

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

October 12, 2000 GO2-00-178

Docket No. 50-397

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

Gentlemen:

Subject: WNP-2 OPERATING LICENSE NPF-21 REQUEST FOR AMENDMENT FACILITY NAME CHANGE

Pursuant to 10 CFR 50.90, this letter transmits a request to amend facility Operating License (OL) NPF-21 to reflect the facility name change from WNP-2 to Columbia Generating Station. In addition, this request includes editorial changes to Technical Specification Figure 4.1-1, Site Area Boundary.

No impact on the status of the OL or the continued operation of the facility is anticipated, since this request contains a proposed change that is solely administrative in nature.

Attachment 1 of this letter provides a description of the proposed change. Attachment 2 provides, pursuant to 10 CFR 50.92, the determination that the proposed amendment contains evaluation of significant hazards consideration. Attachment 3 provides, pursuant to 10 CFR 51.30, the environmental assessment for the proposed facility name change. Attachment 4 provides a marked-up copy of the affected pages of the OL, a typical page of the Technical Specifications showing the revised footer, and editorial changes to Figure 4.1-1. Attachment 5 provides a copy of the OL with the proposed change included.

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

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

Respectfully,

D.K. Hohm

DK Atkinson (Acting) Vice President, Operations Support/PIO Mail Drop PE08

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Attachments: as stated

cc: EW Merschoff - NRC RIV JS Cushing - NRR NRC Sr. Resident Inspector - 927N DL Williams - BPA/1399 TC Poindexter - Winston & Strawn DJ Ross - EFSEC STATE OF WASHINGTON ) ) COUNTY OF BENTON )

Subject: Request For Amendment Facility Name Change

I, D. K. Atkinson, being duly sworn, subscribe to and say that I am the (Acting) 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 the statements made in it are true.

DATE 10/12 , 2000

D. K. Atkinson

(Acting) Vice President Operations Support/PIO

On this date personally appeared before me D. K. Atkinson, 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 <u>/Z</u> day of <u>October</u> 2000.

Notary Public in and for the STATE OF WASHINGTON

Residing at <u>Benton County</u> mmission Expires <u>3-29-01</u>

My Commission Expires

### Attachment 1 Page 1 of 1

### **DESCRIPTION OF PROPOSED CHANGE**

### **Proposed Change**

With this submittal, the NRC is being requested to change references to the facility name from WNP-2 to Columbia Generating Station in all applicable locations of the Operating License (OL). This request also applies to Appendix A (Technical Specifications) and Appendix B (Environmental Protection Plan) of the OL. In addition, the proposed change includes the following editorial changes to Technical Specification Figure 4.1-1, Site Area Boundary:

- changing WNP-1&4 PUMP HOUSE and WNP-2 PUMP HOUSE to River Pump Houses,
- Deleting PLANT SUPPORT FACILITY
- Deleting WNP-2 from WNP-2 ACCESS ROAD TO ROUTE 4.

Similarly, in any pending applications or license amendments heretofore submitted by Energy Northwest, but not yet acted upon by the NRC, references to WNP-2 should also be replaced with Columbia Generating Station.

### Discussion

The proposed change is solely administrative in nature and involves only a facility name change and editorial changes to Technical Specification Figure 4.1-1. The proposed change does not alter any technical content of the OL or any technical content of the Technical Specification requirements, nor do they have any programmatic effect on the Operational Quality Assurance Program Description. The change will have no impact on the design, function, or operation of any plant structure, system, or component, either technically or administratively.

### Attachment 2 Page 1 of 2

### **EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION**

### Summary of Proposed Change

With this submittal, the NRC is being requested to change references to the facility name from WNP-2 to Columbia Generating Station in all applicable locations of the Operating License (OL). This request also applies to Appendix A (Technical Specifications) and Appendix B (Environmental Protection Plan) of the OL. In addition, the proposed change includes editorial changes to Technical Specification Figure 4.1-1, Site Area Boundary.

### No Significant Hazards Consideration Determination

Pursuant to 10 CFR 50.92, it has been determined that this request does not involve a significant hazards consideration. The determination of no significant hazards was made by applying the NRC established standards contained in 10 CFR 50.92. These standards assure that any changes to the operation of the plant in accordance with this request, consider the following:

1) <u>Will the change involve a significant increase in the probability or consequences of an accident previously evaluated?</u>

No. This request involves an administrative change only. The Operating License (OL) and Technical Specification Figure 4.1-1, Site Area Boundary, are being changed to reflect the new name of the facility. In addition, editorial changes are being made to Figure 4.1-1 for clarification. No actual plant equipment or accident analyses are affected by the proposed change. Therefore, this request will have no impact on the probability or consequence of any type of accident previously evaluated.

2) <u>Will the change create the possibility of a new or different kind of accident from any</u> accident previously evaluated?

No. This request involves an administrative change only. The OL and Technical Specification Figure 4.1-1 are being changed to reflect the new name of the facility. In addition, editorial changes are being made to Figure 4.1-1 for clarification. No actual plant equipment or accident analyses are affected by the proposed change and no failure modes not bounded by previously evaluated accidents will be created. Therefore, this request will have no impact on the possibility of any type of accident: new, different, or previously evaluated.

### Attachment 2 Page 2 of 2

### 3) Will the change involve a significant reduction in a margin of safety?

No. Margin of safety is associated with confidence in the ability of the fission product barriers (i.e., fuel and fuel cladding, Reactor Coolant System pressure boundary, and containment structure) to limit the level of radiation dose to the public. This request involves an administrative change only. The OL and Technical Specification Figure 4.1-1 are being changed to reflect the new name of the facility. In addition, editorial changes are being made to Figure 4.1-1 for clarification.

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No actual plant equipment or accident analyses are affected by the proposed change. Additionally, the proposed change will not relax any criteria used to establish safety limits, will not relax any safety system settings, or will not relax the bases for any limiting conditions of operation. Therefore, this proposed change will not impact margin of safety.

### Attachment 3 Page 1 of 2

#### ENVIRONMENTAL ASSESSMENT

Pursuant to 10 CFR 51.30, it has been determined that this request involves an environmental assessment. The determination of no environmental impacts was made by applying the NRC established standards contained in 10 CFR 51.30. There are no significant radiological or non-radiological environmental impacts associated with the proposed action.

#### **Identification of the proposed Action**

The proposed Operating License (OL) amendment request involves an administrative change only. The proposed action will revise the facility OL No. NPF-21 to reflect the change in the facility name from WNP-2 to Columbia Generating Station and editorial changes to Figure 4.1-1, Site Area Boundary.

### **Need for the Proposed Action**

The proposed action is required to change the operating license to accurately reflect the name of the facility from WNP-2 to Columbia Generating Station and editorial changes to Figure 4.1-1.

### **Environmental Impacts of the Proposed Action**

This request for a name change is administrative in nature and will not affect the operation of the facility.

The proposed amendment will not increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released off site, and there is no significant increase in occupational or public radiation exposure. Therefore, there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential non-radiological impacts, the proposed action does not involve any historic sites. It does not affect non-radiological plant effluents and has no other environmental impacts. Therefore, there are no significant non-radiological environmental impacts associated with the proposed action.

### **Alternatives to the Proposed Action**

An alternative to the proposed action is denial of the proposed action. Denial would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are the same.

#### Alternative Use of Resources

This action does not involve the use of any resources not previously considered in the Final Environmental Statement for the facility dated December 1981.

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### **Agencies and Persons Consulted**

No consultation regarding environmental impact was deemed appropriate or necessary for this proposed action.

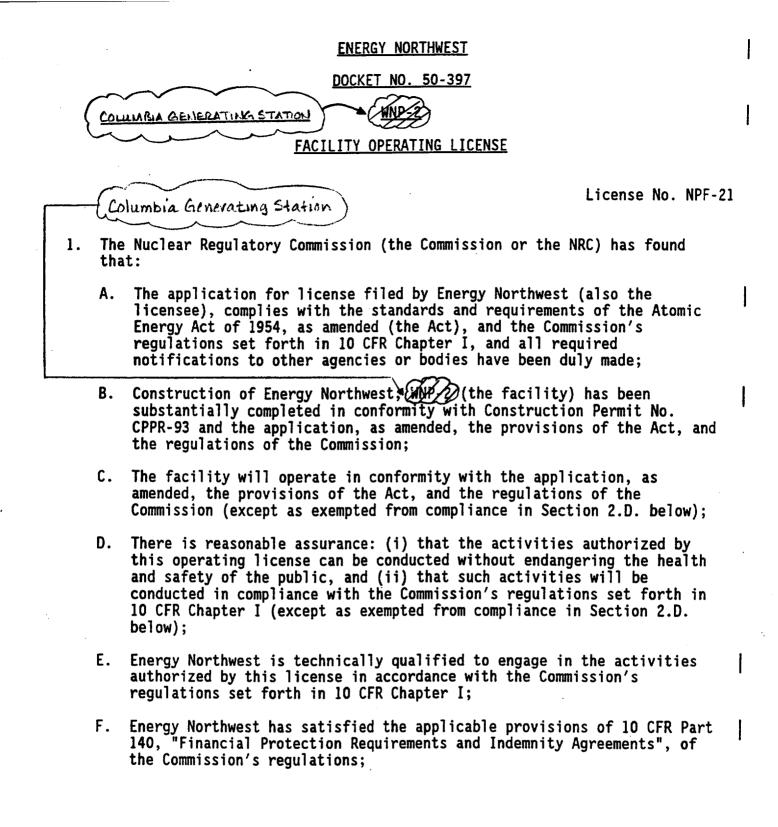
### Finding of No Significant Impact

On the basis of the environmental assessment, Energy Northwest concludes that the proposed action will not have a significant effect on the quality of the human environment.

Therefore, this requested change to our OL meets the criteria of 10 CFR 51.30 Environmental Assessment.

Attachment 4 Page 1 of 1

Marked-Up Operating License Pages



- G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;
- H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of this Facility Operating License No. NPF-21, subject to the conditions for protection of the environment set forth in the Environmental Protection Plan attached as Appendix B, is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied; and
- I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40 and 70.
- 2. Based on the foregoing findings regarding this facility, Facility Operating License NPF-21 is hereby issued to Energy Northwest (the licensee) to read as follows:
  - A. This license applies to the MP-2, a boiling water nuclear reactor and associated equipment, owned by Energy Northwest. The facility is located on Hanford Reservation in Benton County near Richland, Washington, and is described in the licensee's "Final Safety Analysis Report", as supplemented and amended, and in the licensee's Environmental Report, as supplemented and amended.
  - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses Energy Northwest:
    - Pursuant to Section 103 of the Act and 10 CFR Part 50, to possess, use, and operate the facility at the designated location on Hanford Reservation, Benton County, Washington, in accordance with the procedures and limitations set forth in this license;
    - (2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

Amendment No. 157

- 2 -

- (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source of special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- (6) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to store byproduct, source and special nuclear materials not intended for use at MPPS's Muclear Project No. 2. The materials shall be no more than 9 sealed neutron radiation sources designed for insertion into pressurized water reactors and no more than 40 sealed beta radiation sources designed for use in area radiation monitors. The total inventory shall not exceed 24 microcuries of strontium-90, 20 microcuries of uranium-235, 30 curies of plutonium-238, and 3 curies of americium-241.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
  - (1) Maximum Power Level

Columbia

Station

Genevating

The licensee is authorized to operate the facility at reactor core power levels not in excess of full power (3486 megawatts thermal). Items in Attachment 1 shall be completed as specified. Attachment 1 is hereby incorporated into this license.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment 166 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

a. For Surveillance Requirements (SRs) not previously performed by existing SRs or other plant tests, the requirement will be considered met on the implementation date and the next required test will be at the interval specified in the Technical Specifications as revised in Amendment No. 149.

Amendment No. 1, 2, 137, 149, 155

APPENDIX B

### TO FACILITY OPERATING LICENSE NO. NPF-21

**ENERGY NORTHWEST** COLUMBIA GENERATING STATION

### DOCKET NO. 50-397

# ENVIRONMENTAL PROTECTION PLAN (NONRADIOLOGICAL)

**ENERGY NORTHWEST** 

COLUMBIA GENERATING STATION G

### ENVIRONMENTAL PROTECTION PLAN

(NON-RADIOLOGICAL)

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1.0 Objectives of the Environmental Protection Plan

Columbia Generating Station

The Environmental Protection Plan (EPP) is to provide for protection of nonradiological environmental values during operation of the WNP2 facility. The principal objectives of the EPP are as follows:

- Verify that the plant is operated in an environmentally acceptable manner, as established by the FES-OL and other NRC environmental impact assessments.
- (2) Coordinate NRC requirements and maintain consistency with other Federal, State and local requirements for environmental protection.
- (3) Keep NRC informed of the environmenal effects of facility construction and operation and of actions taken to control those effects.

Environmental concerns identified in the FES-OL which relate to water quality matters are regulated by way of the licensee's NPDES permit.

2.0 Environmental Protection Issues

In the FES-OL dated December 1981, the staff considered the environmental impacts associated with the operation of WNP-22 Certain environmental issues were identified which required study or license conditions to resolve environmental concerns and to assure adequate protection of the environment.

Columbia Generating Station

#### 2.1 Aquatic Resources Issues

The one aquatic issue raised by the staff in the FES-OL was that the disposal of chlorinated effluents in the river could have significant impacts on Hanford Reach biota if chlorine content were not carefully controlled (Section 5.5.2.2). This matter is addressed by the NPDES permit issued by the State of Washington Energy Facility Site Evaluation Council(EFSEC). Also, in the FES-OL (Section 5.5.3.2), the staff acknowledged that entrainment and impingement studies might be performed in accordance with special conditions of the water withdrawal permit, issued by the U.S. Army Corps of Engineers.

The NRC will rely on these agencies for regulation of matters involving water quality and aquatic biota.

### 2.2 Terrestrial Resources Issues

There is uncertainty in predicting the potential impact of cooling tower drift on vegetation surrounding the site (FES Section 5.5.1.1). To resolve the

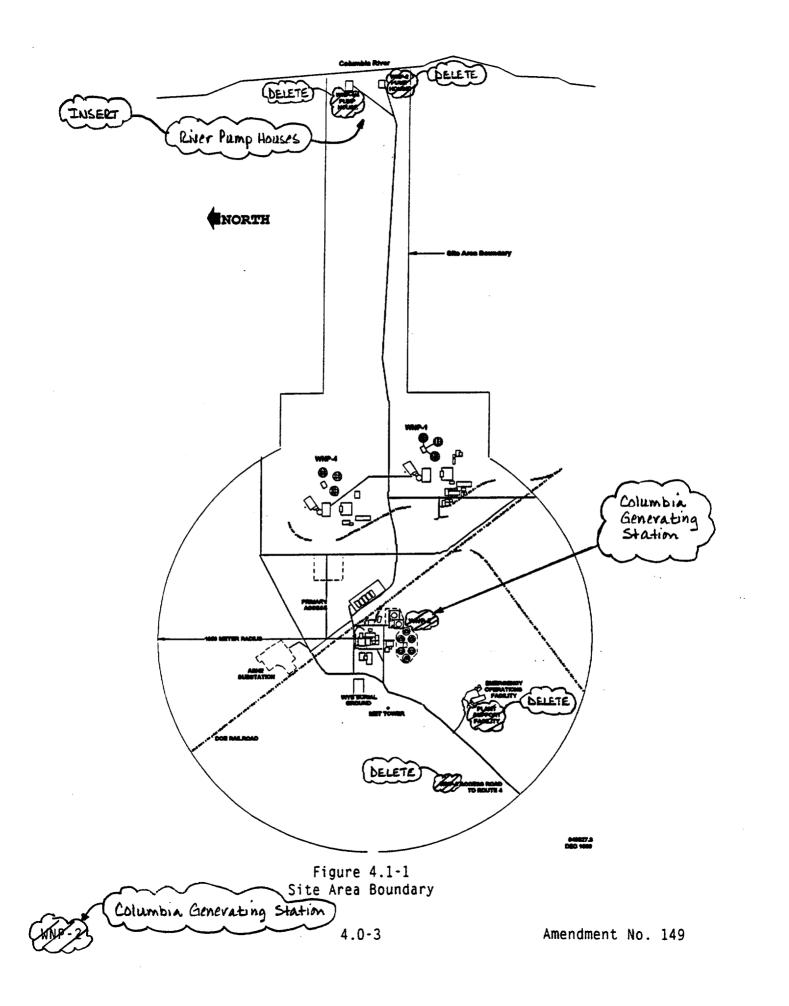
2-1

REVIEWER NOTE: THIS IS REPRESENTATINE OF A TYPICAL PAGE CHANGE THROUGOUT APPENDIX & OF THE OPERATING LICENSE. EACH PAGE OF THE TECHNICAL SPECIFICATIONS CONTAINS A FOOTER REFERENCE TO WNP-2.

