FENOC
FirstEnergy Nuclear Operating Company

Perry Nuclear Power Plant
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September 5, 2012
L-12-318

10 CFR 50.90

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

Subject:
Perry Nuclear Power Plant, Unit No. 1
Docket Number 50-440, License Number NPF-58
License Amendment Request for Adoption of TSTF-275-A, Revision 0, "Clarify Requirement for EDG Start Signal on RPV Level – Low, Low, Low during RPV Cavity Flood-up," and TSTF-300-A, Revision 0, "Eliminate DG LOCA-Start SRs while in S/D when no ECCS is Required"

Pursuant to 10 CFR 50.90, FirstEnergy Nuclear Operating Company (FENOC) hereby submits an amendment application for the Perry Nuclear Power Plant, Unit No. 1 operating license.

The proposed amendment would modify Technical Specifications by revising Table 3.3.5.1, "Emergency Core Cooling System [ECCS] Instrumentation," footnote (a) to require the ECCS instrumentation to be operable only when the associated ECCS subsystems are required to be operable. This change is consistent with Nuclear Regulatory Commission (NRC)-approved Technical Specification Task Force (TSTF) Traveler TSTF-275-A, Revision 0, "Clarify Requirement for EDG [emergency diesel generator] Start Signal on RPV [reactor pressure vessel] Level – Low, Low, Low during RPV Cavity Flood-up." A change that deviates from TSTF-275, Revision 0 is the proposed addition of a new footnote (f) to Table 3.3.5.1.

Additionally, the proposed amendment would add exceptions to the diesel generator (DG) surveillance requirements (SRs) for Technical Specification 3.8.2, "AC Sources – Shutdown," to eliminate the requirement that the DG be capable of responding to ECCS initiation signals while the ECCS subsystems are not required to be operable. This change is consistent with NRC-approved TSTF-300-A, Revision 0, "Eliminate DG LOCA-Start SRs while in S/D [Shutdown] when no ECCS is Required."

The evaluation of the proposed changes is enclosed. To allow for normal NRC processing, FENOC requests approval of the proposed license amendment by September 30, 2013. An implementation period of 60 days following the effective date of the amendment is requested.

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NRR

In accordance with 10 CFR 50.91(b)(1), a copy of this application, with enclosure, is being provided to the designated Ohio official.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Phil H. Lashley, Supervisor - Fleet Licensing, at (330) 315-6808.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 5, 2012.

Sincerely,

H. D. Hanson, Jr.
Director, Performance Improvement

Enclosure:
FENOC Evaluation of the Proposed Amendment

cc: NRC Region III
NRC Resident Inspector
NRC Project Manager
Executive Director, Ohio Emergency Management Agency, State of Ohio (NRC Liaison)
Utility Radiological Safety Board

FENOC Evaluation of the Proposed Amendment

Subject: License Amendment Request for Adoption of TSTF-275-A, Revision 0, "Clarify Requirement for EDG Start Signal on RPV Level – Low, Low, Low during RPV Cavity Flood-up," and TSTF-300-A, Revision 0, "Eliminate DG LOCA-Start SRs while in S/D when no ECCS is Required"

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1. Proposed Technical Specification Changes (Mark-ups)
2. Retyped Technical Specification Pages (Typed with Mark-ups Incorporated)
3. Proposed Technical Specification Bases Changes (For Information Only)

1.0 SUMMARY DESCRIPTION

This evaluation supports a request to amend the Perry Nuclear Power Plant, Unit No. 1 Operating License NPF-58. The proposed amendment involves changes to: (1) modify a Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation," footnote to specify that the associated Functions are required to be OPERABLE to support Emergency Core Cooling System (ECCS) initiation in MODES 4 and 5 only when the associated ECCS subsystems are required to be operable; (2) add a Table 3.3.5.1-1 footnote to ensure ECCS instrumentation required to actuate the annulus exhaust gas treatment (AEGT) subsystems remains operable when the associated AEGT subsystems are required; and (3) eliminate from Surveillance Requirement (SR) 3.8.2.1 for AC (alternating current) sources during shutdown the requirement that the diesel generator (DG) be capable of responding to ECCS initiation signals by eliminating the requirement for SR 3.8.1.12 and SR 3.8.1.19 to be met while the ECCS subsystems are not required to be operable.

The proposed changes and justification are consistent with NRC-approved Technical Specification Task Force (TSTF) Travelers TSTF-275-A, Revision 0, "Clarify Requirement for EDG [emergency diesel generator] start signal on RPV Level – Low, Low, Low during RPV [reactor pressure vessel] Cavity Flood-up," and TSTF-300-A, Revision 0, "Eliminate DG LOCA-[loss of cooling accident] Start SRs while in S/D [shutdown] when no ECCS is Required," with one exception for TSTF-275-A as discussed in Sections 2.0 and 3.0.

Current TS pages marked to show changes (mark-ups) and retyped TS pages are provided in Attachments 1 and 2, respectively. Proposed changes to the Bases for Specifications 3.3.5.1, "Emergency Core Cooling System (ECCS) Instrumentation," and 3.8.2, "AC Sources – Shutdown," are provided for information only in Attachment 3, and do not require Nuclear Regulatory Commission (NRC) approval. Technical Specification Bases changes would be processed in accordance with TS 5.5.11, "Technical Specification (TS) Bases Control Program." To meet format requirements, the index, TS and Bases pages would be revised and repaginated as necessary to reflect the changes.

2.0 DETAILED DESCRIPTION

2.1 TSTF-275-A, Revision 0

Table 3.3.5.1-1 identifies instrumentation associated with actuation of the ECCS. The purpose of the ECCS instrumentation is to initiate appropriate responses from systems to ensure that the fuel is adequately cooled in the event of a design basis accident or transient. Portions of this ECCS instrumentation actuate the annulus exhaust gas treatment (AEGT) subsystems and the diesel generators (DGs), in addition to the ECCS subsystems (low pressure core spray (LPCS), low pressure

coolant injection (LPCI), high pressure core spray (HPCS), and automatic depressurization system (ADS)). The ECCS instrumentation identified in Table 3.3.5.1-1, "Emergency Core Cooling System Instrumentation," is associated with the LPCS, LPCI, HPCS, and ADS.

Consistent with NRC-approved TSTF-275-A, Revision 0, the proposed TS changes include a revision to Table 3.3.5.1-1, footnote (a). The footnote is included on Table 3.3.5.1-1, pages 1 through 4. Footnote (a) would be revised as shown below by adding the underlined words.

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS – Shutdown.

A similar proposed modification that is not included in NRC-approved TSTF-275-A, Revision 0, is the addition of a new footnote (f). The following footnote would be added to Table 3.3.5.1-1, pages 1 and 2.

