



LICENSE AUTHORITY FILE COPY

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

FEB 04 1986

AMDT BOOKS
DO NOT REMOVE
Posted
Amdt. 33
to NPF-11

Docket No. 50-373

Mr. Dennis L. Farrar
Director of Licensing
Commonwealth Edison Company
P.O. Box 767
Chicago, Illinois 60690

Dear Mr. Farrar:

Subject: Issuance of Amendment No. 33 to Facility Operating License
No. NPF-11 - La Salle County Station, Unit 1

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 33 to Facility Operating License No. NPF-11 for the La Salle County Station, Unit 1. This amendment is in response to your letter dated November 13, 1985.

The amendment revises the La Salle Unit 1 Technical Specifications to reflect a reactor scram on low control rod drive pump discharge pressure modification as required for completion by License Condition 2.C.(15). This amendment (1) satisfies License Condition 2.C.(15), and (2) changes the Technical Specifications to incorporate the reactor scram on low control rod drive pump discharge pressure modification.

A copy of the related safety evaluation supporting Amendment No. 33 to Facility Operating License No. NPF-11 is enclosed.

Sincerely,

Elinor G. Adensam, Director
Project Directorate No. 3
Division of BWR Licensing

Enclosures:

1. Amendment No. 33 to NPF-11
2. Safety Evaluation

cc w/enclosure:
See next page

Mr. Dennis L. Farrar
Commonwealth Edison Company

La Salle County Nuclear Power Station
Units 1 & 2

cc:
Philip P. Steptoe, Esquire
Suite 4200
One First National Plaza
Chicago, Illinois 60603

John W. McCaffrey
Chief, Public Utilities Division
160 North La Salle Street, Room 900
Chicago, Illinois 60601

Assistant Attorney General
188 West Randolph Street
Suite 2315
Chicago, Illinois 60601

Resident Inspector/LaSalle, NPS
U.S. Nuclear Regulatory Commission
Rural Route No. 1
P.O. Box 224
Marseilles, Illinois 61341

Chairman
La Salle County Board of Supervisors
La Salle County Courthouse
Ottawa, Illinois 61350

Attorney General
500 South 2nd Street
Springfield, Illinois 62701

Chairman
Illinois Commerce Commission
Leland Building
527 East Capitol Avenue
Springfield, Illinois 62706

Mr. Gary N. Wright, Manager
Nuclear Facility Safety
Illinois Department of Nuclear Safety
1035 Outer Park Drive, 5th Floor
Springfield, Illinois 62704

Regional Administrator, Region III
U. S. Nuclear Regulatory Commission
799 Rossevelt Road
Glen Ellyn, Illinois 60137



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

COMMONWEALTH EDISON COMPANY

DOCKET NO. 50-373

LA SALLE COUNTY STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 33
License No. NPF-11

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
 - A. The application for amendment filed by the Commonwealth Edison Company, dated November 13, 1985, 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. 33, 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 startup following the first refueling outage.

FOR THE NUCLEAR REGULATORY COMMISSION

Elinor G. Adensam

Elinor G. Adensam, Director
Project Directorate No. 3
Division of BWR Licensing

Enclosure:
Changes to the Technical
Specifications

Date of Issuance: **FEB 04 1986**

ENCLOSURE TO LICENSE AMENDMENT NO. 33

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

2-4a
3/4 1-10
3/4 3-3
3/4 3-6
3/4 3-8
B3/4 1-3
B3/4 1-4

INSERT

2-4a
B2-13
3/4 1-10
3/4 3-3
3/4 3-6
3/4 3-8
B3/4 1-3
B3/4 1-4

TABLE 2.2.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
9. Turbine Stop Valve - Closure	≤ 5% closed	≤ 7% closed
10. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low	≥ 500 psig	≥ 414 psig
11. Reactor Mode Switch Shutdown Position	NA	NA
12. Manual Scram	NA	NA
13. Control Rod Drive		
a. Charging Water Header Pressure - Low	≥ 1157 psig	≥ 1134 psig
b. Delay Timer	≤ 10 seconds	≤ 10 seconds

