



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-373

LASALLE COUNTY STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 59
License No. NPF-11

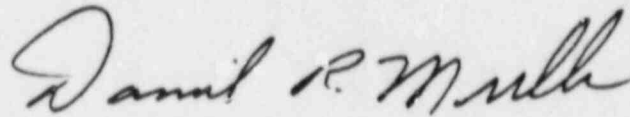
1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
 - A. The application for amendment filed by the Commonwealth Edison Company (the licensee), dated April 29, 1987 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
 - C. There is reasonable assurance: (i) that the activities authorized by this amendment 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;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the enclosure to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-11 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 59, 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.

3. This amendment is effective upon date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, reading "Daniel R. Muller".

Daniel R. Muller, Director
Project Directorate III-2
Division of Reactor Projects - III,
IV, V and Special Projects

Enclosure:
Changes to the Technical
Specifications

Date of Issuance: August 31, 1988

ENCLOSURE TO LICENSE AMENDMENT NO. 59

FACILITY OPERATING LICENSE NO. NPF-11

DOCKET NO. 50-373

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain a vertical line indicating the area of change.

REMOVE

XIX
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B 3/4 5-2
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INSERT

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EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
C. <u>DIVISION 3 TRIP SYSTEM</u>		
1. <u>HPCS SYSTEM</u>		
a. Reactor Vessel Water Level - Low Low, Level 2	>- 50 inches*	>- 57 inches*
b. Drywell Pressure - High	< 1.69 psig	< 1.89 psig
c. Reactor Vessel Water Level - High, Level 8	< 55.5 inches*	< 56 inches*
d. Condensate Storage Tank Level - Low	> 715'7"	> 715'3"
e. Suppression Pool Water Level - High	< 2 inches**	< 3 inches**
f. Pump Discharge Pressure - High	> 120 psig	> 110 psig
g. HPCS System Flow Rate - Low	> 1000 gpm	> 900 gpm
h. Manual Initiation	NA	NA
D. <u>LOSS OF POWER</u>		
1. 4.15 kV Emergency Bus Undervoltage (Loss of Voltage)#		
a. 4.16 kV Basis		
1) Divisions 1 and 2	2625 ± 131 volts with < 10 seconds time delay	2625 ± 262 volts with < 11 seconds time delay
	2496 ± 125 volts with > 4 seconds time delay	2496 ± 250 volts with > 3 seconds time delay
2) Division 3	2970 ± 143 volts with < 10 seconds time delay	2870 ± 287 volts with < 11 seconds time delay

*See Bases Figure B 3/4 3-1.

#These are inverse time delay voltage relays or instantaneous voltage relays with a time delay. The voltages shown are the maximum that will not result in a trip. Lower voltage conditions will result in decreased trip times.

**Level is referenced to a plant elevation of 699 feet 11 inches (See Figure B 3/4.6.2-i).

EMERGENCY CORE COOLING SYSTEMS

3/4.5.3 SUPPRESSION CHAMBER#

LIMITING CONDITION FOR OPERATION

3.5.3 The suppression chamber shall be OPERABLE:

- a. In OPERATIONAL CONDITION 1, 2, or 3 with a contained water volume of at least 128,800 ft³, equivalent to a level of -4 1/2 inches.**
- b. In OPERATIONAL CONDITION 4 or 5* with a contained water volume of at least 70,000 ft³, equivalent to a level of -12 feet 7 inches,** except that the suppression chamber level may be less than the limit or may be drained in OPERATIONAL CONDITION 4 or 5* provided that:
 1. No operations are performed that have a potential for draining the reactor vessel,
 2. The reactor mode switch is locked in the Shutdown or Refuel position,
 3. The condensate storage tank contains at least 135,000 available gallons of water, equivalent to a level of 14.5 feet, and
 4. The HPCS system is OPERABLE per Specification 3.5.2 with an OPERABLE flow path capable of taking suction from the condensate storage tank and transferring the water through the spray sparger to the reactor vessel.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, 4, and 5*.

ACTION:

- a. In OPERATIONAL CONDITION 1, 2, or 3 with the suppression chamber water level less than the above limit, restore the water level to within the limit within 1 hour 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 4 or 5* with the suppression chamber water level less than the above limit or drained and the above required conditions not satisfied, suspend CORE ALTERATIONS and all operations that have a potential for draining the reactor vessel and lock the reactor mode switch in the Shutdown position. Establish SECONDARY CONTAINMENT INTEGRITY within 8 hours.

