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Docket Nos.: 50-416/417

Mississippi Power and Light Company
ATTN: Mr. James P. McGaughy, Jr.
Assistant Vice President - Nuclear Production
P.O. Box 1640
Jackson, Mississippi 39205

Dear Mr. McGaughy:

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - GRAND GULF NUCLEAR STATION UNITS 1 AND 2

As a result of our on-going review of the Grand Gulf application for an operating license we have identified certain areas where additional information is required. To aid us in our licensing review of Grand Gulf you are requested to provide the following information to us:

1. IE Bulletin 79-27 required a response to concerns on instrument bus failures from operating reactors and certain NTOL applicants. You are requested to provide a response addressing these concerns.

2. IE Bulletin 80-06 addressed concerns related to ESF reset controls. This Bulletin did not require a response from NTOL applicants, however, we believe these deficiencies are of sufficient importance to warrant consideration by those licensees with plants under operating license review. Accordingly, you are requested to provide a response to this Bulletin, using the criteria provided in the Attachment. Your response should be filed within 60 days of receipt of this letter.

Please contact us if you desire any clarification of this request.

Sincerely,

Original signed by:
Robert L. Tedesco

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
As stated

cc: See next page.

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DATE ▶	12/11/80	12/ /80	12/11/80			

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ATTACHMENT

SUBJECT: POTENTIAL DESIGN DEFICIENCIES IN BYPASS, OVERRIDE, AND RESET CIRCUITS OF ENGINEERED SAFETY FEATURES

DISCUSSION OF DEFICIENCIES

Several instances have been reported where automatic closure of the containment ventilation/purge valves would not have occurred because the safety actuation signals were either manually overriden or bypassed (blocked) during normal plant operations. In addition, a related design deficiency with regard to the resetting of engineered safety feature actuation signals has been found at several operating facilities where, upon the reset of an ESF signal, certain safety related equipment would return to its non-safety mode.

Specifically, on June 25, 1978, Northeast Nuclear Energy Company discovered that intermittent containment purge operations had been conducted at Millstone Unit No. 2 with the safety actuation signals to redundant containment purge isolation valves (48 inch butterfly valves) manually overriden and inoperable. The isolation signals which are required to automatically close the purge valves to assure containment integrity were manually overriden to allow purging of containment with a high radiation signal present. The manual override circuitry designed by the plant's architect/engineer defeated not only the high radiation signal but also all other isolation signals to these valves. To manually override a safety actuation signal, the operator cycles the valve control switch to the closed position and then to the open position. This action energized a relay which

blocked the safety signal and allowed manual operation independent of any safety actuation signal. This circuitry was designed to permit reopening of certain valves after an accident to allow manual operation of required safety equipment.

On September 8, 1978, the staff was advised that, as a matter of routine, Salem Unit No. 1 had been venting the containment through the containment ventilation system valves to reduce pressure. In certain instances this venting has occurred with the containment high particulate radiation monitor isolation signal to the purge and pressure-vacuum relief valves overridden. The override of this containment isolation signal was accomplished by re-setting the train A and B reset buttons. Under these circumstances, six valves in the containment vent and purge systems could be opened with the radiation isolation signal present. This override was performed after verifying that the actual containment particulate levels were acceptable for venting. The licensee, after further investigation of this practice, determined that the reset of the particulate radiation monitor alarm also overrides the containment isolation signal to the purge valves such that the purge valves would not have automatically closed on an emergency core cooling system (ECCS) safety injection signal.

A related design deficiency was discovered during a review of system operation following a recent unit trip and subsequent safety injection at North Anna No. 1. Specifically, it was found that certain equipment important to safety (for example, control room habitability system dampers) would return to its non-safety mode following the reset of an ESF signal.

In addition, many utilities do not have safety grade radiation monitors to initiate containment isolation.

SAFETY SIGNIFICANCE

The overriding of certain containment ventilation isolation signals could also bypass other safety actuation signals and thus prevent valve closure when the other isolation signals are present. Although such designs may be acceptable, and even necessary, to accomplish certain reactor functions, they are generally unacceptable where they result in the unnecessary bypassing of safety actuation signals. Where such bypassing is also inadvertent, a more serious situation is created especially where there is no bypass indication system to alert the operator.

Where the resetting of ESF actuation signals, such as safety injection, directly causes equipment important to safety to return to its non-safety mode, protective actions of the affected systems could be prematurely negated when the associated actuation signal is reset. Prompt operator action would be required to assure that the necessary equipment is returned to its emergency mode.

The use of non-safety grade monitor to initiate containment isolation could seriously degrade the reliability of the isolation system.

STAFF POSITION

It is our position that, in addition to other applicable criteria, the following should be satisfied for all operating license applications currently under review:

1) The overriding[a] of one type of safety actuation signal (e.g., particulate radiation) should not cause the blocking of any other type of safety actuation signal (e.g., iodine radiation, reactor pressure) for those valves that have no function other than containment isolation.

2) Physical features (e.g., key lock switches) should be provided to ensure adequate administrative controls.

3) A system level annunciation of the overridden status should be provided for every safety system impacted when any override is active. (See R.G. 1.47).

4) The following diverse signals should be provided to initiate isolation of the containment purge/ventilation system: containment high radiation, safety injection actuation, and containment high pressure (where containment high pressure is not a portion of safety injection actuation).

5) The instrumentation systems provided to initiate containment purge ventilation isolation should be designed and qualified to Class 1E criteria.

6) The overriding or resetting[b] of the ESF actuation signal should not cause any equipment to change position.

Accordingly, you are requested to review your protection system design to determine its degree of conformance to these criteria. You should report the results of your review to us within 60 days of receipt of this letter, describing any departures from the criteria and the corrective actions to be implemented. Design departures for which no corrective action is planned should be justified.

The following definitions are given for clarity.

[a]Override: The signal is still present, and it is blocked in order to perform a function contrary to the signal.

[b]Reset: The signal has come and gone, and the circuit is being cleared in order to return it to the normal condition.