

December 6, 2017

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Limerick Generating Station, Units 1 and 2
Renewed Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket Nos. 50-352 and 50-353

Subject: Response to Request for Additional Information
Application to Revise Technical Specifications to Adopt TSTF-542, "Reactor
Pressure Vessel Water Inventory Control," Revision 2

- References:
1. Letter from James Barstow (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Application to Revise Technical Specifications to Adopt TSTF-542, 'Reactor Pressure Vessel Water Inventory Control,' Revision 2," dated July 19, 2017 (ADAMS Accession No. ML17200D096).
 2. Electronic mail message from V. Sreenivas, U.S. Nuclear Regulatory Commission, to Glenn Stewart, Exelon Generation Company, LLC, "Limerick Generating Station TSTF-542 RAIs: Response Requested by 12-08-2017," dated November 7, 2017 (ADAMS Accession No. ML17311B104).

By letter dated July 19, 2017 (ADAMS Accession No. ML17200D096) (Reference 1), Exelon Generation Company, LLC (Exelon), requested approval to adopt Technical Specifications Task Force (TSTF) Traveler TSTF-542, "Reactor Pressure Vessel Water Inventory Control," Revision 2, which changes the Technical Specifications (TSs) for Limerick Generating Station (LGS), Units 1 and 2.

The NRC staff reviewed the information provided that supports the proposed amendment and identified the need for additional information in order to complete their evaluation of the amendment request. The request for additional information (RAI) was sent from the NRC to Exelon by electronic mail message on November 7, 2017 (Reference 2). The NRC email requested a response by December 8, 2017.

Attachment 1 to this letter provides a restatement of the RAI questions followed by our responses. Attachment 2 provides revised TS markups. The remaining TS markups remain unaffected by this response.

Exelon has reviewed the information supporting a finding of no significant hazards consideration, and the environmental consideration, that were previously provided to the NRC in Attachment 1 of the Reference 1 letter. Exelon has concluded that the information provided in this response does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92. In addition, Exelon has concluded that the information in this response does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

There are no regulatory commitments in this response.

In accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b), Exelon is notifying the Commonwealth of Pennsylvania of this RAI response by transmitting a copy of this letter and its attachments to the designated State Official.

If you have any questions or require additional information, please contact Glenn Stewart at 610-765-5529.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 6th day of December 2017.

Respectfully,



David P. Helker
Manager, Licensing and Regulatory Affairs
Exelon Generation Company, LLC

Attachments:

1. Response to Request for Additional Information
Application to Revise Technical Specifications to Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control," Revision 2
2. Revised Markup of Proposed Technical Specifications Pages

cc:	Regional Administrator - NRC Region I	w/attachment
	NRC Senior Resident Inspector - Limerick Generating Station	"
	NRC Project Manager, NRR - Limerick Generating Station	"
	Director, Bureau of Radiation Protection - Pennsylvania	"
	Department of Environmental Protection	"

ATTACHMENT 1

License Amendment Request

**Limerick Generating Station, Units 1 and 2
Docket Nos. 50-352 and 50-353**

**Response to Request for Additional Information
Application to Revise Technical Specifications to Adopt TSTF-542,
"Reactor Pressure Vessel Water Inventory Control," Revision 2**

By letter dated July 19, 2017 (ADAMS Accession No. ML17200D096) (Reference 1), Exelon Generation Company, LLC (Exelon), requested approval to adopt Technical Specifications Task Force (TSTF) Traveler TSTF-542, "Reactor Pressure Vessel Water Inventory Control," Revision 2, which changes the Technical Specifications (TSs) for Limerick Generating Station (LGS), Units 1 and 2.

The NRC staff reviewed the information provided that supports the proposed amendment and identified the need for additional information in order to complete their evaluation of the amendment request. The request for additional information (RAI) was sent from the NRC to Exelon by electronic mail message on November 7, 2017 (Reference 2). Below is a restatement of the questions followed by our responses.

Question 1 (LGS-RAI-1):

Background:

Markup pages 3/4 3-35 and 3/4 3-41b: The licensee proposed to move Mode 4 and 5 requirements for Function 1.d (Core Spray System - Manual Initiation) from LGS TS Table 3.3.3-1 to TS Table 3.3.3.A-1 as Function 1.b. The current Function 1.d is modified by Note (e) which states, "The manual initiation push buttons start the respective core spray pump and diesel generator. The "A" and "B" logic manual push buttons also actuate an initiation permissive in the injection valve opening logic."