#See Specification 3.6.2.1 for pressure suppression requirements.

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

**Level is referenced to a plant elevation of 699 feet 11 inches (See Figure B 3/4.6.2-1).

EMERGENCY CORE COOLING SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

- c. With one suppression chamber water level instrumentation channel inoperable, restore the inoperable channel to OPERABLE status within 7 days or verify the suppression chamber water level to be greater than or equal to -4 1/2 inches** or -12 feet 7 inches**, as applicable, at least once per 12 hours by local indication.
- d. With both suppression chamber water level instrumentation channels inoperable, restore at least one inoperable channel to OPERABLE status within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours and verify the suppression chamber water level to be greater than or equal to -4 1/2 inches** or -12 feet 7 inches**, as applicable, at least once per 12 hours by local indication.

SURVEILLANCE REQUIREMENTS

4.5.3.1 The suppression chamber shall be determined OPERABLE by verifying:

- a. The water level to be greater than or equal to, as applicable:
 1. -4 1/2 inches** at least once per 24 hours.
 2. -12 feet 7 inches** at least once per 12 hours.
- b. Two suppression chamber water level instrumentation channels OPERABLE by performance of a:
 1. CHANNEL CHECK at least once per 24 hours,
 2. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
 3. CHANNEL CALIBRATION at least once per 18 months,

with the low water level alarm setpoint at greater than or equal to -3 inches.**

4.5.3.2 With the suppression chamber level less than the above limit or drained in OPERATIONAL CONDITION 4 or 5*, at least once per 12 hours:

- a. Verify the required conditions of Specification 3.5.3.b. to be satisfied, or
- b. Verify footnote conditions* to be satisfied.

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

**Level is referenced to a plant elevation of 699 feet 11 inches (See Figure B 3.4.6.2-1).

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 131,900 ft³ and 128,800 ft³, equivalent to a level between +3 inches** and -4 1/2 inches**, and a
2. Maximum average temperature of 100°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. Drywell-to-suppression chamber bypass leakage less than or equal to 10% of the acceptable A/\sqrt{k} design value of 0.03 ft².

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 1 hour 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 or equal to 100°F, restore the average temperature to less than or equal to 100°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:
 1. With the suppression chamber average water temperature greater than 105°F during testing which adds heat to the suppression chamber, stop all testing which adds heat to the suppression chamber and restore the average temperature to less than or equal to 100°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.
 2. With the suppression chamber average water temperature greater than 110°F, place the reactor mode switch in the Shutdown position and operate at least one residual heat removal loop in the suppression pool cooling mode.
 3. With the suppression chamber average water temperature greater than 120°F, depressurize the reactor pressure vessel to less than 200 psig within 12 hours.

[#]See Specification 3.5.3 for ECCS requirements.

^{##}See Special Test Exception 3.10.8.

^{**}Level is referenced to a plant elevation of 699 feet 11 inches (See Figure B 3/4.6.2-1).

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- c. By verifying at least two suppression chamber water level instrumentation channels and at least 14 suppression pool water temperature instrumentation channels, 7 in each of two divisions, OPERABLE by performance of a:

1. CHANNEL CHECK at least once per 24 hours,
2. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
3. CHANNEL CALIBRATION at least once per 18 months.

The suppression chamber water level and suppression pool temperature alarm setpoint shall be:

- a) High water level $\leq +2$ inches*
- b) Low water level ≥ -3 inches*
- c) High temperature $\leq 100^{\circ}\text{F}$

- d. By conducting drywell-to-suppression chamber bypass leak tests and verifying that the A/\sqrt{k} calculated from the measured leakage is within the specified limit when drywell-to-suppression chamber bypass leak tests are conducted:

1. At least once per 18 months at an initial differential pressure of 1.5 psi, and
2. At the first refueling outage and then on the schedule required for Type A Overall Integrated Containment Leakage Rate tests by Specification 4.6.1.2.a; at an initial differential pressure of 5 psi,

except that, if the first two 5 psi leak tests performed up to that time result in:

1. A calculated A/\sqrt{k} within the specified limit, and
2. The A/\sqrt{k} calculated from the leak tests at 1.5 psi is $\leq 20\%$ of the specified limit,

then the leak tests at 5 psi may be discontinued.