LIMITING SAFETY SYSTEM SETTING

BASES

REACTOR PROTECTON SYSTEM INSTRUMENTATION SETPOINTS (Continued)

13. Control Rod Drive (CRD) Charging Water Header Pressure - Low

The Hydraulic Control Unit (HCU) scram accumulator is precharged with high pressure nitrogen (N_2). When the Control Rod Drive (CRD) pump is activated, the pressurized charging water forces the accumulator piston down to mechanical stops. The piston is maintained seated against this mechanical stop with normal charging water pressure, typically above 1400 psig. If the charging water header pressure decreases below the N_2 pressure, such as would be the case with high leakage through the check valves of the CRD charging water lines, the accumulator piston would eventually rise off its stops. This results in a reduction of the accumulator energy and thereby degrades normal scram performance of the CRD's in the absence of sufficient reactor pressure.

The CRD low charging water header pressure trip setpoint initiates a scram at the charging water header pressure which assures the seating of the accumulator piston. With this trip setpoint, full accumulator capability, and therefore, normal scram performance, is assured at all reactor pressures. An adjustable time-delay relay is provided for each pressure transmitter/trip channel to protect against inadvertent scram due to pressure fluctuations in the charging line.

Four channels of pressure transmitter/trip unit combinations measure the charging water header pressure using one-out-of-two-twice logic. The trip function is active in STARTUP and REFUEL modes because reactor pressure may be insufficient to assist the CRD scram action.

REACTIVITY CONTROL SYSTEM

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each control rod scram accumulator shall be determined OPERABLE:

- a. At least once per 7 days by verifying that the indicated pressure is greater than or equal to 940 psig unless the control rod is inserted and disarmed or scrambled.
- b. At least once per 18 months by:
 1. Performance of a:
 - a) CHANNEL FUNCTIONAL TEST of the leak detectors, and
 - b) CHANNEL CALIBRATION of the pressure detectors, with the alarm setpoint $940 + 30, -0$ psig on decreasing pressure.

TABLE 3.3.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>APPLICABLE OPERATIONAL CONDITIONS</u>	<u>MINIMUM OPERABLE CHANNELS PER TRIP SYSTEM (a)</u>	<u>ACTION</u>
7. Primary Containment Pressure - High	1, 2 ^(f)	2 ^(g)	1
8. Scram Discharge Volume Water Level - High	1, 2, 5 ^(h)	2 2	1 3
9. Turbine Stop Valve - Closure	1 ⁽ⁱ⁾	4 ^(j)	6
10. Turbine Control Valve Fast Closure, Valve Trip System Oil Pressure - Low	1 ⁽ⁱ⁾	2 ^(j)	6
11. Reactor Mode Switch Shutdown Position	1, 2 3, 4 5	1 1 1	1 7 3
12. Manual Scram	1, 2 3, 4 5	1 1 1	1 8 9
13. Control Rod Drive			
a. Charging Water Header Pressure - Low	2 5 ^(h)	2 2	1 3
b. Delay Timer	2 5 ^(h)	2 2	1 3

LA SALE - UNIT 1

3/4 3-3

Amendment No. 33

TABLE 3.3.1-2

REACTOR PROTECTION SYSTEM RESPONSE TIMES

<u>FUNCTIONAL UNIT</u>	<u>RESPONSE TIME (Seconds)</u>
1. Intermediate Range Monitors:	
a. Neutron Flux - High*	NA
b. Inoperative	NA
2. Average Power Range Monitor*	
a. Neutron Flux - High, Setdown	NA **
b. Flow Biased Simulated Thermal Power-Upscale	≤ 0.09
c. Fixed Neutron Flux - High	≤ 0.09
d. Inoperative	NA
3. Reactor Vessel Steam Dome Pressure - High	≤ 0.55
4. Reactor Vessel Water Level - Low, Level 3	≤ 1.05
5. Main Steam Line Isolation Valve - Closure	≤ 0.06
6. Main Steam Line Radiation - High	NA
7. Primary Containment Pressure - High	NA
8. Scram Discharge Volume Water Level - High	NA
9. Turbine Stop Valve - Closure	≤ 0.06
10. Turbine Control Valve Fast Closure, Trip Oil Pressure - Low	≤ 0.08 [#]
11. Reactor Mode Switch Shutdown Position	NA
12. Manual Scram	NA
13. Control Rod Drive	
a. Charging Water Header Pressure - Low	NA
b. Delay Timer	NA

