

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION SYSTEMS

SUPPRESSION CHAMBER

LIMITING CONDITION FOR OPERATION

3.6.2.1 The suppression chamber shall be OPERABLE with:

a. The pool water:

1. Volume between 87,600 ft³ and 89,600 ft³, equivalent to a level between -27 inches and -31 inches, and a
 2. Maximum average temperature of 95°F during OPERATIONAL CONDITION 1 or 2, except that the maximum average temperature may be permitted to increase to:
 - a) 105°F during testing which adds heat to the suppression chamber.
 - b) 110°F with THERMAL POWER less than or equal to 1% of RATED THERMAL POWER.
 - c) 120°F with the main steam line isolation valves closed following a scram.
- b. Two OPERABLE suppression chamber water temperature instrumentation channels with a minimum of 11 operable RTD inputs per channel.
- c. A total leakage from the drywell to the suppression chamber of less than the equivalent leakage through a 1-inch diameter orifice at a differential pressure of 1 psig.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION:

- a. With the suppression chamber water level outside the above limits, restore the water level to within the limits within 6 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 1 or 2 with the suppression chamber average water temperature greater than 95°F, restore the average temperature to less than or equal to 95°F within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours, except, as permitted above:

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CONTAINMENT SYSTEMS

BASES

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

The specifications of this section ensure that the primary containment pressure will not exceed the calculated pressure of 49 psig during primary system blowdown from full operating pressure.

The pressure suppression pool water provides the heat sink for the reactor primary system energy release following a postulated rupture of the system. The pressure suppression chamber water volume must absorb the associated decay and structural sensible heat released during primary system blowdown from 1045 psig. Since all of the gases in the drywell are purged into the pressure suppression chamber air space during a loss of coolant accident, the pressure of the liquid must not exceed 62 psig, the suppression chamber maximum pressure. The design volume of the suppression chamber, water and air, was obtained by considering that the total volume of reactor coolant to be condensed is discharged to the suppression chamber and that the drywell volume is purged to the suppression chamber.

89,843

Using the minimum or maximum water volumes given in the specification, containment pressure during the design basis accident is approximately 49 psig, which is below the design pressure of 62 psig. Maximum water volume of ~~89,800~~ ft³ results in a downcomer submergence of 3'4" and the minimum volume of ~~87,800~~ ft³ results in a submergence approximately four inches less.

86,545

The Monticello tests were run with a submerged length of three feet and with complete condensation. Thus, with respect to the downcomer submergence, this specification is adequate. The maximum temperature at the end of the blowdown tested during the Humboldt Bay and Bodega Bay tests was 170°F, and this is conservatively taken to be the limit for complete condensation of the reactor coolant, although condensation would occur for temperatures above 170°F.

When it is necessary to make the suppression chamber inoperable, this shall only be done as provided in Specification 3.5.3.3.

Under full power operation conditions, blowdown from an initial suppression chamber water temperature of 90°F results in a water temperature of approximately 135°F immediately following blowdown, which is below the temperature 170°F used for complete condensation. At this temperature and atmospheric pressure, the available NPSH exceeds that required by both the RHR and core spray pumps; thus, there is no dependency on containment overpressure during the accident injection phase. If both RHR loops are used for containment cooling, there is no dependency on containment overpressure for post-LOCA operations.

ENCLOSURE 6

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
NRC DOCKET NOS. 50-325 AND 50-324
OPERATING LICENSE NOS. DPR-71 AND DPR-62
REQUEST FOR LICENSE AMENDMENTS
REVISION OF SUPPRESSION POOL WATER VOLUMES

MARKED-UP TECHNICAL SPECIFICATION AND BASES PAGES - UNIT 2

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION SYSTEMS

SUPPRESSION CHAMBER

LIMITING CONDITION FOR OPERATION

3.6.2.1 The suppression chamber shall be OPERABLE with:

a. The pool water:

1. Volume between ^{86,545}~~87,600~~ ft³ and ^{89,843}~~89,600~~ ft³, equivalent to a level between -27 inches and -31 inches, and a
 2. Maximum average temperature of 95°F during OPERATIONAL CONDITION 1 or 2, except that the maximum average temperature may be permitted to increase to:
 - a) 105°F during testing which adds heat to the suppression chamber.
 - b) 110°F with THERMAL POWER less than or equal to 1% of RATED THERMAL POWER.
 - c) 120°F with the main steam line isolation valves closed following a scram.
- b. Two OPERABLE suppression chamber water temperature instrumentation channels with a minimum of 11 operable RTD inputs per channel.
- c. A total leakage from the drywell to the suppression chamber of less than the equivalent leakage through a 1-inch diameter orifice at a differential pressure of 1 psig.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION:

- a. With the suppression chamber water level outside the above limits, restore the water level to within the limits within 6 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 1 or 2 with the suppression chamber average water temperature greater than 95°F, restore the average temperature to less than or equal to 95°F within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours, except, as permitted above:

CONTAINMENT SYSTEMS

BASES

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

The specifications of this section ensure that the primary containment pressure will not exceed the calculated pressure of 49 psig during primary system blowdown from full operating pressure.

