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Subject: **Clarification to Design Control Document, Tier 2, Subsection 5.2.5.5 Resulting from ACRS Discussions of June 22, 2010**

The purpose of this letter is to submit the GE Hitachi Nuclear Energy (GEH) response to an ACRS comment related to clarifying the time period for the rate of change alarm for ESBWR reactor coolant leakage. This time period is defined as one hour in ESBWR DCD Tier 2 Subsection 5.2.5.4, but is undefined in Subsection 5.2.5.5. The DCD markup presented in Enclosure 1 eliminates this inconsistency.

If you have any questions or require additional information, please contact me.

Sincerely,

Richard E. Kingston

Richard E. Kingston
Vice President, ESBWR Licensing

Enclosure:

1. Clarification to Design Control Document, Tier 2, Subsection 5.2.5.5 Resulting from ACRS Discussions of June 22, 2010 – DCD Markup

| | | |
|---|---|---|
| cc: | AE Cubbage | USNRC (with enclosure) |
| | JG Head | GEH/Wilmington (with enclosure) |
| | DH Hinds | GEH/Wilmington (with enclosure) |
| | TL Enfinger | GEH/Wilmington (with enclosure) |
| | eDRF Section | 0000-0116-8735 |

# Enclosure 1

# MFN 10-187

# Clarification to Design Control Document, Tier 2, Subsection 5.2.5.5 Resulting from ACRS Discussions of June 22, 2010

# DCD Markup

#### 5.2.5.2.3 Summary of Plant Variables Monitored for Leak Detection

The plant variables monitored for leakage are summarized in Tables 5.2-6 and 5.2-7 for areas within and outside the containment. The automatic LD&IS isolation functions that are provided for detection and isolation of gross leakage within the plant are identified in Table 5.2-6. The leakage parameters of the plant that are monitored and annunciated in the main control room are identified in Table 5.2-7. Also, Table 5.2-6 lists at least two or more leakage parameters that are monitored for containment isolation.

### *5.2.5.3 Display and Indications in the Main Control Room*

Monitored plant leakage parameters are measured, recorded and displayed on the appropriate panels in the main control room. All abnormal indications are annunciated for operator alert to initiate corrective action. All initiated automatic or manual isolation functions are also alarmed in the main control room.

### *5.2.5.4 Limits for Reactor Coolant Leakage Rates Within the Drywell*

The total reactor coolant leakage rate consists of all identified and unidentified leakages that flow to the drywell floor drain and equipment drain sumps. The reactor coolant leakage rate limits for alarm annunciation are established at less than or equal to 95 liters/min (25 gpm) from identified sources and at 19 liters/min (5 gpm) from unidentified sources. The instrumentation is designed to detect leakage rate step changes from unidentified sources of as low as 3.8 liters/min (1 gpm) in one hour under ideal conditions. An alarm annunciates if a step increase of the unidentified leak rate occurs, equal to or greater than a flow rate increase of 8.33 liters/min (2.2 gpm) within one hour.

### *5.2.5.5 Criteria to Evaluate the Adequacy and Margin of Leak Detection System*

For process lines that penetrate the containment, at least two different methods are used for detecting and isolating the leakage for the affected system. The instrumentation is designed to initiate alarms at established leakage limits and isolate the affected systems. The alarm setpoints are determined analytically or are based on actual measurements made during startup and pre-operational tests.

The unidentified leakage rate limit is based, with an adequate margin for contingencies, on a crack size large enough for leakage to propagate rapidly. The established limit is sufficiently low so that, even if the entire leakage rate were coming from a single crack in the nuclear system process barrier, corrective action could be taken before barrier integrity is threatened.

Sump instrumentation is capable of detecting unidentified leakage step changes of as low as 3.8 liters/min (1 gpm) in one hour within the drywell under ideal conditions. To account for normal operating condition changes, the evolution of drywell moisture, and parameter variations (e.g., temperature, turbidity) affecting leakage detection accuracy, a rate-of-change alarm setpoint is established at a lower limit value of 8.33 liters/minute (2.2 gpm) within one hour. The rate-of-change alarm provides an early alert for the control room operators to initiate investigation of the cause and proper response actions for the change of unidentified leakage flow prior to reaching or exceeding the Technical Specifications limit.