(f) When the associated AEGT subsystems are required to be OPERABLE per LCO 3.6.4.3, Annulus Exhaust Gas Treatment (AEGT) System.

The change to footnote (a) and the addition of footnote (f) would correctly identify the applicable modes or other specified conditions for which ECCS instrumentation identified in Table 3.3.5.1-1 must be operable. These changes would identify the systems/subsystems and limiting conditions for operation to consider in determining the applicable modes or other specified conditions in which the associated ECCS instrumentation must be operable.

2.2 TSTF-300-A, Revision 0

Consistent with NRC-approved TSTF-300-A, Revision 0, the proposed TS changes include adding exceptions to the DG surveillance requirements for LCO 3.8.2, "AC Sources – Shutdown." An additional note is added as NOTE 2 to SR 3.8.2.1 as shown below.

2. SR 3.8.1.12 and SR 3.8.1.19 are not required to be met when associated ECCS subsystem(s) are not required to be OPERABLE per LCO 3.5.2, "ECCS – Shutdown."

Surveillance Requirement 3.8.1.12 and SR 3.8.19 verify each DG starts on an ECCS initiation signal, and a loss of offsite power signal in conjunction with an ECCS initiation signal, respectively.

The exceptions added as NOTE 2 to SR 3.8.2.1 would eliminate the requirement that the DG be capable of responding to ECCS initiation signals (that is, eliminate the requirement for SR 3.8.1.12 and SR 3.8.1.19 to be met) when the ECCS subsystems are not required to be operable.

3.0 TECHNICAL EVALUATION

3.1 TSTF-275-A, Revision 0

According to TS 3.5.2, two ECCS injection/spray subsystems are required to be operable in MODE 4 and in certain MODE 5 conditions.

No ECCS injection/spray subsystems are required to be operable when the plant is in MODE 5 with the reactor vessel head and steam dryer storage pool/reactor well gate removed and water level greater than or equal to 22 feet 9 inches over the top of the reactor pressure vessel flange. When the ECCS subsystems are not required to be operable by TS 3.5.2, then the instrumentation associated with that ECCS subsystem also should not be required to be operable.

In accordance with TSTF-275-A, Table 3.3.5.1-1 footnote (a) would be modified to require these Functions to be operable to support ECCS initiation in MODES 4 and 5 only when the associated ECCS subsystems are required to be operable.

The current Table 3.3.5.1-1 footnote (a) requires the ECCS instrumentation to be operable not only when the associated ECCS is required to be operable, but also when the associated ECCS support systems are required to be operable. This requirement is unnecessary since these ECCS support systems also support other Functions that are required at times when the ECCS and associated initiation instrumentation are not needed (for example, the DGs are required during fuel handling). Revising this note is beneficial in that it would eliminate the requirement for applicable instrumentation functions to be operable when ECCS subsystems are not required to respond to them. For instance, the ECCS signals that start the DG(s) serve no safety significant support function when the ECCS systems are not required to be operable. Therefore, the ECCS instrumentation associated with actuation of the DGs should not be required to be operable when the ECCS subsystems are not required to be operable. This is consistent with TSTF-275-A, Revision 0. Automatic initiation of the required DG during shutdown conditions is specified in LCO 3.3.8.1, "Loss of Power (LOP) Instrumentation."

FENOC proposes an additional change that is not included in NRC-approved TSTF-275-A, Revision 0. As previously stated, portions of the ECCS instrumentation actuate the AEGT subsystems. Therefore, the applicable ECCS instrumentation must remain operable when the AEGT subsystems are required to be operable per LCO 3.6.4.3, "Annulus Exhaust Gas Treatment (AEGT) System." The AEGT system is unique to the PNPP and was not considered in TSTF-275-A, Revision 0. The inclusion of a new footnote (f) on Table 3.3.5.1-1, pages 1 and 2 is necessary to ensure ECCS instrumentation that initiates AEGT subsystems is required to be operable when the AEGT subsystems are required to be operable and ensures that the current TS requirements for the AEGT subsystem initiation instrument operability are not changed. This proposed change is consistent with the footnote proposed by TSTF-275-A in that it requires operability of ECCS instrumentation when the subsystems that the instrumentation initiates are required to be operable.

3.2 TSTF-300-A, Revision 0

Surveillance Requirement 3.8.2.1 lists the surveillances that are applicable to the AC sources during shutdown. Listed among the applicable surveillances are SR 3.8.1.12, verification of DG auto-start capability on an ECCS initiation signal, and SR 3.8.1.19, verification of load shedding and DG auto-start on a loss of offsite power signal in conjunction with an ECCS initiation signal. The proposed change adds a note to SR 3.8.2.1 that would eliminate the requirement that the DG be capable of responding to ECCS signals by excluding SR 3.8.1.12 and SR 3.8.1.19 while the associated ECCS subsystem(s) are not required to be operable per TS 3.5.2, "ECCS – Shutdown."

When the ECCS subsystems are not required to be operable per TS 3.5.2, the DG ECCS start signals serve no safety significant function. Therefore, when the ECCS subsystems are not required, the SRs that verify the DG capability to respond to an ECCS start signal may be removed from DG operability considerations.

4.0 REGULATORY EVALUATION

FirstEnergy Nuclear Operating Company proposes to amend Perry Nuclear Power Plant, Unit No. 1 Operating License NPF-58.

The requested amendment involves changes to the Technical Specifications (TS) that would require emergency core cooling system (ECCS) instrumentation to be operable only when the associated ECCS subsystem is required to be operable per TS 3.5.2, "ECCS – Shutdown," and when the associated AEGT subsystems are required to be operable per TS 3.6.4.3, "Annulus Exhaust Gas Treatment (AEGT) System."

Additionally, the proposed changes would eliminate the requirement for the diesel generator (DG) to be capable of responding to ECCS initiation signals while the ECCS subsystems are not required to be operable.

4.1 Significant Hazards Consideration Analysis

FirstEnergy Nuclear Operating Company has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed amendment involves changes to Technical Specification Table 3.3.5.1-1, "Emergency Core Cooling System [ECCS] Instrumentation," and Surveillance Requirement 3.8.2.1 for alternating current sources during shutdown.

   The proposed changes to Table 3.3.5.1-1 ensure that ECCS instrumentation is only required to be operable when the ECCS subsystems and annulus exhaust gas treatment subsystems are required to be operable. These changes ensure the ECCS instrumentation that actuates ECCS subsystems and annulus exhaust gas treatment subsystems are required to be operable to perform their function as described in the safety analysis, and do not involve physical changes to plant systems, structures or components. The proposed changes to Table 3.3.5.1-1 do not affect plant operations or design functions, and do not increase the likelihood of a malfunction.