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	(contributed)

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Columbia Generating Statim



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Copy of Operating License with the Proposed Change Included

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#### ENERGY NORTHWEST

#### DOCKET NO. 50-397

#### COLUMBIA GENERATING STATION

#### FACILITY OPERATING LICENSE

License No. NPF-21

- 1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for license filed by Energy Northwest (also the licensee), complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I, and all required notifications to other agencies or bodies have been duly made;
  - B. Construction of Energy Northwest, Columbia Generating Station (the facility) has been substantially completed in conformity with Construction Permit No. CPPR-93 and the application, as amended, the provisions of the Act, and the regulations of the Commission;
  - C. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the regulations of the Commission (except as exempted from compliance in Section 2.D. below);
  - D. There is reasonable assurance: (i) that the activities authorized by this operating license can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I (except as exempted from compliance in Section 2.D. below);
  - E. Energy Northwest is technically qualified to engage in the activities authorized by this license in accordance with the Commission's regulations set forth in 10 CFR Chapter I;
  - F. Energy Northwest has satisfied the applicable provisions of 10 CFR Part 140, "Financial Protection Requirements and Indemnity Agreements", of the Commission's regulations;

- G. The issuance of this license will not be inimical to the common defense and security or to the health and safety of the public;
- H. After weighing the environmental, economic, technical, and other benefits of the facility against environmental and other costs and considering available alternatives, the issuance of this Facility Operating License No. NPF-21, subject to the conditions for protection of the environment set forth in the Environmental Protection Plan attached as Appendix B, is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied; and
- I. The receipt, possession, and use of source, byproduct and special nuclear material as authorized by this license will be in accordance with the Commission's regulations in 10 CFR Parts 30, 40 and 70.
- Based on the foregoing findings regarding this facility. Facility Operating License NPF-21 is hereby issued to Energy Northwest (the licensee) to read as follows:
  - A. This license applies to Columbia Generating Station, a boiling water nuclear reactor and associated equipment, owned by Energy Northwest. The facility is located on Hanford Reservation in Benton County near Richland, Washington, and is described in the licensee's "Final Safety Analysis Report", as supplemented and amended, and in the licensee's Environmental Report, as supplemented and amended.
  - B. Subject to the conditions and requirements incorporated herein, the Commission hereby licenses Energy Northwest:
    - (1) Pursuant to Section 103 of the Act and 10 CFR Part 50, to possess, use, and operate the facility at the designated location on Hanford Reservation, Benton County, Washington, in accordance with the procedures and limitations set forth in this license;
    - (2) Pursuant to the Act and 10 CFR Part 70, to receive, possess and use at any time special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, as described in the Final Safety Analysis Report, as supplemented and amended;

- (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source of special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (5) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- (6) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, to store byproduct, source and special nuclear materials not intended for use at Columbia Generating Station. The materials shall be no more than 9 sealed neutron radiation sources designed for insertion into pressurized water reactors and no more than 40 sealed beta radiation sources designed for use in area radiation monitors. The total inventory shall not exceed 24 microcuries of strontium-90, 20 microcuries of uranium-235, 30 curies of plutonium-238, and 3 curies of americium-241.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
  - (1) Maximum Power Level

The licensee is authorized to operate the facility at reactor core power levels not in excess of full power (3486 megawatts thermal). Items in Attachment 1 shall be completed as specified. Attachment 1 is hereby incorporated into this license.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment 168 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

a. For Surveillance Requirements (SRs) not previously performed by existing SRs or other plant tests, the requirement will be considered met on the implementation date and the next required test will be at the interval specified in the Technical Specifications as revised in Amendment No. 149.

#### APPENDIX B

TO FACILITY OPERATING LICENSE NO. NPF-21

#### ENERGY NORTHWEST

#### COLUMBIA GENERATING STATION

DOCKET NO. 50-397

#### ENVIRONMENTAL PROTECTION PLAN

# (NONRADIOLOGICAL)

### ENERGY NORTHWEST

## COLUMBIA GENERATING STATION

### ENVIRONMENTAL PROTECTION PLAN

### (NON-RADIOLOGICAL)

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1.0 Objectives of the Environmental Protection Plan

The Environmental Protection Plan (EPP) is to provide for protection of nonradiological environmental values during operation of the Columbia Generating Station facility. The principal objectives of the EPP are as follows:

- (1) Verity that the plant is operated in an environmentally acceptable manner, as established by the FES-OL and other NRC environmental impact assessments.
- (2) Coordinate NRC requirements and maintain consistency with other Federal, State and local requirements for environmental protection.
- (3) Keep NRC informed of the environmental effects of facility construction and operation and of actions taken to control those effects.

Environmental concerns identified in the FES-OL which relate to water quality matters are regulated by way of the licensee's NPDES permit.

#### 2.0 Environmental Protection Issues

In the FES-OL dated December 1981, the staff considered the environmental impacts associated with the operation of Columbia Generating Station. Certain environmental issues were identified which required study or license conditions to resolve environmental concerns and to assure adequate protection of the environment.

2.1 Aquatic Resources Issues

The one aquatic issue raised by the staff in the FES-OL was that the disposal of chlorinated effluents in the river could have significant impacts on Hanford Reach biota if chlorine content were not carefully controlled (Section 5.5.2.2). This matter is addressed by the NPDES permit issued by the State of Washington Energy Facility Site Evaluation Council (EFSEC). Also, in the FES-OL (Section 5.5.3.2), the staff acknowledged that entrainment and impingement studies might be performed in accordance with special conditions of the water withdrawal permit, issued by the U.S. Army Corps of Engineers.

The NRC will rely on these agencies for regulation of matters involving water quality and aquatic biota.

#### 2.2 Terrestrial Resources Issues

There is uncertainty in predicting the potential impact of cooling tower drift on vegetation surrounding the site (FES Section 5.5.1.1). To resolve the

uncertainty, the staff recommended a monitoring program to detect any effects of cooling tower drift on vegetation (FES Section 5.5.3.1).

NRC requirements with regard to the terrestrial issues are specified in

Subsection 4.2 of this EPP.

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### 1.0 USE AND APPLICATION

### 1.1 Definitions

-----NOTE-----The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications and Bases. -----

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)	The APLHGR shall be applicable to a specific planar height and is equal to the sum of the LHGRs for all the fuel rods in the specified bundle at the specified height divided by the number of fuel rods in the fuel bundle at the height.
CHANNEL CALIBRATION	A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds within the necessary range and accuracy to known values of the parameter that the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel, including the required sensor, alarm, display, and trip functions, and shall include the CHANNEL FUNCTIONAL TEST. Calibration of instrument channels with resistance temperature detector (RTD) or thermocouple sensors may consist of an inplace qualitative assessment of sensor behavior and normal calibration of the remaining adjustable devices in the channel. The CHANNEL CALIBRATION may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is calibrated.
CHANNEL CHECK	A CHANNEL CHECK shall be the qualitative assessment, by observation, of channel behavior during operation. This determination shall include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter. (continued)

(continued)

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1.1 Definitions (continued)

A CHANNEL FUNCTIONAL TEST shall be the injection of a simulated or actual signal into the channel as close to the sensor as practicable to verify OPERABILITY, including required alarm, interlock, display, and trip functions, and channel failure trips. The CHANNEL FUNCTIONAL TEST may be performed by means of any series of sequential, overlapping, or total channel steps so that the entire channel is tested.
CORE ALTERATION shall be the movement of any fuel, sources, or reactivity control components within the reactor vessel with the vessel head removed and fuel in the vessel. The following exceptions are not considered to be CORE ALTERATIONS:
a. Movement of source range monitors, local power range monitors, intermediate range monitors, traversing incore probes, or special movable detectors (including undervessel replacement); and
b. Control rod movement, provided there are no fuel assemblies in the associated core cell.
Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.
The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Plant operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for

(continued)

#### 1.1 Definitions

DOSE	EQUIVALENT	I-131
(cc	ontinued)	

EMERGENCY CORE COOLING SYSTEM (ECCS) RESPONSE TIME

END OF CYCLE RECIRCULATION PUMP TRIP (EOC-RPT) SYSTEM RESPONSE TIME

ISOLATION SYSTEM RESPONSE TIME

Power and Test Reactor Sites;" Table E-7 of Regulatory Guide 1.109, Rev. 1, NRC, 1977; or ICRP 30, Supplement to Part 1, page 192-212, Table titled "Committed Dose Equivalent in Target Organs or Tissues per Intake of Unit Activity."

The ECCS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its ECCS initiation setpoint at the channel sensor until the ECCS equipment is capable of performing its safety function (i.e., the valves travel to their required positions, pump discharge pressures reach their required values. etc.). Times shall include diesel generator starting and sequence loading delays, where applicable. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

The EOC-RPT SYSTEM RESPONSE TIME shall be that time interval from initial signal generation by the associated turbine throttle valve limit switch or from when the turbine governor valve hydraulic control oil pressure drops below the pressure switch setpoint to complete suppression of the electric arc between the fully open contacts of the recirculation pump circuit breaker. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

The ISOLATION SYSTEM RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its isolation initiation setpoint at the channel sensor until the isolation valves travel to their required positions. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.

(continued)

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LEAKAGE	LEAKAGE shall be:
	a. <u>Identified LEAKAGE</u>
	<ol> <li>LEAKAGE into the drywell such as that from pump seals or valve packing, that is captured and conducted to a sump or collecting tank; or</li> </ol>
	<ol> <li>LEAKAGE into the drywell atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE;</li> </ol>
	b. <u>Unidentified LEAKAGE</u>
	All LEAKAGE into the drywell that is not identified LEAKAGE;
	c. <u>Total LEAKAGE</u>
	Sum of the identified and unidentified LEAKAGE; and
	d. <u>Pressure Boundary LEAKAGE</u>
	LEAKAGE through a nonisolable fault in a Reactor Coolant System (RCS) component body, pipe wall, or vessel wall.
LINEAR HEAT GENERATION RATE (LHGR)	The LHGR shall be the heat generation rate per unit length of fuel rod. It is the integral of the heat flux over the heat transfer area associated with the unit length.
LOGIC SYSTEM FUNCTIONAL TEST	A LOGIC SYSTEM FUNCTIONAL TEST shall be a test of all required logic components (i.e., all required relays and contacts, trip units, solid state logic elements, etc.) of a logic circuit, from as close to the sensor as practicable up to, but not including, the actuated device, to verify OPERABILITY. The LOGIC SYSTEM FUNCTIONAL TEST may be performed by means of any series of sequential overlapping, or total system steps so that the entire logic system is tested.

1.1 Definitions (continued)

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(continued)

1.1 Definitions (continued)

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MAXIMUM FRACTION OF LIMITING POWER DENSITY (MFLPD)	The MFLPD shall be the largest value of the fraction of limiting power density (FLPD) in the core. The FLPD shall be the LHGR existing at a given location divided by the specified LHGR limit for that bundle type.
MINIMUM CRITICAL POWER RATIO (MCPR)	The MCPR shall be the smallest critical power ratio (CPR) that exists in the core for each class of fuel. The CPR is that power in the assembly that is calculated by application of the appropriate correlation(s) to cause some point in the assembly to experience boiling transition. divided by the actual assembly operating power.
MODE	A MODE shall correspond to any one inclusive combination of mode switch position, average reactor coolant temperature, and reactor vessel head closure bolt tensioning specified in Table 1.1–1 with fuel in the reactor vessel.
OPERABLE — OPERABILITY	A system, subsystem, division, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, division, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).
PHYSICS TESTS	PHYSICS TESTS shall be those tests performed to measure the fundamental nuclear characteristics of the reactor core and related instrumentation. These tests are:
	a. Described in Chapter 14, Initial Test Program of the FSAR;
	<ul> <li>Authorized under the provisions of 10 CFR 50.59; or</li> </ul>
	c. Otherwise approved by the Nuclear Regulatory Commission.

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Columbia Generating Station 1.1-5

1.1 Definitions (continued)

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RATED THERMAL POWER (RTP)	RTP shall be a total reactor core heat transfer rate to the reactor coolant of 3486 MWt.
REACTOR PROTECTION SYSTEM (RPS) RESPONSE TIME	The RPS RESPONSE TIME shall be that time interval from when the monitored parameter exceeds its RPS trip setpoint at the channel sensor until de-energization of the scram pilot valve solenoids. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.
SHUTDOWN MARGIN (SDM)	SDM shall be the amount of reactivity by which the reactor is subcritical or would be subcritical assuming that:
	a. The reactor is xenon free;
	b. The moderator temperature is 68°F; and
	c. All control rods are fully inserted except for the single control rod of highest reactivity worth, which is assumed to be fully withdrawn. With control rods not capable of being fully inserted, the reactivity worth of these control rods must be accounted for in the determination of SDM.
STAGGERED TEST BASIS	A STAGGERED TEST BASIS shall consist of the testing of one of the systems, subsystems, channels, or other designated components during the interval specified by the Surveillance Frequency, so that all systems, subsystems, channels, or other designated components are tested during <i>n</i> Surveillance Frequency intervals, where <i>n</i> is the total number of systems, subsystems, channels, or other designated components in the associated function.
THERMAL POWER	THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

(continued)

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1.1 Definitions (continued)

TURBINE BYPASS SYSTEM RESPONSE TIME	The TURBINE BYPASS SYSTEM RESPONSE TIME shall be the time from when the turbine bypass control unit generates a turbine bypass valve flow signal until 80% of the turbine bypass capacity is established.			
	The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured.			

MODE	TITLE	REACTOR MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1 2	Power Operation Startup	Run Refuel <sup>(a)</sup> or Startup/Hot Standby	NA NA
3	Hot Shutdown <sup>(a)</sup>	Shutdown	> 200
4	Cold Shutdown <sup>(a)</sup>	Shutdown	≤ 200
5	Refueling <sup>(b)</sup>	Shutdown or Refuel	NA

# Table 1.1-1 (page 1 of 1) MODES

- All reactor vessel head closure bolts fully tensioned. (a)
- One or more reactor vessel head closure bolts less than fully (b) tensioned.

#### 1.0 USE AND APPLICATION

#### 1.2 Logical Connectors

The purpose of this section is to explain the meaning of PURPOSE logical connectors. Logical connectors are used in Technical Specifications (TS)

to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in TS are <u>AND</u> and <u>OR</u>. The physical arrangement of these connectors constitutes logical conventions with specific meanings.

Several levels of logic may be used to state Required BACKGROUND Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentions of the logical connectors.

> When logical connectors are used to state a Condition, Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Condition, Completion Time, Surveillance, or Frequency.

The following examples illustrate the use of logical EXAMPLES connectors.

(continued)

Columbia Generating Station 1.2-1

EXAMPLE 1.2-1 ACTIONS				
ONDITION REQUIRED ACTION COMPLETION	TIME			
CO not met. A.1 Verify AND				
<u>AND</u> A.2 Restore				

In this example, the logical connector <u>AND</u> is used to indicate that, when in Condition A, both Required Actions A.1 and A.2 must be completed.

(continued)

1.2 Logical Connectors

EXAMPLES

XAMPLES (continued)	EXAMPLE 1.2-2 ACTIONS					
	CONDITION	REQUIRED ACTION	COMPLETION TIME			
	A. LCO not met.	A.1 Trip				
		<u>OR</u>				
		A.2.1 Verify				
		AND				
		A.2.2.1 Reduce				
		<u>OR</u>				
		A.2.2.2 Perform				
		<u>OR</u>				
		A.3 Align				

This example represents a more complicated use of logical connectors. Required Actions A.1, A.2, and A.3 are alternative choices, only one of which must be performed as indicated by the use of the logical connector OR and the left justified placement. Any one of these three Actions may be chosen. If A.2 is chosen, then both A.2.1 and A.2.2 must be performed as indicated by the logical connector AND. Required Action A.2.2 is met by performing A.2.2.1 or A.2.2.2. The indented position of the logical connector OR indicates that A.2.2.1 and A.2.2.2 are alternative choices, only one of which must be performed.

