

# **ENERGY NORTHWEST**

P.O. Box 968 ■ Richland, Washington 99352-0968

July 17, 2000  
GO2-00-126

Docket No. 50-397

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

**Subject: WNP-2, OPERATING LICENSE NPF-21  
REQUEST FOR AMENDMENT  
TECHNICAL SPECIFICATIONS 3.3.5.1, 3.3.6.1 and 3.3.6.2**

**Reference: NRC Administrative Letter 98-10, December 29, 1998, "Dispositioning of  
Technical Specifications That Are Insufficient To Assure Plant Safety"**

In accordance with the Code of Federal Regulations, Title 10, Parts 2.101, 50.59, and 50.90, Energy Northwest hereby submits a request for amendment to the WNP-2 Operating License. Specifically, Energy Northwest is requesting a revision to the following Technical Specifications Limiting Conditions for Operation (LCO): LCO 3.3.5.1 "ECCS Instrumentation;" LCO 3.3.6.1 "Primary Containment Isolation Instrumentation;" and LCO 3.3.6.2 "Secondary Containment Isolation Instrumentation."

The proposed changes add notes to tables listing instrumentation channels that are common to, or support operability of, interrelated systems as governed by these Technical Specification LCOs. The proposed notes provide branching of the instrumentation channels to more restrictive Actions for routine plant evolutions such as surveillance testing. The Technical Specification Bases were revised in 1998 by providing more detail in this regard. In addition, specific operator training was provided. This proposed change makes explicit that which is required for Operability of the subject LCOs. In accordance with the guidance in the reference, we are now proposing an amendment to formally address this condition in the WNP-2 Technical Specifications.

Additional information has been attached to this letter to complete the amendment request. Attachment 1 provides a detailed description and basis for acceptability of the proposed changes. Attachment 2 describes an evaluation of the proposed changes in accordance with 10 CFR 50.92(c) and concludes the changes do not result in a significant hazards consideration.

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Attachment 3 provides the Environmental Assessment Applicability Review and notes that the proposed change meets the eligibility criteria for a categorical exclusion as set forth in 10 CFR 51.22(c)(9). Therefore, in accordance with 10 CFR 51.22(b), an environmental assessment of the change is not required. Attachment 4 summarizes the proposed changes and provides marked-up pages of the Technical Specifications. Attachment 5 submits the typed Technical Specification pages as proposed by this request.

This request for an amendment has been approved by the WNP-2 Plant Operations Committee and reviewed by the Energy Northwest Corporate Nuclear Safety Review Board. In accordance with 10 CFR 50.91, the State of Washington has been provided a copy of this letter.

Should you have any questions or desire additional information regarding this matter, please contact PJ Inserra at (509) 377-4147.

Respectfully,



RL Webring  
Vice President, Operations Support/PIO  
Mail Drop PE08

Attachments

cc: EW Merschoff - NRC RIV  
JS Cushing - NRC NRR  
NRC Resident Inspector - 927N  
DJ Ross - EFSEC  
TC Poindexter -Winston & Strawn  
DL Williams - BPA/1399

STATE OF WASHINGTON)  
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COUNTY OF BENTON )

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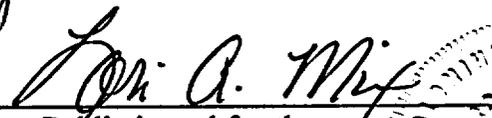
I, RL Webring, being duly sworn, subscribe to and say that I am the Vice President, Operations Support/PIO, for ENERGY NORTHWEST, the applicant herein; that I have the full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief that the statements made in it are true.

DATE 7/17/ 2000

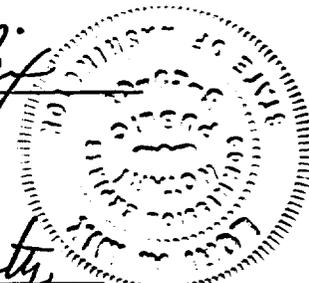
  
\_\_\_\_\_  
RL Webring  
Vice President, Operations Support/PIO

On this date personally appeared before me RL Webring, to me known to be the individual who executed the foregoing instrument, and acknowledged that he signed the same as his free act and deed for the uses and purposes herein mentioned.

GIVEN under my hand and seal this 17 day of June 2000

  
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Notary Public in and for the  
STATE OF WASHINGTON

Residing at Benton County,  
My Commission expires 3-29-01



**REQUEST FOR AMENDMENT  
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Attachment 1  
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**Description of Proposed Changes**

**Summary of Proposed Technical Specification Change**

Energy Northwest is requesting a revision to three Technical Specifications to add notes pertinent to instrumentation channels.

This change is proposed to identify the instrument channels of the WNP-2 primary and secondary containment isolation logic that are governed by more than one Technical Specification, so that the Technical Specification makes explicit that which is required for Operability. These notes will identify the most restrictive Action and Completion Times when a channel becomes inoperable or is placed in the tripped condition.

