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July 13, 1981

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

Attention: J.R. Miller, Chief
Standardization & Special Projects Branch

Gentlemen:

SUBJECT: GESSAR COMMITMENTS RELATIVE TO NSPS

The purpose of this letter is to provide a summary report on how GESSAR commitments relative to NSPS are met. The request for this information was in the form of an action item following our recent meetings on June 8-11 with Bill Morris, Jim Knight, Steve Halverson and Jerry Mauck here in San Jose.

The commitments identified in the attachment are based on agreements made in 1974 between GE and the NRC (then AEC) under GESSAR docket number 50-447. The agreements were the result of a 3-day meeting held October 29, 30 and 31, 1974 in San Jose, California.

The 1974 agreements and the GESSAR Safety Evaluation Report items were reviewed in conjunction with the essentially complete NSPS design. The "assessment" response under each identified commitment is summarized from tne results of our review.

Our finding revealed that virtually all of the commitments have been or are being met. We therefore anticipate prompt NRC action for approval of the BWR 6 solid-state design.

Please feel free to contact me if I can assist you further.

Sincerely,

J.F. Quirk, Manager
BWR Standardization
Nuclear Safety & Licensing Operation

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Attachment

cc: B.M. Morris
J.E. Knight

Commitment A.2

GE to submit a list of equipment to be seismically qualified, and qualification procedures to be used. Test results to be submitted during FDA review.

Assessment A.2

Seismic qualification of all safety related equipment in GE scope of supply is addressed in GESSAR II Section 3.10. Equipment lists, qualification procedures and test results (when completed) are provided within that section.

Commitment A.3

RHR shutdown cooling I&C must meet seismic design criteria. Figure 7.1-2 to be revised to reference IEEE 344-1975.

Assessment A.3

GESSAR II Table 7.1-4 and associated text address IEEE 344-1975. The RHR shutdown cooling I&C is designed to meet this criteria as indicated.

Commitment B.2

GE to submit a list of equipment to be environmentally qualified, and qualification procedures to be used. Test resutls to be submitted during FDA review.

Assessment B.2

Environmental qualification of all safety related equipment in GE scope of supply is addressed in GESSAR II Section 3.11. Equipment lists, qualification procedures and test results (when completed) are provided within that section.

Commitment B.3

GE to develop aging program acceptable to staff for meeting IEEE 323-1974.

Assessment B.3

GESSAR II Section 3.11 has an aging program description included. The NRC Staff has not yet approved the program. We are working for review/approval in connection with the GESSAR II docket.

Commitment B.4

Revise GESSAR to commit to IEEE 323-1974.

Assessment B.4

GESSAR II commits to IEEE 323-1974 for safety related systems.

Commitment B.5

RHR shutdown cooling equipment must meet IEEE 323-1974.

Assessment B.5

GESSAR II Table 7.1-4 and associated text address IEEE 323-1974. The RHR shutdown cooling is designed to meet this criteria as indicated.

Commitment C.1

Revise PSAR to indicate that equipment used for manual initiation of safety functions meets IEEE 384-1974 and Regulatory Guide 1.75.

Assessment C.1

Tables 7.1-3 through 7.1-6 of GESSAR II address IEEE 384-1974 and Regulatory Guide 1.75. Except portions of some systems which are specifically noted, all safety-related systems are designed to meet this criteria.

Commitment C.2

Revise PSAR to indicate that ECCS will meet IEEE 384-1974 and Regulatory Guide 1.75.

Assessment C.2

Table 7.1-3 and text of GESSAR II address IEEE 384-1974 and Regulatory Guide 1.75 for the ECCS. All ECCS systems are designed to meet these requirements.

Commitment E.2

All protection system sensors that do not have analog readout indication will be testable during reactor power operation.

Assessment E.2

In the current solid state design, all such indicators are testable during reactor power operation.

Commitment E.3

All sensors removed from service for tests will include automatic indication of bypass per Regulatory Guide 1.47.