*Level is referenced to a plant elevation of 699 feet 11 inches (See Figure B 3/4.6.2-1).

EMERGENCY CORE COOLING SYSTEMS

BASES

ECCS-OPERATING and SHUTDOWN (Continued)

the suppression pool into the reactor, but no credit is taken in the hazards analyses for the condensate storage tank water.

With the HPCS system inoperable, adequate core cooling is assured by the OPERABILITY of the redundant and diversified automatic depressurization system and both the LPCS and LPCI systems. In addition, the reactor core isolation cooling (RCIC) system, a system for which no credit is taken in the hazards analysis, will automatically provide makeup at reactor operating pressures on a reactor low water level condition. The HPCS out-of-service period of 14 days is based on the demonstrated OPERABILITY of redundant and diversified low pressure core cooling systems.

The surveillance requirements provide adequate assurance that the HPCS system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test with reactor vessel injection requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to provide cooling at the earliest moment.

Upon failure of the HPCS system to function properly, if required, the automatic depressurization system (ADS) automatically causes selected safety-relief valves to open, depressurizing the reactor so that flow from the low pressure core cooling systems can enter the core in time to limit fuel cladding temperature to less than 2200°F. ADS is conservatively required to be OPERABLE whenever reactor vessel pressure exceeds 122 psig even though low pressure core cooling systems provide adequate core cooling up to 350 psig.

ADS automatically controls seven selected safety-relief valves. Six valves are required to be OPERABLE since the LOCA analysis assumes 6 ADS valves in addition to a single failure. It is therefore appropriate to permit one of the required valves to be out-of-service for up to 14 days without materially reducing system reliability.

3/4.5.3 SUPPRESSION CHAMBER

The suppression chamber is also required to be OPERABLE as part of the ECCS to ensure that a sufficient supply of water is available to the HPCS, LPCS and LPCI systems in the event of a LOCA. This limit on suppression chamber minimum water volume ensures that sufficient water is available to permit recirculation cooling flow to the core. The OPERABILITY of the suppression chamber in OPERATIONAL CONDITIONS 1, 2 or 3 is required by Specification 3.6.2.1.

Repair work might require making the suppression chamber inoperable. This specification will permit those repairs to be made and at the same time give assurance that the irradiated fuel has an adequate cooling water supply when the suppression chamber must be made inoperable, including draining, in OPERATIONAL CONDITION 4 or 5.

In OPERATIONAL CONDITION 4 and 5 the suppression chamber minimum required water volume is reduced because the reactor coolant is maintained at or below 200°F. Since pressure suppression is not required below 212°F, the minimum water volume is based on NPSH, recirculation volume, vortex prevention plus a 2'-4" safety margin for conservatism.

CONTAINMENT SYSTEMS

BASES

3/4.6.2. DEPRESSURIZATION SYSTEMS

The specifications of this section ensure that the primary containment pressure will not exceed the design pressure of 45 psig during primary system blowdown from full operating pressure.