**Basis for the Proposed Technical Specification Change**

Time delay relays (TDRs) are installed in the starting circuits of the Division 1 and 2 low pressure emergency core cooling system (ECCS) pumps to sequence closure of the main pump circuit breakers. That feature prevents simultaneous startup of the low pressure ECCS pumps and High Pressure Core Spray (HPCS) pump, which would result in undesirable voltage transients on the 4.16 kV emergency supply buses and on the 230 kV offsite power transformer when it is supplying power to the 4.16 kV buses. Such transients would present unnecessary challenges to the onsite AC electrical power supply systems and to the normal 230 kV transformer and connected circuitry. Thus, the TDRs support operability of the normal 230 kV AC power circuit, as indicated in the note proposed for inclusion in Table 3.3.5.1-1 for functions 1c, 1d, 2c and 2d. The proposed note is "(e) Also supports OPERABILITY of 230 kV offsite power circuit pursuant to LCO 3.8.1 and LCO 3.8.2." This note will assure that if these channels are not restored to operable status within the Completion Time, the associated supported features that are required to be declared inoperable will include the 230 kV offsite power source.

Pump-start TDR channels are included in each of the Division 1 and 2 low pressure ECCS pump-start logic trains. Each of the four low pressure ECCS pump-start designs contain a TDR relay channel initiated by a Drywell Pressure-High or a Reactor Vessel Water-Low Low, Level-2 sensor contact in series, together with other logic associated with electrical system relay and circuit breaker position. The WNP-2 design is such that actuation of any one of the sensors results in providing an actuation signal to the TDR channels for both low-pressure ECCS pumps in the same electrical division (See Figures 1-3).

In the event that one of the sensors was spuriously actuated, or was placed in the trip condition as required by any of the affected Technical Specifications (in the case of an inoperable instrument), both LOCA TDR channels in the division would receive an actuation signal. When power is aligned to the 230 kV offsite power source, the time delay relays will start and time-out, setting up the logic for simultaneous starts upon receipt of a LOCA signal (See Figures 1-3). Since the actual start of the low pressure pumps is dependent on LOCA signals that originate in other branches of the WNP-2 instrumentation systems (See Figures 2-3),

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neither low pressure ECCS pump would start immediately. However, if a Loss of Coolant Accident (LOCA) Drywell Pressure-High signal was received after the sequenced TDRs had both timed-out, both low pressure ECCS pumps in that electrical division would start at approximately the same time as the HPCS pump. Likewise, if a loss of coolant accident caused a rapid decrease in reactor vessel water level, the level-1 LOCA signal could be initiated closely following the level-2 signal causing a similar multiple pump start condition. This would result in a significant voltage transient on the 230 kV offsite power transformer as discussed above. Therefore, the note is proposed to be added identifying the 230 kV offsite power source as an associated supported feature.

The primary and secondary containment isolation channels specified in Table 3.3.6.1-1 (Functions 2c and 2d) and in Table 3.3.6.2-1 (Functions 1 and 2) initiate the LOCA TDR specified in Table 3.3.5.1-1 (Functions 1c, 1d, 2c, and 2d). Since these Drywell Pressure and Reactor Level 2 signals are used in several functions governed by multiple Technical Specifications, we are proposing to add notes to these Technical Specifications to identify the branching to the other requirements. The note to the, "Required Channels Per Trip System," column for Table 3.3.6.1-1 Functions 2c and 2d is, "(e) Also required to initiate the associated LOCA Time Delay Relay Function pursuant to LCO 3.3.5.1." The note for 3.3.6.2-1 Functions 1 and 2 is identical, except it is labeled as Note (c). These notes will direct the operators to LCO 3.3.5.1 and a more restrictive Action.

This proposed change is being initiated to make explicit what is currently required for LCO 3.3.5.1 Functions 1c, 1d, 2c and 2d instrument channel and 230 kV offsite source Operability. This change is being requested so that operators may more easily determine the most restrictive Action and Completion Times for performing routine plant operations such as surveillance testing.

FIGURE 1  
PRIMARY CONTAINMENT  
INBOARD ISOLATION LOGIC  
(PARTIAL)  
[TYP. FOR OUTBOARD  
SHOWN IN ( )]  
REF. FSAR  
FIGURE 7.3-8.1