   The surveillance requirement change eliminates the requirement that the diesel generator be capable of responding to ECCS initiation signals when the ECCS injection/spray subsystems are not required to be operable. The modified surveillance requirements do not involve physical changes to plant systems, structures or components, and would not cause the plant to be operated in a new or different manner. No new failure mechanisms, malfunctions, or accident initiators would be introduced by the proposed changes. The required equipment continues to be tested in a manner and at a frequency necessary to provide confidence that the equipment can perform its intended safety function. If the ECCS subsystems are not required to be operable, there is no benefit to maintaining diesel generator capability to respond to ECCS initiation signals. The proposed surveillance

requirement change does not affect plant operations or design functions, and does not increase the likelihood of a malfunction.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed Technical Specification changes would correctly identify the applicable modes or other specified conditions for which ECCS instrumentation is required to be operable and revises requirements for when certain surveillances are to be performed. These changes would not result in revisions of plant design, physical alteration of a plant structure, system, or component, or installation of new or different types of equipment. No new failure mechanisms, malfunctions, or accident initiators would be introduced by the proposed changes. Therefore, the proposed changes would not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed amendment involve a significant reduction in a margin of safety?

   Response: No.

   The proposed changes have no effect on design bases, safety limits, or safety analysis assumptions or methods of performing safety analyses. The changes do not adversely affect system operability or design requirements and the equipment continues to be tested in a manner and at a frequency necessary to provide confidence that the equipment can perform its intended safety function.

   Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, FirstEnergy Nuclear Operating Company concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.2 Applicable Regulatory Requirements / Criteria

Changes described in the license amendment request would not affect plant design, and therefore FENOC would remain in compliance with the following regulations:

Part 50 of 10 CFR, Appendix A, "General Design Criteria for Nuclear Power Plants," General Design Criterion (GDC) 17, "Electric Power Systems," requires in part, that nuclear power plants have an onsite and offsite electric power system to permit the functioning of structures, systems, and components important to safety. The onsite system is required to have sufficient independence, redundancy, and testability to perform its safety function, assuming a single failure, and the offsite system is required to supply the onsite electrical distribution system by two physically independent circuits. In addition, this criterion requires provisions to minimize the probability of losing electric power from the remaining electric power supplies as the result of loss of power from the unit, the offsite transmission network, or the onsite power supplies.

GDC 18, "Inspection and Testing of Electric Power Systems," requires that electric power systems that are important to safety must be designed to permit appropriate periodic inspection and testing.

GDC 41, "Containment Atmosphere Cleanup," requires that systems to control fission products, hydrogen, oxygen, and other substances that may be released into the reactor containment shall be provided as necessary to reduce, consistent with the functioning of other associated systems, the concentration and quality of fission products released to the environment following postulated accidents, and to control the concentration of hydrogen or oxygen and other substances in the containment atmosphere following postulated accidents to assure that containment integrity is maintained.

Section 50.36 of 10 CFR, "Technical Specifications," requires a licensee's TS to establish limiting conditions for operation and surveillance requirements for equipment that is required for safe operation of the facility. Specifically, Section 50.36(c)(3) describes surveillance requirements.

4.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public would not be endangered by operation in the proposed manner, (2) such activities would be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment would not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

The proposed amendment would change requirements with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve, (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. Technical Specification Task Force Improved Standard Technical Specifications Change Traveler TSTF-275-A, Revision 0, dated July 18, 2005.

2. Technical Specification Task Force Improved Standard Technical Specifications Change Traveler TSTF-300-A, Revision 0, dated July 31, 2003.

Attachment 1

Perry Nuclear Power Plant, Unit No. 1

Proposed Technical Specification Changes

The following lists the pages included within Attachment 1:

3.3-38 *
3.3-39
3.3-40
3.3-41
3.3-42
3.3-43 *
3.8-20
3.8-10 *
3.8-14 *

* No Change proposed. Included for context.

SURVEILLANCE REQUIREMENTS

----------NOTES----------

1. Refer to Table 3.3.5.1-1 to determine which SRs apply for each ECCS Function.

2. When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed as follows: (a) for up to 6 hours for Functions 3.c, 3.f, 3.g, and 3.h; and (b) for up to 6 hours for Functions other than 3.c, 3.f, 3.g, and 3.h, provided the associated Function or the redundant Function maintains ECCS initiation capability.

SURVEILLANCE		FREQUENCY
SR 3.3.5.1.1	Perform CHANNEL CHECK.	12 hours
SR 3.3.5.1.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.5.1.3	Calibrate the trip unit.	92 days
SR 3.3.5.1.4	Perform CHANNEL CALIBRATION.	92 days
SR 3.3.5.1.5	Perform CHANNEL CALIBRATION.	24 months
SR 3.3.5.1.6	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months
SR 3.3.5.1.7	Perform CHANNEL CALIBRATION.	6 months

Table 3.3.5.1-1 (page 1 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems					
a. Reactor Vessel Water Level - Low Low Low, Level 1	1,2,3, $4^{(a)(f)}$, $5^{(a)(f)}$	$2^{(b)}$	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 14.3 inches
b. Drywell Pressure - High	1,2,3	$2^{(b)}$	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.88 psig
c. LPCI Pump A Start - Time Delay Relay	1,2,3, $4^{(a)}, 5^{(a)}$	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 5.25 seconds
d. Reactor Vessel Pressure - Low (LPCS Injection Valve Permissive)	1,2,3	1	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 482.7 psig and ≤ 607.7 psig
	$4^{(a)}, 5^{(a)}$	1	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 482.7 psig and ≤ 607.7 psig
e. Reactor Vessel Pressure-Low (LPCI Injection Valve Permissive)	1,2,3	1	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490.0 psig and ≤ 537.1 psig
	$4^{(a)}, 5^{(a)}$	1	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490.0 psig and ≤ 537.1 psig
f. LPCS Pump Discharge Flow - Low (Bypass)	1,2,3, $4^{(a)}, 5^{(a)}$	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 1200 gpm

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(b) Also required to initiate the associated diesel generator and AEGT subsystem.

(f) When associated AEGT subsystems are required to be OPERABLE per LCO 3.6.4.3, Annulus Exhaust Gas Treatment (AEGT) System.