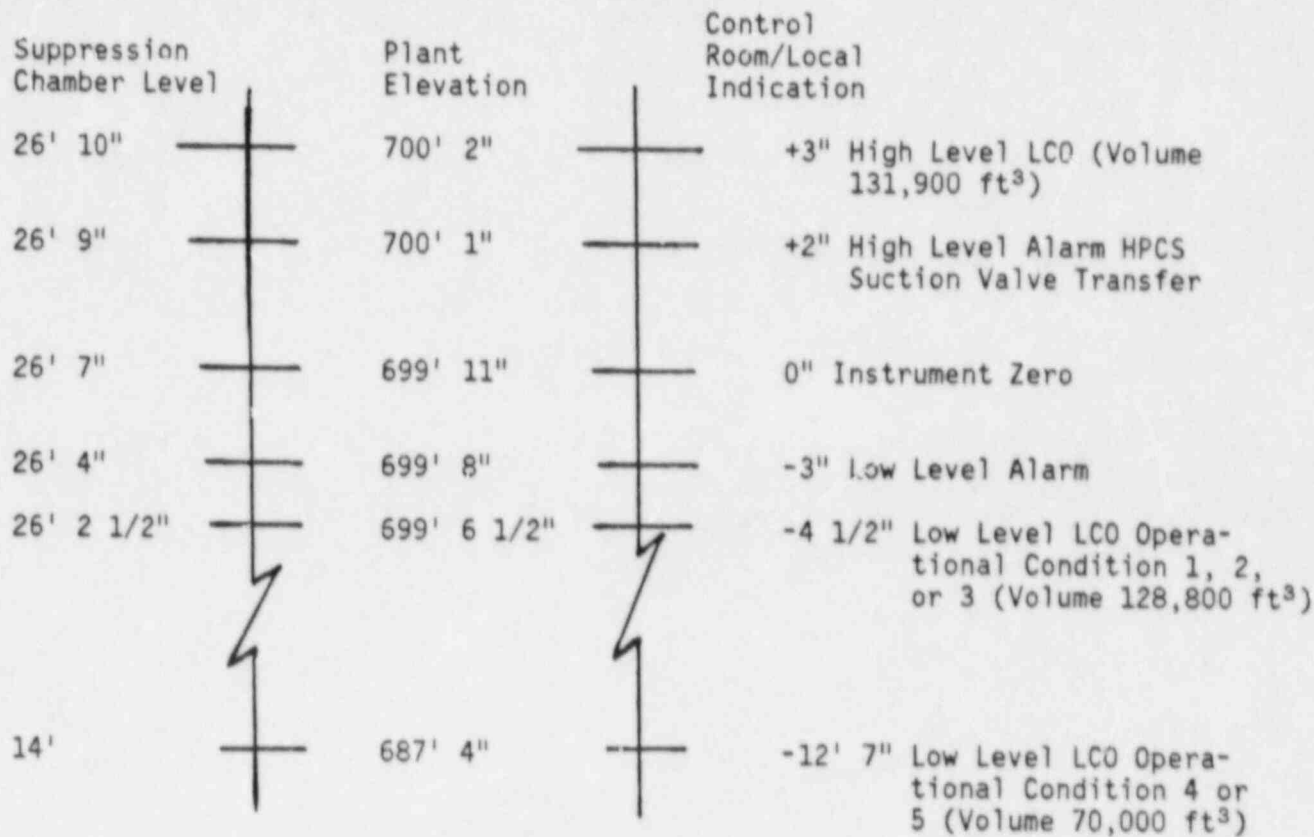
The suppression chamber water provides the heat sink for the reactor coolant system energy release following a postulated rupture of the system. The suppression chamber water volume must absorb the associated decay and structural sensible heat released during reactor coolant system blowdown from 1020 psig. Since all of the gases in the drywell are purged into the suppression chamber air space during a loss of coolant accident, the pressure of the liquid must not exceed 45 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 and to be considered is discharged to the suppression chamber and that the drywell volume is purged to the suppression chamber. (See Figure B 3/4.6.2-1)

Using the minimum or maximum water volumes given in this specification, containment pressure during the design basis accident is approximately 39.6 psig which is below the design pressure of 45 psig. Maximum water volume of 131,900 ft³ results in a downcomer submergence of 12.4 ft and the minimum volume of 128,800 ft³ results in a submergence approximately 8 inches less. The majority of the Bogeda tests were run with a submerged length of four feet and with complete condensation. Thus, with respect to the downcomer submergence, this specification is adequate.

Should it be necessary to make the suppression chamber inoperable, this shall only be done as specified in Specification 3.5.3.

Under full power operating 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 200°F used for complete condensation via T-quencher devices. 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.

Experimental data indicates that excessive steam condensing loads can be avoided if the peak bulk temperature of the suppression pool is maintained below 200°F during any period of relief valve operation with sonic conditions at the discharge exit for T-quencher devices. Specifications have been placed on the envelope of reactor operating conditions so that the reactor can be depressurized in a timely manner to avoid the regime of potentially high suppression chamber loadings.



SUPPRESSION POOL LEVEL SETPOINTS

BASES FIG. A E B 3/4.6.2-1



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-374

LASALLE COUNTY STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 39
License No. NPF-18

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
 - A. The application for amendment filed by the Commonwealth Edison Company (the licensee), dated April 29, 1987 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;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
 - C. There is reasonable assurance: (i) that the activities authorized by this amendment 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;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

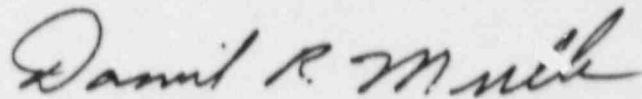
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the enclosure to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-18 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 39, 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.