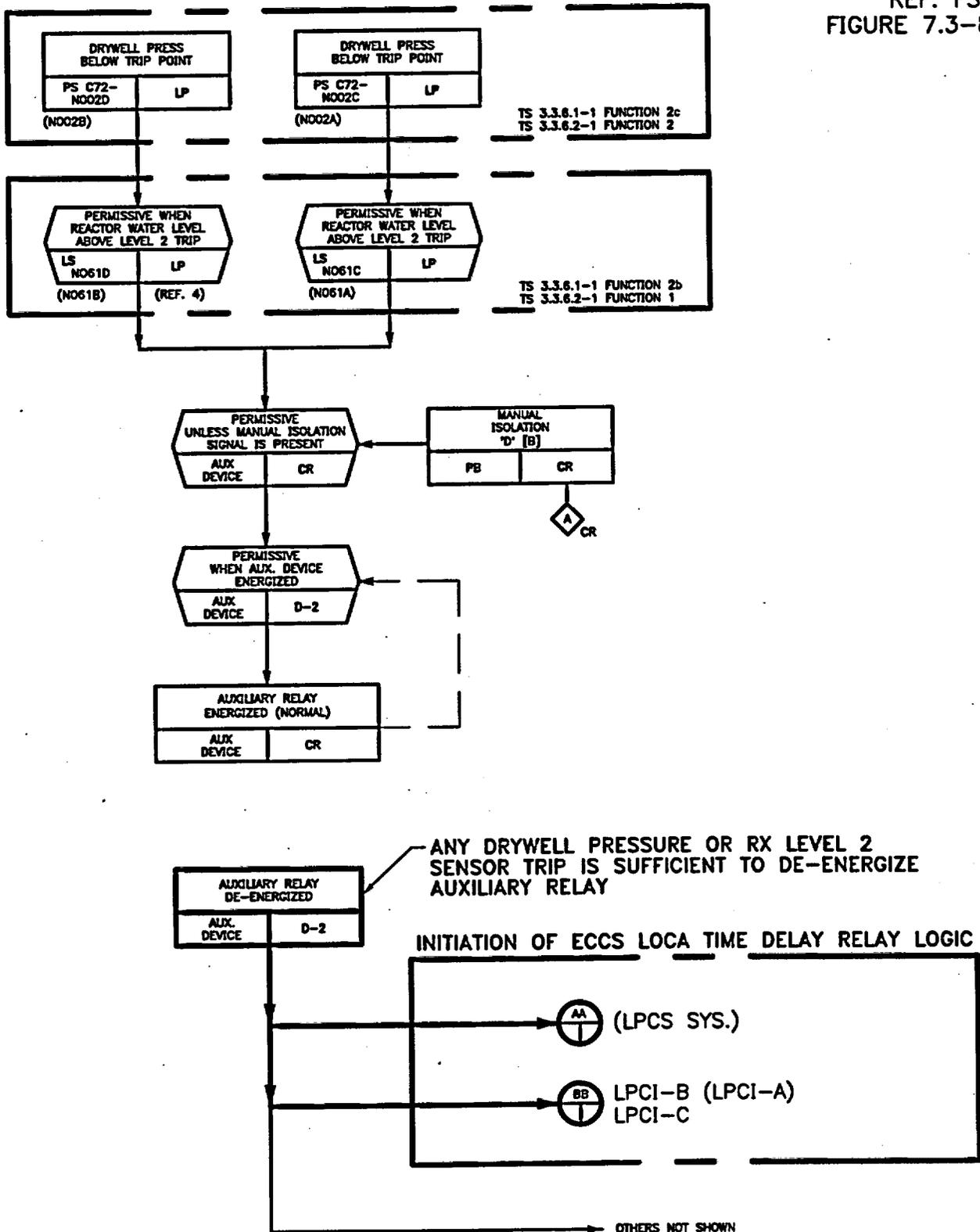
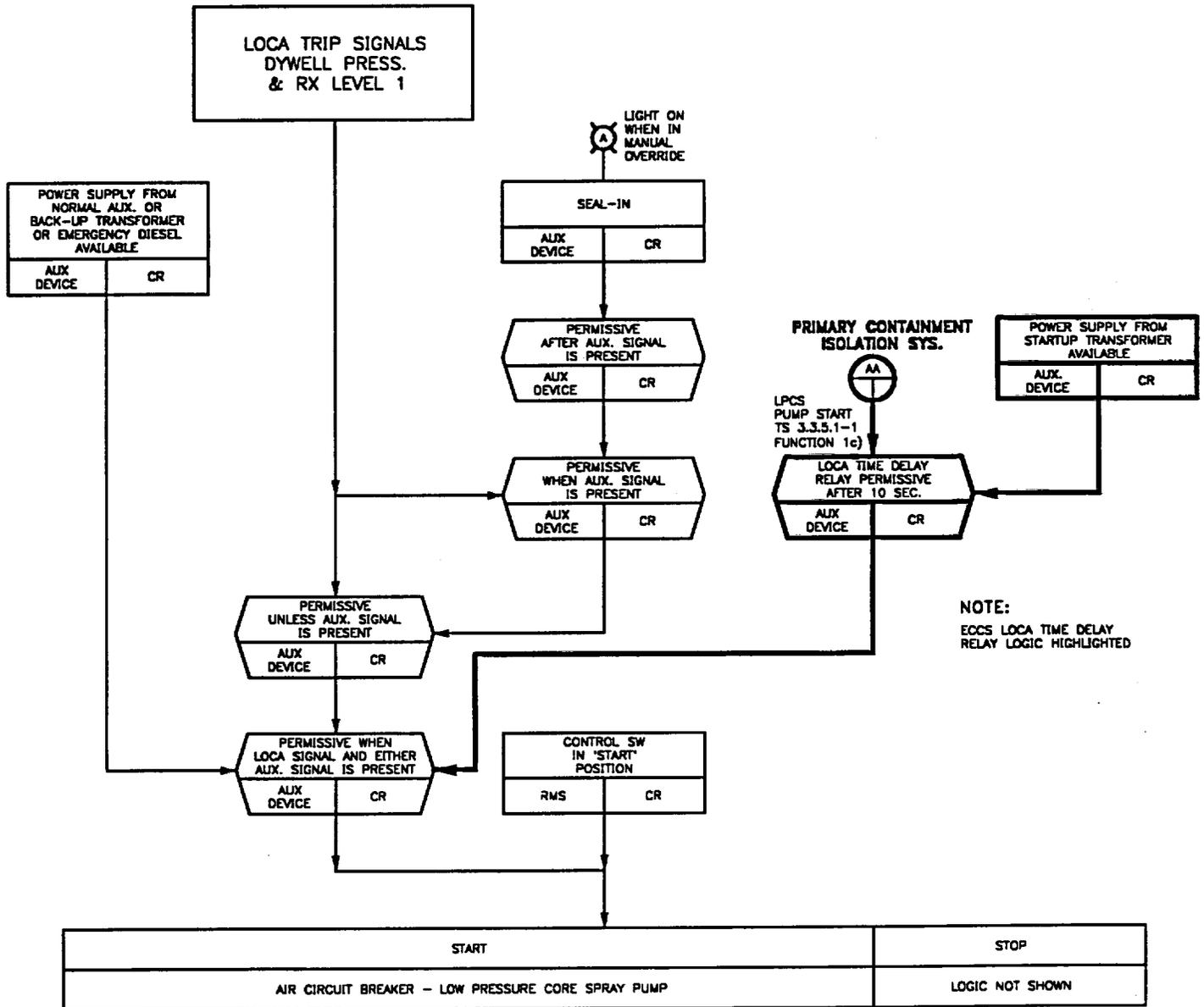