Columbia Generating Station 1.2-3

#### 1.0 USE AND APPLICATION

# 1.3 Completion Times

PURPOSE	The purpose of this section i	s to establish	the Completion
	Time convention and to provid	e guidance for	its use.

- BACKGROUND Limiting Conditions for Operation (LCOs) specify minimum requirements for ensuring safe operation of the unit. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Time(s).
- DESCRIPTION The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the unit is in a MODE or specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the unit is not within the LCO Applicability.

If situations are discovered that require entry into more than one Condition at a time within a single LCO (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times are tracked for each Condition starting from the time of discovery of the situation that required entry into the Condition.

Once a Condition has been entered, subsequent divisions, subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will <u>not</u> result in separate entry into the Condition unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure, with Completion Times based on initial entry into the Condition. However, when a <u>subsequent</u> division, subsystem, component, or variable expressed in the Condition is discovered to be inoperable or not within limits, the Completion Time(s) may be extended. To apply this Completion Time extension, two criteria must first be met. The subsequent inoperability:

(continued)

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1.3-1

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DESCRIPTION (continued)	<ul> <li>Must exist concurrent with the <u>first</u> inoperability; and</li> </ul>
	b. Must remain inoperable or not within limits after the first inoperability is resolved.
	The total Completion Time allowed for completing a Required Action to address the subsequent inoperability shall be limited to the more restrictive of either:
	a. The stated Completion Time, as measured from the initial entry into the Condition, plus an additional 24 hours; or
	b. The stated Completion Time as measured from discovery of the subsequent inoperability.
	The above Completion Time extension does not apply to those Specifications that have exceptions that allow completely separate re-entry into the Condition (for each division, subsystem, component, or variable expressed in the Condition) and separate tracking of Completion Times based on this re-entry. These exceptions are stated in individual Specifications.
	The above Completion Time extension does not apply to a Completion Time with a modified "time zero." This modified "time zero" may be expressed as a repetitive time (i.e., "once per 8 hours," where the Completion Time is referenced from a previous completion of the Required Action versus the time of Condition entry) or as a time modified by the phrase "from discovery" Example 1.3-3 illustrates one use of this type of Completion Time. The 10 day Completion Time specified for Conditions A and B in Example 1.3-3 may not be extended.

(continued)

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The following examples illustrate the use of Completion FXAMPLES Times with different types of Conditions and changing Conditions.

### EXAMPLE 1.3-1

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are to be in MODE 3 within 12 hours AND in MODE 4 within 36 hours. A total of 12 hours is allowed for reaching MODE 3 and a total of 36 hours (not 48 hours) is allowed for reaching MODE 4 from the time that Condition B was entered. If MODE 3 is reached within 6 hours, the time allowed for reaching MODE 4 is the next 30 hours because the total time allowed for reaching MODE 4 is 36 hours.

If Condition B is entered while in MODE 3, the time allowed for reaching MODE 4 is the next 36 hours.

(continued)

Columbia Generating Station 1.3-3

EXAMPLES

(continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
Α.	One pump inoperable.	A.1	Restore pump to OPERABLE status.	7 days
Β.	Required Action and associated Completion Time not met.	AND	Be in MODE 3. Be in MODE 4.	12 hours 36 hours

When a pump is declared inoperable, Condition A is entered. If the pump is not restored to OPERABLE status within 7 days, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the inoperable pump is restored to OPERABLE status after Condition B is entered, Conditions A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

When a second pump is declared inoperable while the first pump is still inoperable, Condition A is not re-entered for the second pump. LCO 3.0.3 is entered, since the ACTIONS do not include a Condition for more than one inoperable pump. The Completion Time clock for Condition A does not stop after LCO 3.0.3 is entered, but continues to be tracked from the time Condition A was initially entered.

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has not expired, LCO 3.0.3 may be exited and operation continued in accordance with Condition A.

(continued)

# EXAMPLES EXAMPLE 1.3-2 (continued)

While in LCO 3.0.3, if one of the inoperable pumps is restored to OPERABLE status and the Completion Time for Condition A has expired, LCO 3.0.3 may be exited and operation continued in accordance with Condition B. The Completion Time for Condition B is tracked from the time the Condition A Completion Time expired.

On restoring one of the pumps to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first pump was declared inoperable. This Completion Time may be extended if the pump restored to OPERABLE status was the first inoperable pump. A 24 hour extension to the stated 7 days is allowed, provided this does not result in the second pump being inoperable for > 7 days.

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EXAMPLES (continued)	<u>EXAMPLE 1.3-3</u> ACTIONS		
	CONDITION	REQUIRED ACTION	COMPLETION TIME
	A. One Function X subsystem inoperable.	A.1 Restore Function X subsystem to OPERABLE status.	7 days <u>AND</u> 10 days from discovery of failure to meet the LCO
	B. One Function Y subsystem inoperable.	B.1 Restore Function Y subsystem to OPERABLE status.	72 hours <u>AND</u> 10 days from discovery of failure to meet the LCO
	C. One Function X subsystem inoperable.	C.1 Restore Function X subsystem to OPERABLE status.	72 hours
	<u>AND</u> One Function Y subsystem inoperable.	OR C.2 Restore Function Y subsystem to OPERABLE status.	72 hours

(continued)

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#### EXAMPLE 1.3-3 (continued) EXAMPLES

When one Function X subsystem and one Function Y subsystem are inoperable. Condition A and Condition B are concurrently applicable. The Completion Times for Condition A and Condition B are tracked separately for each subsystem. starting from the time each subsystem was declared inoperable and the Condition was entered. A separate Completion Time is established for Condition C and tracked from the time the second subsystem was declared inoperable (i.e., the time the situation described in Condition C was discovered).

If Required Action C.2 is completed within the specified Completion Time, Conditions B and C are exited. If the Completion Time for Required Action A.1 has not expired, operation may continue in accordance with Condition A. The remaining Completion Time in Condition A is measured from the time the affected subsystem was declared inoperable (i.e., initial entry into Condition A).

The Completion Times of Conditions A and B are modified by a logical connector, with a separate 10 day Completion Time measured from the time it was discovered the LCO was not met. In this example, without the separate Completion Time, it would be possible to alternate between Conditions A, B, and C in such a manner that operation could continue indefinitely without ever restoring systems to meet the LCO. The separate Completion Time modified by the phrase "from discovery of failure to meet the LCO" is designed to prevent indefinite continued operation while not meeting the LCO. This Completion Time allows for an exception to the normal "time zero" for beginning the Completion Time "clock". In this instance, the Completion Time "time zero" is specified as commencing at the time the LCO was initially not met, instead of at the time the associated Condition was entered.

(continued)

Columbia Generating Station 1.3-7

EXAMPLES

ACTIO	NS	r		
(	CONDITION		REQUIRED ACTION	COMPLETION TIME
١	)ne or more valves inoperable.	A.1	Restore valve(s) to OPERABLE status.	4 hours
) ä	Required Action and associated Completion	B.1 AND	Be in MODE 3.	12 hours
-	Time not net.	B.2	Be in MODE 4.	36 hours

A single Completion Time is used for any number of valves inoperable at the same time. The Completion Time associated with Condition A is based on the initial entry into Condition A and is not tracked on a per valve basis. Declaring subsequent valves inoperable, while Condition A is still in effect, does not trigger the tracking of separate Completion Times.

Once one of the valves has been restored to OPERABLE status, the Condition A Completion Time is not reset, but continues from the time the first valve was declared inoperable. The Completion Time may be extended if the valve restored to OPERABLE status was the first inoperable valve. The Condition A Completion Time may be extended for up to 4 hours provided this does not result in any subsequent valve being inoperable for > 4 hours.

If the Completion Time of 4 hours (plus the extension) expires while one or more valves are still inoperable, Condition B is entered.

(continued)

EXAMPLE 1.3-5 EXAMPLES

(continued)

ACTIONS

-----NOTE-----Separate Condition entry is allowed for each inoperable valve. 

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve to OPERABLE status.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. <u>AND</u> B.2 Be in MODE 4.	12 hours 36 hours

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each inoperable valve, and Completion Times tracked on a per valve basis. When a valve is declared inoperable, Condition A is entered and its Completion Time starts. If subsequent valves are declared inoperable, Condition A is entered for each valve and separate Completion Times start and are tracked for each valve.

(continued)

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#### EXAMPLE 1.3-5 (continued) EXAMPLES

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve that caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

Since the Note in this example allows multiple Condition entry and tracking of separate Completion Times, Completion Time extensions do not apply.

#### EXAMPLE 1.3-6

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME	
A. One channel inoperable.	<pre>A.1 Perform    SR 3.x.x.x. OR A.2 Reduce THERMAL    POWER to</pre>	Once per 8 hours 8 hours	
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	12 hours	

#### (continued)

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#### EXAMPLE 1.3-6 (continued) EXAMPLES

Entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "once per" Completion Time, which qualifies for the 25% extension, per SR 3.0.2, to each performance after the initial performance. The initial 8 hour interval of Required Action A.1 begins when Condition A is entered and the initial performance of Required Action A.1 must be completed within the first 8 hour interval. If Required Action A.1 is followed and the Required Action is not met within the Completion Time (plus the extension allowed by SR 3.0.2), Condition B is entered. If Required Action A.2 is followed and the Completion Time of 8 hours is not met. Condition B is entered.

If after entry into Condition B, Required Action A.1 or A.2 is met, Condition B is exited and operation may then continue in Condition A.

(continued)

EXAMPLES (continued)	EXAMPLE 1.3-7 ACTIONS					
	<u></u>	CONDITION	F	REQUIRED ACTION	COMPLETION TIME	
	Α.	One subsystem inoperable.	AND	Verify affected subsystem isolated. Restore subsystem to OPERABLE status.	1 hour <u>AND</u> Once per 8 hours thereafter 72 hours	
	Β.	Required Action and associated Completion Time not met.	AND	Be in MODE 3. Be in MODE 4.	12 hours 36 hours	

Required Action A.1 has two Completion Times. The 1 hour Completion Time begins at the time the Condition is entered and each "Once per 8 hours thereafter" interval begins upon performance of Required Action A.1.

If after Condition A is entered, Required Action A.1 is not met within either the initial 1 hour or any subsequent 8 hour interval from the previous performance (plus the extension allowed by SR 3.0.2), Condition B is entered. The Completion Time clock for Condition A does not stop after Condition B is entered, but continues from the time Condition A was initially entered. If Required Action A.1

(continued)

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1.3-12

EXAMPLES	EXAMPLE 1.3-7 (continued)				
	is met after Condition B is entered, Condition B is exited and operation may continue in accordance with Condition A, provided the Completion Time for Required Action A.2 has not expired.				
IMMEDIATE COMPLETION TIME	When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.				

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# 1.0 USE AND APPLICATION

# 1.4 Frequency

PURPOSE	The purpose of this section is to define the proper use and application of Frequency requirements.
DESCRIPTION	Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated Limiting Conditions for Operation (LCO). An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.
	The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0, "Surveillance Requirement (SR) Applicability." The "specified Frequency" consists of the requirements of the Frequency column of each SR, as well as certain Notes in the Surveillance column that modify performance requirements.
	Sometimes special situations dictate when the requirements of a Surveillance are to be met. They are "otherwise stated" conditions allowed by SR 3.0.1. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillance, or both. Example 1.4-4 discusses these special situations.
	Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction.
	The use of "met" or "performed" in these instances conveys specified meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria. SR 3.0.4 restrictions would not apply if both the following conditions are satisfied:
	(continued)

<u>(continued)</u>

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# 1.4 Frequency The Surveillance is not required to be performed; and DESCRIPTION a. (continued) The Surveillance is not required to be met or, even if b. required to be met. is not known to be failed. The following examples illustrate the various ways that EXAMPLES Frequencies are specified. In these examples, the Applicability of the LCO (LCO not shown) is MODES 1, 2, and 3. EXAMPLE 1.4-1 SURVEILLANCE REQUIREMENTS FREQUENCY SURVEILLANCE 12 hours Perform CHANNEL CHECK. Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency Surveillance must be performed at least one time.

specifies an interval (12 hours) during which the associated Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the interval specified in the Frequency is allowed by SR 3.0.2 for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 3.0.1 (such as when the equipment is inoperable, a variable is outside specified limits, or the unit is outside the Applicability of the LCO). If the interval specified by SR 3.0.2 is exceeded while the unit is in a MODE or other specified condition in the Applicability of the LCO. and the performance of the Surveillance is not otherwise modified (refer to Examples 1.4-3 and 1.4-4), then SR 3.0.3 becomes applicable.

(continued)

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#### 1.4 Frequency

#### EXAMPLE 1.4-1 (continued) EXAMPLES

If the interval as specified by SR 3.0.2 is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the LCO for which performance of the SR is required, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 prior to entry into the MODE or other specified condition. Failure to do so would result in a violation of SR 3.0.4.

#### EXAMPLE 1.4-2

#### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify flow is within limits.	Once within 12 hours after <u>&gt;</u> 25% RTP <u>AND</u>
	24 hours thereafter

Example 1.4-2 has two Frequencies. The first is a one time performance Frequency, and the second is of the type shown in Example 1.4-1. The logical connector "AND" indicates that both Frequency requirements must be met. Each time reactor power is increased from a power level < 25% RTP to > 25% RTP, the Surveillance must be performed within 12 hours.

The use of "once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the extension allowed by SR 3.0.2.

(continued)

Columbia Generating Station 1.4-3

### 1.4 Frequency

EXAMPLE 1.4-2 (continued) **EXAMPLES** 

> "Thereafter" indicates future performances must be established per SR 3.0.2, but only after a specified condition is first met (i.e., the "once" performance in this example). If reactor power decreases to < 25% RTP, the measurement of both intervals stops. New intervals start upon reactor power reaching 25% RTP.

EXAMPLE 1.4-3

### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY	
Not required to be performed until 12 hours after ≥ 25% RTP.		
Perform channel adjustment.	7 days	

The interval continues whether or not the unit operation is < 25% RTP between performances.

As the Note modifies the required performance of the Surveillance, it is construed to be part of the "specified Frequency." Should the 7 day interval be exceeded while operation is < 25% RTP, this Note allows 12 hours after power reaches  $\geq$  25% RTP to perform the Surveillance. The Surveillance is still considered to be within the "specified Frequency." Therefore, if the Surveillance were not performed within the 7 day interval (plus the extension allowed by SR 3.0.2), but operation was < 25% RTP, it would not constitute a failure of the SR or failure to meet the LCO. Also, no violation of SR 3.0.4 occurs when changing MODES, even with the 7 day Frequency not met, provided operation does not exceed 12 hours with power  $\geq$  25% RTP.

(continued)

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## 1.4 Frequency

EXAMPLES EXAMPLE 1.4-3 (continued)

Once the unit reaches 25% RTP, 12 hours would be allowed for completing the Surveillance. If the Surveillance were not performed within this 12 hour interval, there would then be a failure to perform a Surveillance within the specified Frequency, and the provisions of SR 3.0.3 would apply.

#### EXAMPLE 1.4-4

### SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Only required to be met in MODE 1.	
Verify leakage rates are within limits.	24 hours

Example 1.4-4 specifies that the requirements of this Surveillance do not have to be met until the unit is in MODE 1. The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example 1.4-1. However, the Note constitutes an "otherwise stated" exception to the Applicability of this Surveillance. Therefore, if the Surveillance were not performed within the 24 hour interval (plus the extension allowed by SR 3.0.2), but the unit was not in MODE 1, there would be no failure of the SR nor failure to meet the LCO. Therefore, no violation of SR 3.0.4 occurs when changing MODES, even with the 24 hour Frequency exceeded, provided the MODE change was not made into MODE 1. Prior to entering MODE 1 (assuming again that the 24 hour Frequency were not met), SR 3.0.4 would require satisfying the SR.

1.4-5

# 2.0 SAFETY LIMITS (SLs)

#### 2.1 SLs

- 2.1.1 Reactor Core SLs
  - 2.1.1.1 With the reactor steam dome pressure < 785 psig or core flow < 10% rated core flow:

THERMAL POWER shall be < 25% RTP.