Table 3.3.5.1-1 (page 2 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems (continued)					
g. LPCI Pump A Discharge Flow - Low (Bypass)	1,2,3, $4^{(a)}, 5^{(a)}$	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 1450 gpm
h. Manual Initiation	1,2,3, $4^{(a)}, 5^{(a)}$	1	C	SR 3.3.5.1.6	NA
2. LPCI B and LPCI C Subsystems					
a. Reactor Vessel Water Level - Low Low Low, Level 1	1,2,3, $4^{(a)(f)}$, $5^{(a)(f)}$	$2^{(b)}$	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 14.3 inches
b. Drywell Pressure - High	1,2,3	$2^{(b)}$	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.88 psig
c. LPCI Pump B Start - Time Delay Relay	1,2,3, $4^{(a)}, 5^{(a)}$	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 5.25 seconds
d. Reactor Vessel Pressure - Low (LPCI Injection Valve Permissive)	1,2,3	1 per subsystem	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490.0 psig and ≤ 537.1 psig for LPCI B; and ≥ 490.0 psig and ≤ 537.1 psig for LPCI C
	$4^{(a)}, 5^{(a)}$	1 per subsystem	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490.0 psig and ≤ 537.1 psig for LPCI B; and ≥ 490.0 psig and ≤ 537.1 psig for LPCI C

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(b) Also required to initiate the associated diesel generator and AEGT subsystem.

(f) When associated AEGT subsystems are required to be OPERABLE per LCO 3.6.4.3, Annulus Exhaust Gas Treatment (AEGT) System.

Table 3.3.5.1-1 (page 3 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI B and LPCI C Subsystems (continued)					
e. LPCI Pump B and LPCI Pump C Discharge Flow - Low (Bypass)	1,2,3, $4^{(a)}$,$5^{(a)}$	1 per pump	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 1450 gpm
f. Manual Initiation	1,2,3, $4^{(a)}$,$5^{(a)}$	1	C	SR 3.3.5.1.6	NA
3. High Pressure Core Spray (HPCS) System					
a. Reactor Vessel Water Level - Low Low, Level 2	1,2,3, $4^{(a)}$,$5^{(a)}$	$4^{(e)}$	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 127.6 inches
b. Drywell Pressure - High	1,2,3	$4^{(e)}$	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.88 psig
c. Reactor Vessel Water Level - High, Level 8	1,2,3, $4^{(a)}$,$5^{(a)}$	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 221.7 inches
d. Condensate Storage Tank Level - Low	1,2,3, $4^{(c)}$,$5^{(c)}$	2	D	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 90,300 gallons
e. Suppression Pool Water Level - High	1,2,3	2	D	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.7 SR 3.3.5.1.6	≤ 18 ft 6 inches

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(c) When HPCS is OPERABLE for compliance with LCO 3.5.2, "ECCS - Shutdown," and aligned to the condensate storage tank while tank water level is not within the limits of SR 3.5.2.2.

(e) Also required to initiate the associated diesel generator.

Table 3.3.5.1-1 (page 4 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Core Spray (HPCS) System (continued)					
f. HPCS Pump Discharge Pressure - High (Bypass)	1,2,3, $4^{(a)}, 5^{(a)}$	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 120 psig
g. HPCS System Flow Rate - Low (Bypass)	1,2,3, $4^{(a)}, 5^{(a)}$	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 600 gpm
h. Manual Initiation	1,2,3, $4^{(a)}, 5^{(a)}$	1	C	SR 3.3.5.1.6	NA
4. Automatic Depressurization System (ADS) Trip System A					
a. Reactor Vessel Water Level - Low Low Low, Level 1	$1, 2^{(d)}, 3^{(d)}$	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 14.3 inches
b. ADS Initiation Timer	$1, 2^{(d)}, 3^{(d)}$	1	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 100.5 seconds and ≤ 109.5 seconds
c. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)	$1, 2^{(d)}, 3^{(d)}$	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 177.1 inches
d. LPCS Pump Discharge Pressure - High	$1, 2^{(d)}, 3^{(d)}$	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 125 psig
e. LPCI Pump A Discharge Pressure - High	$1, 2^{(d)}, 3^{(d)}$	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 115 psig
f. Manual Initiation	$1, 2^{(d)}, 3^{(d)}$	2	G	SR 3.3.5.1.6	NA

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(d) With reactor steam dome pressure > 150 psig.

Table 3.3.5.1-1 (page 5 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. ADS Trip System B					
a. Reactor Vessel Water Level - Low Low Low, Level 1	1,2[(d)],3[(d)]	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 14.3 inches
b. ADS Initiation Timer	1,2[(d)],3[(d)]	1	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 100.5 seconds and ≤ 109.5 seconds
c. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)	1,2[(d)],3[(d)]	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 177.1 inches
d. LPCI Pumps B & C Discharge Pressure - High	1,2[(d)],3[(d)]	2 per pump	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 115 psig
e. Manual Initiation	1,2[(d)],3[(d)]	2	G	SR 3.3.5.1.6	NA

(d) With reactor steam dome pressure > 150 psig.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.2.1	----------NOTES---------- 1. The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.8 through SR 3.8.1.16, SR 3.8.1.18, and SR 3.8.1.19. 2. SR 3.8.1.12 and SR 3.8.1.19 are not required to be met when the associated ECCS subsystem(s) are not required to be OPERABLE per LCO 3.5.2, "ECCS - Shutdown." ---------- For AC sources required to be OPERABLE, the following SRs are applicable: SR 3.8.1.1 SR 3.8.1.7 SR 3.8.1.14 SR 3.8.1.2 SR 3.8.1.9 SR 3.8.1.15 SR 3.8.1.3 SR 3.8.1.10 SR 3.8.1.16 SR 3.8.1.4 SR 3.8.1.11 SR 3.8.1.18 SR 3.8.1.5 SR 3.8.1.12 SR 3.8.1.19 SR 3.8.1.6 SR 3.8.1.13	In accordance with applicable SRs

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: a. In ≤ 10 seconds for Division 1 and 2, and ≤ 13 seconds for Division 3, after auto-start and during tests, achieves voltage ≥ 3900 V and frequency ≥ 58.8 Hz; and b. Achieves steady state voltage ≥ 3900 V and ≤ 4400 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and c. Operates for ≥ 5 minutes.	24 months
SR 3.8.1.13	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify each DG's automatic trips are bypassed on an actual or simulated ECCS initiation signal except: a. Engine overspeed; and b. Generator differential current	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.19	NOTES 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses for Divisions 1 and 2; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds for Divisions 1 and 2 and ≤ 13 seconds for Division 3, 2. energizes auto-connected emergency loads (for Division 3, verify energization in ≤ 13 seconds), 3. achieves steady state voltage ≥ 3900 V and ≤ 4400 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	24 months

(continued)

Attachment 2

Perry Nuclear Power Plant, Unit No. 1

Retyped Technical Specification Pages

The following lists the pages included within Attachment 2:

3.3-39
3.3-40
3.3-41
3.3-42
3.8-20

Table 3.3.5.1-1 (page 1 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems					
a. Reactor Vessel Water Level - Low Low Low, Level 1	1,2,3, 4(a)(f), 5(a)(f)	2(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 14.3 inches
b. Drywell Pressure - High	1,2,3	2(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.88 psig
c. LPCI Pump A Start - Time Delay Relay	1,2,3, 4(a),5(a)	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 5.25 seconds
d. Reactor Vessel Pressure - Low (LPCS Injection Valve Permissive)	1,2,3	1	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 482.7 psig and ≤ 607.7 psig
	4(a),5(a)	1	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 482.7 psig and ≤ 607.7 psig
e. Reactor Vessel Pressure-Low (LPCI Injection Valve Permissive)	1,2,3	1	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490.0 psig and ≤ 537.1 psig
	4(a), 5(a)	1	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490.0 psig and ≤ 537.1 psig
f. LPCS Pump Discharge Flow - Low (Bypass)	1,2,3, 4(a),5(a)	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 1200 gpm

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(b) Also required to initiate the associated diesel generator and AEGT subsystem.

(f) When associated AEGT subsystems are required to be OPERABLE per LCO 3.6.4.3, Annulus Exhaust Gas Treatment (AEGT) System.

Table 3.3.5.1-1 (page 2 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems (continued)					
g. LPCI Pump A Discharge Flow - Low (Bypass)	1,2,3, $4^{(a)}, 5^{(a)}$	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 1450 gpm
h. Manual Initiation	1,2,3, $4^{(a)}, 5^{(a)}$	1	C	SR 3.3.5.1.6	NA
2. LPCI B and LPCI C Subsystems					
a. Reactor Vessel Water Level - Low Low Low, Level 1	1,2,3, $4^{(a)(f)}$, $5^{(a)(f)}$	$2^{(b)}$	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 14.3 inches
b. Drywell Pressure - High	1,2,3	$2^{(b)}$	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.88 psig
c. LPCI Pump B Start - Time Delay Relay	1,2,3, $4^{(a)}, 5^{(a)}$	1	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 5.25 seconds
d. Reactor Vessel Pressure - Low (LPCI Injection Valve Permissive)	1,2,3	1 per subsystem	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490.0 psig and ≤ 537.1 psig for LPCI B; and ≥ 490.0 psig and ≤ 537.1 psig for LPCI C
	$4^{(a)}, 5^{(a)}$	1 per subsystem	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 490.0 psig and ≤ 537.1 psig for LPCI B; and ≥ 490.0 psig and ≤ 537.1 psig for LPCI C

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(b) Also required to initiate the associated diesel generator and AEGT subsystem.

(f) When associated AEGT subsystems are required to be OPERABLE per LCO 3.6.4.3, Annulus Exhaust Gas Treatment (AEGT) System.

Table 3.3.5.1-1 (page 3 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. LPCI B and LPCI C Subsystems (continued)					
e. LPCI Pump B and LPCI Pump C Discharge Flow - Low (Bypass)	1,2,3, $_4$(a), $_5$(a)	1 per pump	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 1450 gpm
f. Manual Initiation	1,2,3, $_4$(a), $_5$(a)	1	C	SR 3.3.5.1.6	NA
3. High Pressure Core Spray (HPCS) System					
a. Reactor Vessel Water Level - Low Low, Level 2	1,2,3, $_4$(a), $_5$(a)	$_4$(e)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 127.6 inches
b. Drywell Pressure - High	1,2,3	$_4$(e)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 1.88 psig
c. Reactor Vessel Water Level - High, Level 8	1,2,3, $_4$(a), $_5$(a)	4	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≤ 221.7 inches
d. Condensate Storage Tank Level - Low	1,2,3, $_4$(c), $_5$(c)	2	D	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 90,300 gallons
e. Suppression Pool Water Level - High	1,2,3	2	D	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.7 SR 3.3.5.1.6	≤ 18 ft 6 inches

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(c) When HPCS is OPERABLE for compliance with LCO 3.5.2, "ECCS - Shutdown," and aligned to the condensate storage tank while tank water level is not within the limits of SR 3.5.2.2.

(e) Also required to initiate the associated diesel generator.

Table 3.3.5.1-1 (page 4 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. High Pressure Core Spray (HPCS) System (continued)					
f. HPCS Pump Discharge Pressure - High (Bypass)	1,2,3, $_4$(a),$_5$(a)	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 120 psig
g. HPCS System Flow Rate - Low (Bypass)	1,2,3, $_4$(a),$_5$(a)	1	E	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 600 gpm
h. Manual Initiation	1,2,3, $_4$(a),$_5$(a)	1	C	SR 3.3.5.1.6	NA
4. Automatic Depressurization System (ADS) Trip System A					
a. Reactor Vessel Water Level - Low Low Low, Level 1	1,$_2$(d),$_3$(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 14.3 inches
b. ADS Initiation Timer	1,$_2$(d),$_3$(d)	1	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 100.5 seconds and ≤ 109.5 seconds
c. Reactor Vessel Water Level - Low, Level 3 (Confirmatory)	1,$_2$(d),$_3$(d)	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 177.1 inches
d. LPCS Pump Discharge Pressure - High	1,$_2$(d),$_3$(d)	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 125 psig
e. LPCI Pump A Discharge Pressure - High	1,$_2$(d),$_3$(d)	2	G	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 115 psig
f. Manual Initiation	1,$_2$(d),$_3$(d)	2	G	SR 3.3.5.1.6	NA

(continued)

(a) When associated ECCS subsystem(s) are required to be OPERABLE per LCO 3.5.2, ECCS-Shutdown.

(d) With reactor steam dome pressure > 150 psig.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.2.1 ----------NOTES---------- 1. The following SRs are not required to be performed: SR 3.8.1.3, SR 3.8.1.8 through SR 3.8.1.16, SR 3.8.1.18, and SR 3.8.1.19. 2. SR 3.8.1.12 and SR 3.8.1.19 are not required to be met when the associated ECCS subsystem(s) are not required to be OPERABLE per LCO 3.5.2, "ECCS - Shutdown." ---------- For AC sources required to be OPERABLE, the following SRs are applicable: SR 3.8.1.1, SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.4, SR 3.8.1.5, SR 3.8.1.6, SR 3.8.1.7, SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.11, SR 3.8.1.12, SR 3.8.1.13, SR 3.8.1.14, SR 3.8.1.15, SR 3.8.1.16, SR 3.8.1.18, SR 3.8.1.19	In accordance with applicable SRs

Attachment 3

Perry Nuclear Power Plant, Unit No. 1

Proposed Technical Specification Bases Changes

The following lists the pages included within Attachment 3:

B 3.3-93
B 3.3-94
3.3-74**
3.8-17**
B 3.3-95
B 3.3-95a *
3.6-56**
B 3.3-96
B 3.3-98
B 3.3-99
B 3.3-100
B 3.8-36
B 3.8-40

* Entire page added.
** Technical Specification page included for context.