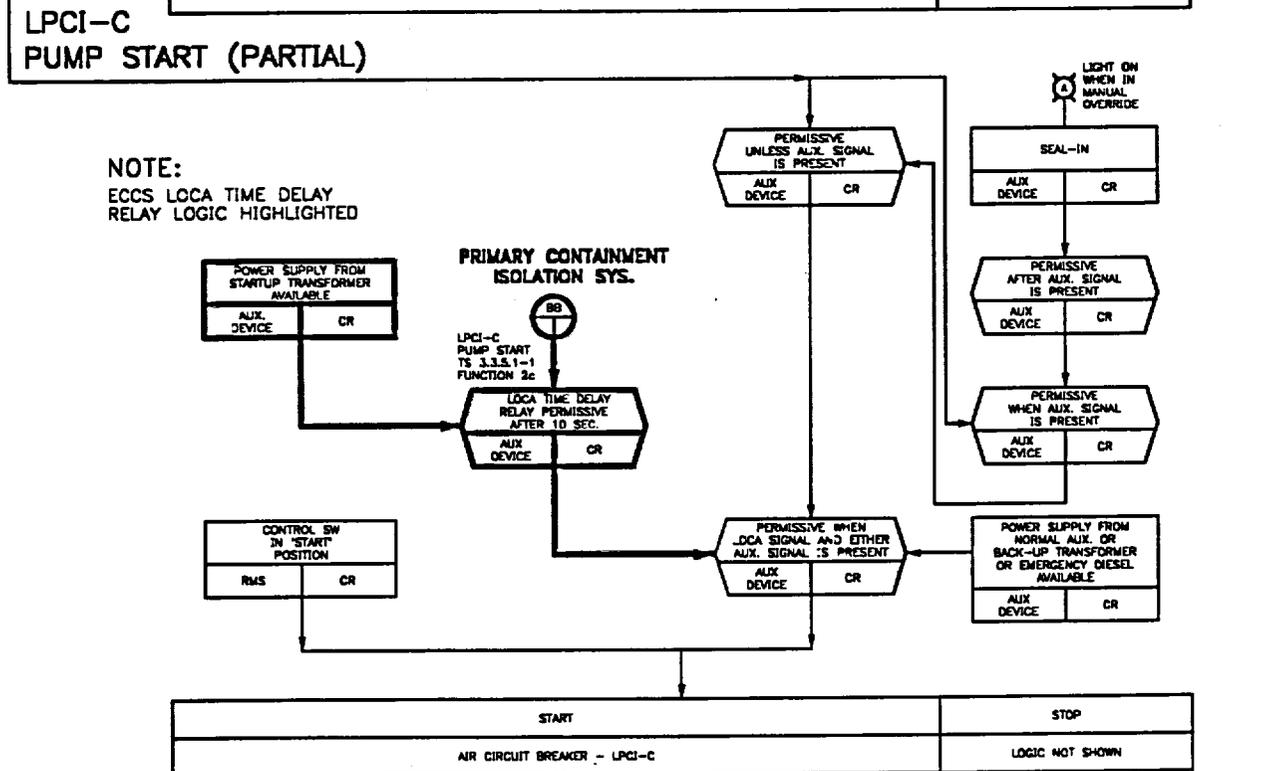
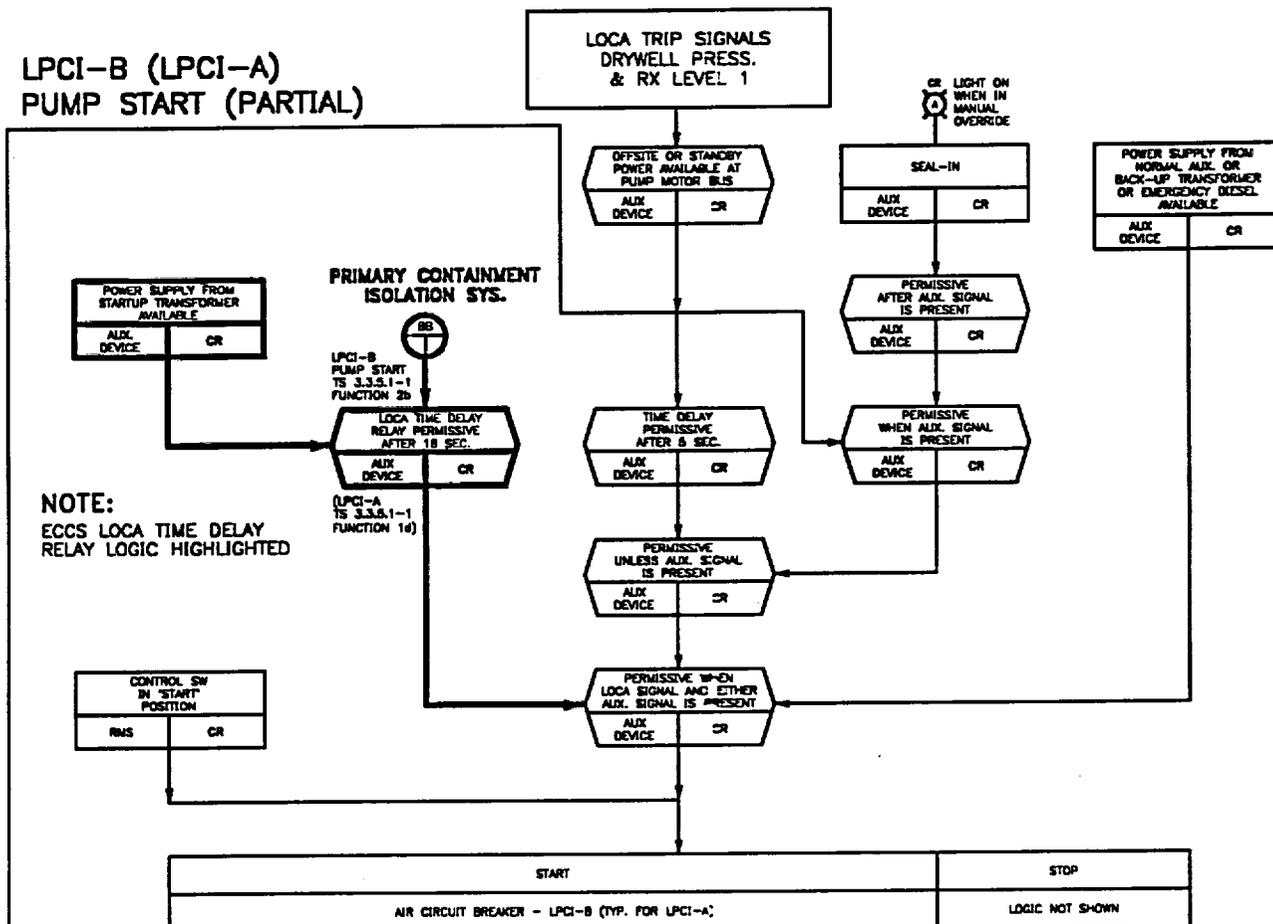


