



# MISSISSIPPI POWER & LIGHT COMPANY

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P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

NUCLEAR PRODUCTION DEPARTMENT

June 14, 1982

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 & 50-417  
File: 0260/L-860.0  
Evaluation of Emergency  
Procedures for Activating  
Hydrogen Ignition  
Reference: AECM-82/193, dated  
April 30, 1982  
AECM-82/267

Mississippi Power & Light Company (MP&L) has been requested by members of your staff to evaluate the emergency procedures which control initiation of the Grand Gulf Nuclear Station (GGNS) Hydrogen Ignition System (HIS). The evaluation was requested to ensure that the activation of the HIS and associated operator actions do not alter the accident analyses which have been submitted by MP&L as part of the GGNS Final Safety Analysis Report (FSAR).

The emergency procedures for GGNS were submitted to the NRC in AECM-82/193. The HIS is energized in emergency procedure 05-S-01-EP-7, "Core Cooling Without Level Restoration." This procedure can only be entered if the reactor pressure vessel level cannot be restored and maintained above the top of the active fuel and simultaneously the vessel pressure is less than 50 psig and not increasing. In order to achieve these entry conditions, all of the emergency safeguard feature systems and normal reactor coolant makeup systems, including the condensate/feedwater, control rod drive, reactor core isolation cooling, high pressure core spray, low pressure core spray, and low pressure coolant injection systems, must be simultaneously inoperable.

The accident scenarios which might involve reactor pressure vessel inventory depletion are discussed in Chapters 6 and 15 of the GGNS FSAR. The sequences of events for these applicable accidents are summarized in Attachments 1 and 2 of this letter. All of the accidents included in Attachments 1 and 2 are terminated prior to reaching entry points for emergency procedure 05-S-01-EP-7.

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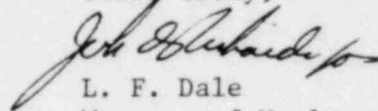
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Even for the steam line break outside containment, which involves a short duration partial uncover of the fuel, the accident will be terminated prior to reaching the entry points for emergency procedure 05-S-01-EP-7 by the initiation of the low pressure ECCS. Therefore, no interaction between activation of the HIS and the existing accident analyses will occur.

MP&L believes that the issue of interaction of the HIS with the existing accident analyses can be closed on this basis.

Yours truly,



L. F. Dale

Manager of Nuclear Services

Attachment

RMS/JDR:tlj

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

Mr. Richard C. DeYoung, Director (w/a)  
Office of Inspection and Enforcement  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Mr. J. P. O'Reilly, Regional Administrator (w/a)  
Office of Inspection and Enforcement  
Region II  
101 Marietta St., N.W., Suite 3100  
Atlanta, Georgia 30303

SCENARIOS EVALUATED FOR GGNS  
FSAR CHAPTER 6 ACCIDENT ANALYSES

<u>Recirculation Line Rupture</u>	<u>Main Steam Line Break</u>	<u>Intermediate Size Break (001ft<sup>2</sup>)</u>	<u>Small Break Accident</u>
1. Initiating break with simultaneous loss of offsite power.	1. Initiating break.	1. Initiating break in either a reactor steam or liquid line.	1. Initiating small break.
2. Automatic Scram Occurs.	2. Automatic scram occurs.	2. Automatic scram occurs.	2. Automatic scram occurs.
3. MSIV's start closing at 0.5 sec into the transient.	3. ECCS initiates at 30 seconds into the transient.	3. ECCS initiates and vessel is depressurized within 600 seconds.	3. Operators will shut down reactor normally using either the main condensers or the RHR heat exchangers in the steam condensing mode.
4. MSIV's fully closed at 3 sec into the transient.	4. Vessel reflood will be completed at 279 seconds into transient with all ECCS operable.	4. Long term suppression pool and containment response are essentially identical to those produced by the main steam line break.	4. Reactor shutdown complete in approximately 6 hours.
5. After blowdown ECCS provides core flood, containment spray, and long term containment heat removal.	5. Reflood will be completed at 455 seconds if only minimum ECCS is available.	5. RHR system placed in suppression pool cooling mode.	
5.1 LPCI pumps flood core before 600 seconds into the transient.	6. RHR system will be switched to suppression pool cooling mode at 1800 seconds into the transient.		
5.2 HPCS available during entire transient.			
5.3 RHR heat exchangers put into suppression pool cooling mode.			

SCENARIOS EVALUATED FOR GGNS  
FSAR CHAPTER 15 ACCIDENT ANALYSES INVOLVING  
VESSEL INVENTORY REDUCTIONS

Stuck Open Relief Valve

One of the primary SRVs opens and remains open throughout the event.

Operator receives an alarm from thermocouples on the SRV discharge line of an open or leaking SRV.

Operator receives an alarm when suppression pool temperature rises to 90°F.

Operator attempts to close the valve unsuccessfully.

Operator activates RHR pool cooling.

Shutdown and cooldown completed.

Steam Line Break Outside Containment

Guillotine break of one main steam line outside primary containment.

High steam line flow signal initiates closure of main steam line isolation valve.

Reactor begins scram.

Main steam isolation valves fully closed.

RCIC and HPCS would initiate on low water level (RCIC considered unavailable, HPCS assumed single failure and therefore not available).

Safety/relief valves open on high vessel pressure. The valves open and close to maintain vessel pressure at approximately 1100 psi.

Reactor water level above core begins to drop slowly due to loss of steam through the safety valves. Reactor pressure still at approximately 1100 psi.

Operator initiates ADS or manually controls relief valves. Vessel depressurizes rapidly.

Feedwater Line Break Outside Containment

One feedwater line breaks.

Feedwater line check valves isolate the reactor from the break.

At low low-water reactor level RCIC would initiate, HPCS would initiate, MSIV closure would initiate, reactor scram would initiate and recirculation pumps would trip.

The safety relief valves would open and close and maintain the reactor vessel pressure at approximately 1100 psig.

Normal reactor cooldown procedure established.

SCENARIOS EVALUATED FOR GGNS  
FSAR CHAPTER 15 ACCIDENT ANALYSES INVOLVING  
VESSEL INVENTORY REDUCTIONS

Stuck Open Relief Valve

Steam Line Break Outside Containment

Feedwater Line Break Outside Containment

Low pressure ECCS systems initiated.  
Reactor Fuel uncovered partially.

Core effectively reflooded and clad  
temperature heatup terminated. No  
fuel rod failure.