The pressure suppression pool water provides the heat sink for the reactor primary system energy release following a postulated rupture of the system. The pressure suppression chamber water volume must absorb the associated decay and structural sensible heat released during primary system blowdown from 1045 psig. Since all of the gases in the drywell are purged into the pressure suppression chamber air space during a loss of coolant accident, the pressure of the liquid must not exceed 62 psig, the suppression chamber maximum pressure. The design volume of the suppression chamber, water and air, was obtained by considering that the total volume of reactor coolant to be condensed is discharged to the suppression chamber and that the drywell volume is purged to the suppression chamber.

89,643

Using the minimum or maximum water volumes given in the specification, containment pressure during the design basis accident is approximately 49 psig, which is below the design pressure of 62 psig. Maximum water volume of ~~89,600~~ ^{89,643} ft³ results in a downcomer submergence of 3'4" and the minimum volume of ~~87,600~~ ^{87,645} ft³ results in a submergence approximately four inches less.

86,545 The Monticello tests were run with a submerged length of three feet and with complete condensation. Thus, with respect to the downcomer submergence, this specification is adequate. The maximum temperature at the end of the blowdown test during the Humboldt Bay and Bodega Bay tests was 170°F, and this is conservatively taken to be the limit for complete condensation of the reactor coolant, although condensation would occur for temperatures above 170°F.

When it is necessary to make the suppression chamber inoperable, this shall only be done as provided in Specification 3.5.3.3.

Under full power operation conditions, blowdown from an initial suppression chamber water temperature of 90°F results in a water temperature of approximately 135°F immediately following blowdown, which is below the temperature 170°F used for complete condensation. At this temperature and atmospheric pressure, the available NPSH exceeds that required by both the RHR and core spray pumps; thus, there is no dependency on containment overpressure during the accident injection phase. If both RHR loops are used for containment cooling, there is no dependency on containment overpressure for post-LOCA operations.

ENCLOSURE 7

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
NRC DOCKET NOS. 50-325 AND 50-324
OPERATING LICENSE NOS. DPR-71 AND DPR-62
REQUEST FOR LICENSE AMENDMENTS
REVISION OF SUPPRESSION POOL WATER VOLUMES

TYPED TECHNICAL SPECIFICATION AND BASES PAGES - UNIT 1

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION SYSTEMS

SUPPRESSION CHAMBER

LIMITING CONDITION FOR OPERATION

3.6.2.1 The suppression chamber shall be OPERABLE with:

- a. The pool water:
 1. Volume between 86,545 ft³ and 89,843 ft³, equivalent to a level between -27 inches and -31 inches, and a
 2. Maximum average temperature of 95°F during OPERATIONAL CONDITION 1 or 2, except that the maximum average temperature may be permitted to increase to:
 - a) 105°F during testing which adds heat to the suppression chamber.
 - b) 110°F with THERMAL POWER less than or equal to 1% of RATED THERMAL POWER.
 - c) 120°F with the main steam line isolation valves closed following a scram.
- b. Two OPERABLE suppression chamber water temperature instrumentation channels with a minimum of 11 operable RTD inputs per channel.
- c. A total leakage from the drywell to the suppression chamber of less than the equivalent leakage through a 1-inch diameter orifice at a differential pressure of 1 psig.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION:

- a. With the suppression chamber water level outside the above limits, restore the water level to within the limits within 6 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 1 or 2 with the suppression chamber average water temperature greater than 95°F, restore the average temperature to less than or equal to 95°F within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours, except, as permitted above:

CONTAINMENT SYSTEMS

BASES

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

The specifications of this section ensure that the primary containment pressure will not exceed the calculated pressure of 49 psig during primary system blowdown from full operating pressure.

The pressure suppression pool water provides the heat sink for the reactor primary system energy release following a postulated rupture of the system. The pressure suppression chamber water volume must absorb the associated decay and structural sensible heat released during primary system blowdown from 1020 psig. Since all of the gases in the drywell are purged into the pressure suppression chamber air space during a loss of coolant accident, the pressure of the liquid must not exceed 62 psig, the suppression chamber maximum pressure. The design volume of the suppression chamber, water and air, was obtained by considering that the total volume of reactor coolant to be condensed is discharged to the suppression chamber and that the drywell volume is purged to the suppression chamber.