2.1.1.2 With the reactor steam dome pressure  $\geq$  785 psig and core flow  $\geq$  10% rated core flow:

> The MCPR for ATRIUM-9X fuel shall be  $\geq$  1.10 for two recirculation loop operation or > 1.11 for single recirculation loop operation. The MCPR for the ABB SVEA-96 fuel shall be  $\geq$  1.10 for two recirculation loop operation or  $\geq$  1.12 for single recirculation loop operation.

- 2.1.1.3 Reactor vessel water level shall be greater than the top of active irradiated fuel.
- 2.1.2 <u>Reactor Coolant System Pressure SL</u>

Reactor steam dome pressure shall be  $\leq$  1325 psig.

#### 2.2 SL Violations

With any SL violation, the following actions shall be completed within 2 hours:

2.2.1 Restore compliance with all SLs; and

2.2.2 Insert all insertable control rods.

## 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

- LCO 3.0.1 LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2 and LCO 3.0.7.
- LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.

- LCO 3.0.3 When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in:
  - a. MODE 2 within 7 hours;
  - b. MODE 3 within 13 hours; and
  - c. MODE 4 within 37 hours.

Exceptions to this Specification are stated in the individual Specifications.

Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required.

LCO 3.0.3 is only applicable in MODES 1, 2, and 3.

LCO 3.0.4 When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other

(continued)

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3.0-1

#### 3.0 LCO APPLICABILITY

LCO 3.0.4 specified conditions in the Applicability that are required (continued) specified conditions or that are part of a shutdown of the unit. Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time. LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

LCO 3.0.5 Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

LCO 3.0.6 When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Specification 5.5.11, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

(continued)

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## 3.0 LCO APPLICABILITY (continued)

LCO 3.0.7 Special Operations LCOs in Section 3.10 allow specified Technical Specifications (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Special Operations LCOs is optional. When a Special Operations LCO is desired to be met but is not met, the ACTIONS of the Special Operations LCO shall be met. When a Special Operations LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.

# 3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

- SR 3.0.1 SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.
- SR 3.0.2 The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply.

If a Completion Time requires periodic performance on a "once per . . ." basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Specification are stated in the individual Specifications.

SR 3.0.3 If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is less. This delay period is permitted to allow performance of the Surveillance.

> If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

(continued)

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## 3.0 SR APPLICABILITY (continued)

SR 3.0.4 Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

> SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

# 3.1 REACTIVITY CONTROL SYSTEMS

3.1.1 SHUTDOWN MARGIN (SDM)

LCO 3.1.1 SDM shall be:

- $\geq$  0.38%  $\Delta k/k$  , with the highest worth control rod a. analytically determined; or
- $\geq$  0.28%  $\Delta$ k/k, with the highest worth control rod b. determined by test.

APPLICABILITY: MODES 1, 2, 3, 4, and 5.

ACTIONS

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	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	SDM not within limits in MODE 1 or 2.	A.1	Restore SDM to within limits.	6 hours
в.	Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	12 hours
с.	SDM not within limits in MODE 3.	C.1	Initiate action to fully insert all insertable control rods.	Immediately
D.	SDM not within limits in MODE 4.	D.1	Initiate action to fully insert all insertable control rods.	Immediately
		AND		(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. (continued)	D.2	Initiate action to restore secondary containment to OPERABLE status.	1 hour
	AND		
	D.3	Initiate action to restore one standby gas treatment (SGT) subsystem to OPERABLE status.	l hour ′
	AND		
	D.4	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	l hour
E. SDM not within limits in MODE 5.	E.1	Suspend CORE ALTERATIONS except for control rod insertion and fuel assembly removal.	Immediately
	AND		
	E.2	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
	AND		
			(continued)

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ACTIONS

CONDITION		REQUIRED ACTION	COMPLETION TIME
E. (continued)	E.3	Initiate action to restore secondary containment to OPERABLE status.	1 hour
	AND		
	E.4	Initiate action to restore one SGT subsystem to OPERABLE status.	1 hour
	AND		
	E.5	Initiate action to restore isolation capability in each required secondary containment penetration flow path not isolated.	l hour

SURVEILLANCE REQUIREMENTS

	FREQUENCY	
SR 3.1.1.1	<ul> <li>Verify SDM is:</li> <li>a. ≥ 0.38% Δk/k with the highest worth control rod analytically determined; or</li> <li>b. ≥ 0.28% Δk/k with the highest worth control rod determined by test.</li> </ul>	Prior to each in vessel fuel movement during fuel loading sequence <u>AND</u> Once within 4 hours after criticality following fuel movement within the reactor pressure vessel or control rod replacement

# 3.1 REACTIVITY CONTROL SYSTEMS

3.1.2 Reactivity Anomalies

The reactivity difference between the monitored core  $k_{eff}$  and the predicted core  $k_{eff}$  shall be within  $\pm~1\%~\Delta k/k$  . LCO 3.1.2

APPLICABILITY: MODES 1 and 2.

# ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	Core reactivity difference not within limit.	A.1	Restore core reactivity difference to within limit.	72 hours
в.	Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours

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SURVEILLANCE REQUIREMENTS

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SURVEILLANCE			FREQUENCY
SR	3.1.2.1	Verify core reactivity difference between the monitored core $k_{eff}$ and the predicted core $k_{eff}$ is within $\pm$ 1% $\Delta k/k$ .	Once within 24 hours after reaching equilibrium conditions following startup after fuel movement within the reactor pressure vessel or control rod replacement <u>AND</u> 1000 MWD/T thereafter during
			operations in MODE 1

## 3.1 REACTIVITY CONTROL SYSTEMS

# 3.1.3 Control Rod OPERABILITY

Each control rod shall be OPERABLE. LCO 3.1.3

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTE-----NOTE-----Separate Condition entry is allowed for each control rod. -----

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One withdrawn control rod stuck.	Rod Wor be bypa LCO 3.3 Block I	NOTE th Minimizer (RWM) may ssed as allowed by 2.2.1, "Control Rod nstrumentation," if ed, to allow continued on.	
		A.1	Verify stuck control rod separation criteria are met.	Immediately
		AND		
		A.2	Disarm the associated control rod drive (CRD).	2 hours
		AND		
				(continued)

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	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	(continued)	A.3	Perform SR 3.1.3.2 and SR 3.1.3.3 for each withdrawn OPERABLE control rod.	24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP) of the RWM
		AND		
		A.4	Perform SR 3.1.1.1.	72 hours
Β.	Two or more withdrawn control rods stuck.	B.1	Be in MODE 3.	12 hours
С.	One or more control rods inoperable for reasons other than Condition A or B.	C.1	Verify the total number of "slow" and inoperable control rods is <u>&lt;</u> eight.	Immediately
		AND		
				(continued)

ACTIONS

ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
с.	(continued)	C.2	RWM may be bypassed as allowed by LCO 3.3.2.1, if required, to allow insertion of inoperable control rod and continued operation.	
			Fully insert inoperable control rod.	3 hours
		AND		
		C.3	Disarm the associated CRD.	4 hours
D.	Not applicable when THERMAL POWER	D.1	Restore compliance with BPWS.	4 hours
	> 10% RTP.	<u> 0                                   </u>		
	Two or more inoperable control rods not in compliance with banked position withdrawal sequence (BPWS) and not separated by two or more OPERABLE control rods.	D.2	Restore control rod to OPERABLE status.	4 hours

(continued)

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	CONDITION		REQUIRED ACTION	COMPLETION TIME 4 hours	
Ε.	Not applicable when THERMAL POWER > 10% RTP. One or more groups with four or more inoperable control rods.	E.1 Restore the control rod to OPERABLE status.			
F.	Required Action and associated Completion Time of Condition A, C, D, or E not met. <u>OR</u> Nine or more control rods inoperable.	F.1	Be in MODE 3.	12 hours	

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SURVEILLANCE REQUIREMENTS

		SURVEILLANCE	FREQUENCY
SR	3.1.3.1	Determine the position of each control rod.	24 hours
SR	3.1.3.2	Not required to be performed until 7 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM.	
		Insert each fully withdrawn control rod at least one notch.	7 days
SR	3.1.3.3	Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM.	
		Insert each partially withdrawn control rod at least one notch.	31 days
SR	3.1.3.4	Verify each control rod scram time from fully withdrawn to notch position 5 is $\leq$ 7 seconds.	In accordance with SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4

	SURVEILLANCE	FREQUENCY
SR 3.1.3.5	Verify each control rod does not go to the withdrawn overtravel position.	Each time the control rod is withdrawn to "full out" position <u>AND</u> Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect coupling

# 3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Control Rod Scram Times

The average scram time of all OPERABLE control rods in all LCO 3.1.4 two-by-two arrays shall not exceed the limits of Table 3.1.4-1.

APPLICABILITY: MODES 1 and 2.

#### ACTIONS

-----NOTE-----NOTE-----Separate Condition entry is allowed for each two-by-two array. -----

CONDITION		REQUIRED ACTION	COMPLETION TIME
<ul> <li>A. One or more two-by-two arrays with average scram time not within the limits of Table 3.1.4-1.</li> </ul>	A.1	Declare each control rod in the two-by-two array with a scram time slower than the average scram time limits "slow."	Immediately
	<u>AND</u> A.2	Verify the total number of "slow" and inoperable control rods is ≤ eight.	Immediately
	AND		
	A.3	Verify each "slow" control rod meets the "slow" control rod separation criteria.	Immediately

(continued)

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ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
Β.	Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

-----NOTE-----NOTE-----During single control rod scram time Surveillances, the control rod drive (CRD) pumps shall be isolated from the associated scram accumulator. · · · · · . . . . . .

	FREQUENCY	
SR 3.1.4.1	Verify each control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 800 psig.	Prior to exceeding 40% RTP after each refueling <u>AND</u> Prior to exceeding 40% RTP after each reactor shutdown > 120 days

		SURVEILLANCE	FREQUENCY
SR	3.1.4.2	Verify, for a representative sample, each tested control rod scram time is within the limits of Table 3.1.4–1 with reactor steam dome pressure ≥ 800 psig.	120 days cumulative operation in MODE 1
SR	3.1.4.3	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with any reactor steam dome pressure.	Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect scram time
SR	3.1.4.4	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 800 psig.	Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time <u>AND</u> Prior to exceeding 40%
			RTP after fuel movement within the reactor pressure vessel

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#### Table 3.1.4-1 Control Rod Scram Times

Enter applicable Conditions and Required Actions of LCO 3.1.3, "Control Rod OPERABILITY," for control rods with scram times > 7 seconds to notch position 5. These control rods are inoperable, in accordance with SR 3.1.3.4, and are not considered "slow."

NOTCH POSITION	SCRAM TIMES(a)(b) (seconds) WHEN REACTOR STEAM DOME PRESSURE <u>≥</u> 800 psig
45	0.430
39	0.868
25	1.936
5	3.497

- (a) Maximum scram time from fully withdrawn position, based on de-energization of scram pilot valve solenoids as time zero.
- (b) Scram times as a function of reactor steam dome pressure, when< 800 psig, are within established limits.</li>

# 3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Control Rod Scram Accumulators

LCO 3.1.5 Each control rod scram accumulator shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

Separate Condition entry is allowed for each control rod scram accumulator.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One control rod scram accumulator inoperable with reactor steam dome pressure ≥ 900 psig.	A.1 Only applicable if the average scram times of the two-by- two arrays associated with the control rod with the inoperable accumulator are within the limits of Table 3.1.4-1 during the last scram time Surveillance. Declare the average scram time in all two-by-two arrays associated with the control rod with the inoperable accumulator not within the limits of Table 3.1.4-1 and declare the associated control rod "slow."	8 hours
	<u>OR</u>	(continued)

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CONDITION			REQUIRED ACTION	COMPLETION TIME
Α.	(continued)	A.2	Declare the associated control rod inoperable.	8 hours
Β.	Two or more control rod scram accumulators inoperable with reactor steam dome pressure ≥ 900 psig.	B.1	Restore charging water header pressure to ≥ 940 psig.	20 minutes from discovery of Condition B concurrent with charging water header pressure < 940 psig
		AND		
		B.2.1	Only applicable if the average scram times of the two-by- two arrays associated with the control rod with the inoperable accumulator are within the limits of Table 3.1.4-1 during the last scram time Surveillance. Declare the average scram time in all two-by-two arrays associated with the control rod with the inoperable accumulator not within the limits of Table 3.1.4-1 and declare the	1 hour
	ŭ	<u>OR</u>	associated control rod "slow."	(continued

CONDITION		REQUIRED ACTION		COMPLETION TIME
В.	(continued)	B.2.2	Declare the associated control rod inoperable.	1 hour
C.	One or more control rod scram accumulators inoperable with reactor steam dome pressure < 900 psig.	C.1	Verify the associated control rod is fully inserted.	Immediately upor discovery of charging water header pressure < 940 psig
		AND		
		C.2	Declare the associated control rod inoperable.	l hour
D.	Required Action B.1 or C.1 and associated Completion Time not met.	D.1	Not applicable if all inoperable control rod scram accumulators are associated with fully inserted control rods.	
			Place the reactor mode switch in the shutdown position.	Immediately

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Control Rod Scram Accumulators 3.1.5

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.5.1	Verify each control rod scram accumulator pressure is ≥ 940 psig.	7 days

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# 3.1 REACTIVITY CUNTROL SYSTEMS

3.1.6 Rod Pattern Control

OPERABLE control rods shall comply with the requirements of LCO 3.1.6 the banked position withdrawal sequence (BPWS).

APPLICABILITY: MODES 1 and 2 with THERMAL POWER  $\leq$  10% RTP.

# ACTIONS

ON	REQUIRED ACTION	COMPLETION TIME
OPERABLE A.1 not in with BPWS.	Rod Worth Minimizer (RWM) may be bypassed as allowed by LCO 3.3.2.1, "Control Rod Block Instrumentation." 	
<u>OR</u> A.2	correct position. Declare associated control rod(s)	8 hours
	OPERABLE A.1 not in ith BPWS. <u>OR</u>	OPERABLE A.1 not in ith BPWS. Note associated CRWM) may be bypassed as allowed by LCO 3.3.2.1, "Control Rod Block Instrumentation." Move associated control rod(s) to correct position. <u>OR</u> A.2 Declare associated

ACTIONS
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COMPLETION TIME
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	SURVEILLANCE	FREQUENCY
SR 3.1.6.1	Verify all OPERABLE control rods comply with BPWS.	24 hours

# 3.1 REACTIVITY CONTROL SYSTEMS

3.1.7 Standby Liquid Control (SLC) System

LCO 3.1.7 Two SLC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

# ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
Α.	One SLC subsystem inoperable.	A.1	Restore SLC subsystem to OPERABLE status.	7 days
в.	Two SLC subsystems inoperable.	B.1	Restore one SLC subsystem to OPERABLE status.	8 hours
С.	Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours

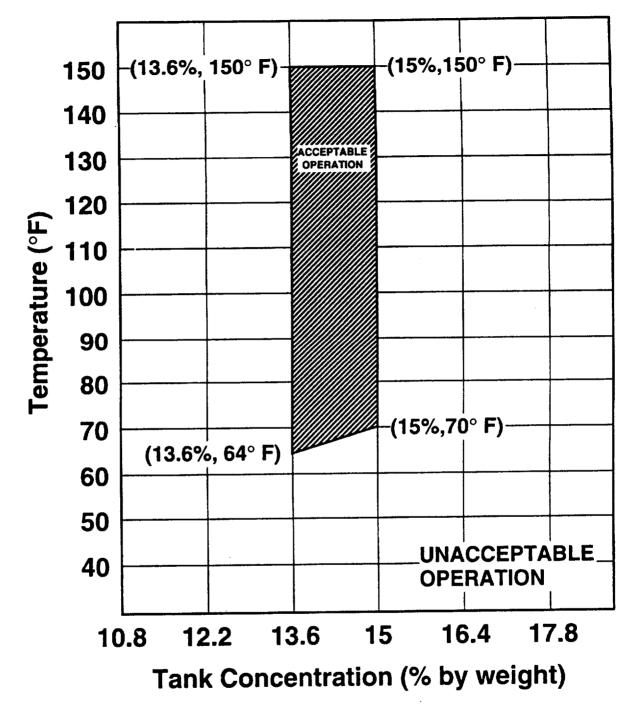
## SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.7.1	Verify available volume of sodium pentaborate solution is ≥ 4587 gallons.	24 hours