Question:

Please provide technical justification to explain why Note (e) would no longer be applicable to Table 3.3.3.A-1 Function 1.b, or revise the proposed changes.

Response

Footnote (e) from existing LGS TS Table 3.3.3-1 has been added to proposed TS Table 3.3.3.A-1, Function 1.b as footnote (c). See revised TS markups (Attachment 2).

Question 2 (LGS-RAI-2):

Background:

Markup page 3/4 5-6. The proposed title 3/4 5.2, REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL (WIC) is missing a period between 3/4 and 5. It should read, 3/4.5.2.

Question:

Correct the typo.

Response

The typo in the proposed title 3/4 5.2, REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL (WIC), has been corrected by adding a period between 3/4 and 5. See revised TS markups (Attachment 2).

Question 3 (LGS-RAI-3):

Background:

Markup page 3/4 5-6a. Action e states, "With required ACTION and associated allowed outage time for ACTIONs c. or d. not met, or DRAIN TIME less than 1 hour, initiate action to restore DRAIN TIME to greater than or equal to 36 hours." In accordance with TSTF-542, LCO 3.5.2, Condition E, states a Completion Time of "immediately."

Question:

Correct LCO 3.5.2, Action e to be in accordance with the traveler or provide justification that the immediate Completion Time is not required.

Response

The word "immediately" has been added to the wording of proposed LCO 3.5.2, Action e. See revised TS markups (Attachment 2).

Question 4 (LGS-RAI-4):

Background:

Markup pages 3/4 5.6 and 3/4 5.7. LCO 3.5.2 and surveillance requirements 4.5.2 uses "suppression chamber water level" and "suppression pool water level" in several places.

Question:

In order to bring consistence to new proposed TS, select one of these 'water levels,' or provide justification that the mixing of the terms 'chamber' and 'pool' is correct.

Response

The wording in Surveillance Requirements 4.5.2.2 and 4.5.2.3 has been revised to "suppression chamber" water level for consistency with LCO 3.5.2 wording. See revised TS markups (Attachment 2).

Question 5 (LGS- RAI-5):

Background:

Attachment 1, Page 2, first Variation states.

In alignment with TSTF-542, Rev. 2, Proposed Safety Basis (Section 3.1.2), the existing LGS TS 3.5.2 requirement to suspend core alterations as an action for Emergency Core Cooling System (ECCS) inoperability is no longer warranted since there are no postulated events associated with core alterations that are prevented or mitigated by the proposed RPV water inventory control requirements. In addition, loss of RPV inventory events are not initiated by core alteration operations. Refueling Limiting Conditions for Operation (LCOs) provide requirements to ensure safe operation during core alterations, including required water level above the RPV flange. Therefore, LGS proposes to delete TS 3.5.2, Action 'b' in its entirety, including the action relating to core alterations.

Traveler 542 does not specifically address that existing TS that have in place requirement for CORE ALTERATION, can be deleted.

Question:

Re-instate the TS requirement for CORE ALTERATION as described in the following sections; LCO 3.5.2, Action b, LCO 3.5.3, Action b, or provide stronger justification that these actions can be deleted.

Response

The TS requirement for suspending CORE ALTERATIONS has been re-instated by adding it into the newly proposed LCO 3.5.2, Action a, which now states, based on this response:

"With none of the above required subsystems OPERABLE, immediately suspend CORE ALTERATIONS. Restore as least one subsystem to OPERABLE status within 4 hours. Otherwise, initiate action to establish a method of water injection capable of operating without offsite electrical power."

As noted in Section 2.2 of the original submittal (Reference 1), the requirements of LCO 3.5.3.b are redundant to the requirements of the proposed LCO 3.5.2.a.2.b). Existing LCO 3.5.3, Action b is captured by adding the immediate suspension of CORE ALTERATIONS into the newly proposed LCO 3.5.2, Action a. In addition, the requirement to establish secondary containment in both LCO 3.5.2, Action b and LCO 3.5.3, Action b is captured by the newly proposed LCO 3.5.2, Actions c. and d. Therefore, no changes are proposed to the previously proposed revisions to LCO 3.5.3 and associated Actions. See revised TS markups (Attachment 2).

