HITACHI

GE Hitachi Nuclear Energy

James C. Kinsey
Vice President, ESBWR Licensing

PO Box 780 M/C A-55
Wilmington, NC 28402-0780
USA

T 910 675 5057
F 910 362 5057
jim.kinsey@ge.com

MFN 07-643

Docket No. 52-010

December 5, 2007

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: **Response to Portion of NRC Request for Additional Information Letter No. 96 Related to ESBWR Design Certification Application - RAI Number 14.3-149**

Enclosure 1 contains GEH's response to the subject RAI transmitted via the Reference 1 letter.

If you have any questions or require additional information regarding the information provided here, please contact me.

Sincerely,

James C. Kinsey

James C. Kinsey
Vice President, ESBWR Licensing

D068
NRO

Reference:

1. MFN 07-231, Letter from U.S. Nuclear Regulatory Commission to Robert E. Brown, *Request for Additional Information Letter No. 96 Related to ESBWR design Certification Application,* April 12, 2007.

Enclosure:

1. Response to Portion of NRC Request for Additional Information Letter No. 96 Related to ESBWR Design Certification Application - RAI Number 14.3-149

cc:	AE Cubbage	USNRC (with enclosure)
	GB Stramback	GEH/San Jose (with enclosure)
	RE Brown	GEH/Wilmington (with enclosure)
	DH Hinds	GEH/Wilmington (with enclosure)
	eDRF	0000-0076-5578

Enclosure 1

MFN 07-643

Response to Portion of NRC Request for Additional Information Letter No. 96 Related to ESBWR Design Certification Application – RAI Number 14.3-149

NRC RAI 14.3-149

Provide ITAAC for the deluge function of GDCS. In DCD Tier 1, Revision 3, Table 2.4.2-1, according to GE, the deluge function of GDCS is non-safety related and rows 5 and 6 were deleted. The staff does not agree with the deletion. Standard Review Plan (SRP) Section 14.3 states that "if the results of the PRA indicate that a particular component or function of a system is risk significant, that component function will be verified by the ITAAC." The staff believes that the deluge function is "risk significant" and hence should be included in the ITAAC.

GE Response

The design of the deluge valve is such that it provides unrestricted flow in the open position. Type testing will be performed on the valve for proper operation as identified in DCD Tier 1, Revision 4, Table 2.4.2-3, row 22. This ITAAC fulfills the original intent of the ITAAC deleted in Tier 1, Revision 3, Table 2.4.2-1, row 5.

Additional material will be added to DCD Tier 1, Revision 5, section 2.4.2, Table 2.4.2-2 and Table 2.4.2-3 as shown in the attached markup. This addition covers the original intent of the ITAAC deleted in Tier 1, Revision 3, Table 2.4.2-1, row 6.

DCD Impact

DCD Tier 1, Revision 5, will be changed as shown in the attached markup.

2.4.2 Emergency Core Cooling System - Gravity-Driven Cooling System

Design Description

Emergency core cooling is provided by the Gravity-Driven Cooling System (GDCS) located within containment in conjunction with the ADS in case of a LOCA.

(1) The functional arrangement of the GDCS is as listed in Table 2.4.2-1 and shown on Figure 2.4.2-1.

(2) a. Components identified in Table 2.4.2-1 as ASME Code Section III are designed, fabricated, installed, and inspected in accordance with the ASME Code, Section III requirements.

b. Piping identified in Table 2.4.2-1 as ASME Code Section III are designed, fabricated, installed, and inspected in accordance with the ASME Code, Section III requirements.

(3) a. Pressure boundary welds in components identified in Table 2.4.2-1 as ASME Code Section III meet ASME Code Section III requirements.

b. Pressure boundary welds in piping identified in Table 2.4.2-1 as ASME Code Section III meet ASME Code Section III requirements.

(4) a. Each component identified in Table 2.4.2-1 as ASME Code Section III retains its pressure boundary integrity at under internal pressures that will be experienced during service.

b. The piping identified in Table 2.4.2-1 as ASME Code Section III retains its pressure boundary integrity at design pressure.

