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Docket No. 50-289

Mr. Henry D. Hukill
Vice President
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P. O. Box 480
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Dear Mr. Hukill:

In its partial initial decision issued December 14, 1981, the Board charged the staff with the responsibility to review the revised Abnormal Transient Operating Guidelines (ATOG) program on TMI-1 and to certify to the Commission that GPU Nuclear is making reasonable progress in meeting the criteria specified in NUREG-0737 Item I.C.1.

The staff has reviewed the ATOG program on TMI-1 and finds that reasonable progress towards meeting the criteria of Item I.C.1 have been met. As noted in our evaluations, the implementation of upgraded emergency operating procedures is to proceed in accordance with a plan to be issued to all licensees as Supplement 1 to NUREG-0737. "Requirements for Emergency Response Capability." The supplement, which supercedes Item I.C.1, will restate the requirements and provide guidance on documentation, schedules and implementation milestones. This supplement is expected to be issued to licensees in the near future.

We note that your schedule for implementing ATOG procedures is the first refueling outage after restart and we are satisfied that your progress to date and plans for ATOG completion support your procedure implementation schedule. Our evaluation is enclosed.

Sincerely,

"ORIGINAL SIGNED BY
JOHN F. STOLZ"

John F. Stolz, Chief
Operating Reactors Branch #4
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Enclosure:
Progress on Action
Plan Item I.C.1

cc w/enclosure:
See next page

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DATE	10/26/82	10/26/82					

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GPU NUCLEAR PROGRESS ON ACTION PLAN ITEM I.C.1

The NRC Task Force assembled to identify lessons learned from the TMI-2 accident found that "Some of the human errors during the TMI accident were caused in part by inadequate coordination of transient and accident analysis, emergency procedure preparation and operator training." They concluded that full capabilities of licensees and vendors had not been used to develop emergency procedures, and they recommended that transients and accidents be reanalyzed to provide better emergency procedures for improved operator actions.

This item was made a requirement and imposed on licensees by letters from NRC of September 13 and 27, October 10 and 30, and November 9, 1979. It was later included in the TMI-2 Action Plan as Item I.C.1(3), Transients and Accidents. The requirements were expanded and made more specific in the Action Plan, i.e., "perform analyses of transients and accidents; prepare emergency procedure guidelines, upgrade emergency procedures including procedures for operating with natural circulation conditions, and conduct operator retraining." From this the concept of emergency operating procedure guidelines emerged. These guidelines were conceptualized as a mechanism for translating the analyses into generic technical procedural guidelines which would form the bases for developing procedures for similar plants. Hence, from the generic technical guidelines, licensees of similar plants could write emergency operating procedures for their plants, including plant-specific or unique plant features in their procedures. This program led to formation of owners' groups representing utilities and associated NSSS vendors for the four major NSSS plant types to develop the generic technical guidelines.

Initial progress on reanalysis and guidelines work was difficult and slow. Licensees did not provide a good basis for the types of procedures envisioned in the guidelines. NUREG-0737, Clarification of TMI Action Plan Requirements, dated November 1980, provided clarification of Item I.C.1 requirements, and it contained additional guidance on the types of failures and types of emergencies

to be addressed in completion of Item I.C.1. Guidance on Item I.C.1 in NUREG-0737 included the following:

"The analyses should be carried out far enough into the event to assure that all relevant thermal/hydraulic/neutronic phenomena are identified (e.g., upper head voiding due to rapid cooldown, steam generator stratification). Failures and operator errors during the long-term cooldown period should also be addressed.

The analyses should support development of guidelines that define a logical transition from the emergency procedures into the inadequate core cooling procedure including the use of instrumentation to identify inadequate core cooling conditions. Rationale for this transition should be discussed. Additional information that should be submitted includes:

(1) A detailed description of the methodology used to develop the guidelines;

(2) Associated control function diagrams, sequence-of-event diagrams, or others, if used;

(3) The bases for multiple and consequential failure considerations;

(4) Supporting analysis, including a description of any computer codes used; and

(5) A description of the applicability of and generic results to plant-specific applications.

Owners' group or vendor submittals may be referenced as appropriate to support this reanalysis. If owners' group or vendor submittals have already been forwarded to the staff for review, a brief description of the submittals and justification of their adequacy to support guideline development is all that is required."

This clarification resulted in owners' groups developing technical guidelines that provide instructions for operator action based on symptoms and maintenance of safety functions without first having to identify the specific event.

The development of the technical guidelines has been a much more complex and time-consuming effort than originally expected. Much work has been done by the Owners' Groups and staff in response to the I.C.1 requirement. The B&W Owners' Group actually started developing symptom-based guidelines before the requirements were published. GPU is a member of the B&W Owners' Group that is developing the technical guidelines from which TMI Unit 1 emergency operating procedures will be written. These guidelines are known as Abnormal Transient Operating Guidelines (ATOG).

The B&W Owners' Group is treating the analysis of transients and accidents on a generic basis where possible. However, they are developing their technical guidelines, ATOG, for specific plants even though much of its content is generic in nature. The staff has accepted their concept and is reviewing only the lead plants' ATOG with the understanding that ATOG for later plants will closely follow the ATOG for the lead plant. The lead plant review will be documented in a safety evaluation report.