*Neutron detectors are exempt from response time testing. Response time shall be measured from the detector output or from the input of the first electronic component in the channel.

**Not including simulated thermal power time constant.

[#]Measured from start of turbine control valve fast closure.

TABLE 4.3.1-1 (Continued)

REACTOR PROTECTION SYSTEM INSTRUMENTATION SURVEILLANCE REQUIREMENTS

FUNCTIONAL UNIT	CHANNEL CHECK	CHANNEL FUNCTIONAL TEST	CHANNEL CALIBRATION	OPERATIONAL CONDITIONS FOR WHICH SURVEILLANCE REQUIRED
8. Scram Discharge Volume Water Level - High	NA	M	R	1, 2, 5
9. Turbine Stop Valve - Closure	NA	M	R	1
10. Turbine Control Valve Fast Closure Valve Trip System Oil Pressure - Low	NA	M	R*	1
11. Reactor Mode Switch Shutdown Position	NA	R	NA	1, 2, 3, 4, 5
12. Manual Scram	NA	M	NA	1, 2, 3, 4, 5
13. Control Rod Drive				
a. Charging Water Header Pressure - Low	NA	M	R	2, 5
b. Delay Timer	NA	M	R	2, 5

- (a) Neutron detectors may be excluded from CHANNEL CALIBRATION.
- (b) The IRM, and SRM channels shall be determined to overlap for at least 1/2 decades during each startup and the IRM and APRM channels shall be determined to overlap for at least 1/2 decades during each controlled shutdown, if not performed within the previous 7 days.
- (c) Within 24 hours prior to startup, if not performed within the previous 7 days.
- (d) This calibration shall consist of the adjustment of the APRM channel to conform to the power levels calculated by a heat balance during OPERATIONAL CONDITION 1 when THERMAL POWER \geq 25% of RATED THERMAL POWER. The APRM Gain Adjustment Factor (GAF) for any channel shall be equal to the power value determined by the heat balance divided by the APRM reading for that channel.

Within 2 hours, adjust any APRM channel with a GAF > 1.02. In addition, adjust any APRM channel within 12 hours, (1) if power is greater than or equal to 90% of RATED THERMAL POWER and the APRM channel GAF is < 0.98, or (2) if power is less than 90% of RATED THERMAL POWER and the APRM reading exceeds the power value determined by the heat balance by more than 10% of RATED THERMAL POWER. Until any required APRM adjustment has been accomplished, notification shall be posted on the reactor control panel.

- (e) This calibration shall consist of the adjustment of the APRM flow biased channel to conform to a calibrated flow signal.
- (f) The LPRMs shall be calibrated at least once per 1000 effective full power hours (EFPH) using the TIP system.
- (g) Measure and compare core flow to rated core flow.
- (h) This calibration shall consist of verifying the 6 ± 1 second simulated thermal power time constant.

*The specified 18-month interval may be waived for Cycle 1 provided the surveillance is performed during Refuel 1, which is to commence no later than October 27, 1985.

REACTIVITY CONTROL SYSTEMS

BASES

CONTROL RODS (Continued)

In addition, the automatic CRD charging water header low pressure scram (see Table 2.2.1-1) initiates well before any accumulator loses its full capability to insert the control rod. With this added automatic scram feature, the surveillance of each individual accumulator check valve is no longer necessary to demonstrate adequate stored energy is available for normal scram action.