(5) a. The seismic Category I equipment identified in Table 2.4.2-1 can withstand seismic design basis loads without loss of safety function.

b. Each of the lines identified in Table 2.4.2-1 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability.

(6) The minimum set of displays, alarms and controls, based on the applicable codes and standards, including HFE evaluations and emergency procedure guidelines, is available in the main control room.

(7) The equipment qualification of GDCS components is addressed in Tier 1 Section 3.8.

(8) a. The GDCS injections lines provide sufficient flow to maintain water coverage one meter above TAF for 72 hours following a design basis LOCA.

b. The GDCS equalizing lines provide sufficient flow to maintain water coverage one meter above TAF for 72 hours following a design basis LOCA.

(9) The GDCS squib valve used in the injection and equalization open as designed.

(10) Check valves designated in Figure 2.4.2-1 as having an active safety-related function open, close, or both open and also close under system pressure, fluid flow, and temperature conditions.

(11) Control Room indications and controls are provided for the GDCS.

(12) GDCS squib valves maintain RPV backflow leak tightness and maintain reactor coolant pressure boundary integrity during normal plant operation.

(13) Each GDCS injection line includes a nozzle flow limiter to limit break size.

(14) Each GDCS equalizing line includes a nozzle flow limiter to limit break size.

(15) Each of the GDCS divisions is powered from their respective safety-related power divisions.

(16) Each mechanical division of the GDCS outside the drywell is physically separated from the other divisions with the exception of divisions B and C connected to pool B/C as shown in Figure 2.4.2-1.

(17) The GDCS pools A, B/C, and D are sized to hold a minimum drainable water volume.

(18) The GDCS pools A, B/C, and D are of sized for holding a specified minimum water level.

(19) The minimum elevation change between minimum water level of GDCS pools and the centerline of GDCS injection line nozzles is sufficient to provide gravity-driven flow.

(20) The minimum drainable volume from the suppression pool to the RPV is sufficient to meet long-term post-LOCA core cooling requirements.

(21) The long-term GDCS minimum equalizing driving head is based on RPV Level 0.5.

(22) The GDCS Deluge squib valves open as designed.

(23) GDCS deluge system has redundant nonsafety-related programmable logic controllers (PLCs) that are connected to thermocouples in each cell of the lower drywell Basemat-internal Melt Arrest Coolability (BiMAC) system.

(24) When temperatures exceed the setpoint at one set of thermocouples coincident with setpoints being exceeded at a second set of thermocouples in adjacent cells, each PLC starts an adjustable deluge squib valve non-bypassable timer.

(25) The GDCS deluge valve squib initiation timer signals are inhibited when either of the safety-related GDCS deluge system lower drywell temperature switches sense temperatures lower than a preset value coincident with the presence of both deluge squib valve timer signals.

Refer to Subsection 2.2.15 for "Instrumentation and Controls Compliance with IEEE Standard 603."

Inspections, Tests, Analyses and Acceptance Criteria

Table 2.4.2-3 provides a definition of the inspections, test and/or analyses, together with associated acceptance criteria for the Gravity-Driven Cooling System.