Assessment E.3

The commitment is not correctly worded. Regulatory Guide 1.47 allows for manual indication of bypass under administrative control for bypasses which cannot be automatically indicated. There are RPS "sensors" such as limit switches on valves which, because they function simply as an open or closed contact, fit in this category. A switch is provided to activate the indicators manually for bypass of such devices. Wherever possible, all other sensors (including the analog transmitters/trip units) are automatically indicated when bypassed. Commitment E.3 is met if corrected by deleting "automatic" from the sentence. Thus, all sensors removed from service for tests will include indication of bypass per Regulatory Guide 1.47.

Commitment E.4

Pulse testing will be supplemented by provisions for manual testing of the functional logic to verify proper operation of pulse testing system.

Assessment E.4

Provisions for manual testing of the functional logic are provided which verify the proper operation of the self-test feature.

Commitment G.1

HPCS FCD will be revised so that interlock that terminates injection flow on high water level will be effective only if no high drywell pressure signal exists.

Assessment G.1

The system was originally revised per NRC request. However, we are presently negotiating with the NRC for reversal of this agreement because it is unwise(though not a safety issue) to allow water flow into the main steamlines under any condition. We expect NRC approval so long as the diversity of HPCS start (low water level and/or high drywell pressure) is preserved.

Commitment G.2

HPCS FCD will be revised so that the interlock which prevents opening of the suppression pool suction valve unless both test bypass valves are closed will be effective only for manual control of suppression pool suction valve.

Assessment G.2

Manual opening of the suppression pool suction valve is permissive only if both test bypass valves are closed. Furthermore, automatic opening does not depend on any test valve interlocks.

Commitment H.1

The LPCS and LPCI designs will be modified to provide diverse initiation signals that are not dependent on a non-diverse interlock (vessel pressure).

Assessment H.1

GE committed to meet the diversity requirement by providing different manufacturers for the injection valve interlock sensors. However, this has not been done to date; largely due to the difficulty of finding quality vendors willing to accept 10CFR21 responsibility. However, greatly improved testability and operator awareness is made possible through the use of analog transmitters and trip units, which replace the previous pressure switch hardware. Such improvements should reduce the need for "different manufacturers" in sensor equipment. GE desires further discussion with the NRC on this issue.

Commitment I.1

The I&C used for automatic initiation containment spray will meet the same criteria as other engineered safety feature systems. The preliminary design for containment spray will be submitted and reviewed as a post-PDA item.

Assessment I.1

GESSAR II, Section 7.3 treats Containment Spray Cooling mode of RHR as a safety related ysstem designed to meet the same criteria as the other ESF systems. Also, Table 7.1-3 identifies all the criteria, IEEE's and Regulatory Guides are applied to Containment Spray. The GESSAR II submittal fulfills the post-PDA review requirement.

Commitment O.1

GE will study the effects of inadvertent initiation of ADS to determine whether a design criterion, that no single failure will cause inadvertent opening of more than one relief valve is necessary. If necessary, the criterion will be adopted.

Assessment O.1

The ADS system is designed such that no single failure can prevent ADS initiation. The control logic circuits for initiation are comprised of two independent sets of controls (Division 1 and Division 2), each controlling one of two pilot solenoids per valve and capable of activating ADS. Tolerance to single failures (preventing ADS initiation) are in accordance with IEEE 379. In addition, each division utilizes two channels in a two-out-of-two logic configuration to reduce the possibilities of inadvertent system initiation. This reduces the probability of a spurious actuation of more than one valve to less than 1×10^{-3}/year.

Commitment 0.3

The sensing and control system circuitry for relief valve operation must provide redundancy and independence equal of that required for protection systems.

Assessment 0.3

The SRV sensors, logic and actuators use the same divisions, channels and solenoids as described above for ADS. The SRV operation therefore meets the same redundancy and independence requirements as the ADS.