	20 000 - 1000	SURVEILLANCE	FREQUENCY
SR	3.1.7.2	Verify temperature of sodium pentaborate solution is within the limits of Figure 3.1.7-1.	24 hours
SR	3.1.7.3	Verify continuity of explosive charge.	31 days
SR	3.1.7.4	Verify the concentration of boron in solution is within the limits of Figure 3.1.7-1.	31 days <u>AND</u> Once within 24 hours after water or boron is added to solution <u>AND</u> Once within 24 hours after solution temperature is restored within the limits of Figure 3.1.7-1
SR	3.1.7.5	Verify each SLC subsystem manual and power operated valve in the flow path that is not locked, sealed, or otherwise secured in pusition, is in the correct position or can be aligned to the correct position.	31 days

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<u></u>		FREQUENCY	
SR	3.1.7.6	Verify each pump develops a flow rate ≥ 41.2 gpm at a discharge pressure ≥ 1220 psig.	In accordance with the Inservice Testing Program
SR	3.1.7.7	Verify flow through one SLC subsystem from pump into reactor pressure vessel.	24 months on a STAGGERED TEST BASIS
SR	3.1.7.8	Verify all heat traced piping between storage tank and pump suction valve is unblocked.	24 months <u>AND</u> Once within 24 hours after solution temperature is restored within the limits of Figure 3.1.7-1



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Figure 3.1.7-1 (Page 1 of 1) Sodium Pentaborate Solution Temperature/Concentration Requirements

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#### 3.1 REACTIVITY CONTROL SYSTEMS

3.1.8 Scram Discharge Volume (SDV) Vent and Drain Valves

LCO 3.1.8 Each SDV vent and drain valve shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

### ACTIONS

- -----NOTES-----1. Separate Condition entry is allowed for each SDV vent and drain line.
- 2. An isolated line may be unisolated under administrative control to allow draining and venting of the SDV. -----

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One or more SDV vent or drain lines with one valve inoperable.	A.1	Isolate the associated line.	7 days
В.	One or more SDV vent or drain lines with both valves inoperable.	B.1	Isolate the associated line.	8 hours
с.	Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	12 hours

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	SURVEILLANCE	FREQUENCY
SR 3.1.8.1	Not required to be met on vent and drain valves closed during performance of SR 3.1.8.2.	
	Verify each SDV vent and drain valve is open.	31 days
SR 3.1.8.2	Cycle each SDV vent and drain valve to the fully closed and fully open position.	92 days
SR 3.1.8.3	<ul> <li>Verify each SDV vent and drain valve:</li> <li>a. Closes in ≤ 30 seconds after receipt of an actual or simulated scram signal; and</li> <li>b. Opens when the actual or simulated scram signal is reset.</li> </ul>	24 months

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3.2.1 AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)

All APLHGRs shall be less than or equal to the limits LCO 3.2.1 specified in the COLR.

APPLICABILITY: THERMAL POWER ≥ 25% RTP.

# ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
Α.	Any APLHGR not within limits.	A.1	Restore APLHGR(s) to within limits.	2 hours
В.	Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE				
SR 3.2.1.1	Verify all APLHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after ≥ 25% RTP			
		AND			
		24 hours thereafter			

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3.2.2 MINIMUM CRITICAL POWER RATIO (MCPR)

LCO 3.2.2 All MCPRs shall be greater than or equal to the MCPR operating limits specified in the COLR.

APPLICABILITY: THERMAL POWER  $\geq$  25% RTP.

### ACTIONS

<u>AU11</u>	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	Any MCPR not within limits.	A.1	Restore MCPR(s) to within limits.	2 hours
Β.	Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

to the limits specified in the COLR.	Once within 12 hours after ≥ 25% RTP
	AND
	24 hours thereafter

3.2.3 LINEAR HEAT GENERATION RATE (LHGR)

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All LHGRs shall be less than or equal to the limits LCO 3.2.3 specified in the COLR.

APPLICABILITY: THERMAL POWER  $\geq$  25% RTP.

# ACTIONS

ACTI	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	Any LHGR not within limits.	A.1	Restore LHGR(s) to within limits.	2 hours
В.	Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < 25% RTP.	4 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE			
SR 3.2.3.1	Verify all LHGRs are less than or equal to the limits specified in the COLR.	Once within 12 hours after <u>&gt;</u> 25% RTP		
		AND		
		24 hours thereafter		

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3.2.4 Average Power Range Monitor (APRM) Gain and Setpoint

- MFLPD shall be less than or equal to Fraction of RTP LCO 3.2.4 a. (FRTP): or
  - Each required APRM Flow Biased Simulated Thermal Powerb. High Function Allowable Value shall be modified by greater than or equal to the ratio of FRTP and the MFLPD: or
  - Each required APRM gain shall be adjusted such that the с. APRM readings are  $\geq$  100% times MFLPD.

APPLICABILITY: THERMAL POWER  $\geq$  25% RTP.

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	Requirements of the LCO not met.	A.1	Satisfy the requirements of the LCO.	6 hours
В.	Required Action and associated Completion Time not met.	B.1	Reduce THERMAL POWER to < 25% RTP.	4 hours

ACTIONS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.2.4.1	Not required to be met if SR 3.2.4.2 is satisfied for LCO 3.2.4.b or LCO 3.2.4.c requirements.	
	Verify MFLPD is within limits.	Once within 12 hours after ≥ 25% RTP <u>AND</u> 24 hours thereafter
SR 3.2.4.2	Not required to be met if SR 3.2.4.1 is satisfied for LCO 3.2.4.a requirements.	
	<ul> <li>Verify each required:</li> <li>a. APRM Flow Biased Simulated Thermal Power-High Function Allowable Value is modified by greater than or equal to the ratio of FRTP and the MFLPD; or</li> <li>b. APRM gain is adjusted such that the APRM reading is ≥ 100% times MFLPD.</li> </ul>	12 hours

## 3.3 INSTRUMENTATION

3.3.1.1 Reactor Protection System (RPS) Instrumentation

The RPS instrumentation for each Function in Table 3.3.1.1-1 LCO 3.3.1.1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.1.1-1.

#### ACTIONS

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

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One or more required channels inoperable.	A.1	Place channel in trip.	12 hours
		<u>OR</u> A.2	Place associated trip system in trip.	12 hours
в.	One or more Functions with one or more required channels inoperable in both	B.1 <u>OR</u>	Place channel in one 6 trip system in trip.	6 hours
	trip systems.	B.2	Place one trip system in trip.	6 hours
с.	One or more Functions with RPS trip capability not maintained.	C.1	Restore RPS trip capability.	l hour

(continued)

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ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
D.	Required Action and associated Completion Time of Condition A, B, or C not met.	D.1	Enter the Condition referenced in Table 3.3.1.1-1 for the channel.	Immediately
Ε.	As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	E.1	Reduce THERMAL POWER to < 30% RTP.	4 hours
F.	As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	F.1	Be in MODE 2.	6 hours
G.	As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1	Be in MODE 3.	12 hours
Н.	As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	н.1	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

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Function.

# Refer to Table 3.3.1.1-1 to determine which SRs apply for each RPS

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 for up to 6 hours provided the associated Function maintains RPS trip capability.

FREQUENCY SURVEILLANCE 12 hours SR 3.3.1.1.1 Perform CHANNEL CHECK. -----NOTE-----SR 3.3.1.1.2 Not required to be performed until 12 hours after THERMAL POWER  $\geq$  25% RTP. 7 days Verify the absolute difference between the average power range monitor (APRM) channels and the calculated power < 2% RTP plus any gain adjustment required by LCO 3.2.4, "Average Power Range Monitor (APRM) Gain and Setpoint," while operating at > 25% RTP. -----NOTE-----SR 3.3.1.1.3 Not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2. 7 days Perform CHANNEL FUNCTIONAL TEST. 7 days Perform CHANNEL FUNCTIONAL TEST. SR 3.3.1.1.4

(continued)

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RPS Instrumentation 3.3.1.1

SURVEILLANCE REQUIREMENTS

		SURVEILLANCE	FREQUENCY
SR	3.3.1.1.5	Verify the source range monitor (SRM) and intermediate range monitor (IRM) channels overlap.	Prior to withdrawing SRMs from the fully inserted position
SR	3.3.1.1.6	Only required to be met during entry into MODE 2 from MODE 1.	
		Verify the IRM and APRM channels overlap.	7 days
SR	3.3.1.1.7	Calibrate the local power range monitors.	1130 MWD/T average core exposure
SR	3.3.1.1.8	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR	3.3.1.1.9	<ol> <li>Neutron detectors are excluded.</li> </ol>	
		<ol> <li>For Function 2.a, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2.</li> </ol>	
		Perform CHANNEL CALIBRATION.	184 days

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.10	<ol> <li>Neutron detectors are excluded.</li> <li>For Function 1, not required to be performed when entering MODE 2 from MODE 1 until 12 hours after entering MODE 2.</li> </ol>	
	Perform CHANNEL CALIBRATION.	18 months for Functions 1 through 7 and 9 through 11 <u>AND</u> 24 months for Function 8
SR 3.3.1.1.11	Verify the APRM Flow Biased Simulated Thermal Power-High Function time constant is $\leq$ 7 seconds.	18 months
SR 3.3.1.1.12	Verify Turbine Throttle Valve-Closure, and Turbine Governor Valve Fast Closure Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is ≥ 30% RTP.	18 months
SR 3.3.1.1.13	Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.1.1.14	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.15	<ol> <li>Neutron detectors are excluded.</li> <li>Channel sensors for Functions 3 and 4 are excluded.</li> <li>For Function 5, "n" equals 4 channels for the purpose of determining the STAGGERED TEST BASIS Frequency.</li> <li>Verify the RPS RESPONSE TIME is within limits.</li> </ol>	24 months on a STAGGERED TEST BASIS

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#### Table 3.3.1.1-1 (page 1 of 3) Reactor Protection System Instrumentation

•		FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVE ILLANCE REQUIREMENTS	ALLOWABLE VALUE
1.	Inte Moni	rmediate Range tors					
		Neutron Flux — High	2	3	G	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.5 SR 3.3.1.1.6 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 122/125 divisions of full scale
			5 <sup>(a)</sup>	3	H	SR 3.3.1.1.1 SR 3.3.1.1.4 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 122/125 divisions of full scale
	b.	Inop	2	3	G	SR 3.3.1.1.3 SR 3.3.1.1.14	NA
			5(a)	3	H	SR 3.3.1.1.4 SR 3.3.1.1.14	NA
2.		rage Power Range itors					
	a.	Neutron Flux — High, Setdown	2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.3 SR 3.3.1.1.6 SR 3.3.1.1.7 SR 3.3.1.1.9 SR 3.3.1.1.14	≤ 20% RTP
	b.	Flow Biased Simulated Thermal Power — High	1	2	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.11 SR 3.3.1.1.14	<u>&lt; 0.58W + 62% RT</u> and <u>&lt; 114.9% RTP</u>
	с.	Fixed Neutron Flux — High	1 .	2	F	SR 3.3.1.1.1 SR 3.3.1.1.2 SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.9 SR 3.3.1.1.14 SR 3.3.1.1.15	<u>≤</u> 120% RTP
	d.	Inop	1,2	2	G	SR 3.3.1.1.7 SR 3.3.1.1.8 SR 3.3.1.1.14	NA
3.		ctor Vessel Steam e Pressure — High	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14 SR 3.3.1.1.15	<u>≤</u> 1079 psig

(continued)

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

Table 3.3.1.1	-1 (page 2 of 3)
Reactor Protection	System Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4.	Reactor Vessel Water Level — Low, Level 3	1,2	2	G	SR 3.3.1.1.1 SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14 SR 3.3.1.1.15	≥ 9.5 inches
5.	Main Steam Isolation Valve — Closure	1	8	F	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14 SR 3.3.1.1.15	<u>≺</u> 12.5% closed
6.	Primary Containment Pressure — High	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	<u>≤</u> 1.88 psig
7.	Scram Discharge Volume Water Level — High					
	a. Transmitter/Trip Unit	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 529 ft 9 inches elevation
		5(a)	2	H	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 529 ft 9 inches elevation
	b. Float Switch	1,2	2	G	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	≤ 529 ft 9 inches elevation
		5 <sup>(a)</sup>	2	H	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.14	<pre>&lt; 529 ft 9 inches elevation</pre>
8.	Turbine Throttle Valve — Closure	<u>&gt;</u> 30% RTP	4	E	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.12 SR 3.3.1.1.14 SR 3.3.1.1.15	<u>&lt;</u> 7% closed
9.	Turbine Governor Valve Fast Closure, Trip Oil Pressure — Low	<u>&gt;</u> 30% rtp	2	E	SR 3.3.1.1.8 SR 3.3.1.1.10 SR 3.3.1.1.12 SR 3.3.1.1.14 SR 3.3.1.1.15	≥ 1000 psig
10.	Reactor Mode Switch — Shutdown	1,2	2	G	SR 3.3.1.1.13 SR 3.3.1.1.14	NA
	Position	5(a)	2	Н	SR 3.3.1.1.13 SR 3.3.1.1.14	NA

(continued)

(a) With any control rcd withdrawn from a core cell containing one or more fuel assemblies.

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FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
. Manual Scram	1,2	2	G	SR 3.3.1.1.4 SR 3.3.1.1.14	NA
	5 <sup>(a)</sup>	2	н	SR 3.3.1.1.4 SR 3.3.1.1.14	NA

#### Table 3.3.1.1-1 (page 3 of 3) Reactor Protection System Instrumentation

(a) With any control rod withdrawn from a core cell containing one or more fuel assemblies.

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3.3.1.2 Source Range Monitor (SRM) Instrumentation

The SRM instrumentation in Table 3.3.1.2-1 shall be LCO 3.3.1.2 OPERABLE.

APPLICABILITY: According to Table 3.3.1.2-1.

## ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One or more required SRMs inoperable in MODE 2 with intermediate range monitors (IRMs) on Range 2 or below.	A.1	Restore required SRMs to OPERABLE status.	4 hours .
В.	Three required SRMs inoperable in MODE 2 with IRMs on Range 2 or below.	B.1	Suspend control rod withdrawal.	Immediately
с.	Required Action and associated Completion Time of Condition A or B not met.	C.1	Be in MODE 3.	12 hours

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CONDITION		REQUIRED ACTION		COMPLETION TIME	
D.	One or more required SRMs inoperable in MODE 3 or 4.	D.1	Fully insert all insertable control rods.	l hour	
		AND			
		D.2	Place reactor mode switch in the shutdown position.	l hour	
Ε.	One or more required SRMs inoperable in MODE 5.	E.1	Suspend CORE ALTERATIONS except for control rod insertion.	Immediately	
		AND			
		E.2	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately	

Refer to Table 3.3.1.2-1 to determine which SRs apply for each applicable MODE or other specified condition.

	FREQUENCY					
SR 3.3.1.2.1	R 3.3.1.2.1 Perform CHANNEL CHECK.					
SR 3.3.1.2.2	<ul> <li>NOTES</li></ul>	12 hours				
SR 3.3.1.2.3	Perform CHANNEL CHECK.	24 hours				

(continued)

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······································	SURVEILLANCE	FREQUENCY	
SR 3.3.1.2.4	Not required to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant.		
	<ul> <li>Verify count rate is:</li> <li>a. ≥ 3.0 cps with a signal to noise ratio ≥ 2:1, or</li> <li>b. ≥ 0.7 cps with a signal to noise ratio ≥ 20:1.</li> </ul>	12 hours during CORE ALTERATIONS <u>AND</u> 24 hours	
SR 3.3.1.2.5	The determination of signal to noise ratio is not required to be met with less than or equal to four fuel assemblies adjacent to the SRM and no other fuel assemblies in the associated core quadrant.		
	Perform CHANNEL FUNCTIONAL TEST and determination of signal to noise ratio.	7 days	
SR 3.3.1.2.6	Not required to be performed until Not required to Be performed until 12 hours after IRMs on Range 2 or below.		
	Perform CHANNEL FUNCTIONAL TEST and determination of signal to noise ratio.	31 days	

	SURVEILLANCE	FREQUENCY
SR 3.3.1.2.7	<ol> <li>Neutron detectors are excluded.</li> <li>Not required to be performed until 12 hours after IRMs on Range 2 or below.</li> </ol>	·
	Perform CHANNEL CALIBRATION.	18 months

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED	SURVEILLANCE REQUIREMENTS
Source Range Monitor	2 <sup>(a)</sup>	3	SR 3.3.1.2.1 SR 3.3.1.2.4 SR 3.3.1.2.6 SR 3.3.1.2.7
	3,4	2	SR 3.3.1.2.3 SR 3.3.1.2.4 SR 3.3.1.2.6 SR 3.3.1.2.7
	5	2(p),(c)	SR 3.3.1.2.1 SR 3.3.1.2.2 SR 3.3.1.2.4 SR 3.3.1.2.5 SR 3.3.1.2.7

## Table 3.3.1.2-1 (page 1 of 1) Source Range Monitor Instrumentation

(a) With IRMs on Range 2 or below.