BACKGROUND

Automatic Depressurization System (continued)

Either ADS trip system A or trip system B will cause all the ADS relief valves to open. Once the ADS initiation signal is present, it is sealed in until manually reset.

There are two manual initiation push buttons in each trip system. Actuating both push buttons in either trip system will cause all ADS valves to open if at least one of the two low pressure ECCS pumps is running. Manual initiation can also be accomplished by operating the individual control switch for each safety/relief valve (S/RV) associated with the ADS. Manual inhibit switches are provided in the control room for ADS; however, their function is not required for ADS OPERABILITY (provided ADS is not inhibited when required to be OPERABLE).

Diesel Generators

The Division 1, 2, and 3 DGs may be initiated by either automatic or manual means. Automatic initiation occurs for conditions of Reactor Vessel Water Level-Low Low Low, Level 1 or Drywell Pressure-High for Division 1 and 2 DGs, and Reactor Vessel Water Level-Low Low, Level 2 or Drywell Pressure-High for Division 3 DG. The DGs are also initiated upon degraded voltage and loss of voltage signals (refer to Bases for LCO 3.3.8.1, "Loss of Power (LOP) Instrumentation," for a discussion of these signals). Each of these diverse variables is monitored by two redundant transmitters per DG, which are, in turn, connected to two trip units. The outputs of the four divisionalized trip units (two trip units from each of the two variables) are connected to relays whose contacts are connected to a one-out-of-two taken twice logic. The DGs receive their initiation signals from the associated Divisions' ECCS logic (i.e., Division 1 DG receives an initiation signal from Division 1 ECCS (LPCS and LPCI A); Division 2 DG receives an initiation signal from Division 2 ECCS (LPCI B and LPCI C); and Division 3 DG receives an initiation signal from Division 3 ECCS (HPCS)). The DGs can also be started manually from the control room and locally in the associated DG room. The DG initiation signal is a sealed in signal and must be manually reset. The DG initiation logic is reset by resetting the associated ECCS initiation logic. Upon receipt of a LOCA initiation signal, each DG is automatically started, is ready to load in approximately 10 seconds (13 seconds for Division 3), and will run in

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BACKGROUND

Diesel Generators (continued)

standby conditions (rated voltage and speed, with the DG output breaker open). The DGs will only energize their respective Engineered Safety Feature (ESF) buses if a degraded voltage or loss of voltage occurs (refer to Bases for LCO 3.3.8.1).

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AEGTs

The AEGT subsystems may be initiated by either automatic or manual means. Automatic initiation occurs for conditions of Reactor Vessel Water Level-Low Low Low, Level 1 or Drywell Pressure-High. Each of these diverse variables is monitored by two redundant transmitters per AEGT subsystem which are, in turn, connected to two trip units. The outputs of the four divisionalized trip units (two trip units from each of the two variables) are connected to relays whose contacts are arranged in a one-out-of-two taken twice logic. The AEGT subsystems receive their initiation signals from the associated Divisions' ECCS logic (i.e., Division 1 AEGT subsystem receives an initiation signal from Division 1 ECCS (LPCS and LPCI A), and Division 2 AEGT subsystem receives an initiation signal from Division 2 ECCS (LPCI B and LPCI C)). The AEGT subsystems can also be started manually from the control room. The AEGT initiation logic is reset by resetting the associated ECCS initiation logic.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

The actions of the ECCS are explicitly assumed in the safety analyses of References 1, 2, and 3. The ECCS is initiated to preserve the integrity of the fuel cladding by limiting the post LOCA peak cladding temperature to less than the 10 CFR 50.46 limits.

ECCS instrumentation satisfies Criterion 3 of the NRC Final Policy Statement on Technical Specification Improvements (58 FR 39132). Certain instrumentation Functions are retained for other reasons and are described below in the individual Functions discussion.

The OPERABILITY of the ECCS instrumentation is dependent upon the OPERABILITY of the individual instrumentation channel Functions specified in Table 3.3.5.1-1. Each

(continued)

Technical Specification Page Included for Context

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When the associated diesel generator (DG) is required to be OPERABLE by LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

---NOTE---
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Place channel in trip.	1 hour
B. Required Action and associated Completion Time not met.	B.1 Declare associated DG inoperable.	Immediately

Technical Specification Page Included for Context

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources — Shutdown

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

a. One qualified circuit between the offsite transmission network and the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.8, "Distribution Systems — Shutdown";

b. One diesel generator (DG) capable of supplying one division of the Division 1 or 2 onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.8; and

c. One qualified circuit, other than the circuit in LCO 3.8.2.a, between the offsite transmission network and the Division 3 onsite Class 1E electrical power distribution subsystem, or the Division 3 DG capable of supplying the Division 3 onsite Class 1E AC electrical power distribution subsystem, when the Division 3 onsite Class 1E electrical power distribution subsystem is required by LCO 3.8.8.

APPLICABILITY: MODES 4 and 5.
During movement of recently irradiated fuel assemblies in the primary containment or fuel handling building.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Function must have a required number of OPERABLE channels, with their setpoints within the specified Allowable Values, where appropriate. The actual setpoint is calibrated consistent with applicable setpoint methodology assumptions. Each ECCS subsystem must also respond within its assumed response time. Table 3.3.5.1-1 is modified by three footnotes. Footnote (a) is added to specify that the associated Functions are required to be OPERABLE to support ECCS initiation in MODES 4 and 5 only when their supported ECCS are required to be OPERABLE per LCO 3.5.2, "ECCS - Shutdown". Footnote (b) is added to show that certain ECCS instrumentation Functions also perform DG and AEGT subsystem initiation. Footnote (f) is added to ensure ECCS instrumentation required to actuate the AEGT subsystems remains OPERABLE when AEGT subsystems are required to be OPERABLE per LCO 3.6.4.3.

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Allowable Values are specified for each ECCS Function specified in the table. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Value between CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value. Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor vessel water level), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. The Allowable Values are derived from the analytic limits, corrected for calibration,process, and some of the instrument errors. The trip setpoints are then determined, accounting for the remaining instrument errors (e.g., drift). The trip setpoints derived in this manner provide adequate protection because instrumentation uncertainties, process effects, calibration tolerances, instrument drift, and severe environment errors (for channels that must function in harsh environments as defined by 10 CFR 50.49) are accounted for.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

In general, the individual Functions are required to be OPERABLE in the MODES or other specified conditions that may require ECCS (or AEGT) initiation to mitigate the consequences of a design basis accident or transient. To ensure reliable ECCS and AEGT function, a combination of Functions is required to provide primary and secondary initiation signals.