3. This amendment is effective upon date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, appearing to read "Daniel R. Muller".

Daniel R. Muller, Director
Project Directorate III-2
Division of Reactor Projects - III,
IV, V and Special Projects

Enclosure:
Changes to the Technical
Specifications

Date of Issuance: August 31, 1988

ENCLOSURE TO LICENSE AMENDMENT NO. 39

FACILITY OPERATING LICENSE NO. NPF-18

DOCKET NO. 50-374

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by amendment number and contain a vertical line indicating the area of change.

REMOVE

XIX
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3/4 5-8
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B 3/4 5-2
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XIX
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3/4 5-9
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TABLE 3.3.3-2 (Continued)
EMERGENCY CORE COOLING SYSTEM ACTUATION INSTRUMENTATION SETPOINTS

<u>TRIP FUNCTION</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUE</u>
C. <u>DIVISION 3 TRIP SYSTEM</u>		
1. <u>HPCS SYSTEM</u>		
a. Reactor Vessel Water Level - Low Low, Level 2	>- 50 inches*	>- 57 inches*
b. Drywell Pressure - High	< 1.69 psig	< 1.89 psig
c. Reactor Vessel Water Level - High, Level 8	< 55.5 inches*	< 56 inches*
d. Condensate Storage Tank Level - Low	> 715'7"	> 715'3"
e. Suppression Pool Water Level - High	< 2 inches**	< 3 inches**
f. Pump Discharge Pressure - High	> 120 psig	> 110 psig
g. HPCS System Flow Rate - Low	> 1000 gpm	> 900 gpm
h. Manual Initiation	N.A.	N.A.
D. <u>LOSS OF POWER</u>		
1. 4.16 kV Emergency Bus Undervoltage (Loss of Voltage)#		
a. 4.16 kV Basis		
1) Divisions 1 and 2	2625 ± 131 volts with ≤ 10 second time delay	2625 ± 262 volts with ≤ 11 second time delay
	2496 ± 125 volts with ≥ 4 second time delay	2496 ± 250 volts with ≥ 3 second time delay
2) Division 3	2870 ± 143 volts with ≤ 10 second time delay	2870 ± 287 volts with ≤ 11 second time delay

TABLE NOTATIONS

*See Bases Figure B 3/4 3-1.

#These are inverse time delay voltage relays or instantaneous voltage relays with a time delay. The voltages shown are the maximum that will not result in a trip. Lower voltage conditions will result in decreased trip times.

N.A. Not Applicable

**Level is referenced to a plant elevation of 699 feet 11 inches (See Figure B 3/4.6.2-1).

LA SALLE - UNIT 2

3/4 3-30

Amendment No. 39

EMERGENCY CORE COOLING SYSTEMS

3/4.5.3 SUPPRESSION CHAMBER#

LIMITING CONDITION FOR OPERATION

3.5.3 The suppression chamber shall be OPERABLE:

- a. In OPERATIONAL CONDITION 1, 2, or 3 with a contained water volume of at least 128,800 ft³, equivalent to a level of -4 1/2 inches.**
- b. In OPERATIONAL CONDITION 4 or 5* with a contained water volume of at least 70,000 ft³, equivalent to a level of -12 feet 7 inches**, except that the suppression chamber level may be less than the limit or may be drained in OPERATIONAL CONDITION 4 or 5* provided that:
 1. No operations are performed that have a potential for draining the reactor vessel,
 2. The reactor mode switch is locked in the Shutdown or Refuel position,
 3. The condensate storage tank contains at least 135,000 available gallons of water, equivalent to a level of 14.5 feet, and
 4. The HPCS system is OPERABLE per Specification 3.5.2 with an OPERABLE flow path capable of taking suction from the condensate storage tank and transferring the water through the spray sparger to the reactor vessel.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, 4, and 5*.