Question 6 (LGS- RAI-6):

Background:

In Attachment 1 of the LAR, page 2 of 6, the licensee proposed the following variation:

Because LGS, Unit 1 and Unit 2 TS are based on NUREG-0123, Revision 2, the current LGS TS in Table 3.3.3-1, "Emergency Core Cooling System Actuation Instrumentation," do not include requirements for the following functions that are listed in TSTF-542: "1b - Core Spray Pump Discharge Flow-Low (Bypass)" and "2b - Low Pressure Coolant Injection Pump Discharge Flow-Low (Bypass)." Therefore, to align with current LGS instrumentation TS, no

requirements were added for these functions as part of the newly proposed TS Table 3.3.3.A-1.

TSTF-542 moves the CS and LPCI bypass requirements from STS Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation," to new STS Table 3.3.5.2-1, "RPV Water Inventory Control Instrumentation." In particular, Section 3.3.4.2 of the TSTF-542 technical evaluation describes the purpose of the STS requirement:

The minimum flow instruments are provided to protect the associated low pressure ECCS pump from overheating when the pump is operating and the associated injection valve is not fully open. The minimum flow line valve is opened when low flow is sensed, and the valve is automatically closed when the flow rate is adequate to protect the pump.

As per the requirements contained in TSTF-542, successful RPV water inventory control is based, in part, on the capability of an operable ECCS pump to inject water as needed to make up the inventory. Sections 5.4.7.1.2 and 6.2.4.3.1.3.1.1 of the LGS Updated Final Safety Analysis Report describe this protective function of the LGS minimum flow rate instruments to signal automatically opening or closing the valves in the minimum flow bypass lines for the low pressure RHR and CS pumps.

Furthermore, the presence or absence of a requirement in a current TS is not in and of itself justification for the proposed TS.

Question:

Since the licensee has omitted the equivalent of the TSTF-542 instrumentation requirements for both CS and LPCI Pump Discharge Flow-Low (Bypass) from the proposed TSs, please describe how there is reasonable assurance that a required LGS ECCS pump will operate as expected (e.g., the bypass line will not lessen expected discharge flow, and said pump will not overheat when the associated injection valve is not fully open).

Response

The design of the Core Spray (CS) and Residual Heat Removal (RHR) systems at LGS includes a pump minimum flow bypass line which provides pump minimum flow protection when the respective pump is operating and the associated discharge flow path is not open or reactor pressure is greater than pump discharge pressure following system initiation. Sections 5.4.7, 6.3.2 and 7.3.1 of the LGS Updated Final Safety Analysis Report describe the function of the CS and RHR pump minimum flow bypass lines and associated valves and controls.

Although the CS and RHR pump discharge low flow bypass instrumentation is not addressed by specific TS requirements under newly proposed TS 3.3.3.A, functionality of this instrumentation is tested under current TS Surveillance Requirements (SRs). Logic system functional testing and simulated automatic operation of all ECCS actuation channels, including the CS and RHR pump discharge low flow bypass instrumentation, is performed for each RHR train and CS loop under existing TS SR 4.3.3.2, Logic System Functional Tests. Calibration of the transmitter and associated trip unit, and verification of trip unit trip and reset setpoint accuracy, of the CS and RHR pump discharge low flow bypass instrumentation is performed under preventive maintenance activities. Additionally, operational readiness of the active valves located in the

CS and RHR pump minimum flow bypass lines is demonstrated periodically under the LGS ASME Section XI In-Service Testing program.

The testing and maintenance activities described above provide reasonable assurance that the CS and RHR pumps will operate as expected when the associated discharge flow path is not open or reactor pressure is greater than pump discharge pressure following system initiation.

References:

1. Letter from James Barstow (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Application to Revise Technical Specifications to Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control," Revision 2," dated July 19, 2017 (ADAMS Accession No. ML17200D096).
2. Electronic mail message from V. Sreenivas, U.S. Nuclear Regulatory Commission, to Glenn Stewart, Exelon Generation Company, LLC, "Limerick Generating Station TSTF-542 RAIs: Response Requested by 12-08-2017," dated November 7, 2017 (ADAMS Accession No. ML17311B104).