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The specific Applicable Safety Analyses, LCO, and Applicability discussions are listed below on a Function by Function basis.

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Technical Specification Page Included for Context

3.6 CONTAINMENT SYSTEMS

3.6.4.3 Annulus Exhaust Gas Treatment (AEGT) System

LCO 3.6.4.3 Two AEGT subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
During movement of recently irradiated fuel assemblies in the primary containment.
During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One AEGT subsystem inoperable.	A.1	Restore AEGT subsystem to OPERABLE status.	7 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 AND B.2	Be in MODE 3. Be in MODE 4.	12 hours 36 hours
C. Required Action and associated Completion Time of Condition A not met during movement of recently irradiated fuel assemblies in the primary containment, or during OPDRVs.	C.1 OR	Place OPERABLE AEGT subsystem in operation.	Immediately

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Low Pressure Core Spray and Low Pressure Coolant Injection Systems

1.a, 2.a Reactor Vessel Water Level-Low Low Low, Level 1

Low reactor pressure vessel (RPV) water level indicates that the capability to cool the fuel may be threatened. Should RPV water level decrease too far, fuel damage could result. The low pressure ECCS and associated DGs are initiated at Level 1 to ensure that core spray and flooding functions are available to prevent or minimize fuel damage. The AEGT System also receives Level 1 initiation signals to ensure a subsystem will operate following events that challenge core coverage. The Reactor Vessel Water Level-Low Low Low, Level 1 is one of the Functions assumed to be OPERABLE and capable of initiating the ECCS during the transients analyzed in References 1 and 3. In addition, the Reactor Vessel Water Level-Low Low Low, Level 1 Function is assumed in the analysis of the DBA LOCA (Ref. 2). The core cooling function of the ECCS, along with the scram action of the Reactor Protection System (RPS), ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

Reactor Vessel Water Level-Low Low Low, Level 1 signals are initiated from four level transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. The Reactor Vessel Water Level-Low Low Low, Level 1 Allowable Value is chosen to allow time for the low pressure core flooding systems to activate and provide adequate cooling.

Two channels of Reactor Vessel Water Level-Low Low Low, Level 1 Function per associated Division are required to be OPERABLE when the associated ECCS or AEGT subsystem is required to be OPERABLE, to ensure that no single instrument failure can preclude system initiation. (Two channels input to Division 1, while the other two channels input to Division 2.) Per footnote (a) to Table 3.3.5.1-1, this ECCS Function is only required to be OPERABLE to support ECCS initiation in MODES 4 and 5 whenever the associated ECCS is required to be OPERABLE per LCO 3.5.2. Because portions of the ECCS instrumentation also actuate the AEGT subsystems, footnote (f) to Table 3.3.5.1-1 requires this ECCS Function to be OPERABLE when the AEGT subsystems are required to be OPERABLE per LCO 3.6.4.3.

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Refer to LCO 3.5.1 and LCO 3.5.2, "ECCS-Shutdown," for Applicability Bases for the low pressure ECCS subsystems; LCO 3.8.1, "AC Sources-Operating" and LCO 3.8.2, "AC Sources-Shutdown," for Applicability Bases for the DGs; and LCO 3.6.4.3, "Annulus Exhaust Gas Treatment (AEGT) System," for Applicability Bases for AEGT System.

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APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.c, 2.c. Low Pressure Coolant Injection Pump A and Pump B Start-Time Delay Relay (continued)

However, since the time delay does not degrade ECCS operation, it remains in the pump start logic at all times. The LPCI Pump Start-Time Delay Relays are assumed to be OPERABLE in the accident and transient analyses requiring ECCS initiation. That is, the analysis assumes that the pumps will initiate when required and excess loading will not cause failure of the power sources.

There are two LPCI Pump Start-Time Delay Relays, one in each of the RHR "A" and RHR "B" pump start logic circuits. While each time delay relay is dedicated to a single pump start logic, a single failure of a LPCI Pump Start-Time Delay Relay could result in the failure of the two low pressure ECCS pumps, powered from the same ESF bus, to perform their intended function within the assumed ECCS RESPONSE TIMES (e.g., as in the case where both ECCS pumps on one ESF bus start simultaneously due to an inoperable time delay relay). This still leaves two of the four low pressure ECCS pumps OPERABLE; thus, the single failure criterion is met (i.e., loss of one instrument does not preclude ECCS initiation). The Allowable Value for the LPCI Pump Start-Time Delay Relay is chosen to be long enough so that most of the starting transient of the first pump is complete before starting the second pump on the same 4.16 kV emergency bus and short enough so that ECCS operation is not degraded.

Each LPCI Pump Start-Time Delay Relay Function is only required to be OPERABLE when the associated LPCI subsystem is required to be OPERABLE. Per footnote (a) to Table 3.3.5.1-1, this ECCS Function is only required to be OPERABLE in MODES 4 and 5 whenever the associated ECCS is required to be OPERABLE per LCO 3.5.2. Refer to LCO 3.5.1 and LCO 3.5.2 for Applicability Bases for the LPCI subsystems.

1.d, 1.e, 2.d, Reactor Vessel Pressure-Low (Injection Valve Permissive)

Low reactor vessel pressure signals are used as permissives for the low pressure ECCS subsystems. This ensures that, prior to opening the injection valves of the low pressure ECCS subsystems, the reactor pressure has fallen to a value below these subsystems' maximum design pressure. The Reactor Vessel Pressure-Low (Injection Valve Permissive) is one of the Functions assumed to be OPERABLE and capable of permitting initiation of the ECCS during the transients analyzed in References 1 and 3. In addition,

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.d, 1.e, 2.d. Reactor Vessel Pressure-Low (Injection Valve Permissive) (continued)

the Reactor Vessel Pressure-Low (Injection Valve Permissive) Function is directly assumed in the analysis of the recirculation line break (Ref. 2). The core cooling function of the ECCS, along with the scram action of the RPS, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46.

The Reactor Vessel Pressure-Low (Injection Valve Permissive) signals are initiated from one pressure transmitter for each low pressure ECCS System that senses the reactor pressure.

The Allowable Value is low enough to prevent overpressurizing the equipment in the low pressure ECCS, but high enough to ensure that the ECCS injection prevents the fuel peak cladding temperature from exceeding the limits of 10 CFR 50.46.