Control rod coupling integrity is required to ensure compliance with the analysis of the rod drop accident in the FSAR. The overtravel position feature provides the only positive means of determining that a rod is properly coupled and therefore this check must be performed prior to achieving criticality after completing CORE ALTERATIONS that could have affected the control rod drive coupling integrity. The subsequent check is performed as a backup to the initial demonstration.

In order to ensure that the control rod patterns can be followed and therefore that other parameters are within their limits, the control rod position indication system must be OPERABLE.

The control rod housing support restricts the outward movement of a control rod to less than 3 inches in the event of a housing failure. The amount of rod reactivity which could be added by this small amount of rod withdrawal is less than a normal withdrawal increment and will not contribute to any damage to the primary coolant system. The support is not required when there is no pressure to act as a driving force to rapidly eject a drive housing.

The required surveillance intervals are adequate to determine that the rods are OPERABLE and not so frequent as to cause excessive wear on the system components.

3/4.1.4 CONTROL ROD PROGRAM CONTROLS

Control rod withdrawal and insertion sequences are established to assure that the maximum insequence individual control rod or control rod segments which are withdrawn at any time during the fuel cycle could not be worth enough to result in a peak fuel enthalpy greater than 280 cal/gm in the event of a control rod drop accident. The specified sequences are characterized by homogeneous, scattered patterns of control rod withdrawal. When THERMAL POWER is greater than 20% of RATED THERMAL POWER, there is no possible rod worth which, if dropped at the design rate of the velocity limiter, could result in a peak enthalpy of 280 cal/gm. Thus requiring the RSCS and RWM to be OPERABLE when THERMAL POWER is less than or equal to 20% of RATED THERMAL POWER provides adequate control.

The RSCS and RWM provide automatic supervision to assure that out-of-sequence rods will not be withdrawn or inserted.

The analysis of the rod drop accident is presented in Section 15.4.9 of the FSAR and the techniques of the analysis are presented in a topical report, Reference 1, and two supplements, References 2 and 3.

REACTIVITY CONTROL SYSTEMS

BASES

CONTROL ROD PROGRAM CONTROLS (Continued)

The RBM is designed to automatically prevent fuel damage in the event of erroneous rod withdrawal from locations of high power density during high power operation. Two channels are provided. Tripping one of the channels will block erroneous rod withdrawal soon enough to prevent fuel damage. This system backs up the written sequence used by the operator for withdrawal of control rods.

3/4.1.5 STANDBY LIQUID CONTROL SYSTEM

The standby liquid control system provides a backup capability for bringing the reactor from full power to a cold, Xenon-free shutdown, assuming that the withdrawn control rods remain fixed in the rated power pattern. To meet this objective it is necessary to inject a quantity of boron which produces a concentration of 660 ppm in the reactor core in approximately 50 to 125 minutes. A normal quantity of 4587 gallons net of solution having a 13.4% sodium pentaborate concentration is required to meet a shutdown requirement of 3%. There is an additional allowance of 25% in the reactor core to account for imperfect mixing. The time requirement was selected to override the reactivity insertion rate due to cooldown following the Xenon poison peak and the required pumping rate is 41.2 gpm. The minimum storage volume of the solution is established to allow for the portion below the pump suction that cannot be inserted and the filling of other piping systems connected to the reactor vessel.

The temperature requirement on the sodium pentaborate solution is necessary to maintain the solubility of the solution as it was initially mixed to the appropriate concentration. Checking the volume of fluid and the temperature once each 24 hours assures that the solution is available for injection.

With redundant pumps and explosive injection valves and with a highly reliable control rod scram system, operation of the reactor is permitted to continue for short periods of time with the system inoperable or for longer periods of time with one of the redundant components inoperable.

Surveillance requirements are established on a frequency that assures a high reliability of the system. Once the solution is established, boron concentration will not vary unless more boron or water is added, thus a check on the temperature and volume once each 24 hours assures that the solution is available for use.

Replacement of the explosive charges in the valves at regular intervals will assure that these valves will not fail because of deterioration of the charges.