The first ATOG submittal was a draft for Arkansas Nuclear One, Unit 1. The staff conducted a preliminary review and concluded that it was deficient in a number of areas, including addressing containment, natural occurrences and operator errors. At a meeting in August 1981, the NRC staff and B&W Owners agreed that development of ATOG should not be delayed by trying to address all technical concerns in the ANO 1 guidelines, and that the Oconee Unit 3 draft ATOG was to be used as the principal review document. The Oconee ATOG has been reviewed by the staff, and the staff has met several times with the B&W Owners' Group to resolve our concerns with these guidelines and their bases.

The staff is continuing the guideline review. The B&W Owners' Group was informed by letter dated March 3, 1982, that the review has progressed to the point where NRC confidence in the symptomatic approach, used by B&W to develop the

guidelines, supported the continued development of the ATOG program. They were told that some issues required additional information or justification before NRC could complete its review. These issues were identified.

Much of the required information has been received and the staff's safety evaluation is near completion. The preliminary conclusions of the evaluation is that the ATOG provides an acceptable basis for writing Oconee emergency operating procedures contingent upon the results of confirmatory research and upon resolution of a small number of ongoing generic issues.

The staff is thus encouraging the B&W Owners' Group to proceed with implementation of upgraded emergency operating procedures recognizing that significant progress has been made and a significant incremental safety improvement can be achieved even without final approval of the technical adequacy of ATOG.

Implementation of upgraded emergency operating procedures is to proceed in accordance with a plan to be issued to licensees as Supplement 1 to NUREG-0737, "Requirements for Emergency Response Capability." It will restate the requirements and will provide guidance on documentation, schedules, and implementation milestones. It will also discuss generation and validation of, and training on emergency operating procedures. Some aspects of the NRC pre- and post-implementation review plans will also be identified. The contents of the Supplement have been discussed with owners' groups and the owners' groups are aware of Commission action on SECY 82-111, "Requirements for Emergency Response Capability," the precursor to Supplement 1 to NUREG-0737.

GPU Nuclear Company has been a participating member of the B&W Owners' Group since before Action Plan Item I.C.1 work began. The TMI-1 ATOG was developed at about the same time as the Oconee Unit 3 ATOG. Although TMI-1 ATOG was patterned after ANO ATOG, it incorporated most of the Oconee improvements, and it contains some features to accommodate the TMI-1 differences and preferences. The first draft was prepared in June 1981 and was reviewed by the licensee over a period of several months.

Representatives of the licensee's operations staff and training staff witnessed a demonstration of the ATOG concept on the B&W simulator in Lynchburg, Virginia. On the recommendation of this group, a committee was formed to resolve changes required to implement ATOG at TMI-1. This Implementation Committee included members from the GPU Nuclear Technical Functions staff, Plant Operations staff, Training staff and Plant Engineering staff. The committee developed the following target dates for implementation of ATOG:

February 1, 1982 - Forward comments to B&W on DRAFT ATOG Part I & II.

- Select implementation concept (Procedure

June 1, 1982 - Complete package of PORC reviewed procedure changes available to commence training.

End of Cycle 5 - Complete implementation of ATOG program.

The licensee has indicated that several committee meetings were held between November 1981 and February 1982 to review specific parts of the draft ATOG and to provide a set of comments on the ATOG for resolution with B&W representatives. The staff was informed that the Implementation Committee met with B&W on March 10, 1982, to discuss resolution of comments. Subsequently, the staff was advised that committee meetings were held to reach agreement on technical content of procedures, arrange sequence of steps for some procedures, prepare flow diagrams, and develop a new philosophy section for ATOG. Work remaining has been identified by the committee.

A meeting of representatives of GPU Nuclear and B&W was held in September 1982, originally targeted for June 1982, to go over the remaining ATOG comments. Although there are many unresolved comments, few of them impact either the technical content or the overall ATOG approach for dealing with plant emergencies. The staff has been informed that lesson plans will be developed for training the operators on ATOG and the new emergency operating procedures. Although the individuals who will write procedures from the guidelines have not been identified, plans have been made by the licensee to identify writers when

ATOG is acceptable to the plant. The staff was informed that lesson plan generation and procedure writing will overlap in time. When procedures are written, GPU Nuclear plans for the independent review body to review the procedures for technical adequacy and at the same time determine whether any changes proposed by the new procedures constitute an unreviewed safety question. If so, the change will be submitted for NRC staff review.

After the independent review body review, a validation program will be conducted, and operators will be trained in use of the new procedures. The licensee plans full implementation of new emergency operating procedures incorporating ATOG at the first refueling outage after restart. Considering the work to be done, this target date should be met without difficulty.

In preparation for restart of TMI-1, GPU Nuclear operations and technical staffs have examined the existing emergency operating procedures and have proposed changes to upgrade them. The licensee has stated that the existing EOPs will be upgraded prior to restart. These upgraded procedures will include many of the changes to procedures resulting from their ATOG and Implementation Committee work.

Conclusion

The B&W Owners' Group progress toward implementation of ATOG is slightly ahead of other owners' groups. TMI-1 ATOG development is slightly ahead of the average of B&W owner's ATOG development. GPU Nuclear has plans and milestone dates to implement ATOG. Plans include finishing ATOG by mid November 1982, writing the emergency operating procedures, validating the procedures, and training operators in their use prior to implementation at the first refueling outage after restart.

The staff has examined the work associated with the requirements of NUREG-0737 Item I.C.1, and concludes that the licensee has made reasonable progress toward meeting the criteria of I.C.1.