FIGURE 2  
 LOW PRESSURE  
 CORE SPRAY  
 PUMP START (PARTIAL)  
 REF. FSAR  
 FIGURE 7.3-9.1





## **Evaluation of Significant Hazards Consideration**

### **Summary of Proposed Change**

Energy Northwest is requesting a revision to three Technical Specification tables to add notes to the, "Required Channels Per Trip System," column for Tables 3.3.5.1-1 Functions 1c, 1d, 2c and 2d, 3.3.6.1-1 Functions 2c and 2d; and 3.3.6.2-1 Functions 1 and 2. This change identifies instrument channels of the primary and secondary containment isolation logic that are included in more than one Limiting Condition for Operation (LCO), so that operators will determine the most restrictive Action and Completion Time when a channel becomes inoperable or is placed in the tripped condition.

### **No Significant Hazards Consideration Determination**

Energy Northwest has evaluated the proposed change to the Technical Specifications using the criteria established in 10 CFR 50.92(c) and has determined that it does not represent a significant hazards consideration as described below:

- **The operation of WNP-2 in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.**

The proposed change has no impact on previously analyzed accidents or transients and has no affect on design, operation, capacity, or surveillance requirements of the affected instrumentation channels. The change provides branching notes to the Loss of Coolant Accident (LOCA) Time Delay Relay (TDR) Functions of LCO 3.3.5.1 from instrument channels of the primary and secondary containment isolation channels of LCO 3.3.6.1 and LCO 3.3.6.2 and the associated support features for the LOCA TDR function. Since these instruments affect multiple LCOs, this change will assure that operators implement the most restrictive Action and Completion Time when a channel becomes inoperable or is placed in the tripped condition. Providing this branching to the more restrictive Actions makes explicit what is currently required for Operability and has no impact on any previously evaluated accident.

Therefore, operation of WNP-2 in accordance with the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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- **The operation of WNP-2 in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.**

The proposed change does not impact any operational or physical aspect of WNP-2. The change only makes explicit the LCOs affected by the primary and secondary containment isolation instruments and the associated supported features for the LOCA TDR function.

Therefore, operation of WNP-2 in accordance with the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

- **The operation of WNP-2 in accordance with the proposed amendment will not involve a significant reduction in the margin of safety.**

The proposed change provides branching notes to the LOCA TDR channels of LCO 3.3.5.1 from instrument channels of the primary and secondary containment isolation channels of LCO 3.3.6.1 and LCO 3.3.6.2 and provides notes for identifying associated support features for the LOCA TDR function. This change only makes explicit what is currently required for LCO 3.3.5.1 Functions 1c, 1d, 2c and 2d instrument channel Operability. This change will make explicit the most restrictive Action when an instrument sensor or channel becomes inoperable or is placed in the tripped condition, thereby, maintaining the margin of safety in accordance with the Technical Specifications.

Therefore, operation of WNP-2 in accordance with the proposed amendment will not involve a significant reduction in the margin of safety.

