



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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-295

ZION NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 110
License No. DPR-39

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by the Commonwealth Edison Company (the licensee), dated May 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;
 - 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. DPR-39 is hereby amended to read as follows:

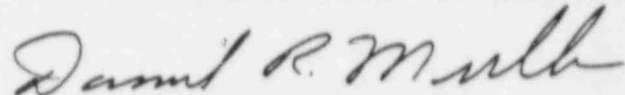
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(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 110, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



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: April 4, 1988

ATTACHMENT TO LICENSE AMENDMENTS

AMENDMENT NO. 110 FACILITY OPERATING LICENSE NO. DPR-39

AMENDMENT NO. 99 FACILITY OPERATING LICENSE NO. DPR-48

DOCKET NOS. 50-295 AND 50-304

Revise Appendix A as follows:

REMOVE

82

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INSERT

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83a

83b

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LIMITING CONDITION FOR OPERATION

SURVEILLANCE REQUIREMENT

3.3.2.G. Low Temperature Overpressure Protection

1. At least one of the following low temperature protection methods shall be available:
 - a. Two power operated relief valves (PORVs) with a lift setting of 435 psig shall be OPERABLE, or

4.3.2.G. Low Temperature Overpressure Protection

1. Surveillance and testing of the low temperature overpressure protection methods shall be performed as follows:
 - a. Each PORV shall be demonstrated as OPERABLE by:
 1. Performance of a CHANNEL FUNCTIONAL TEST on the PORV actuation channel within 31 days prior to entering a condition in which the PORV is required OPERABLE, and at least once per 31 days thereafter when the PORV is required OPERABLE.
 2. Verifying the PORV backup air supply is charged, within 31 days prior to entering a condition in which the PORV is required OPERABLE, and at least once per 31 days thereafter when the PORV is required OPERABLE.
 3. Performance of a CHANNEL CALIBRATION on the PORV actuation channel at least once per refueling outage.

LIMITING CONDITION FOR OPERATION

3.3.2.G. Low Temperature Overpressure Protection (Continued)

- b. The Reactor Coolant System (RCS) pressure shall be less than 100 psig, and the pressurizer level less than 25%, or
 - c. The RCS is depressurized and one PORV and its isolation valve are open.
2. A maximum of one* charging pump or safety injection pump, aligned for injection into the RCS, and no accumulators shall be OPERABLE.

SURVEILLANCE REQUIREMENT

4.3.2.G. Low Temperature Overpressure Protection (Continued)

- 4. Verifying each PORV's isolation valve is open at least once per shift when this method is being used for low temperature overpressure protection.
 - b. The RCS pressure shall be verified to be less than 100 psig, and pressurizer level shall be verified to be less than 25% at least once per shift, when this method is being used for low temperature overpressure protection.
 - c. Verifying one PORV and its isolation valve are open at least once per shift, when this method is being used for low temperature overpressure protection.
2. At least four of the five pumps (charging pumps and safety injection pumps), and all accumulators, shall be verified to be incapable of injecting into the RCS prior to entering a condition in which they are required to be inoperable, and at least once per shift thereafter while they are required to be inoperable.

* For short durations of time during pump switchover, two charging pumps may be OPERABLE for the purpose of maintaining seal injection flow to the reactor coolant pumps.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT
<p>3.3.2.6. Low Temperature Overpressure Protection (Continued)</p> <p>3. When starting a reactor coolant pump, when no reactor coolant pumps are running, the temperature in the secondary side of the steam generator in the loop in which the reactor coolant pump is to be started shall be less than 50°F higher than the RCS temperature.</p> <p><u>APPLICABILITY:</u> Mode 4 when the temperature of any RCS cold leg is less than or equal to 250°F, MODE 5 and MODE 6 with the reactor vessel head on.</p> <p><u>ACTION:</u></p> <p>a. With one PORV inoperable, restore the inoperable PORV to OPERABLE status within 7 days, or within the next 24 hours either;</p> <ul style="list-style-type: none"> - Depressurize the RCS to less than 100 psig and lower pressurizer level to less than 25%, or - Depressurize the RCS and open at least one PORV and it's block valve. 	<p>4.3.2.6. Low Temperature Overpressure Protection (Continued)</p> <p>3. Not applicable.</p>

LIMITING CONDITION FOR OPERATION

SURVEILLANCE REQUIREMENT

3.3.2.G. Low Temperature Overpressure Protection (Continued)

b. With both PORV's inoperable, within the next 16 hours either;

- Depressurize the RCS to less than 100 psig and lower pressurizer level to less than 25%, or
- Depressurize the RCS and open at least one PORV and it's block valve.

c. In the event that a PORV is used to mitigate an RCS pressure transient, a SPECIAL REPORT shall be prepared and submitted to the Commission pursuant to Specification 6.6.3.B. The report shall include the following information:

1. A description of the circumstances initiating the transient, and
2. The effect of the PORV's on the transient, and
3. The corrective action necessary to prevent reoccurrence.

d. The provisions of Specification 3.0.4 are not applicable.

