

April 19, 1996

U.S. Nuclear Regulatory Commission
Mail Station P1-37
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station
Docket No. 50-416
License No. NPF-29
Response to Generic Letter 96-01

GNRO-96/00043

Gentlemen:

NRC Generic Letter No. 96-01 requested that all holders of operating licenses for nuclear power reactors consider certain actions related to testing of safety-related logic circuits. Requested actions of the generic letter state that the licensee should undertake the following:

- 1) Compare electrical schematic drawings and logic diagrams for the reactor protection systems, EDG load shedding and sequencing, and actuation logic for the engineered safety features systems against plant surveillance test procedures to ensure that all portions of the logic circuitry, including the parallel logic, interlocks, bypasses, and inhibit circuits, are adequately covered in the surveillance procedures to fulfill the TS requirements. This review should also include relay contacts, control switches, and other relevant electrical components within these systems, utilized in the logic circuits performing a safety function.
 - 2) Modify the surveillance procedures as necessary for complete testing to comply with the technical specifications. Additionally, the licensee may request an amendment to the technical specifications if relief from certain testing requirements can be justified.
- It is requested the completion of these actions be accomplished prior to startup from the first refueling outage commencing one year after the issuance of this generic letter.

The generic letter recognized that some licensees may have already performed reviews and taken appropriate corrective actions. These licensees were not required to perform any additional reviews unless modifications had been made to safety-related logic circuits. Licensees were reminded that full functional testing (rather than routine surveillance testing) of the modification should then be conducted. The generic letter went on to say that because existing regulatory requirements were not being satisfied, the changes were considered to be "necessary to bring the addressees into compliance with existing requirements".

At Grand Gulf Nuclear Station (GGNS) the adequacy of our Logic System Functional Tests (LSFTs) has already been reviewed during implementation of Improved Technical Specifications (ITS). Because multiple surveillance procedures are often required to test a logic system, this effort included a review of individual procedures to confirm that interfaces with other procedures required for LSFT were appropriate. This review compared GGNS electrical schematic drawings against plant surveillance procedures to verify the LSFT requirements were satisfied. Procedure test scope and overlap points were documented on a set of GGNS controlled electrical schematic drawings by highlighting the logic tested by each procedure on the drawings. This review demonstrated that our current LSFT methodology adequately tests the logic circuits that perform a safety function required by the Technical Specifications.

During the review of the LSFT surveillance procedures, we did identify one discrepancy in our testing procedures. One of set of contacts (out of four) in the high drywell pressure circuit of the Containment Spray initiation logic was not adequately tested in one of the two trains. This discrepancy was the result of a failure to recognize the difference in the logics of the two trains. This resulted in a violation of our Technical Specifications and was reported to the NRC via Licensee Event Report (LER) 94-009-00. Because the initiation signals are redundant and because of the redundant train of containment spray, there was no loss of safety function as a result of this condition.

Rather than depend on surveillance testing alone, every modification involving a safety related logic circuit is tested under a special test instruction. Engineering practices at GGNS ensure that each modification to these circuits are evaluated and tested as appropriate to ensure functionality. Changes to procedures related to LSFT are reviewed against the marked up schematic drawings, along with the detailed written descriptions in each applicable procedure, to determine if there is any affect on the performance of the LSFT or to the surveillance procedures.

GGNS Technical Specifications define an LSFT as a test of all required logic components, (i.e., all required relays and contacts, all trip units, solid state logic elements, etc.), of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device¹, to verify

¹ The final logic device will be at a point in the circuit where there is overlap with the actuated device's control circuit. Where it is convenient, the logic devices are tested by verification of the actuated devices, otherwise the actuated devices are tested as part of the system functional test. Because the Emergency Diesel Generator (EDG) Load Shedding and Sequencing (LSS) logic boards are solid state, the LSS panel is considered to be an actuated device for purposes of LSFT. The LSS logic is tested as required by the Technical Specifications to ensure that they will meet their design criteria.

operability. The LSFT may be performed by means of any series of sequential, overlapping or total system steps so that the entire logic system is tested. The definition of an LSFT does not require that all logic combinations be verified in order to satisfy the definition. Testing is limited to verifying the operability of the logic circuits specified in the Technical Specifications. LSFT philosophies at GGNS are focused on those components and circuit segments that are important to the safety function. Each LSFT requirement in the Technical Specifications is defined in the surveillance procedures and includes applicable overlap points.

We believe that current testing meets the intent of the generic letter. We further believe that current LSFT methodology adequately tests the required components of the logic system for the safety function required by plant Technical Specifications. Previous in-depth review of LSFT surveillance procedures indicated that there were very few problems associated with our testing program. This, when coupled with our engineering practices, which ensure full functional testing of any modifications to safety-related logic circuits, provides reasonable assurance that these circuits will work as designed when called upon. We are therefore in compliance with the generic letter and plan no additional action.

Yours truly,



CRH/WBB

cc:

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