ACTION:

- a. In OPERATIONAL CONDITION 1, 2, or 3 with the suppression chamber water level less than the above limit, restore the water level to within the limit within 1 hour 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 4 or 5* with the suppression chamber water level less than the above limit or drained and the above required conditions not satisfied, suspend CORE ALTERATIONS and all operations that have a potential for draining the reactor vessel and lock the reactor mode switch in the Shutdown position. Establish SECONDARY CONTAINMENT INTEGRITY within 8 hours.

#See Specification 3.6.2.1 for pressure suppression requirements.

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

**Level is referenced to a plant elevation of 699 feet 11 inches (see Figure B 3/4 6.2-1).

EMERGENCY CORE COOLING SYSTEMS

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

- c. With one suppression chamber water level instrumentation channel inoperable, restore the inoperable channel to OPERABLE status within 7 days or verify the suppression chamber water level to be greater than or equal to -4 1/2 inches** or -12 feet 7 inches**, as applicable, at least once per 12 hours by local indication.
- d. With both suppression chamber water level instrumentation channels inoperable, restore at least one inoperable channel to OPERABLE status within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours and verify the suppression chamber water level to be greater than or equal to -4 1/2 inches** or -12 feet 7 inches**, as applicable, at least once per 12 hours by local indication.

SURVEILLANCE REQUIREMENTS

4.5.3.1 The suppression chamber shall be determined OPERABLE by verifying:

- a. The water level to be greater than or equal to, as applicable:
 1. -4 1/2 inches** at least once per 24 hours.
 2. -12 feet 7 inches** at least once per 12 hours.
- b. Two suppression chamber water level instrumentation channels OPERABLE by performance of a:
 1. CHANNEL CHECK at least once per 24 hours,
 2. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
 3. CHANNEL CALIBRATION at least once per 18 months,with the low water level alarm setpoint at greater than or equal to -3 inches.**

4.5.3.2 With the suppression chamber level less than the above limit or drained in OPERATIONAL CONDITION 4 or 5*, at least once per 12 hours:

- a. Verify the required conditions of Specification 3.5.3.b. to be satisfied, or
- b. Verify footnote conditions* to be satisfied.

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

**Level is referenced to a plant elevation of 699 feet 11 inches (See Figure B 3/4 6.2-1).

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 131,900 ft³ and 128,800 ft³, equivalent to a level between +3 inches** and -4 1/2 inches**, and a
 2. Maximum average temperature of 100°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. Drywell-to-suppression chamber bypass leakage less than or equal to 10% of the acceptable A/\sqrt{k} design value of 0.03 ft².

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 1 hour 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 or equal to 100°F, restore the average temperature to less than or equal to 100°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:
 1. With the suppression chamber average water temperature greater than 105°F during testing which adds heat to the suppression chamber, stop all testing which adds heat to the suppression chamber and restore the average temperature to less than or equal to 100°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.
 2. With the suppression chamber average water temperature greater than 110°F, place the reactor mode switch in the Shutdown position and operate at least one residual heat removal loop in the suppression pool cooling mode.
 3. With the suppression chamber average water temperature greater than 120°F, depressurize the reactor pressure vessel to less than 200 psig within 12 hours.

#See Specification 3.5.3 for ECCS requirements.

**Level is referenced to a plant elevation of 699 feet 11 inches (See Figure B 3/4.6.2-1).

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

- c. By verifying at least 2 suppression chamber water level instrumentation channels and at least 14 suppression pool water temperature instrumentation channels, 7 in each of two divisions, OPERABLE by performance of a:

1. CHANNEL CHECK at least once per 24 hours,
2. CHANNEL FUNCTIONAL TEST at least once per 31 days, and
3. CHANNEL CALIBRATION at least once per 18 months.

The suppression chamber water level and suppression pool temperature alarm setpoint shall be:

- a) High water level $\leq +2$ inches*
- b) Low water level ≥ -3 inches*
- c) High temperature $\leq 100^{\circ}\text{F}$

- d. By conducting drywell-to-suppression chamber bypass leak tests and verifying that the A/\sqrt{k} calculated from the measured leakage is within the specified limit when drywell-to-suppression chamber bypass leak tests are conducted:

1. At least once per 18 months at an initial differential pressure of 1.5 psi, and
2. At the first refueling outage and then on the schedule required for Type A Overall Integrated Containment Leakage Rate tests by Specification 4.6.1.2.d, at an initial differential pressure of 5 psi,

except that, if the first two 5 psi leak tests performed up to that time result in:

1. A calculated A/\sqrt{k} within the specified limit, and
2. The A/\sqrt{k} calculated from the leak tests at 1.5 psi is $\leq 20\%$ of the specified limit,

then the leak tests at 5 psi may be discontinued.