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**TECHNICAL SPECIFICATIONS 3.3.5.1, 3.3.6.1 and 3.3.6.2**  
**Attachment 3**  
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**Environmental Assessment Applicability Review**

Energy Northwest has evaluated the proposed amendment against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21.

The proposed change meets the criteria for categorical exclusion as provided under 10 CFR 51.22(c)(9) because the change does not pose a significant hazard consideration nor does it involve an increase in the amounts, or a change in the types, of any effluent that may be released offsite.

Furthermore, this request does not involve an increase in individual or cumulative occupational exposure.

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Attachment 4**

**Marked-Up Version of Technical Specifications**

Table 3.3.5.1-1 (page 1 of 4)  
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
<b>1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems</b>					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1,2,3, 4(a),5(a)	2(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -148 inches
b. Drywell Pressure — High	1,2,3	2(b)	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 1.88 psig.
c. LPCS Pump Start — LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1(e)	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 8.53 seconds and ≤ 10.64 seconds
d. LPCI Pump A Start — LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1(e)	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 17.24 seconds and ≤ 21.53 seconds
e. LPCI Pump A Start — LOCA/LOOP Time Delay Relay	1,2,3, 4(a),5(a)	1	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.6	≥ 3.04 seconds and ≤ 6.00 seconds
f. Reactor Vessel Pressure — Low (Injection Permissive)	1,2,3 4(a),5(a)	1 per valve 1 per valve	C B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 448 psig and ≤ 492 psig ≥ 448 psig and ≤ 492 psig
g. LPCS Pump Discharge Flow — Low (Minimum Flow)	1,2,3, 4(a),5(a)	1	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 668 gpm and ≤ 1067 gpm
h. LPCI Pump A Discharge Flow — Low (Minimum Flow)	1,2,3, 4(a),5(a)	1	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 605 gpm and ≤ 984 gpm
i. Manual Initiation	1,2,3, 4(a),5(a)	2	C	SR 3.3.5.1.6	NA

(continued)

(a) When associated subsystem(s) are required to be OPERABLE.

(b) Also required to initiate the associated diesel generator (DG).

(e) Also supports OPERABILITY of 230 kV offsite power circuit pursuant to LCO 3.8.1 and LCO 3.8.2.

Table 3.3.5.1-1 (page 2 of 4)  
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
<b>2. LPCI B and LPCI C Subsystems</b>					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1,2,3, 4(a),5(a)	2(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -148 inches
b. Drywell Pressure — High	1,2,3	2(b)	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 1.88 psig
c. LPCI Pump B Start — LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1(e)	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 17.24 seconds and ≤ 21.53 seconds
d. LPCI Pump C Start — LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1(e)	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 8.53 seconds and ≤ 10.64 seconds
e. LPCI Pump B Start — LOCA/LOOP Time Delay Relay	1,2,3, 4(a),5(a)	1	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.6	≥ 3.04 seconds and ≤ 6.00 seconds
f. Reactor Vessel Pressure — Low (Injection Permissive)	1,2,3 4(a),5(a)	1 per valve 1 per valve	C B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 448 psig and ≤ 492 psig ≥ 448 psig and ≤ 492 psig
g. LPCI Pumps B & C Discharge Flow — Low (Minimum Flow)	1,2,3, 4(a),5(a)	1 per pump	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 605 gpm and ≤ 984 gpm
h. Manual Initiation	1,2,3, 4(a),5(a)	2	C	SR 3.3.5.1.6	NA
<b>3. High Pressure Core Spray (HPCS) System</b>					
a. Reactor Vessel Water Level — Low Low, Level 2	1,2,3, 4(a),5(a)	4(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -58 inches

(continued)

(a) When associated subsystem(s) are required to be OPERABLE.

(b) Also required to initiate the associated DG.

(e) Also supports OPERABILITY of 230 kV offsite power circuit pursuant to LCO 3.8.1 and LCO 3.8.2.

Table 3.3.6.1-1 (page 1 of 4)  
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
<b>1. Main Steam Line Isolation</b>					
a. Reactor Vessel Water Level — Low Level 2	1,2,3	2	D	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ -58 inches
b. Main Steam Line Pressure — Low	1	2	E	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 804 psig
c. Main Steam Line Flow — High	1,2,3	2 per MSL	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 124.4 psid
d. Condenser Vacuum — Low	1,2(a), 3(a)	2	D	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≥ 7.2 inches Hg vacuum
e. Main Steam Tunnel Temperature — High	1,2,3	2	D	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 170°F
f. Main Steam Tunnel Differential Temperature — High	1,2,3	2	D	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 90°F
g. Manual Initiation	1,2,3	4	G	SR 3.3.6.1.6	NA
<b>2. Primary Containment Isolation</b>					
a. Reactor Vessel Water Level — Low, Level 3	1,2,3	2	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≥ 9.5 inches
b. Reactor Vessel Water Level — Low Level 2	1,2,3	2 (e)	H	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≥ -58 inches
c. Drywell Pressure — High	1,2,3	2 (e)	H	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 1.88 psig
d. Reactor Building Vent Exhaust Plenum Radiation — High	1,2,3	2	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 16.0 mR/hr
e. Manual Initiation	1,2,3	4	G	SR 3.3.6.1.6	NA

(a) With any turbine throttle valve not closed.

(continued)

(e) Also required to initiate the associated LOCA Time Delay Relay Function pursuant to LCO 3.3.5.1.