Table 2.4.2-2

Electrical Equipment

Equipment Name (Description)	Equipment Identifier See Figure 2.4.2-1	Control Q-DCIS/ DPS	Seismic Category I	Safety-Related	Safety-Related Display	Active Function	Remotely Operated	Containment Isolation Valve Actuator
GDCS Injection Line Check Valve	V-1(A)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Injection Line Squib Valve	V-2(A)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Injection Line Squib Valve	V-3(A)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Injection Line Check Valve	V-4(A)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Suppression Pool Injection Line Squib Valve	V-5(A)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Suppression Pool Injection Line Check Valve	V-6(A)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Deluge Line Squib Valve	V-7(A)	-	Yes	No	Yes	Open	Yes	No
GDCS Deluge Line Squib Valve	V-8(A)	-	Yes	No	Yes	Open	Yes	No
GDCS Deluge Line Squib Valve	V-9(A)	-	Yes	No	Yes	Open	Yes	No
GDCS Injection Line Check Valve	V-1(B)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Injection Line Squib Valve	V-2(B)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Injection Line Squib Valve	V-3(B)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Injection Line Check Valve	V-4(B)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Suppression Pool Injection Line Squib Valve	V-5(B)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Suppression Pool Injection Line Check Valve	V-6(B)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Deluge Line Squib Valve	V-7(B)	-	Yes	No	Yes	Open	Yes	No
GDCS Deluge Line Squib Valve	V-8(B)	-	Yes	No	Yes	Open	Yes	No
GDCS Deluge Line Squib Valve	V-9(B)	-	Yes	No	Yes	Open	Yes	No
GDCS Injection Line Check Valve	V-1(C)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Injection Line Squib Valve	V-2(C)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Injection Line Squib Valve	V-3(C)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Injection Line Check Valve	V-4(C)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Suppression Pool Injection Line Squib Valve	V-5(C)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No

Table 2.4.2-2

Electrical Equipment

Equipment Name (Description)	Equipment Identifier See Figure 2.4.2-1	Control Q-DCIS/ DPS	Seismic Category I	Safety-Related	Safety-Related Display	Active Function	Remotely Operated	Containment Isolation Valve Actuator
GDCS Suppression Pool Injection Line Check Valve	V-6(C)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Deluge Line Squib Valve	V-7(C)	-	Yes	No	Yes	Open	Yes	No
GDCS Deluge Line Squib Valve	V-8(C)	-	Yes	No	Yes	Open	Yes	No
GDCS Deluge Line Squib Valve	V-9(C)	-	Yes	No	Yes	Open	Yes	No
GDCS Injection Line Check Valve	V-1(D)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Injection Line Squib Valve	V-2(D)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Injection Line Squib Valve	V-3(D)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Injection Line Check Valve	V-4(D)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Suppression Pool Injection Line Squib Valve	V-5(D)	Yes / Yes	Yes	Yes	Yes	Open	Yes	No
GDCS Suppression Pool Injection Line Check Valve	V-6(D)	-	Yes	Yes	Yes	Open/Close	No	No
GDCS Deluge Line Squib Valve	V-7(D)	-	Yes	No	Yes	Open	Yes	No
GDCS Deluge Line Squib Valve	V-8(D)	-	Yes	No	Yes	Open	Yes	No
GDCS Deluge Line Squib Valve	V-9(D)	-	Yes	No	Yes	Open	Yes	No
Programmable logic controller Channel A Train 1	-	-	No (II)	No	No	No	-	-
Programmable logic controller Channel B Train 1	-	-	No (II)	No	No	No	-	-
Programmable logic controller Channel A Train 2	-	-	No (II)	No	No	No	-	-
Programmable logic controller Channel B Train 2	-	-	No (II)	No	No	No	-	-
Deluge system PLC DC power supply battery and charger Channel A Train 1	-	-	No (II)	No	No	No	-	-
Deluge system PLC DC power supply battery and charger Channel B Train 1	-	-	No (II)	No	No	No	-	-
Deluge system squib valve initiator DC power supply battery and charger Train 1	-	-	No (II)	No	No	No	-	-
Deluge system PLC DC power supply battery and charger Channel A Train 2	-	-	No (II)	No	No	No	-	-