4.3.2.G. Low Temperature Overpressure Protection (Continued)

Increase with increasing cooldown rates. Allowable pressure-temperature relations are generated for both steady-state and finite cooldown rate situations. From these relations, composite limit curves are constructed for each cooldown rate of interest.

The use of the composite curve in the cooldown analysis is necessary because control of the cooldown procedure is based on measurement of reactor coolant temperature, whereas the limiting pressure is actually dependent on the material temperature at the tip of the assumed flaw. During cooldown, the 1/41 vessel location is at a higher temperature than the fluid adjacent to the vessel ID. This condition, of course, is not true for the steady-state situation. It follows that at any given reactor coolant temperature, the ΔT developed during cooldown results in a higher value of K_{IR} at the 1/41 location for finite cooldown rates than for steady-state operation. Furthermore, if conditions exist such that the increase in K_{IR} exceeds K_{IT} , the calculated allowable pressure during cooldown will be greater than the steady-state value.

The above procedures are needed because there is no direct control on temperature at the 1/41 location; therefore, allowable pressures may unknowingly be violated if the rate of cooling is decreased at various intervals along a cooldown ramp. The use of the composite curve eliminates this problem and assures conservative operation of the system for the entire cooldown period.

PRESSURIZER LIMITS

Although the pressurizer operates in temperature ranges above those for which there is reason for concern of nonductile failure, operating limits are provided to assure compatibility of operation with the fatigue analysis performed in accordance with the ASME Code requirements.

HYDROSTATIC TESTING LIMIT CURVE

Allowable pressure-temperature relationships for leak and hydrostatic testing are also calculated using methods derived from Non-Mandatory Appendix G2000 in Section III of the ASME Boiler and Pressure Vessel Code. The approach specified is the same as described for heatup and cooldown limits except that the safety factor on K_{IM} is reduced to 1.5 and there are no significant thermal transients or gradients. Thus the governing equation for the leak and hydrostatic testing analysis is:

$$1.5 K_{IM} < K_{IR}$$

INADVERTANT SAFETY INJECTION

In the event of an inadvertent safety injection actuation, the affected reactor will trip immediately, placing the reactor in the hot shutdown condition. After 60 seconds safety injection may be reset and injection terminated as required. An inspection of the primary system while at hot shutdown will prevent possible degradations in the primary system from undergoing further immediate thermal shock imposed during a cooldown. If degradations in the primary system are discovered, an orderly controlled cooldown will be planned to minimize the effects of thermal shock on these degradations on the affected unit.

Bases: Low Temperature Overpressure Protection

- 3.2.2.6 There are 3 means of protecting the RCS from overpressurization by a pressure transient at low temperatures (below 250°F). The first type of protection is ensured by the operation and surveillance of the power operated relief valves with a lift setting of 435 psig. A single power operated relief valve (PORV) will relieve a pressure transient caused by 1) a mass addition into a solid RCS from a charging pump or 2) a heat input based on a reactor coolant pump being started in an idle RCS and circulating water into a steam generator whose temperature is 50°F greater than the RCS temperature. (1)
- 4.2.2.6

The second means of protection is ensured by a PORV being open. It will have the same relieving capabilities as mentioned above.

The third means of protection limits the pressurizer level to 25% and the pressurizer pressure to 100 psig. A pressure transient caused by the inadvertent mass addition from a charging pump running for 10 minutes will be relieved by the large gas volume and low pressure present in the pressurizer as mentioned above. Maintaining the pressurizer level below 25% will also make the hi pressurizer level deviation alarm available to the operator during a mass addition accident.

In the event that a single PORV becomes inoperable, the repair period of 7 days is based on allowing sufficient time to effect repairs using safe and proper procedures and upon the operability of the redundant PORV. The 24 hour time period to reach the restrictive conditions in the pressurizer provides sufficient time to meet these conditions.

In the event that both PORV's become inoperable, the condition is more serious than for a single inoperable PORV, therefore every attempt should be made to depressurize the RCS in a controlled manner as rapidly as possible. The 16 hour time period to reach the restrictive conditions in the pressurizer represents a reasonable amount of time to meet these conditions under an expedited circumstance.

The Low Temperature Overpressure Protection System must be tested on a periodic bases consistent with the need for its use. A CHANNEL FUNCTIONAL TEST shall be performed prior to enabling the overpressure protection system during cooldown and startup.

The limitations and surveillance requirements on the ECCS equipment provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV or the limiting conditions placed on the pressurizer.

The restrictions for startup of a RCP limits the heat input accident to within the relieving capabilities of a single PORV.

- (1) Pressure Mitigating Systems Transient Analysis Results July 1977 Westinghouse Owners Group on RCS Overpressurization.



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COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-304

ZION NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 99
License No. DPR-48

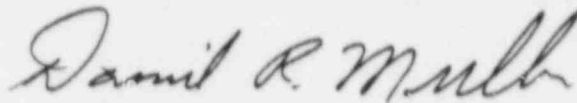
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by the Commonwealth Edison Company (the licensee), dated May 29, 1987, and supplemented March 3, 1987, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (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;
 - 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. DPR-48 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 99, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This amendment is effective as of the date of its issuance.

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