(b) Only one SRM channel is required to be OPERABLE during spiral offload or reload when the fueled region includes only that SRM detector.

(c) Special movable detectors may be used in place of SRMs if connected to normal SRM circuits.

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3.3.2.1 Control Rod Block Instrumentation

The control rod block instrumentation for each Function in LCO 3.3.2.1 Table 3.3.2.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2.1-1.

## ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One rod block monitor (RBM) channel inoperable.	A.1	Restore RBM channel to OPERABLE status.	24 hours
В.	Required Action and associated Completion Time of Condition A not met. <u>OR</u> Two RBM channels inoperable.	B.1	Place one RBM channel in trip.	l hour
С.	Rod worth minimizer (RWM) inoperable during reactor startup.	C.1 <u>OR</u>	Suspend control rod movement except by scram.	Immediately (continued)

## Control Rod Block Instrumentation 3.3.2.1

ACTIONS

CONDITION			REQUIRED ACTION	COMPLETION TIME	
C.	(continued)	C.2.1.1	Verify ≥ 12 rods withdrawn.	Immediately	
		C.2.1.2	<u>OR</u> Verify by administrative methods that startup with RWM inoperable has not been performed in the last calendar year.	Immediately	
		AND			
		C.2.2	Verify movement of control rods is in compliance with banked position withdrawal sequence (BPWS) by a second licensed operator or other qualified member of the technical staff.	During control rod movement	
D.	RWM inoperabie during reactor shutdown.	D.1	Verify movement of control rods is in compliance with BPWs by a second licensed operator or other qualified member of the technical staff.	During control rod movement	

ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Ε.	One or more Reactor Mode Switch-Shutdown Position channels inoperable.	E.1 <u>AND</u>	Suspend control rod withdrawal.	Immediately
		E.2	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

## SURVEILLANCE REQUIREMENTS

-----NOTES-----

- 1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.
- 2. When an RBM channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability. \_\_\_\_\_

	SURVEILLANCE			
SR 3.3.2.1.1	Perform CHANNEL FUNCTIONAL TEST.	92 days		

SURVEILLANCE REQUIREMENTS

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	SURVEILLANCE	FREQUENCY	
SR 3.3.2.1.2	Not required to be performed until 1 hour after any control rod is withdrawn at 10% RTP in MODE 2.</th <th colspan="2"></th>		
	Perform CHANNEL FUNCTIONAL TEST.	92 days	
SR 3.3.2.1.3	Not required to be performed until 1 hour after THERMAL POWER is ≤ 10% RTP in MODE 1.		
	Perform CHANNEL FUNCTIONAL TEST.	92 days	
SR 3.3.2.1.4	Neutron detectors are excluded.		
	Verify the RBM is not bypassed:	92 days	
	a. When THERMAL POWER is $\geq$ 30% RTP; and		
	b. When a peripheral control rod is not selected.		
SR 3.3.2.1.5	Neutron detectors are excluded.		
	Perform CHANNEL CALIBRATION.	92 days	

SURVEILLANCE REQUIREMENTS

		SURVEILLANCE	FREQUENCY
SR	3.3.2.1.6	Verify the RWM is not bypassed when THERMAL POWER is $\leq$ 10% RTP.	18 months
SR	3.3.2.1.7	Not required to be performed until 1 hour after reactor mode switch is in the shutdown position.	
		Perform CHANNEL FUNCTIONAL TEST.	24 months
SR	3.3.2.1.8	Verify control rod sequences input to the RWM are in conformance with BPWS.	Prior to declaring RWM OPERABLE following loading of sequence into RWM

Table	3.3.2.1-1	(page 1 of 1)
Control	Rod Block	Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Rod Block Monitor				
a. Upscale	(2)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.5	<u>≤</u> 0.58W + 51% RTF
b. Inop	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.4	NA
c. Downscale	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.5	<u>&gt;</u> 3% RTP
2. Rod Worth Minimizer	1 <sup>(b)</sup> ,2 <sup>(b)</sup>	1	SR 3.3.2.1.2 SR 3.3.2.1.3 SR 3.3.2.1.6 SR 3.3.2.1.8	NA
3. Reactor Mode Switch — Shutdown Position	(c)	2	SR 3.3.2.1.7	NA

(a) THERMAL POWER  $\geq$  30% RTP and no peripheral control rod selected.

(b) With THERMAL POWER  $\leq 10\%$  RTP.

(c) Reactor mode switch in the shutdown position.

Feedwater and Main Turbine High Water Level Trip Instrumentation 3.3.2.2

### 3.3 INSTRUMENTATION

3.3.2.2 Feedwater and Main Turbine High Water Level Trip Instrumentation

Three channels of feedwater and main turbine high water LCO 3.3.2.2 level trip instrumentation shall be OPERABLE.

APPLICABILITY: THERMAL POWER  $\geq$  25% RTP.

## ACTIONS

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

CONDITION			REQUIRED ACTION	COMPLETION TIME	
Α.	One feedwater and main turbine high water level trip channel inoperable.	A.1	Place channel in trip.	7 days	
В.	Two or more feedwater and main turbine high water level trip channels inoperable.	B.1	Restore feedwater and main turbine high water level trip capability.	2 hours	
с.	Required Action and associated Completion Time not met.	C.1	Reduce THERMAL POWER to < 25% RTP.	4 hours	

Feedwater and Main Turbine High Water Level Trip Instrumentation 3.3.2.2

## SURVEILLANCE REQUIREMENTS

-----NOTE-----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 for up to 6 hours provided feedwater and main turbine high water level trip capability is maintained. 

		FREQUENCY	
SR	3.3.2.2.1	Perform CHANNEL CHECK.	24 hours
SR	3.3.2.2.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR	3.3.2.2.3	Perform CHANNEL CALIBRATION. The Allowable Value shall be $\leq$ 56.0 inches.	24 months
SR	3.3.2.2.4	Perform LOGIC SYSTEM FUNCTIONAL TEST, including valve actuation.	24 months

3.3.3.1 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.3.1 The PAM instrumentation for each Function in Table 3.3.3.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

## ACTIONS

-----NOTES-----1. LCO 3.0.4 is not applicable.

2. Separate Condition entry is allowed for each Function. \_\_\_\_\_

	CONDITION	REQUIRED ACTION		COMPLETION TIME
Α.	One or more Functions with one required channel inoperable.	A.1	Restore required channel to OPERABLE status.	30 days
В.	Required Action and associated Completion Time of Condition A not met.	B.1	Initiate action in accordance with Specification 5.6.6.	Immediately
С.	One or more Functions with two or more required channels inoperable.	C.1	Restore all but one required channel to OPERABLE status.	7 days

ACTIONS	A	СТ	Ί(	ΟN	S
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-	CONDITION	REQUIRED ACTION		COMPLETION TIME	
D.	Required Action and associated Completion Time of Condition C not met.	D.1	Enter the Condition referenced in Table 3.3.3.1–1 for the channel.	Immediately.	
Ε.	As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	E.1	Be in MODE 3.	12 hours	
F.	As required by Required Action D.1 and referenced in Table 3.3.3.1-1.	F.1	Initiate action in accordance with Specification 5.6.6.	Immediately	

- -----NOTES-----1. These SRs apply to each Function in Table 3.3.3.1-1.
- When a channel is placed in an inoperable status solely for performance 2. of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the other required channel(s) in the associated Function is OPERABLE.

FREQUENCY SURVEILLANCE 31 days SR 3.3.3.1.1 Perform CHANNEL CHECK. Perform CHANNEL CALIBRATION for 92 days SR 3.3.3.1.2 Function 8. 18 months Perform CHANNEL CALIBRATION for SR 3.3.3.1.3 Functions 1, 2, 4, 5, 7, 9, and 10. 24 months SR 3.3.3.1.4 Perform CHANNEL CALIBRATION for Functions 3 and 6.

Columbia Generating Station 3.3.3.1-3

	FUNCTION	REQUIRED Channels	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1
1.	Reactor Vessel Pressure	2	E
		2	E
2.	Reactor Vessel Water Level		
	a150 inches to +60 inches	2	E
	b310 inches to -110 inches	2	E
3.	Suppression Pool Water Level		
	a25 inches to +25 inches	2	E
	b. 2 ft to 52 ft	2	Е
4.	Suppression Chamber Pressure	2	E
5.	Drywell Pressure		
	a5 psig to +3 psig	2	E
	b. 0 psig to 25 psig	2	E
	c. O psig to 180 psig	2	E
6.	Primary Containment Area Radiation	2	F
7.	PCIV Position	2 per penetration flow path (a)(b)	E
8.	Drywell H <sub>2</sub> Analyzer	2	E
9.	Drywell O2 Analyzer	2	E
10.	ECCS Pump Room Flood Level	5	Ε

#### Table 3.3.3.1-1 (page 1 of 1) Post Accident Monitoring Instrumentation

(a) Not required for isolation valves whose associated penetration flow path is isolated by at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.

(b) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.

3.3.3.2 Remote Shutdown System

LCO 3.3.3.2 The Remote Shutdown System Functions shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

-----NOTES-----1. LCO 3.0.4 is not applicable.

2. Separate Condition entry is allowed for each Function. 

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One or more required Functions inoperable.	A.1	Restore required Function to OPERABLE status.	30 days
Β.	Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	12 hours

Remote Shutdown System . 3.3.3.2

## SURVEILLANCE REQUIREMENTS

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 for up to 6 hours.

		SURVEILLANCE	FREQUENCY
SR	3.3.3.2.1	Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.	31 days
SR	3.3.3.2.2	Perform CHANNEL CALIBRATION for each required instrumentation channel, except the suppression pool water level instrumentation channel.	18 months
SR	3.3.3.2.3	Perform CHANNEL CALIBRATION for the suppression pool water level instrumentation channel.	24 months
SR	3.3.3.2.4	Verify each required control circuit and transfer switch is capable of performing the intended functions.	24 months

3.3.4.1 End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation

1.00	3.3.4.1	a.	Two channels per trip system for each EOC-RPT	
200			instrumentation Function listed below shall be OPERABLE:	

- 1. Turbine Throttle Valve (TTV) Closure; and
- 2. Turbine Governor Valve (TGV) Fast Closure, Trip Oil Pressure - Low.
- 0R
- LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," b. limits for inoperable EOC-RPT as specified in the COLR are made applicable.

APPLICABILITY: THERMAL POWER  $\geq$  30% RTP.

## ACTIONS

Separate Condition entry is allowed for each channel. \_\_\_\_\_

CONDITION		REQUIRED ACTION	COMPLETION TIME
A. One or more required channels inoperable.	A.1	Restore channel to OPERABLE status.	72 hours
	<u>0R</u>		
			(continued)

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	CONDITION		REQUIRED ACTION	COMPLETION TIME	
Α.	(continued)	A.2	Not applicable if inoperable channel is the result of an inoperable breaker.		
			Place channel in trip.	72 hours	
В.	One or more Functions with EOC-RPT trip capability not maintained.	B.1 <u>OR</u>	Restore EOC-RPT trip capability.	2 hours	
	<u>AND</u> MCPR limit for inoperable EOC-RPT not made applicable.	B.2	Apply the MCPR limit for inoperable EOC-RPT as specified in the COLR.	2 hours	
C.	Required Action and associated Completion Time not met.	C.1	Remove the associated recirculation pump from service.	4 hours	
		<u>OR</u> C.2	Reduce THERMAL POWER to < 30% RTP.	4 hours	

Columbia Generating Station 3.3.4.1-2

EOC-RPT Instrumentation 3.3.4.1

## SURVEILLANCE REQUIREMENTS

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 for up to 6 hours provided the associated Function maintains EOC-RPT trip capability.

. <u></u>		FREQUENCY	
SR	3.3.4.1.1	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR	3.3.4.1.2.a	Perform CHANNEL CALIBRATION. The Allowable Value shall be:	
		TTV−Closure: ≤ 7% closed.	24 months
SR	3.3.4.1.2.b	Perform CHANNEL CALIBRATION. The Allowable Value shall be:	
		TGV Fast Closure, Trip Oil Pressure−Low: <u>&gt;</u> 1000 psig.	18 months
SR	3.3.4.1.3	Verify TTV-Closure and TGV Fast Closure, Trip Oil Pressure-Low Functions are not bypassed when THERMAL POWER is ≥ 30% RTP.	18 months
SR	3.3.4.1.4	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.	24 months

		FREQUENCY	
SR	3.3.4.1.5	Breaker arc suppression time may be assumed from the most recent performance of SR 3.3.4.1.6. Verify the EOC-RPT SYSTEM RESPONSE TIME is within limits.	24 months on a STAGGERED TEST BASIS
SR	3.3.4.1.6	Determine RPT breaker arc suppression time.	60 months

- 3.3.4.2 Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation
- Two channels per trip system for each ATWS-RPT LCO 3.3.4.2 instrumentation Function listed below shall be OPERABLE:
  - Reactor Vessel Water Level-Low Low, Level 2; and a.
  - b. Reactor Vessel Steam Dome Pressure-High.

APPLICABILITY: MODE 1.

ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME	
A. One or more channels inoperable.	A.1	Restore channel to OPERABLE status.	7 days	
	<u>OR</u> A.2	Not applicable if inoperable channel is the result of an inoperable breaker. Place channel in trip.	7 days	

ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Β.	One Function with ATWS-RPT trip capability not maintained.	B.1	Restore ATWS-RPT trip capability.	72 hours
С.	Both Functions with ATWS-RPT trip capability not maintained.	C.1	Restore ATWS-RPT trip capability for one Function.	l hour
D.	Required Action and associated Completion Time not met.	D.1	Remove the associated recirculation pump from service.	6 hours
		 D.2	Be in MODE 2.	6 hours

SURVEILLANCE REQUIREMENTS

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 for up to 6 hours provided the associated Function maintains ATWS-RPT trip capability.

	FREQUENCY	
SR 3.3.4.2.1	Perform CHANNEL CHECK for Reactor Vessel Water Level-Low Low, Level 2 Function.	12 hours

		FREQUENCY	
SR	3.3.4.2.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR	3.3.4.2.3	Perform CHANNEL CALIBRATION. The Allowable Values shall be: a. Reactor Vessel Water Level-Low Low, Level 2: ≥ -58 inches; and b. Reactor Vessel Steam Dome Pressure-High: ≤ 1143 psig.	18 months
SR	3.3.4.2.4	Perform LOGIC SYSTEM FUNCTIONAL TEST, including breaker actuation.	24 months

3.3.5.1 Emergency Core Cooling System (ECCS) Instrumentation

The ECCS instrumentation for each Function in LCO 3.3.5.1 Table 3.3.5.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.1-1.

## ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more channels inoperable.	A.1	Enter the Condition referenced in Table 3.3.5.1-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	B.1	<ul> <li>NOTES</li> <li>Only applicable in MODES 1, 2, and 3.</li> <li>Only applicable for Functions 1.a, 1.b, 2.a, and 2.b.</li> <li>Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.</li> </ul>	<pre>1 hour from discovery of loss of initiation capability for feature(s) in both divisions (continued)</pre>

ECCS Instrumentation 3.3.5.1

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CONDITION		REQUIRED ACTION		COMPLETION TIME
Β.	(continued)	B.2	<pre>••••••••••••••••••••••••••••••••••••</pre>	
			<ol> <li>Only applicable for Functions 3.a and 3.b.</li> </ol>	
			Declare High Pressure Core Spray (HPCS) System inoperable.	<pre>1 hour from discovery of loss of HPCS initiation capability</pre>
		<u>AND</u>		
		B.3	Place channel in trip.	24 hours
C.	As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	C.1	<pre>NOTES 1. Only applicable in MODES 1, 2, and 3.</pre>	
			<ol> <li>Only applicable for Functions</li> <li>1.c, 1.d, 1.e,</li> <li>1.f, 2.c, 2.d,</li> <li>2.e, and 2.f.</li> </ol>	
			Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	l hour from discovery of loss of initiation capability for feature(s) in both divisions
		<u>and</u>		(continued)

ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
C.	(continued)	C.2	Restore channel to OPERABLE status.	24 hours
D.	As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	D.1	Only applicable if HPCS pump suction is not aligned to the suppression pool.	
			Declare HPCS System inoperable.	l hour from discovery of loss of HPCS initiation capability
		AND		
		D.2.1	Place channel in trip.	24 hours
		<u>0r</u>		
		D.2.2	Align the HPCS pump suction to the suppression pool.	24 hours

ECCS Instrumentation . 3.3.5.1

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	CONDITION		REQUIRED ACTION	COMPLETION TIME
E.	As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	E.1	<pre>NOTES 1. Only applicable in MODES 1, 2, and 3.</pre>	
			<ol> <li>Only applicable for Functions</li> <li>1.g, 1.h, and</li> <li>2.g.</li> </ol>	
			Declare supported feature(s) inoperable when its redundant feature ECCS initiation capability is inoperable.	<pre>1 hour from discovery of loss of initiation capability for feature(s) in both divisions</pre>
		AND		
		E.2	Restore channel to OPERABLE status.	7 days
F.	As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	F.1	Declare Automatic Depressurization System (ADS) valves inoperable.	<pre>1 hour from discovery of loss of ADS initiation capability in both trip systems</pre>
		AND		
				(continued)

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	CONDITION		REQUIRED ACTION	COMPLETION TIME
F.	(continued)	F.2	Place channel in trip.	96 hours from discovery of inoperable channel concurrent with HPCS or reactor core isolation cooling (RCIC) inoperable <u>AND</u> 8 days
G.	As required by Required Action A.1 and referenced in Table 3.3.5.1-1.	G.1	Only applicable for Functions 4.b, 4.d, 4.e, 5.b, and 5.d. Declare ADS valves inoperable.	<pre>1 hour from discovery of loss of ADS initiation capability in both trip systems</pre>
		AND		
				(continued)

ECCS Instrumentation 3.3.5.1

ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
G.	(continued)	G.2	Restore channel to OPERABLE status.	96 hours from discovery of inoperable channel concurrent with HPCS or RCIC inoperable <u>AND</u> 8 days
н.	Required Action and associated Completion Time of Condition B, C, D, E, F, or G not met.	H.1	Declare associated supported feature(s) inoperable.	Immediately

## 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.

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	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		RVEILLANCE QUIREMENTS	ALLOWABLE VALUE
1.	<ol> <li>Low Pressure Coolant Injection-A (LPCI) and Low Pressure Core Spray (LPCS) Subsystems</li> </ol>	ection-A (LPCI) and Low ssure Core Spray (LPCS)						
	a.	Reactor Vessel Water	1,2,3,	2 <sup>(b)</sup>	В		3.3.5.1.1	<u>&gt;</u> -142.3 inche
		Level — Low Low Low, Level 1	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR	3.3.5.1.2 3.3.5.1.4 3.3.5.1.6	
	b.	Drywell Pressure — High	1,2,3	2 <sup>(b)</sup>	В	SR	3.3.5.1.2 3.3.5.1.4 3.3.5.1.6	<u>≺</u> 1.88 psig.
	c.	LPCS Pump Start - LOCA		С		SR 3.3.5.1.5	> 8.53 seconds	
		Time Delay Relay	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR	3.3.5.1.6	and <u>&lt;</u> 10.64 second:
	d.	LPCI Pump A	1,2,3,	1	С		3.3.5.1.5	≥ 17.24 seconds and ≤ 21.53 seconds
		Start — LOCA Time Delay Relay	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR	3.3.5.1.6	
	e.	e. LPCI Pump A	1,2,3,	1	С		3.3.5.1.2	$\geq$ 3.04 seconds
		Start — LOCA/LOOP Time Delay Relay	4 <sup>(a)</sup> ,5 <sup>(a)</sup>				3.3.5.1.3 3.3.5.1.6	and <u>&lt;</u> 6.00 seconds
	f.	Reactor Vessel Pressure — Low (Injection Permissive)	1,2,3	1 per valve	C		3.3.5.1.2 3.3.5.1.4 3.3.5.1.6	<u>&gt;</u> 448 psig and ≤ 492 psig
			4 <sup>(a)</sup> ,5 <sup>(a)</sup>	1 per valve	В	SR	3.3.5.1.2 3.3.5.1.4 3.3.5.1.6	<u>&gt;</u> 448 psig and <u>&lt;</u> 492 psig
	g.	LPCS Pump Discharge	1,2,3,	1	E		3.3.5.1.2	<u>&gt;</u> 668 gpm
		Flow — Low (Minimum Flow)	4 <sup>(a)</sup> ,5 <sup>(a)</sup>				3.3.5.1.4 3.3.5.1.6	≥ 668 gpm and ≤ 1067 gpm
	h.	LPCI Pump A Discharge	1,2,3,	1	E		3.3.5.1.2	≥ 605 gpm
		Flow — Low (Minimum Flow)	4 <sup>(a)</sup> ,5 <sup>(a)</sup>				3.3.5.1.4 3.3.5.1.6	and ≤ 984 gpm
	i.	Manual Initiation	1,2,3,	2	С		3.3.5.1.6	NA
			4(a) <sub>,5</sub> (a)					

(continued)

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

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

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Table 3.3.5.1	-1 (page	2 of 4)
Emergency Core Coolin	g System	Instrumentation

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
	PCI B and LPCI C absystems					
a.	Reactor Vessel Water	1,2,3,	2 <sup>(b)</sup>	В	SR 3.3.5.1.1	
	Level — Low Low Low, Level 1	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	
b.	Drywell Pressure — High	1,2,3	2 <sup>(b)</sup>	В	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	
c.	LPCI Pump B	1,2,3,	1	C	SR 3.3.5.1.5	
	Start — LOCA Time Delay Relay	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR 3.3.5.1.6	and <u>&lt;</u> 21.53 secon
d.	LPCI Pump C	1,2,3,	1	С	SR 3.3.5.1.5	
	Start — LOCA Time Delay Relay	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR 3.3.5.1.6	and 10.64 secon
e.	LPCI Pump B	1,2,3,	1	С	SR 3.3.5.1.2	
	Start — LOCA/LOOP Time Delay Relay	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR 3.3.5.1.3 SR 3.3.5.1.6	
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	and
		4 <sup>(a)</sup> ,5 <sup>(a)</sup>	1 per valve	B	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	and
g	. LPCI Pumps B & C	1,2,3,	1 per pump	Е	SR 3.3.5.1.2	
	Discharge Flow — Low (Minimum Flow)	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR 3.3.5.1.4 SR 3.3.5.1.6	
h.	Manual Initiation	1,2,3,	2	С	SR 3.3.5.1.6	5 NA
		4 <sup>(a)</sup> ,5 <sup>(a)</sup>				
	igh Pressure Core Spray HPCS) System					
a	. Reactor Vessel Water	1,2,3,	<sub>4</sub> (b)	В	SR 3.3.5.1.1 SR 3.3.5.1.2	
	Level — Low Low, Level 2	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR 3.3.5.1.4 SR 3.3.5.1.4	•
						(continue

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

(b) Also required to initiate the associated DG.

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		FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVE ILLANCE REQUIREMENTS	ALLOWABLE VALUE
•		S System Intinued)					
	b.	Drywell Pressure — High	1,2,3	4 <sup>(b)</sup>	В	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	<u>≤</u> 1.88 psig
	c.		1,2,3,	2	C	SR 3.3.5.1.1	≤ 56.0 inches
		Water Level — High, Level 8	4 <sup>(a)</sup> ,5 <sup>(a)</sup>			SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	
	d.	Condensate Storage Tank Level — Low	1,2,3,	2	D	SR 3.3.5.1.2 SR 3.3.5.1.4	≥ 448 ft 1 inch elevation
			4 <sup>(c)</sup> ,5 <sup>(c)</sup>			SR 3.3.5.1.6	crevation
	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 inche elevation
	f.	HPCS System Flow Rate — Low (Minimum Flow)	1,2,3, 4 <sup>(a)</sup> ,5 <sup>(a)</sup>	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,			NA	
			4(a) 5(a)				
•-	Dep Sys	omatic pressurization tem (ADS) Trip tem A					
	a.	Reactor Vessel Water Level — Low Low Low, Level 1	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	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	≥ -142.3 inches
	b.	ADS Initiation Timer	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	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 <sup>(d)</sup> ,3 <sup>(d)</sup>	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 <sup>(d)</sup> ,3 <sup>(d)</sup>	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

#### Table 3.3.5.1-1 (page 3 of 4) Emergency Core Cooling System Instrumentation

(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.

3.3.5.1-10

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		FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
4.		Trip System A ntinued)					
	e.	LPCI Pump A Discharge Pressure — High	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	2	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 116 psig and <u>&lt;</u> 134 psig
	f.	Accumulator Backup Compressed Gas System Pressure — Low	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	3	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	<u>&gt;</u> 151.4 psig
	g.	Manual Initiation	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	4	G	SR 3.3.5.1.6	NA
5.	ADS	Trip System B					
	a.	Reactor Vessel Water Level — Low Low Low, Level 1	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	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	> -142.3 inches
	b.	ADS Initiation Timer	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	1	G	SR 3.3.5.1.2 SR 3.3.5.1.3 SR 3.3.5.1.6	$\leq$ 115.0 seconds
	c.	Reactor Vessel Water Level — Low, Level 3 (Permissive)	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	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.	LPCI Pumps B & C Discharge Pressure — High	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	2 per pump	G	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	<u>&gt;</u> 116 psig and <u>&lt;</u> 134 psig
	e.	Accumulator Backup Compressed Gas System Pressure — Low	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	3	F	SR 3.3.5.1.2 SR 3.3.5.1.4 SR 3.3.5.1.6	≥ 151.4 psig
	f.	Manual Initiation	1,2 <sup>(d)</sup> ,3 <sup>(d)</sup>	4	G	SR 3.3.5.1.6	NA

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

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

3.3.5.2 Reactor Core Isolation Cooling (RCIC) System Instrumentation

The RCIC System instrumentation for each Function in LCO 3.3.5.2 Table 3.3.5.2-1 shall be OPERABLE.

APPLICABILITY: MODE 1, MODES 2 and 3 with reactor steam dome pressure > 150 psig.

#### ACTIONS

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

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One or more channels inoperable.	A.1	Enter the Condition referenced in Table 3.3.5.2-1 for the channel.	Immediately
в.	As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	B.1	Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
		AND		
		B.2	Place channel in trip.	24 hours

RCIC System Instrumentation 3.3.5.2

ACTIONS

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	CONDITION		REQUIRED ACTION	COMPLETION TIME
C.	As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	C.1	Restore channel to OPERABLE status.	24 hours
D.	As required by Required Action A.1 and referenced in Table 3.3.5.2-1.	D.1	Only applicable if RCIC pump suction is not aligned to the suppression pool.	
			Declare RCIC System inoperable.	1 hour from discovery of loss of RCIC initiation capability
		AND		
		D.2.1	Place channel in trip.	24 hours
		<u>0r</u>		
		D.2.2	Align RCIC pump suction to the suppression pool.	24 hours
Ε.	Required Action and associated Completion Time of Condition B, C, or D not met.	E.1	Declare RCIC System inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

1. Refer to Table 3.3.5.2-1 to determine which SRs apply for each RCIC

- 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 2 and 4; and (b) for up to 6 hours for Functions 1 and 3 provided the associated Function maintains RCIC initiation capability.

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<u>.</u>		SURVEILLANCE	FREQUENCY
SR	3.3.5.2.1	Perform CHANNEL CHECK.	12 hours
SR	3.3.5.2.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR	3.3.5.2.3	Perform CHANNEL CALIBRATION.	18 months
SR	3.3.5.2.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

FUNCTION		REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1.	Reactor Vessel Water Level — Low Low, Level 2	. 4	В	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.4	≥ -58 inches
2.	Reactor Vessel Water Level — High, Level 8	2	с	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.4	≤ 56 inches
3.	Condensate Storage Tank Level Low	2	D	SR 3.3.5.2.1 SR 3.3.5.2.2 SR 3.3.5.2.3 SR 3.3.5.2.4	≥ 446 ft 0 inches elevation
4.	Manual Initiation	2	С	SR 3.3.5.2.4	NA

#### Table 3.3.5.2-1 (page 1 of 1) Reactor Core Isolation Cooling System Instrumentation

3.3.6.1 Primary Containment Isolation Instrumentation

The primary containment isolation instrumentation for each LCO 3.3.6.1 Function in Table 3.3.6.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.1-1.

#### ACTIONS

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

<u></u>	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One or more required channels inoperable.	A.1	Place channel in trip.	12 hours for Functions 2.a, 2.c, and 5.d <u>AND</u> 24 hours for Functions other than Functions 2.a, 2.c, and 5.d
Β.	One or more automatic Functions with isolation capability not maintained.	B.1	Restore isolation capability.	l hour

Primary Containment Isolation Instrumentation 3.3.6.1

ACTIONS

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	CONDITION		REQUIRED ACTION	COMPLETION TIME
C.	Required Action and associated Completion Time of Condition A or B not met.	C.1	Enter the Condition referenced in Table 3.3.6.1-1 for the channel.	Immediately.
D.	As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	D.1 <u>OR</u>	Isolate associated main steam line (MSL).	12 hours
		D.2.1	Be in MODE 3.	12 hours
		AND		
		D.2.2	Be in MODE 4.	36 hours
Ε.	As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	E.1	Be in MODE 2.	6 hours
F.	As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	F.1	Isolate the affected penetration flow path(s).	l hour
G.	As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	G.1	Isolate the affected penetration flow path(s).	24 hours

(continued)

Columbia Generating Station 3.3.6.1-2

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ACTIO	Ν	S
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	CONDITION		REQUIRED ACTION	COMPLETION TIME
н.	Required Action and associated Completion Time of Condition F or G not met. <u>OR</u> As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	H.1 <u>AND</u> H.2	Be in MODE 3. Be in MODE 4.	12 hours 36 hours
Ι.	As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	I.1 <u>OR</u> I.2	Declare associated standby liquid control (SLC) subsystem inoperable. Isolate the Reactor Water Cleanup (RWCU) System.	1 hour 1 hour
J.	As required by Required Action C.1 and referenced in Table 3.3.6.1-1.	J.1 <u>OR</u> J.2	Initiate action to restore channel to OPERABLE status. Initiate action to isolate the Residual Heat Removal (RHR) Shutdown Cooling (SDC) System.	Immediately Immediately

Primary Containment Isolation Instrumentation 3.3.6.1

SURVEILLANCE REQUIREMENTS

## -----NOTES-----

- 1. Refer to Table 3.3.6.1-1 to determine which SRs apply for each Primary Containment Isolation 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 for up to 6 hours provided the associated Function maintains isolation capability. ----

SURVEILLANCE FREQUENCY SR 3.3.6.1.1 Perform CHANNEL CHECK. 12 hours SR 3.3.6.1.2 Perform CHANNEL FUNCTIONAL TEST. 92 days 184 days SR 3.3.6.1.3 Perform CHANNEL FUNCTIONAL TEST. SR 3.3.6.1.4 Perform CHANNEL CALIBRATION. 18 months SR 3.3.6.1.5 Perform CHANNEL CALIBRATION. 24 months SR 3.3.6.1.6 Perform LOGIC SYSTEM FUNCTIONAL TEST. 24 months SR 3.3.6.1.7 -----NOTE-----Channel sensors for Functions 1.a, 1.b, and 1.c are excluded. Verify the ISOLATION SYSTEM RESPONSE TIME 24 months on a is within limits. STAGGERED TEST BASIS

#### 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
۱.		n Steam Line lation					
	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	Ε	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6 SR 3.3.6.1.7	<u>&gt;</u> 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	<u>≺</u> 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	<u>&gt;</u> 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	<u>≺</u> 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	<u>≤</u> 90°F
	g.	Manual Initiation	1,2,3	4	G	SR 3.3.6.1.6	NA
2.		mary Containment lation					
	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.	н	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	н	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	<u>&lt;</u> 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	<u>≤</u> 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.

		FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1		RVEILLANCE DUIREMENTS	ALLOWABLE VALUE
3.	Coo	ctor Core Isolation ling (RCIC) System lation						
	a.	RCIC Steam Line Flow — High	1,2,3	1	F	SR SR	3.3.6.1.1 3.3.6.1.2 3.3.6.1.4 3.3.6.1.6	≤ 250 inches we
	b.	RCIC Steam Line Flow — Time Delay	1,2,3	1	F	SR	3.3.6.1.2 3.3.6.1.4 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 3.3.6.1.4 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 3.3.6.1.4 3.3.6.1.6	≤ 20 psig
	e.	RCIC Equipment Room Area Temperature — High	1,2,3	1	F		3.3.6.1.3 3.3.6.1.4 3.3.6.1.6	<u>≺</u> 180°F
	f.	RCIC Equipment Room Area Differential Temperature — High	1,2,3	1	F	SR	3.3.6.1.3 3.3.6.1.4 3.3.6.1.6	<u>≤</u> 60°F
	g.	RWCU/RCIC Steam Line Routing Area Temperature — High	1,2,3	1	F	SR	3.3.6.1.3 3.3.6.1.4 3.3.6.1.6	<u>≺</u> 180°F
	h.	Manual Initiation	1,2,3	1 <sup>(b)</sup>	G	SR	3.3.6.1.6	NA
•	RWC	U System Isolation						
	a.	Differential Flow — High	1,2,3	1	F	SR SR	3.3.6.1.1 3.3.6.1.2 3.3.6.1.5 3.3.6.1.6	<u>&lt;</u> 67.4 gpm
	b.	Differential Flow — Time Delay	1,2,3	1	F	SR	3.3.6.1.2 3.3.6.1.5 3.3.6.1.6	<u>&lt;</u> 46.5 seconds
	с.	Blowdown Flow High	1,2,3	1	F	SR SR SR	3.3.6.1.1 3.3.6.1.2 3.3.6.1.5 3.3.6.1.6 3.3.6.1.7	<u>&lt;</u> 271.7 gpm
								(continued

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

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

Table 3.3.6.1-1 (page 3 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
•		U System Isolation ntinued)					
	d.	Heat Exchanger 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	-
	e.	Heat Exchanger Room Area Ventilation 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	-
	f.	Pump Room Area Temperature — High	1,2,3	1 per room	F	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	-
	g.	Pump Room Area Ventilation Differential Temperature — High	1,2,3	1 per room	F	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	-
	h.	RWCU/RCIC 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	-
	i.	RWCU Line Routing Area Temperature — High	1,2,3	1 per room	F	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	
		Room 409, 509 Areas					<u>&lt;</u> 175°F
		Room 408, 511 Areas					<u>≤</u> 180°F
	j.	Reactor Vessel Water Level — Low Low, Level 2	1,2,3	2	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	-
	k.	SLC System Initiation	1,2	2(c)	1	SR 3.3.6.1.6	NA
	ι.	Manual Initiation	1,2,3	2	G	SR 3.3.6.1.6	NA
							(continu

(c) SLC System Initiation only inputs into one of the two trip systems.

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION C.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
	HR SDC System solation					
a.	. Pump Room Area Temperature — High	3	1 per room	F	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	<u>&lt;</u> 150°F
b.	. Pump Room Area Ventilation Differential Temperature — High	3	1 per room	F	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	<u>≤</u> 70°F
с.	. Heat Exchanger Area Temperature — High	3	1 per room	F	SR 3.3.6.1.3 SR 3.3.6.1.4 SR 3.3.6.1.6	
	Room 505 Area					≤ 140°F
	Room 507 Area					<u>≤</u> 160°F
	Room 605 Area					<u>&lt;</u> 150°F
	Room 606 Area					<u>≤</u> 140°F
d.	. Reactor Vessel Water Level — Low, Level 3	3,4,5	2(d)	J	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
e.	Reactor Vessel Pressure — High	1,2,3	1	F	SR 3.3.6.1.2 SR 3.3.6.1.4 SR 3.3.6.1.6	≤ 135 psig
f.	Manual Initiation	1,2,3	2	G	SR 3.3.6.1.6	NA

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

(d) Only one trip system required in MODES 4 and 5 with RHR Shutdown Cooling System integrity maintained.

3.3.6.2 Secondary Containment Isolation Instrumentation

The secondary containment isolation instrumentation for each LCO 3.3.6.2 Function in Table 3.3.6.2-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.6.2-1.

## ACTIONS

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

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One or more channels inoperable.	A.1	Place channel in trip.	12 hours for Function 2 <u>AND</u> 24 hours for Functions other than Function 2
В.	One or more automatic Functions with isolation capability not maintained.	B.1	Restore isolation capability.	l hour
С.	Required Action and associated Completion Time not met.	C.1.1 <u>OR</u>	Isolate the associated penetration flow path(s).	l hour
<u> </u>				(continued)

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Secondary Containment Isolation Instrumentation 3.3.6.2

CONDITION		REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.1.2	Declare associated secondary containment isolation valve(s) inoperable.	l hour
	AND		
	C.2.1	Place the associated standby gas treatment (SGT) subsystem in operation.	l hour
	<u>0r</u>		
	C.2.2	Declare associated SGT subsystem inoperable.	l hour

ACTIONS

#### SURVEILLANCE REQUIREMENTS

- Refer to Table 3.3.6.2-1 to determine which SRs apply for each Secondary Containment Isolation 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 for up to 6 hours provided the associated Function maintains isolation capability.

	SURVEILLANCE	FREQUENCY
SR 3.3.6.2.1	Perform CHANNEL CHECK.	12 hours

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

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	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	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	SR 3.3.6.2.2 SR 3.3.6.2.3 SR 3.3.6.2.4	<u>≺</u> 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	<u>≤</u> 16.0 mR/hr
4.	Manual Initiation	1,2,3, (a),(b)	4	SR 3.3.6.2.4	NA

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

(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.

3.3.7.1 Control Room Emergency Filtration (CREF) System Instrumentation

The CREF System instrumentation for each Function in LCO 3.3.7.1 Table 3.3.7.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.7.1-1.

#### ACTIONS

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

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One or more channels inoperable.	A.1	Enter the Condition referenced in Table 3.3.7.1-1 for the channel.	Immediately
Β.	As required by Required Action A.1 and referenced in Table 3.3.7.1-1.	B.1	Declare associated CREF subsystem inoperable.	<pre>1 hour from discovery of loss of CREF initiation capability in both trip systems</pre>
		<u>AND</u> B.2	Place channel in trip.	24 hours

ACTIONS	TIONS
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	CONDITION	REQUIRED ACTION		COMPLETION TIME
C.	As required by Required Action A.1 and referenced in Table 3.3.7.1-1.	C.1	Declare associated CREF subsystem inoperable.	<pre>1 hour from discovery of loss of CREF initiation capability in both trip systems</pre>
		AND		
		C.2	Place channel in trip.	12 hours
D.	Required Action and associated Completion Time of Condition B or C not met.	D.1	Place associated CREF subsystem in the pressurization mode of operation.	l hour
		<u> 0                                   </u>		
		D.2	Declare associated CREF subsystem inoperable.	l hour

ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
E.	As required by Required Action A.1 and referenced in Table 3.3.7.1-1.		NOTE 0.4 is not applicable. NOTE Enter applicable Conditions and Required Actions of	
			LCO 3.7.3, "Control Room Emergency Filtration (CREF) System," when both remote air intakes are isolated.	
			Isolate the associated remote air intake.	<pre>1 hour from discovery of loss of radiation monitoring capability in a remote air intake</pre>
		<u>and</u>		
		E.2	Restore channel to OPERABLE status.	7 days from discovery of inoperable channels associated with both remote air intakes
				AND
				30 days

ACTIONS

-	CONDITION		REQUIRED ACTION	COMPLETION TIME
F.	Required Action and associated Completion Time of Condition E not met.	F.1	Declare both CREF subsystems inoperable.	Immediately

## SURVEILLANCE REQUIREMENTS

-----NOTES-----

- 1. Refer to Table 3.3.7.1-1 to determine which SRs apply for each CREF System 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 for up to 6 hours provided the associated Function maintains CREF initiation or radiation monitoring capability, as applicable.

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		FREQUENCY	
SR	3.3.7.1.1	Perform CHANNEL CHECK.	12 hours
SR	3.3.7.1.2	Perform CHANNEL FUNCTIONAL TEST.	92 days
SR	3.3.7.1.3	Perform CHANNEL CALIBRATION.	18 months
SR	3.3.7.1.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

	FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1.	Reactor Vessel Water Level — Low Low, Level 2	1,2,3, (a)	2	В	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.4	≥ -58 inches
2.	Drywell Pressure — High	1,2,3	2	C	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.4	<u>&lt;</u> 1.88 psig
3.	Reactor Building Vent Exhaust Plenum Radiation — High	1,2,3, (a),(b)	2	В	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3 SR 3.3.7.1.4	<u>≤</u> 16.0 mR/hr
4.	Main Control Room Ventilation Radiation Monitor	1,2,3, (a),(b)	2 per intake	E	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.3	<u>≤</u> 3800 cpm

#### Table 3.3.7.1-1 (page 1 of 1) Control Room Emergency Filtration System Instrumentation

(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.

3.3.8.1 Loss of Power (LOP) Instrumentation

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- The LOP instrumentation for each Function in Table 3.3.8.1-1 LCO 3.3.8.1 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
Α.	One or more required channels inoperable.	A.1	Enter the Condition referenced in Table 3.3.8.1-1 for the channel.	Immediately
В.	As required by Required Action A.1 and referenced in Table 3.3.8.1-1.	B.1	Declare associated DG inoperable.	1 hour from discovery of loss of initiation capability for the associated DG
		<u>AND</u> B.2	Restore channel to OPERABLE status.	24 hours

(continued)

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ACTIONS

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	CONDITION		REQUIRED ACTION	COMPLETION TIME	
C.	As required by Required Action A.1 and referenced in Table 3.3.8.1-1.	C.1	Place channel in trip.	l hour .	
D.	Required Action and associated Completion Time of Condition B or C not met.	D.1 <u>OR</u>	Declare associated DG inoperable.	Immediately	
		Only applicable for Functions 1.c and 1.d.			
		D.2.1	Open offsite circuit supply breaker to associated 4.16 kV ESF bus.	Immediately	
		AND			
		D.2.2	Declare associated offsite circuit inoperable.	Immediately	

#### SURVEILLANCE REQUIREMENTS

- Refer to Table 3.3.8.1-1 to determine which SRs apply for each LOP 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 for up to 2 hours provided the associated Function maintains initiation capability.

		FREQUENCY	
SR	3.3.8.1.1	Perform CHANNEL FUNCTIONAL TEST.	31 days
SR	3.3.8.1.2	Perform CHANNEL CALIBRATION.	18 months
SR	3.3.8.1.3	Perform CHANNEL CALIBRATION.	24 months
SR	3.3.8.1.4	Perform LOGIC SYSTEM FUNCTIONAL TEST.	24 months

Table 3.3.8.1-1 (page 1 of 1) Loss of Power Instrumentation

		FUNCTION	REQUIRED CHANNELS PER DIVISION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1		RVEILLANCE QUIREMENTS	ALLOWABLE VALUE
1.	Divisions 1 and 2 - 4.16 kV Emergency Bus Undervoltage						
	a.	TR-S Loss of Voltage — 4.16 kV Basis	2	В		3.3.8.1.2 3.3.8.1.4	≥ 2450 V and ≤ 3135 V
	b.	TR-S Loss of Voltage — Time Delay	2	В		3.3.8.1.3 3.3.8.1.4	≥ 2.95 seconds and ≤ 7.1 seconds
	c.	TR-B Loss of Voltage — 4.16 kV Basis	1	C		3.3.8.1.3 3.3.8.1.4	≥ 2450 V and ≤ 3135 V
	d.	TR-B Loss of Voltage — Time Delay	1	С		3.3.8.1.3 3.3.8.1.4	≥ 3.06 seconds and ≤ 9.28 seconds
	e.	Degraded Voltage — 4.16 kV Basis	2 <sup>(a)</sup>	С	SR	3.3.8.1.1 3.3.8.1.2 3.3.8.1.4	≥ 3685 V and ≤ 3755 V
	f.	Degraded Voltage — Primary Time Delay	2 <sup>(a)</sup>	С	SR	3.3.8.1.1 3.3.8.1.2 3.3.8.1.4	5.0 seconds and 5.3 seconds
	g.	Degraded Voltage — Secondary Time Delay	1	C		3.3.8.1.2 3.3.8.1.4	≥ 2.63 seconds and ≤ 3.39 seconds
2.		ision 3 - 4.16 kV Emergency Bus ervoltage					
	a.	Loss of Voltage — 4.16 kV Basis	2	В		3.3.8.1.2 3.3.8.1.4	$\geq$ 2450 V and $\leq$ 3135 V
	b.	Loss of Voltage — Time Delay	2	В		3.3.8.1.3 3.3.8.1.4	≥ 1.87 seconds and ≤ 3.73 seconds
	c.	Degraded Voltage — 4.16 kV Basis	2	C		3.3.8.1.2 3.3.8.1.4	$\geq$ 3685 V and $\leq$ 3755 V
	d.	Degraded Voltage — Time Delay	2	С		3.3.8.1.2 3.3.8.1.4	≥ 7.36 seconds and < 8.34 seconds

(a) The Degraded Voltage - 4.16 kV Basis and - Primary Time Delay Functions must be associated with one another.

3.3.8.2 Reactor Protection System (RPS) Electric Power Monitoring

Two RPS electric power monitoring assemblies shall be LCO 3.3.8.2 OPERABLE for each inservice RPS motor generator set or alternate power supply that supports equipment required to be OPERABLE.

MODES 1, 2, and 3, APPLICABILITY: MODES 4 and 5 with both residual heat removal (RHR) shutdown cooling (SDC) suction isolation valves open, MODE 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies.

#### ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME
Α.	One or both required inservice power supplies with one electric power monitoring assembly inoperable.	A.1	Remove associated inservice power supply(s) from service.	72 hours
Β.	One or both required inservice power supplies with both electric power monitoring assemblies inoperable.	B.1	Remove associated inservice power supply(s) from service.	l hour
С.	Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 <u>AND</u> C.2	Be in MODE 3. Be in MODE 4.	12 hours 36 hours

(continued)

Columbia Generating Station 3.3.8.2-1

ACTIONS

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	CONDITION		REQUIRED ACTION	COMPLETION TIME	
D.	Required Action and associated Completion Time of Condition A or B not met in MODE 4 or 5 with both RHR SDC suction isolation valves open.	D.1	Initiate action to restore one electric power monitoring assembly to OPERABLE status for inservice power supply(s) supplying required instrumentation.	Immediately	
		<u>OR</u>			
		D.2	Initiate action to isolate the RHR SDC System.	Immediately	
Ε.	Required Action and associated Completion Time of Condition A or B not met in MODE 5 with any control rod withdrawn from a core cell containing one or more fuel assemblies.	E.1	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately	

**RPS** Electric Power Monitoring 3.3.8.2

#### SURVEILLANCE REQUIREMENTS

-----NOTE-----NOTE-----When an RPS electric power monitoring assembly is placed in an inoperable status solely for performance of required Surveillances, entry into the associated Conditions and Required Actions may be delayed for up to 6 hours provided the other RPS electric power monitoring assembly for the associated power supply maintains trip capability. μυνει σαρμιν παιπεατήσει της εαμαστητές.

		SURVEILLANCE	FREQUENCY
SR	3.3.8.2.1	Only required to be performed prior to entering MODE 2 or 3 from MODE 4, when in MODE 4 for $\geq$ 24 hours.	
		Perform CHANNEL FUNCTIONAL TEST.	184 days
SR	3.3.8.2.2	<ul> <li>Perform CHANNEL CALIBRATION. The Allowable Values shall be:</li> <li>a. Overvoltage ≤ 133.8 V, with time delay ≤ 3.46 seconds;</li> <li>b. Undervoltage ≥ 110.8 V, with time delay ≤ 3.46 seconds; and</li> <li>c. Underfrequency ≥ 57 Hz, with time delay ≤ 3.46 seconds.</li> </ul>	18 months
SR	3.3.8.2.3	Perform a system functional test.	18 months

Columbia Generating Station 3.3.8.2-3