Using the minimum or maximum water volumes given in the specification, containment pressure during the design basis accident is approximately 49 psig, which is below the design pressure of 62 psig. Maximum water volume of 89,843 ft³ results in a downcomer submergence of 3'4" and the minimum volume of 86,545 ft³ results in a submergence approximately four inches less. The Monticello tests were run with a submerged length of three feet and with complete condensation. Thus, with respect to the downcomer submergence, this specification is adequate. The maximum temperature at the end of the blowdown tested during the Humboldt Bay and Bodega Bay tests was 170°F, and this is conservatively taken to be the limit for complete condensation of the reactor coolant, although condensation would occur for temperatures above 170°F.

When it is necessary to make the suppression chamber inoperable, this shall only be done as provided in Specification 3.5.3.3.

Under full power operation conditions, blowdown from an initial suppression chamber water temperature of 90°F results in a water temperature of approximately 135°F immediately following blowdown, which is below the temperature 170°F used for complete condensation. At this temperature and atmospheric pressure, the available NPSH exceeds that required by both the RHR and core spray pumps; thus, there is no dependency on containment overpressure during the accident injection phase. If both RHR loops are used for containment cooling, there is no dependency on containment overpressure for post-LOCA operations.

ENCLOSURE 8

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NOS. 1 AND 2
NRC DOCKET NOS. 50-325 AND 50-324
OPERATING LICENSE NOS. DPR-71 AND DPR-62
REQUEST FOR LICENSE AMENDMENTS
REVISION OF SUPPRESSION POOL WATER VOLUMES

TYPED TECHNICAL SPECIFICATION AND BASES PAGES - UNIT 2

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION SYSTEMS

SUPPRESSION CHAMBER

LIMITING CONDITION FOR OPERATION

3.6.2.1 The suppression chamber shall be OPERABLE with:

- a. The pool water:
 1. Volume between 86,545 ft³ and 89,843 ft³, equivalent to a level between -27 inches and -31 inches, and a
 2. Maximum average temperature of 95°F during OPERATIONAL CONDITION 1 or 2, except that the maximum average temperature may be permitted to increase to:
 - a) 105°F during testing which adds heat to the suppression chamber.
 - b) 110°F with THERMAL POWER less than or equal to 1% of RATED THERMAL POWER.
 - c) 120°F with the main steam line isolation valves closed following a scram.
- b. Two OPERABLE suppression chamber water temperature instrumentation channels with a minimum of 11 operable RTD inputs per channel.
- c. A total leakage from the drywell to the suppression chamber of less than the equivalent leakage through a 1-inch diameter orifice at a differential pressure of 1 psig.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2 and 3.

ACTION:

- a. With the suppression chamber water level outside the above limits, restore the water level to within the limits within 6 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. In OPERATIONAL CONDITION 1 or 2 with the suppression chamber average water temperature greater than 95°F, restore the average temperature to less than or equal to 95°F within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours, except, as permitted above:

CONTAINMENT SYSTEMS

BASES

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

The specifications of this section ensure that the primary containment pressure will not exceed the calculated pressure of 49 psig during primary system blowdown from full operating pressure.

The pressure suppression pool water provides the heat sink for the reactor primary system energy release following a postulated rupture of the system. The pressure suppression chamber water volume must absorb the associated decay and structural sensible heat released during primary system blowdown from 1020 psig. Since all of the gases in the drywell are purged into the pressure suppression chamber air space during a loss of coolant accident, the pressure of the liquid must not exceed 62 psig, the suppression chamber maximum pressure. The design volume of the suppression chamber, water and air, was obtained by considering that the total volume of reactor coolant to be condensed is discharged to the suppression chamber and that the drywell volume is purged to the suppression chamber.

Using the minimum or maximum water volumes given in the specification, containment pressure during the design basis accident is approximately 49 psig, which is below the design pressure of 62 psig. Maximum water volume of 89,843 ft³ results in a downcomer submergence of 3'4" and the minimum volume of 86,545 ft³ results in a submergence approximately four inches less. The Monticello tests were run with a submerged length of three feet and with complete condensation. Thus, with respect to the downcomer submergence, this specification is adequate. The maximum temperature at the end of the blowdown test during the Humboldt Bay and Bodega Bay tests was 170°F, and this is conservatively taken to be the limit for complete condensation of the reactor coolant, although condensation would occur for temperatures above 170°F.

When it is necessary to make the suppression chamber inoperable, this shall only be done as provided in Specification 3.5.3.3.

Under full power operation conditions, blowdown from an initial suppression chamber water temperature of 90°F results in a water temperature of approximately 135°F immediately following blowdown, which is below the temperature 170°F used for complete condensation. At this temperature and atmospheric pressure, the available NPSH exceeds that required by both the RHR and core spray pumps; thus, there is no dependency on containment overpressure during the accident injection phase. If both RHR loops are used for containment cooling, there is no dependency on containment overpressure for post-LOCA operations.