14, 1982
- 3) Letter to Licensee, Issuance of Facility Operating License, June 16, 1982 and License.
- 4) Region II Confirmation of Action Letter, October 20, 1982.
- 5) Region II Restart Letter, Confirmation of Concurrence, September 23, 1983.
- 6) NRR Order, April 18, 1984.