Table 2.4.2-2

Electrical Equipment

Equipment Name (Description)	Equipment Identifier See Figure 2.4.2-1	Control Q-DCIS/ DPS	Seismic Category I	Safety-Related	Safety-Related Display	Active Function	Remotely Operated	Containment Isolation Valve Actuator
Deluge system PLC DC power supply battery and charger Channel B Train 2	-	-	No (II)	No	No	No	-	-
Deluge system squib valve initiator DC power supply battery and charger Train 2	-	-	No (II)	No	No	No	-	-
GDCS lower drywell temperature switch high Switch A Train 1	-	-	Yes	Yes	Yes	Yes	-	-
GDCS lower drywell temperature switch high Switch B Train 1	-	-	Yes	Yes	Yes	Yes	-	-
GDCS BiMAC thermocouples Channel A Train 1	-	-	No (II)	No	No	No	-	-
GDCS BiMAC thermocouples Channel B Train 1	-	-	No (II)	No	No	No	-	-
GDCS lower drywell temperature switch high Switch A Train 2	-	-	Yes	Yes	Yes	Yes	-	-
GDCS lower drywell temperature switch high Switch B Train 2	-	-	Yes	Yes	Yes	Yes	-	-
GDCS BiMAC thermocouples Channel A Train 2	-	-	No (II)	No	No	No	-	-
GDCS BiMAC thermocouples Channel B Train 2	-	-	No (II)	No	No	No	-	-

Table 2.4.2-3

ITAAC For The Gravity-Driven Cooling System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The functional arrangement of the GDCS is as listed in Table 2.4.2-1 and shown on Figure 2.4.2-1.	Inspections of the as-built system will be conducted.	The as-built GDCS conforms to the functional arrangement as listed in Table 2.4.2-1 and shown in Figure 2.4.2-1.
2a. Components identified in Table 2.4.2-1 as ASME Code Section III are designed, fabricated, installed, and inspected in accordance with the ASME Code, Section III requirements.	Inspections will be conducted of the as-built components as documented in the ASME design reports.	Inspections confirm that the ASME Code components are designed, fabricated, installed, and inspected in accordance with the ASME Code, Section III.
b. Piping identified in Table 2.4.2-1 as ASME Code Section III are designed, fabricated, installed, and inspected in accordance with the ASME Code, Section III requirements.	Inspections will be conducted of the as-built piping as documented in the ASME design reports.	Inspections confirm that the ASME Code piping is designed, fabricated, installed, and inspected in accordance with the ASME Code, Section III.
3a. Pressure boundary welds in components identified in Table 2.4.2-1 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.

Table 2.4.2-3

ITAAC For The Gravity-Driven Cooling System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
b. Pressure boundary welds in piping identified in Table 2.4.2-1 as ASME Code Section III meet ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for non-destructive examination of pressure boundary welds.
4a. Each component identified in Table 2.4.2-1 as ASME Code Section III retains its pressure boundary integrity at under internal pressures that will be experienced during service.	A hydrostatic test will be conducted on those code components of the GDCS required to be hydrostatically tested by the ASME code.	Report(s) document that the results of the hydrostatic test of the ASME Code components of the GDCS conform to the requirements in the ASME Code, Section III.
b. The piping identified in Table 2.4.2-1 as ASME Code Section III retains its pressure boundary integrity at design pressure.	A hydrostatic test will be conducted on those code components of the GDCS required to be hydrostatically tested by the ASME code.	Report(s) document that the results of the hydrostatic test of the ASME Code components of the GDCS conform to the requirements in the ASME Code, Section III.

Table 2.4.2-3

ITAAC For The Gravity-Driven Cooling System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
5a. The seismic Category I equipment identified in Table 2.4.2-1 can withstand seismic design basis loads without loss of safety function.	i) Inspection will be performed to verify that the seismic Category I equipment and valves identified in Table 2.4.2-1. ii) Type tests, analyses, or a combination of type tests and analyses of seismic Category I equipment will be performed. iii) Inspection will be performed for the existence of a report verifying that the as-installed equipment including anchorage is seismically bounded by the tested or analyzed conditions.	i) Report(s) document that the seismic Category I equipment identified in Table 2.4.2-1 is located on a seismic structure. ii) A report exists and concludes that the seismic Category I equipment can withstand seismic design basis loads without loss of safety function. iii) A report exists and concludes that the as-installed equipment including anchorage is seismically bounded by the tested or analyzed conditions.
b. Each of the lines identified in Table 2.4.2-1 for which functional capability is required is designed to withstand combined normal and seismic design basis loads without a loss of its functional capability.	Inspection will be performed for the existence of a report verifying that the as-built piping meets the requirements for functional capability.	A report exists and concludes that each of the as-built lines identified in Table 2.4.2-1 for which functional capability is required meets the requirements for functional capability.