ATTACHMENT 2

License Amendment Request

**Limerick Generating Station, Units 1 and 2
Docket Nos. 50-352 and 50-353**

**Response to Request for Additional Information
Application to Revise Technical Specifications to Adopt TSTF-542,
"Reactor Pressure Vessel Water Inventory Control," Revision 2**

Revised Markup of Proposed Technical Specifications Pages

Unit 1 TS Pages

3/4 3-41b

3/4 5-6

3/4 5-6a

3/4 5-7

Unit 2 TS Pages

3/4 3-41b

3/4 5-6

3/4 5-6a

3/4 5-7

TABLE 3.3.3.A-1
RPV WATER INVENTORY CONTROL (WIC) INSTRUMENTATION

<u>TRIP FUNCTION</u>	<u>MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION</u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>	<u>ACTION</u>
<u>1. CORE SPRAY SYSTEM</u>			
a. Reactor Vessel Pressure – Low (Permissive)	6 ^(a)	4, 5	39
b. Manual Initiation	2 ^{(a)(c)}	4, 5	40
<u>2. LOW PRESSURE COOLANT INJECTION MODE OF RHR SYSTEM</u>			
a. Injection Valve Differential Pressure - Low (Permissive)	1/valve ^(a)	4, 5	39
b. Manual Initiation	1 ^(a)	4, 5	40
<u>3. RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION</u>			
a. Reactor Vessel Water Level - Low - Level 3	2 in one trip system	(b)	38
<u>4. REACTOR WATER CLEANUP SYSTEM ISOLATION</u>			
a. Reactor Vessel Water Level - Low, Low - Level 2	2 in one trip system	(b)	38

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL (WIC)."

(b) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.

(c) The manual initiation push buttons start the respective core spray pump and diesel generator. The "A" and "B" logic manual push buttons also actuate an initiation permissive in the injection valve opening logic.

EMERGENCY CORE COOLING SYSTEMS

3/4.5.2 ~~ECCS~~ ~~SHUTDOWN~~ REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL (WIC)

LIMITING CONDITION FOR OPERATION

3.5.2 DRAIN TIME of RPV water inventory to the top of active fuel (TAF) shall be \geq 36 hours

AND

At least ~~two~~ **one** of the following shall be OPERABLE:

- a. Core spray system (CSS) subsystems ~~with a subsystem~~ comprised of:
 - 1. Two OPERABLE CSS pumps, and
 - 2. An OPERABLE flow path capable of taking suction from at least one of the following water sources and transferring the water through the spray sparger to the reactor vessel:
 - a) From the suppression chamber, or
 - b) When the suppression chamber water level is less than the limit or is drained, from the condensate storage tank containing at least 135,000 available gallons of water, equivalent to a level of 29 feet.
- b. Low pressure coolant injection (LPCI) system subsystems ~~with a subsystem~~ comprised of:
 - 1. One OPERABLE LPCI pump, and
 - 2. An OPERABLE flow path capable of taking suction from the suppression chamber and transferring the water to the reactor vessel.**

APPLICABILITY: OPERATIONAL CONDITIONS 4 and 5*.

ACTION:

- a. With ~~one~~ **none** of the above required subsystems ~~inoperable~~ **OPERABLE**, immediately suspend CORE ALTERATIONS. Restore at least ~~two~~ **one** subsystems to OPERABLE status within 4 hours. Otherwise, initiate action to establish a method of water injection capable of operating without offsite electrical power ~~or suspend all operations with a potential for draining the reactor vessel.~~
- b. ~~With both of the above required subsystems inoperable, suspend CORE ALTERATIONS and all operations with a potential for draining the reactor vessel. Restore at least one subsystem to OPERABLE status within 4 hours or establish SECONDARY CONTAINMENT INTEGRITY within the next 8 hours-DELETED.~~

~~*The ECCS is not required to be OPERABLE provided that the reactor vessel head is removed, the cavity is flooded, the spent fuel pool gates are removed, and water level is maintained within the limits of Specifications 3.9.8 and 3.9.9.~~

**One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.

EMERGENCY CORE COOLING SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

- c. With DRAIN TIME less than 36 hours and greater than or equal to 8 hours, within 4 hours:
 - 1. Verify SECONDARY CONTAINMENT INTEGRITY is capable of being established in less than the DRAIN TIME,
 - 2. Verify each secondary containment penetration flow path is capable of being isolated in less than the DRAIN TIME, and
 - 3. Verify one standby gas treatment subsystem is capable of being placed in operation in less than the DRAIN TIME.

- d. With DRAIN TIME less than 8 hours, immediately:
 - 1. Initiate action to establish an additional method of water injection with water sources capable of maintaining RPV water level greater than TAF for greater than or equal to 36 hours,***
 - 2. Initiate action to establish SECONDARY CONTAINMENT INTEGRITY,
 - 3. Initiate action to isolate each secondary containment penetration flow path or verify it can be manually isolated from the control room, and
 - 4. Initiate action to verify one standby gas treatment subsystem is capable of being placed in operation.