Table 3.3.6.2-1 (page 1 of 1)  
Secondary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES AND OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level — Low Low, Level 2	1,2,3,(a)	2 (C)	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≥ -58 inches
2. Drywell Pressure — High	1,2,3	2 (C)	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 1.88 psig
3. Reactor Building Vent Exhaust Plenum Radiation — High	1,2,3, (a),(b)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 16.0 mR/hr
4. Manual Initiation	1,2,3, (a),(b)	4	SR 3.3.6.2.4	NA

(a) During operations with a potential for draining the reactor vessel.

(b) During CORE ALTERATIONS, and during movement of irradiated fuel assemblies in the secondary containment.

(c) Also required to initiate the associated LOCA Time Delay Relay Function pursuant to LCO 3.3.5.1.

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TECHNICAL SPECIFICATIONS 3.3.5.1, 3.3.6.1 and 3.3.6.2  
Attachment 5**

**Replacement Pages for Technical Specifications**

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, and 3.g; and (b) for up to 6 hours for Functions other than 3.c, 3.f, and 3.g 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 Perform CHANNEL CALIBRATION.	92 days
SR 3.3.5.1.4 Perform CHANNEL CALIBRATION.	18 months
SR 3.3.5.1.5 Perform CHANNEL CALIBRATION.	24 months
SR 3.3.5.1.6 Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table 3.3.5.1-1 (page 1 of 4)  
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
<b>1. Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems</b>					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1,2,3, 4(a),5(a)	2(b)	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -148 inches
b. Drywell Pressure — High	1,2,3	2(b)	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 1.88 psig.
c. LPCS Pump Start — LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1(e)	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 8.53 seconds and ≤ 10.64 seconds
d. LPCI Pump A Start — LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1(e)	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 17.24 seconds and ≤ 21.53 seconds
e. LPCI Pump A Start — LOCA/LOOP Time Delay Relay	1,2,3, 4(a),5(a)	1	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.6	≥ 3.04 seconds and ≤ 6.00 seconds
f. Reactor Vessel Pressure — Low (Injection Permissive)	1,2,3	1 per valve	C	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 448 psig and ≤ 492 psig
	4(a),5(a)	1 per valve	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 448 psig and ≤ 492 psig
g. LPCS Pump Discharge Flow — Low (Minimum Flow)	1,2,3, 4(a),5(a)	1	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 668 gpm and ≤ 1067 gpm
h. LPCI Pump A Discharge Flow — Low (Minimum Flow)	1,2,3, 4(a),5(a)	1	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 605 gpm and ≤ 984 gpm
i. Manual Initiation	1,2,3, 4(a),5(a)	2	C	SR 3.3.5.1.6	NA

(continued)

- (a) When associated subsystem(s) are required to be OPERABLE.
- (b) Also required to initiate the associated diesel generator (DG).
- (e) Also supports OPERABILITY of 230 kV offsite power circuit pursuant to LCO 3.8.1 and LCO 3.8.2.

Table 3.3.5.1-1 (page 2 of 4)  
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
<b>2. LPCI B and LPCI C Subsystems</b>					
a. Reactor Vessel Water Level — Low Low Low, Level 1	1,2,3, 4(a),5(a)	2 <sup>(b)</sup>	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -148 inches
b. Drywell Pressure — High	1,2,3	2 <sup>(b)</sup>	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 1.88 psig
c. LPCI Pump B Start — LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1 <sup>(e)</sup>	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 17.24 seconds and ≤ 21.53 seconds
d. LPCI Pump C Start — LOCA Time Delay Relay	1,2,3, 4(a),5(a)	1 <sup>(e)</sup>	C	SR 3.3.5.1.5 SR 3.3.5.1.6	≥ 8.53 seconds and ≤ 10.64 seconds
e. LPCI Pump B Start — LOCA/LOOP Time Delay Relay	1,2,3, 4(a),5(a)	1	C	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.6	≥ 3.04 seconds and ≤ 6.00 seconds
f. Reactor Vessel Pressure — Low (Injection Permissive)	1,2,3  4(a),5(a)	1 per valve  1 per valve	C  B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6  SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 448 psig and ≤ 492 psig  ≥ 448 psig and ≤ 492 psig
g. LPCI Pumps B & C Discharge Flow — Low (Minimum Flow)	1,2,3, 4(a),5(a)	1 per pump	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 605 gpm and ≤ 984 gpm
h. Manual Initiation	1,2,3, 4(a),5(a)	2	C	SR 3.3.5.1.6	NA
<b>3. High Pressure Core Spray (HPCS) System</b>					
a. Reactor Vessel Water Level — Low Low, Level 2	1,2,3, 4(a),5(a)	4 <sup>(b)</sup>	B	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -58 inches

(continued)

(a) When associated subsystem(s) are required to be OPERABLE.

(b) Also required to initiate the associated DG.

(c) Also supports OPERABILITY of 230 kV offsite power circuit pursuant to LCO 3.8.1 and LCO 3.8.2.