One channel of Reactor Vessel Pressure-Low (Injection Valve Permissive) Function per associated low pressure ECCS subsystem is required to be OPERABLE when the associated ECCS is required to be OPERABLE. Per footnote (a) to Table 3.3.5.1-1, this ECCS Function is only required to be OPERABLE in MODES 4 and 5 whenever the associated ECCS is required to be OPERABLE per LCO 3.5.2. Refer to LCO 3.5.1 and LCO 3.5.2 for Applicability Bases for the low pressure ECCS subsystems.

1.f, 1.g, 2.e. Low Pressure Coolant Injection and Low Pressure Core Spray Pump Discharge Flow-Low (Bypass)

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 valve is opened when low flow is sensed, and the valve is automatically closed when the flow rate is adequate to protect the pump. The LPCI and LPCS Pump Discharge Flow-Low (Bypass) Functions are assumed to be OPERABLE and capable of closing the minimum flow valves to ensure that the low pressure ECCS flows assumed during the transients and accidents analyzed in References 1, 2, and 3 are met. The core cooling function of the ECCS, along with the scram action of the RPS, ensures that the fuel peak cladding temperature remains below the limits of 10 CFR 50.46. One flow transmitter per ECCS pump is used to detect the associated subsystems' flow rates.

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BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1.f, 1.g, 2.e. Low Pressure Coolant Injection and Low Pressure Core Spray Pump Discharge Flow-Low (Bypass) (continued)

The logic is arranged such that each transmitter causes its associated minimum flow valve to open. The logic will close the minimum flow valve once the closure setpoint is exceeded. The LPCI minimum flow valves are time delayed such that the valves will not open for 8 seconds after the transmitters and associated trip units detect low flow. The time delay is provided to limit reactor vessel inventory loss during the startup of the RHR shutdown cooling mode (for RHR A and RHR B). The Pump Discharge Flow-Low (Bypass) Allowable Values are high enough to ensure that the pump flow rate is sufficient to protect the pump, yet low enough to ensure that the closure of the minimum flow valve is initiated to allow full flow into the core.

Each channel of Pump Discharge Flow-Low (Bypass) Function (one LPCS channel and three LPCI channels) is only required to be OPERABLE when the associated ECCS is required to be OPERABLE, to ensure that no single instrument failure can preclude the ECCS function. Refer to LCO 3.5.1 and LCO 3.5.2 for Applicability Bases for the low pressure ECCS subsystems.

1.h, 2.f. Manual Initiation

The Manual Initiation push button channels introduce signals into the appropriate ECCS logic to provide manual initiation capability and are redundant to the automatic protective instrumentation. There is one push button for each of the two Divisions of low pressure ECCS (i.e., Division 1 ECCS, LPCS and LPCI A; Division 2 ECCS, LPCI B and LPCI C).

The Manual Initiation Function is not assumed in any accident or transient analyses in the USAR. However, the Function is retained for overall redundancy and diversity of the low pressure ECCS function as required by the NRC in the plant licensing basis.

There is no Allowable Value for this Function since the channels are mechanically actuated based solely on the position of the push buttons. Each channel of the Manual Initiation Function (one channel per Division) is only required to be OPERABLE when the associated ECCS is required to be OPERABLE. Per footnote (a) to Table 3.3.5.1-1, this ECCS Function is only required to be OPERABLE in MODES 4 and 5 whenever the associated ECCS is required to be OPERABLE per LCO 3.5.2. Refer to LCO 3.5.1 and LCO 3.5.2 for Applicability Bases for the low pressure ECCS subsystems.
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LCO (continued)

powered from offsite power. An OPERABLE DG, associated with a Division 1 or Division 2 Distribution System Engineered Safety Feature (ESF) bus required OPERABLE by LCO 3.8.8, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite circuit. Similarly, when the high pressure core spray (HPCS) system is required to be OPERABLE, a separate offsite circuit to the Division 3 Class 1E onsite electrical power distribution subsystem, or an OPERABLE Division 3 DG, ensure an additional source of power for the HPCS. This additional source for Division 3 is not necessarily required to be connected to be OPERABLE. Either the circuit required by LCO Item a, or a circuit required to meet LCO Item c may be connected, with the second source available for connection. Together, OPERABILITY of the required offsite circuit(s) and DG(s) ensure the availability of sufficient AC sources to operate the plant in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents involving handling of recently irradiated fuel, reactor vessel draindown). Automatic initiation of the required DG during shutdown conditions is specified in LCO 3.3.8.1, "LOP Instrumentation."

The qualified offsite circuit(s) must be capable of maintaining rated frequency and voltage while connected to their respective ESF bus(es), and accepting required loads during an accident. Qualified offsite circuits are those that are described in the USAR and are part of the licensing basis for the plant. One offsite circuit consists of the Unit 1 startup transformer through the Unit 1 interbus transformer, to the Class 1E 4.16 kV ESF buses through source feeder breakers for each required division. A second acceptable offsite circuit consists of the Unit 2 startup transformer through the Unit 2 interbus transformer, to the Class 1E 4.16 kV ESF buses through source feeder breakers for each required division. Additional path(s) are available, as described in the USAR and the "AC Sources - Operating" Bases.

The required DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage, and accepting required loads. This sequence must be accomplished within 10 seconds for Division 1 and 2 and 13 seconds for Division 3. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and must continue to operate until offsite power can be restored to the ESF buses. These capabilities are required to be met from a variety of initial conditions such as: DG in standby with the engine hot and DG in standby

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BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, and 3. SR 3.8.1.8 is not required to be met since only one offsite circuit is required to be OPERABLE. SR 3.8.1.17 is not required to be met because the required OPERABLE DG(s) is not required to undergo periods of being synchronized to the offsite circuit. SR 3.8.1.20 is not required to be met because starting independence is not required with the DG(s) that is not required to be OPERABLE. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

This SR is modified by two Notes. The reason for Note 1 is to preclude requiring the OPERABLE DG(s) from being paralleled with the offsite power network or otherwise rendered inoperable during the performance of SRs, and preclude de-energizing a required 4160 V ESF bus or disconnecting a required offsite circuit during performance of Surveillances. With limited AC sources available, a single event could compromise both the required circuit and the DG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG is required to be OPERABLE. Hence the NOTE provides an exception to SR 3.0.1 during the period when only one diesel generator is OPERABLE.

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Note 2 states that SRs 3.8.1.12 and 3.8.1.19 are not required to be met when the associated ECCS subsystem(s) are not required to be OPERABLE. These SRs demonstrate the DG response to an ECCS signal (either alone or in conjunction with a loss of offsite power signal). This is consistent with the ECCS instrumentation requirements that do not require ECCS signals when the associated ECCS system is not required to be OPERABLE per LCO 3.5.2, "ECCS - Shutdown."

REFERENCES None.