Table 2.4.2-3

ITAAC For The Gravity-Driven Cooling System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
6. The minimum set of displays, alarms and controls, based on the applicable codes and standards, including HFE evaluations and emergency procedure guidelines, is available in the main control room.	Inspections will be performed on the main control room alarms, displays, and/or controls for the GDCS.	Report(s) document that alarms, displays, and/or controls exist or can be retrieved in the main control room.
7. The equipment qualification of GDCS components is addressed in Tier 1 Section 3.8.	See Tier 1 Section 3.8.	See Tier 1 Section 3.8.
8a. The GDCS injections lines provide sufficient flow to maintain water coverage one meter above TAF for 72 hours following a design basis LOCA.	For each loop of the GDCS, an open reactor vessel test will be performed utilizing two test valves in place of the parallel squib valves in the GDCS injection line and connected to the GDCS actuation logic. Flow measurements will be taken on flow into the RPV.	An analysis exists that demonstrates that the observed flow rate, in conjunction with vessel depressurization and other modes of GDCS operation, maintains water coverage one meter above TAF for 72 hours following the design basis LOCA.

Table 2.4.2-3

ITAAC For The Gravity-Driven Cooling System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
b. The GDCS equalizing lines provide sufficient flow to maintain water coverage one meter above TAF for 72 hours following a design basis LOCA.	For each loop of the GDCS, open reactor testing will be performed utilizing one test valve in place of the squib valve in the GDCS equalizing line and connected to the GDCS actuation logic. Flow measurements will be taken on flow into the RPV.	An analysis exists that demonstrates that the observed flow rate, in conjunction with vessel depressurization and other modes of GDCS operation, will maintain water coverage one meter above TAF for 72 hours following the design basis LOCA.
9. The GDCS squib valve used in the injection and equalization open as designed.	A vendor type test will be performed on a squib valve to open as designed.	Records of vendor type test concludes GDCS squib valves used in the injection and equalization open as designed.
10. Check valves designated in Figure 2.4.2-1 as having an active safety-related function open, close, or both open and also close under system pressure, fluid flow, and temperature conditions.	Type tests of valves for opening, closing, or both opening and also closing, will be conducted.	Based on the direction of the differential pressure across the valve, each check valve opens, closes, or both opens and closes, depending upon the valve's safety functions.
11. Control Room indications and controls are provided for the GDCS.	Inspections will be performed on the Control Room indications and controls for the GDCS.	Indications and controls exist or can be retrieved in the control room as defined in Subsection 2.4.2.
12. GDCS squib valves maintain RPV backflow leak tightness and maintain reactor coolant pressure boundary integrity during normal plant operation.	A test will be performed to demonstrate the squib valves are leak tight during normal plant conditions.	Testing concludes GDCS squib valves have zero leakage at normal plant operation pressure