Table 3.3.5.1-1 (page 3 of 4)  
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. HPCS System (continued)					
b. Drywell Pressure — High	1,2,3	4(b)	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 1.88 psig
c. Reactor Vessel Water Level — High, Level 8	1,2,3, 4(a),5(a)	2	C	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 56.0 inches
d. Condensate Storage Tank Level — Low	1,2,3, 4(c),5(c)	2	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 448 ft 1 inch elevation
e. Suppression Pool Water Level — High	1,2,3	2	D	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≤ 466 ft 11 inches elevation
f. HPCS System Flow Rate — Low (Minimum Flow)	1,2,3, 4(a),5(a)	1	E	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 1200 gpm and ≤ 1512 gpm
g. Manual Initiation	1,2,3, 4(a),5(a)	2	C	SR 3.3.5.1.6	NA
4. Automatic Depressurization System (ADS) Trip System A					
a. Reactor Vessel Water Level — Low Low, Level 1	1,2(d),3(d)	2	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ -148 inches
b. ADS Initiation Timer	1,2(d),3(d)	1	G	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.6	≤ 115.0 seconds
c. Reactor Vessel Water Level — Low, Level 3 (Permissive)	1,2(d),3(d)	1	F	SR 3.3.5.1.1 SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 9.5 inches
d. LPCS Pump Discharge Pressure — High	1,2(d),3(d)	2	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 119 psig and ≤ 171 psig

(continued)

- (a) When associated subsystem(s) are required to be OPERABLE.
- (b) Also required to initiate the associated DG.
- (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 limit of SR 3.5.2.2.
- (d) With reactor steam dome pressure > 150 psig.

Primary Containment Isolation Instrumentation  
3.3.6.1

Table 3.3.6.1-1 (page 1 of 4)  
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
<b>1. Main Steam Line Isolation</b>					
a. Reactor Vessel Water Level — Low Low, Level 2	1,2,3	2	D	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ -58 inches
b. Main Steam Line Pressure — Low	1	2	E	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.7	≥ 804 psig
c. Main Steam Line Flow — High	1,2,3	2 per MSL	D	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 124.4 psid
d. Condenser Vacuum — Low	1,2 <sup>(a)</sup> , 3 <sup>(a)</sup>	2	D	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≥ 7.2 inches Hg vacuum
e. Main Steam Tunnel Temperature — High	1,2,3	2	D	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 170°F
f. Main Steam Tunnel Differential Temperature — High	1,2,3	2	D	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 90°F
g. Manual Initiation	1,2,3	4	G	SR 3.3.6.1.6	NA
<b>2. Primary Containment Isolation</b>					
a. Reactor Vessel Water Level — Low, Level 3	1,2,3	2	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≥ 9.5 inches
b. Reactor Vessel Water Level — Low Low, Level 2	1,2,3	2 <sup>(e)</sup>	H	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≥ -58 inches
c. Drywell Pressure — High	1,2,3	2 <sup>(e)</sup>	H	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 1.88 psig
d. Reactor Building Vent Exhaust Plenum Radiation — High	1,2,3	2	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 16.0 mR/hr

(continued)

(a) With any turbine throttle valve not closed.

(e) Also required to initiate the associated LOCA Time Delay Relay Function pursuant to LCO 3.3.5.1.

Primary Containment Isolation Instrumentation  
3.3.6.1

Table 3.3.6.1-1 (page 2 of 4)  
Primary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Primary Containment Isolation (continued)					
e. Manual Initiation	1,2,3	4	G	SR 3.3.6.1.6	NA
3. Reactor Core Isolation Cooling (RCIC) System Isolation					
a. RCIC Steam Line Flow — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 250 inches wg
b. RCIC Steam Line Flow — Time Delay	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 3.00 seconds
c. RCIC Steam Supply Pressure — Low	1,2,3	2	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≥ 61 psig
d. RCIC Turbine Exhaust Diaphragm Pressure — High	1,2,3	2	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 20 psig
e. RCIC Equipment Room Area Temperature — High	1,2,3	1	F	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 180°F
f. RCIC Equipment Room Area Differential Temperature — High	1,2,3	1	F	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 60°F
g. RWCU/RCIC Steam Line Routing Area Temperature — High	1,2,3	1	F	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 180°F
h. Manual Initiation	1,2,3	1 <sup>(b)</sup>	G	SR 3.3.6.1.6	NA
4. RWCU System Isolation					
a. Differential Flow — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 67.4 gpm
b. Differential Flow — Time Delay	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6	≤ 46.5 seconds
c. Blowdown Flow — High	1,2,3	1	F	SR 3.3.6.1.1 SR 3.3.6.1.2 SR 3.3.6.1.5 SR 3.3.6.1.6 SR 3.3.6.1.7	≤ 271.7 gpm

(continued)

(b) RCIC Manual Initiation only inputs into one of the two trip systems.

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
SR 3.3.6.2.2 Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.6.2.3 Perform CHANNEL CALIBRATION.	18 months
SR 3.3.6.2.4 Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Secondary Containment Isolation Instrumentation  
3.3.6.2

Table 3.3.6.2-1 (page 1 of 1)  
Secondary Containment Isolation Instrumentation

FUNCTION	APPLICABLE MODES AND OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level — Low Low, Level 2	1,2,3,(a)	2(c)	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≥ -58 inches
2. Drywell Pressure — High	1,2,3	2(c)	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 1.88 psig
3. Reactor Building Vent Exhaust Plenum Radiation — High	1,2,3, (a),(b)	2	SR 3.3.6.2.1 SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	≤ 16.0 mR/hr
4. Manual Initiation	1,2,3, (a),(b)	4	SR 3.3.6.2.4	NA

- (a) During operations with a potential for draining the reactor vessel.
- (b) During CORE ALTERATIONS, and during movement of irradiated fuel assemblies in the secondary containment.
- (c) Also required to initiate the associated LOCA Time Delay Relay Function pursuant to LCO 3.3.5.1.