*Level is referenced to a plant elevation of 699 feet 11 inches (See Figure B 3/4.6.2-1).

EMERGENCY CORE COOLING SYSTEMS

BASES

ECCS-OPERATING and SHUTDOWN (Continued)

the suppression pool into the reactor, but no credit is taken in the hazards analyses for the condensate storage tank water.

With the HPCS system inoperable, adequate core cooling is assured by the OPERABILITY of the redundant and diversified automatic depressurization system and both the LPCS and LPCI systems. In addition, the reactor core isolation cooling (RCIC) system, a system for which no credit is taken in the hazards analysis, will automatically provide makeup at reactor operating pressures or a reactor low water level condition. The HPCS out-of-service period of 14 days is based on the demonstrated OPERABILITY of redundant and diversified low pressure core cooling systems.

The surveillance requirements provide adequate assurance that the HPCS system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test with reactor vessel injection requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to provide cooling at the earliest moment.

Upon failure of the HPCS system to function properly, if required, the automatic depressurization system (ADS) automatically causes selected safety-relief valves to open, depressurizing the reactor so that flow from the low pressure core cooling systems can enter the core in time to limit fuel cladding temperature to less than 2200°F. ADS is conservatively required to be OPERABLE whenever reactor vessel pressure exceeds 122 psig even though low pressure core cooling systems provide adequate core cooling up to 350 psig.

ADS automatically controls seven selected safety-relief valves. Six valves are required to be OPERABLE since the LOCA analysis assumes 6 ADS valves in addition to a single failure. It is therefore appropriate to permit one of the required valves to be out-of-service for up to 14 days without materially reducing system reliability.

3/4.5.3 SUPPRESSION CHAMBER

The suppression chamber is also required to be OPERABLE as part of the ECCS to ensure that a sufficient supply of water is available to the HPCS, LPCS and LPCI systems in the event of a LOCA. This limit on suppression chamber minimum water volume ensures that sufficient water is available to permit recirculation cooling flow to the core (See Figure B 3/4.6.2-1). The OPERABILITY of the suppression chamber in OPERATIONAL CONDITIONS 1, 2 or 3 is required by Specification 3.6.2.1.

Repair work might require making the suppression chamber inoperable. This specification will permit those repairs to be made and at the same time give assurance that the irradiated fuel has an adequate cooling water supply when the suppression chamber must be made inoperable, including draining, in OPERATIONAL CONDITION 4 or 5.

In OPERATIONAL CONDITION 4 and 5 the suppression chamber minimum required water volume is reduced because the reactor coolant is maintained at or below 200°F. Since pressure suppression is not required below 212°F, the minimum water volume is based on NPSH, recirculation volume, vortex prevention plus a 2'-4" safety margin for conservatism.

CONTAINMENT SYSTEMS

BASES

3/4.6.2 DEPRESSURIZATION SYSTEMS

The specifications of this section ensure that the primary containment pressure will not exceed the design pressure of 45 psig during primary system blowdown from full operating pressure.

