



# MISSISSIPPI POWER & LIGHT COMPANY

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October 14, 1985

NUCLEAR LICENSING & SAFETY DEPARTMENT

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

Attention: Mr. Harold R. Denton, Director

Dear Mr. Denton:

SUBJECT: Grand Gulf Nuclear Station  
Units 1 and 2  
Docket Nos. 50-416 and 50-417  
License No. NPF-29  
File: 0260/0025  
GGNS ATWS Rule Compliance  
Schedule  
AECM-85/0322

In June of 1984, the NRC issued 10CFR50.62 amending its regulations to require design improvements to mitigate the consequences of an anticipated transient without scram (ATWS) event. The final ATWS rule required installation of certain equipment in all nuclear power plants. As described in paragraphs C.3, C.4 and C.5 of 10CFR50.62, the equipment required for a boiling water reactor includes an alternate rod injection (ARI) system, a standby liquid control system (SLCS) with a minimum flow capacity and boron content equivalent in control capacity to 86 gallons per minute of 13 weight percent sodium pentaborate solution, and an automatic recirculation pump trip (RPT). The rule also requires that an implementation schedule be provided with justification if final implementation is later than the second refueling outage.

As required by 10CFR50.62, Mississippi Power and Light plans to implement the requirements of paragraphs C.3, C.4, and C.5 at the Grand Gulf Nuclear Station (GGNS) prior to startup following the second refueling outage. A brief description of the GGNS ATWS design is provided in the attachment to this letter. Also, a simplified diagram of the design which consists of an ATWS-RPT/-ARI subsystem and a manual two pump SLCS subsystem is shown in Figure 1 of the attachment.

The ATWS design will conform to the requirements provided in the 10CFR50.62 table for ATWS criteria guidance. The ATWS equipment will not be safety-related or seismically qualified. However, the equipment will be qualified for normal environmental and anticipated operational occurrences (i.e. not accident conditions). In addition, in order to comply with the QA guidance provided in Generic Letter 85-06, MP&L will include the ATWS non-safety-related equipment in Appendix B of the GGNS Q-List prior to startup following the second refueling outage. Appendix B identifies non-safety-related equipment which has special QA requirements. The inclusion of the non-safety-related ATWS equipment in Appendix B will assure adherence to the intent of the QA guidance of Generic Letter 85-06.

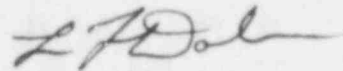
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Please advise if further information is required.

Yours truly,



L. F. Dale  
Director

ARR/GWS/SHH:bms  
Attachment

cc: Mr. J. B. Richard (w/a)  
Mr. O. D. Kingsley, Jr. (w/a)  
Mr. R. B. McGehee (w/a)  
Mr. N. S. Reynolds (w/a)  
Mr. H. L. Thomas (w/o)  
Mr. R. C. Butcher (w/a)

Mr. James M. Taylor, Director (w/a)  
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## GGNS ATWS Design

### Recirculation Pump Trip (RPT) and Alternate Rod Insertion (ARI) Subsystem (Paragraphs C.3 and C.5)

Grand Gulf Nuclear Station (GGNS) presently has an ATWS-RPT function which will be modified as discussed below. The present ATWS-RPT reactor pressure vessel high pressure and low low level (level 2) sensors and trip units provide the trip signals to the recirculation pump normal and low frequency motor generator (LFMG) power supply breakers utilizing a one-out-of-two logic configuration to trip each recirculation pump. The logic will be modified from the present "deenergized-to-trip" to "energized-to-trip" to be diverse from the Reactor Protection System (RPS). The modified ATWS-RPT design will allow testing of the RPT circuit without tripping the recirculation pumps and will therefore meet the requirement for full power testing without impacting plant operation.

The ATWS-ARI system will provide a backup to the RPS. The ARI system will be actuated either manually from the Control Room or automatically utilizing the existing ATWS-RPT initiation logic. The ATWS-ARI logic will utilize a two-out-of-two, two channel logic configuration to prevent inadvertent operation of the ATWS-ARI. The ARI actuation will depressurize the scram air header by providing redundant vent paths from the scram air header. Each of these paths will have two ARI solenoid valves in series. This double valve configuration will provide increased reliability against inadvertent ARI actuation and plant scram since any one valve can be opened without depressurizing the scram air header. This redundant design will also allow testing of the individual ARI vent valves without causing a scram.

Manual ARI reset switches will be provided in the Control Room to reset the ARI solenoid valves after sufficient time delay to allow all control rods to insert and after the ARI initiation signals have been cleared.

The trip sensors and logic are physically separate from the RPS equipment. The ATWS-RPT/-ARI logic components will be located in different cabinets from the RPS. Also, the cable and wiring will be physically separated from the RPS.

