MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
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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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Even for the steam line break outside containment, which involves a short duration partial uncovery 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)
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SCENARIOS EVALUATED FOR GGNS
FSAR CHAPTER 6 ACCIDENT ANALYSES

Recirculation Line Rupture	Main Steam Line Break	Intermediate Size Break ($001ft^2$)	Small Break Accident
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 exhangers 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 minimun 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.			

Enclosure 2 to AECM-82/267

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
One of the primary SRVs opens and remains open throughout the event.	Guillotine break of one main steam line outside primary containment.	One feedwater line breaks.
Operator receives an alarm from thermocouples on the SRV discharge line of an open of leaking SRV.	High steam line flow signal initiates closure of main steam line isolation valve.	Feedwater line check valves isolate the reactor from the break.
Operator receives an alarm when suppression pool temperature rises to 90°F.	Reactor begins scram.	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.
Operator attempts to close the valve unsuccessfully.	Main steam isolation valves fully closed.	The safety relief valves would open and close and maintain the reactor vessel pressure at approximately 1100 psig.
Operator activates RHR pool cooling.	RCIC and HPCS would initiate on low water level (RCIC considered unavailable, HPCS assumed single failure and therefoure not available).	Normal reactor cooldown procedure established.
Shutdown and cooldown completed.	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.	

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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.	