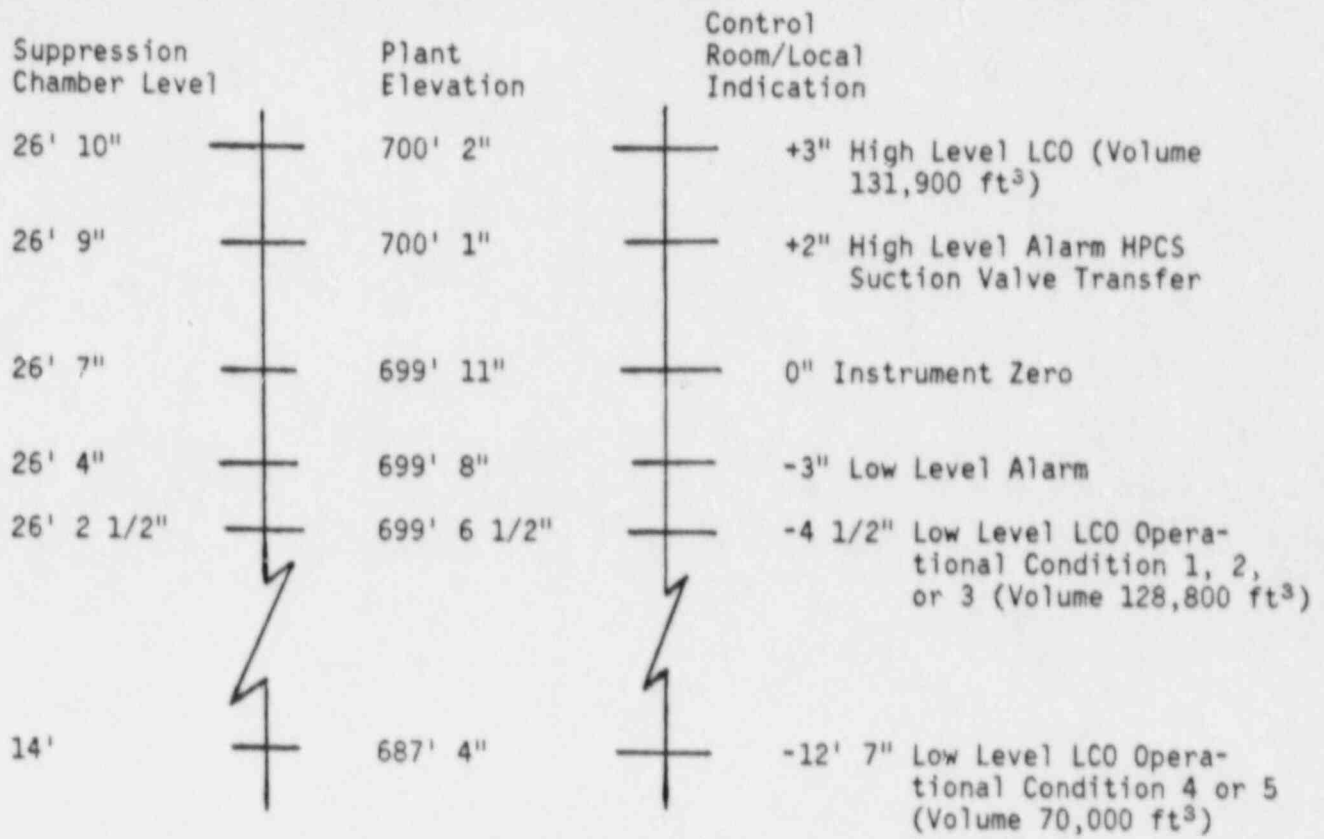
The suppression chamber water provides the heat sink for the reactor coolant system energy release following a postulated rupture of the system. The suppression chamber water volume must absorb the associated decay and structural sensible heat released during reactor coolant system blowdown from 1020 psig. Since all of the gases in the drywell are purged into the suppression chamber air space during a loss of coolant accident, the pressure of the liquid must not exceed 45 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 and to be considered is discharged to the suppression chamber and that the drywell volume is purged to the suppression chamber. (See Figure B 3/4.6.2-1)

Using the minimum or maximum water volumes given in this specification, containment pressure during the design basis accident is approximately 39.6 psig which is below the design pressure of 45 psig. Maximum water volume of 131,900 ft³ results in a downcomer submergence of 12.4 ft and the minimum volume of 128,800 ft³ results in a submergence approximately 8 inches less. The majority of the Bogeda tests were run with a submerged length of four feet and with complete condensation. Thus, with respect to the downcomer submergence, this specification is adequate.

Should it be necessary to make the suppression chamber inoperable, this shall only be done as specified in Specification 3.5.3.

Under full power operating 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 200°F used for complete condensation via T-quencher devices. 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.

Experimental data indicates that excessive steam condensing loads can be avoided if the peak bulk temperature of the suppression pool is maintained below 200°F during any period of relief valve operation with sonic conditions at the discharge exit for T-quencher devices. Specifications have been placed on the envelope of reactor operating conditions so that the reactor can be depressurized in a timely manner to avoid the regime of potentially high suppression chamber loadings.



SUPPRESSION POOL LEVEL SETPOINTS

BASES FIGURE B 3/4.6.2-1