The power supply for the ATWS-RPT/-ARI will be provided by a 24V DC uninterruptable power supply which is independent of the RPS power supply.

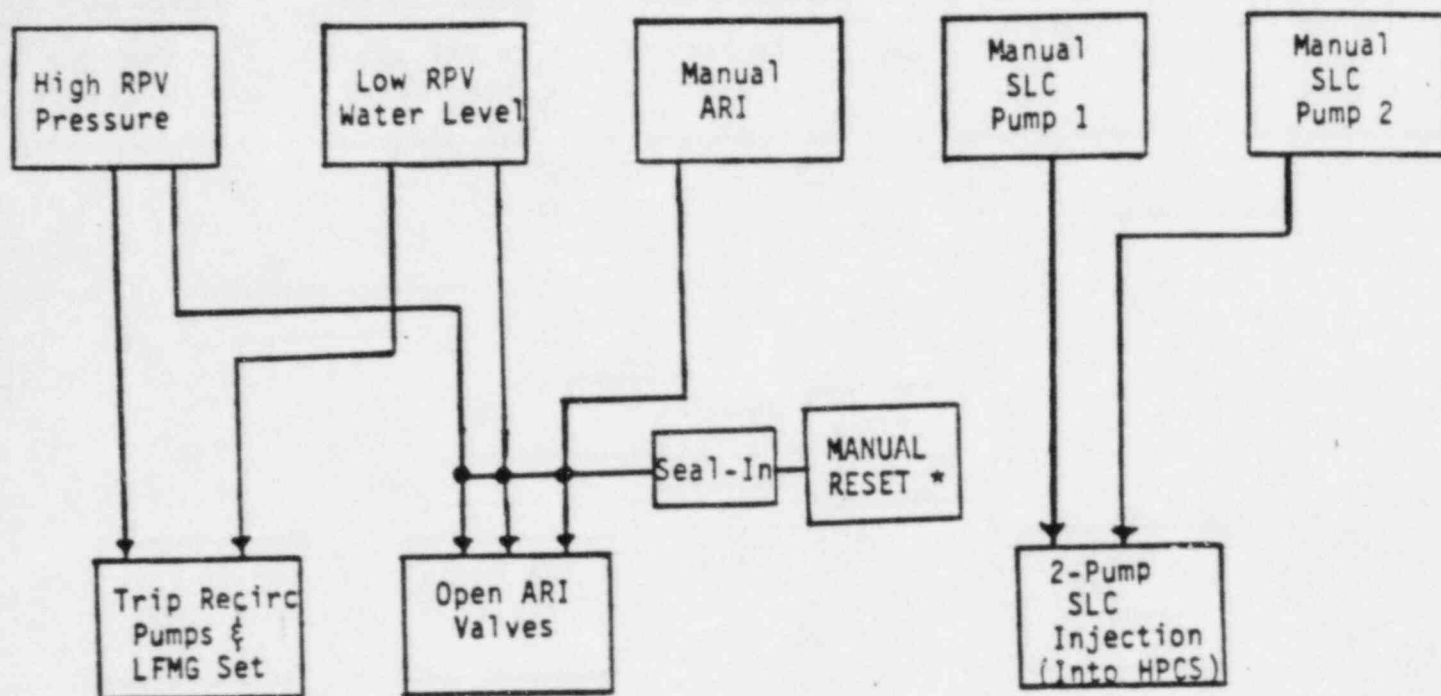
### Manual Two Pump Standby Liquid Control System (SLCS) (Paragraph C.4)

The SLCS will be initiated manually by the operator once he is certain of the existence of an ATWS condition in the plant. The Emergency Procedure Guidelines will provide the necessary operator action to validate an ATWS condition.

The SLCS discharge piping will be rerouted to the High Pressure Core Spray injection piping to provide more effective boron mixing. The simultaneous operation of both SLCS pumps will provide a minimum flow capacity and boron content equivalent in control capacity to 86 gallons per minute of 13 weight percent sodium pentaborate solution. The current two step SLCS actuation process for the SLCS valves and pumps minimizes inadvertent SLCS actuations.

The present standby liquid control system is designed to allow testing of the SLCS valves and pumps during operation. A test tank and related piping is provided to test the operation of the SLCS without injecting boron solution into the reactor vessel.

The ESF 480V AC system supplies power to the motor operated isolation valves and to the SLCS pumps. Also, the ESF 120V AC system supplies control power to the SLCS explosive injection valves.



\* Reset permissible after sufficient time delay to allow all Control Rods to insert

FUNCTIONAL CONTROL BLOCK DIAGRAM FOR  
ATWS MODIFICATIONS

Figure 1