- e. With required ACTION and associated allowed outage time for ACTIONS c. or d. not met, or DRAIN TIME less than 1 hour, immediately initiate action to restore DRAIN TIME to greater than or equal to 36 hours.

***The required injection/spray subsystem or an additional method of water injection shall be capable of operating without offsite electrical power.

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS

4.5.2.1 Verify DRAIN TIME is greater than or equal to 36 hours in accordance with the Surveillance Frequency Control Program. ~~At least the above required ECCS shall be demonstrated OPERABLE per Surveillance Requirement 4.5.1.*~~

4.5.2.2 Verify, for a required LPCI subsystem, the suppression chamber water level is greater than or equal to 16 feet 0 inches in accordance with the Surveillance Frequency Control Program. ~~The core spray system shall be determined OPERABLE in accordance with the Surveillance Frequency Control Program by verifying the condensate storage tank required volume when the condensate storage tank is required to be OPERABLE per Specification 3.5.2a.2.b).~~

4.5.2.3 Verify, for a required CSS subsystem, that the suppression chamber water level is greater than or equal to 16 feet 0 inches or the condensate storage tank water level is greater than or equal to 29 feet 0 inches in accordance with the Surveillance Frequency Control Program.

4.5.2.4 Verify, for the required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.

4.5.2.5 Verify, for the required ECCS injection/spray subsystem, each manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position in accordance with the Surveillance Frequency Control Program. #^

4.5.2.6 Operate the required ECCS injection/spray subsystem through the recirculation line for greater than or equal to 10 minutes in accordance with the Surveillance Frequency Control Program.

4.5.2.7 Verify each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated isolation signal in accordance with the Surveillance Frequency Control Program.

4.5.2.8 Verify the required ECCS injection/spray subsystem actuates on a manual initiation signal in accordance with the Surveillance Frequency Control Program. ##

~~*One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable. DELETED.~~

#Not required to be met for system vent flow paths open under administrative control.

^Except that an automatic valve capable of automatic return to its ECCS position when an ECCS signal is present may be in position for another mode of operation.

##Vessel injection/spray may be excluded.

TABLE 3.3.3.A-1
RPV WATER INVENTORY CONTROL (WIC) INSTRUMENTATION

<u>TRIP FUNCTION</u>	<u>MINIMUM OPERABLE CHANNELS PER TRIP FUNCTION</u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>	<u>ACTION</u>
1. <u>CORE SPRAY SYSTEM</u>			
a. Reactor Vessel Pressure – Low (Permissive)	6 ^(a)	4, 5	39
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a. Injection Valve Differential Pressure - Low (Permissive)	1/valve ^(a)	4, 5	39
b. Manual Initiation	1 ^(a)	4, 5	40
3. <u>RHR SYSTEM SHUTDOWN COOLING MODE ISOLATION</u>			
a. Reactor Vessel Water Level Low - Level 3	2 in one trip system	(b)	38
4. <u>REACTOR WATER CLEANUP SYSTEM ISOLATION</u>			
a. Reactor Vessel Water Level - Low, Low - Level 2	2 in one trip system	(b)	38

(a) Associated with an ECCS subsystem required to be OPERABLE by LCO 3.5.2, "REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL (WIC)."

(b) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.

(c) The manual initiation push buttons start the respective core spray pump and diesel generator. The "A" and "B" logic manual push buttons also actuate an initiation permissive in the injection valve opening logic.

EMERGENCY CORE COOLING SYSTEMS

3/4.5.2 ~~ECCS — SHUTDOWN~~ REACTOR PRESSURE VESSEL (RPV) WATER INVENTORY CONTROL (WIC)

LIMITING CONDITION FOR OPERATION

3.5.2 DRAIN TIME of RPV water inventory to the top of active fuel (TAF) shall be \geq 36 hours

AND

At least ~~two~~ one of the following shall be OPERABLE:

- a. Core spray system (CSS) subsystems ~~with a subsystem~~ comprised of:
 - 1. Two OPERABLE CSS pumps, and
 - 2. An OPERABLE flow path capable of taking suction from at least one of the following water sources and transferring the water through the spray sparger to the reactor vessel:
 - a) From the suppression chamber, or
 - b) When the suppression chamber water level is less than the limit or is drained, from the condensate storage tank containing at least 135,000 available gallons of water, equivalent to a level of 29 feet.
- b. Low pressure coolant injection (LPCI) system subsystems ~~with a subsystem~~ comprised of:
 - 1. One OPERABLE LPCI pump, and
 - 2. An OPERABLE flow path capable of taking suction from the suppression chamber and transferring the water to the reactor vessel. **

APPLICABILITY: OPERATIONAL CONDITIONS 4 and 5*.