Table 2.4.2-3

ITAAC For The Gravity-Driven Cooling System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
13. Each GDCS injection line includes a nozzle flow limiter to limit break size	Inspections of the as-built GDCS injection flow limiters will be taken	A calculation exists that confirms each GDCS injection nozzle flow limiter is less than or equal to 4.562E-3 m^2 (0.0491 ft^2).
14. Each GDCS equalizing line includes a nozzle flow limiter to limit break size.	Inspections of the as-built GDCS equalizing flow limiters will be taken	A calculation exists that confirms each GDCS equalizing line nozzle flow limiter is less than or equal to 2.027E-3 m^2 (0.0218 ft^2).
15. Each of the GDCS divisions is powered from their respective safety-related power divisions.	Tests will be performed on the GDCS by providing a test signal in only one safety-related power division at a time.	Testing confirms the signal exists only in the safety-related power division under test in the GDCS.
16. Each mechanical division of the GDCS is physically separated from the other divisions with the exception of divisions B and C connected to pool B/C as shown in Figure 2.4.2-1.	Inspections of the as-built GDCS will be performed.	Inspection confirms each mechanical division of the GDCS is physically separated from other mechanical divisions of the GDCS by structural and /or fire barriers with the exception of divisions B and C connected to pool B/C as shown in Figure 2.4.2-1.
17. The GDCS pools A, B/C, and D are sized to hold a minimum drainable water volume.	An analysis of combined minimum drainable volume for GDCS pools A, B/C, and D will be performed.	Analysis confirms the combined minimum drainable water volume for GDCS pools A, B/C, and D is 1636 m^3 (57775 ft^3).
18. The GDCS pools A, B/C, and D are of sized for holding a specified minimum water level.	An analysis of minimum water level in GDCS pools A, B/C, and D will be performed.	Analysis confirms the minimum water level in GDCS pools A, B/C, and D is 6.5 m (21.33 ft).

Table 2.4.2-3

ITAAC For The Gravity-Driven Cooling System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
19. The minimum elevation change between minimum water level of GDCS pools and the centerline of GDCS injection line nozzles is sufficient to provide gravity-driven flow.	An analysis of minimum elevation change between minimum water level of GDCS pools and the centerline of GDCS injection line nozzles will be performed.	Analysis confirms the minimum elevation change between minimum water level of GDCS pools and the centerline of GDCS injection line nozzles is 13.5 m (44.3 ft).
20. The minimum drainable volume from the suppression pool to the RPV is sufficient to meet long-term post-LOCA core cooling requirements.	An analysis of minimum drainable volume from the suppression pool to the RPV will be performed.	Analysis confirms the minimum drainable volume from the suppression pool to the RPV is 799 m^3 (28,216 ft^3).
21. The long-term GDCS minimum equalizing driving head is based on RPV Level 0.5.	An analysis of the minimum equalizing driving head will be performed.	Analysis confirms the minimum equalizing driving head is 1 meter (3.28 ft).
22. The GDCS Deluge squib valves open as designed.	A vendor type test will be performed on a squib valve to open as designed.	Records of vendor type test concludes GDCS Deluge squib valves used open as designed.
23. Deluge system has redundant nonsafety-related programmable logic controllers (PLCs) that are connected to thermocouples in each cell of the lower drywell Basemat-internal Melt Arrest Coolability (BiMAC) system.	Inspections and tests will be performed to confirm the connection of the thermocouples to the PLCs.	Reports confirm that one thermocouple from each cell is monitored in one PLC, while the other thermocouple from each cell is monitored in a second PLC.

Table 2.4.2-3

ITAAC For The Gravity-Driven Cooling System

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
24. When temperatures exceed the setpoint at one set of thermocouples coincident with setpoints being exceeded at a second set of thermocouples in adjacent cells, each PLC starts an adjustable deluge squib valve non-bypassable timer.	a. Tests will be performed to confirm timer initiation using simulated signals.	Reports confirm that the timers are initiated and are configured such that both timers must actuate to send an initiate signal to the safety-related Deluge system lower drywell temperature switches.
	b. Type tests will be performed of the thermocouples to confirm detection of simulated core melt debris in the BiMAC cells.	Reports confirm that the thermocouples are capable of detecting simulated core melt debris in the BiMAC cells.
25. The GDCS deluge valve squib initiation signals are inhibited when either of the safety-related deluge system lower drywell temperature switches sense temperatures lower than a preset value coincident with the presence of both deluge squib valve timer signals.	Tests will be performed using simulated signals to confirm that the GDCS deluge valve squib initiation signals are inhibited when either of the safety-related deluge system lower drywell temperature switches sense temperatures lower than a preset value coincident with the presence of both deluge squib valve timer signals.	Reports confirm that GDCS deluge valve squib initiation signals are inhibited when either of the safety-related deluge system lower drywell temperature switches sense temperatures lower than a preset value coincident with the presence of both deluge squib valve timer signals.