ACTION:

- a. With ~~one~~ none of the above required subsystems ~~inoperable~~ OPERABLE, immediately suspend CORE ALTERATIONS. Restore at least ~~two~~ one subsystems to OPERABLE status within 4 hours. Otherwise, initiate action to establish a method of water injection capable of operating without offsite electrical power ~~all operations with a potential for draining the reactor vessel.~~
- b. ~~With both of the above required subsystems inoperable, suspend CORE ALTERATIONS and all operations with a potential for draining the reactor vessel. Restore at least one subsystem to OPERABLE status within 4 hours or establish SECONDARY CONTAINMENT INTEGRITY within the next 8 hours DELETED.~~

~~*The ECCS is not required to be OPERABLE provided that the reactor vessel head is removed, the cavity is flooded, the spent fuel pool gates are removed, and water level is maintained within the limits of Specifications 3.9.8 and 3.9.9.~~

**One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.

EMERGENCY CORE COOLING SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

- c. With DRAIN TIME less than 36 hours and greater than or equal to 8 hours, within 4 hours:
 - 1. Verify SECONDARY CONTAINMENT INTEGRITY is capable of being established in less than the DRAIN TIME,
 - 2. Verify each secondary containment penetration flow path is capable of being isolated in less than the DRAIN TIME, and
 - 3. Verify one standby gas treatment subsystem is capable of being placed in operation in less than the DRAIN TIME.

- d. With DRAIN TIME less than 8 hours, immediately:
 - 1. Initiate action to establish an additional method of water injection with water sources capable of maintaining RPV water level greater than TAF for greater than or equal to 36 hours,***
 - 2. Initiate action to establish SECONDARY CONTAINMENT INTEGRITY,
 - 3. Initiate action to isolate each secondary containment penetration flow path or verify it can be manually isolated from the control room, and
 - 4. Initiate action to verify one standby gas treatment subsystem is capable of being placed in operation.

- e. With required ACTION and associated allowed outage time for ACTIONS c. or d. not met, or DRAIN TIME less than 1 hour, immediately initiate action to restore DRAIN TIME to greater than or equal to 36 hours.

***The required injection/spray subsystem or an additional method of water injection shall be capable of operating without offsite electrical power.

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS

4.5.2.1 Verify DRAIN TIME is greater than or equal to 36 hours in accordance with the Surveillance Frequency Control Program. ~~At least the above required ECCS shall be demonstrated OPERABLE per Surveillance Requirement 4.5.1.*~~

4.5.2.2 Verify, for a required LPCI subsystem, the suppression chamber water level is greater than or equal to 16 feet 0 inches in accordance with the Surveillance Frequency Control Program. ~~the core spray system shall be determined OPERABLE in accordance with the Surveillance Frequency Control Program by verifying the condensate storage tank required volume when the condensate storage tank is required to be OPERABLE per Specification 3.5.2a.2.b).~~

4.5.2.3 Verify, for a required CSS subsystem, that the suppression chamber water level is greater than or equal to 16 feet 0 inches or the condensate storage tank water level is greater than or equal to 29 feet 0 inches in accordance with the Surveillance Frequency Control Program.

4.5.2.4 Verify, for the required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.

4.5.2.5 Verify, for the required ECCS injection/spray subsystem, each manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position in accordance with the Surveillance Frequency Control Program. #^

4.5.2.6 Operate the required ECCS injection/spray subsystem through the recirculation line for greater than or equal to 10 minutes in accordance with the Surveillance Frequency Control Program.

4.5.2.7 Verify each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated isolation signal in accordance with the Surveillance Frequency Control Program.

4.5.2.8 Verify the required ECCS injection/spray subsystem actuates on a manual initiation signal in accordance with the Surveillance Frequency Control Program. ##

~~*One LPCI subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable DELETED.~~

#Not required to be met for system vent flow paths open under administrative control.

^Except that an automatic valve capable of automatic return to its ECCS position when an ECCS signal is present may be in position for another mode of operation.

##Vessel injection/spray may be excluded.