1. C. J. Paone, R. C. Stirn and J. A. Woolley, "Rod Drop Accident Analysis for Large BWR's," G. E. Topical Report NEDO-10527, March 1972
2. C. J. Paone, R. C. Stirn and R. M. Young, Supplement 1 to NEDO-10527, July 1972
3. J. M. Haun, C. J. Paone and R. C. Stirn, Addendum 2, "Exposed Cores," Supplement 2 to NEDO-10527, January 1973



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 33 TO FACILITY OPERATING LICENSE NO. NPF-11

COMMONWEALTH EDISON COMPANY

LA SALLE COUNTY STATION, UNIT 1

DOCKET NO. 50-373

1.0 INTRODUCTION

By letter dated November 13, 1985, Commonwealth Edison Company (licensee) proposed an amendment that would change the La Salle County Station, Unit 1 Technical Specifications to include a previously approved reactor trip setting on low control rod drive (CRD) pump discharge water header pressure and to delete an associated surveillance requirement. The staff's initial evaluation of the CRD charging water header low pressure scram function was provided in Section 4.6.2 of Supplement No. 2 and Section 7.2.3.2 of Supplement No. 7 to the Safety Evaluation Report, and accordingly, License Condition 2.C.(15) was included in the license for its completion prior to startup after the first refueling outage.

2.0 EVALUATION

In our evaluation of the low CRD pump discharge water header pressure in Section 7.2.3.2, the scram trip points approved were 1267 psig and the associated allowable value 1185 psig. This identical scram modification was installed initially in La Salle, Unit 2 with these scram trip points. However, it was discovered that with these scram trip points spurious scrams were occurring. As a result, the licensee changed the scram trip setpoints on Unit 2 from those previously approved of 1267 psig to 1157 psig, and the associated allowable value from 1185 psig to 1134 psig, and the spurious scram problem was rectified. The licensee is now proposing these same setpoint changes on Unit 1. To arrive at the new setpoints, the calibrated range of the pressure sensors has been reduced from 0-2500 psig to 500-1500 psig, thus reducing the uncertainties involved in calculating the setpoint values (i.e., instrument accuracy is increased). The licensee has performed an analysis which demonstrates that accumulator pressure will be sufficient to accomplish a scram for at least three minutes after CRD charging water pressure has decreased below the low pressure scram setpoint allowable value of 1134 psig. A reactor scram will occur ten seconds after charging water header pressure reaches the trip setpoint value of 1157 psig. The CRD low charging pressure scram logic includes a ten second time delay to avoid reactor scrams due to spurious pressure fluctuations. The licensee has not deleted or changed any Technical Specification operability requirements or limiting conditions for operation for the scram accumulators. Based on the above, the staff concludes that the proposed setpoint changes are acceptable.

The licensee has proposed to delete surveillance requirement 4.1.3.5.b.2 to measure and record the time that each individual accumulator check valve maintains the associated accumulator pressure above the low pressure alarm setpoint with no control rod drive pump operating. This test (check valve leakage rate) was required to be performed once per 18 months. With implementation of the CRD charging water header low pressure scram function, a reactor scram will occur before CRD charging pressure, and hence accumulator pressure, decreases (for whatever reason, including check valve leakage) to the point where control rod insertion is no longer possible. Because sufficient pressure will be available to accomplish a scram, for all modes of operation, the staff concludes that deletion of the above surveillance requirement for the accumulator check valves is acceptable.

As a result of this modification, new instrumentation has been incorporated into the design; and the licensee updated Tables 3.3.1-1 and Table 4.3.1.1-1 of the La Salle Unit 1 Technical Specifications to reflect this change. The staff reviewed the proposed changes to the Tables. Table 3.3.1-1 establishes the requirements for the minimum number of operable channels (including the applicable modes of operation) and the associated limiting conditions for operation when the minimum operability requirements are not met. All four charging water header pressure channels and the delay timer are required to be operable at startup and refueling with any control rod withdrawn. Table 4.3.1.1-1 requires that a channel functional test be performed monthly for each pressure channel and the delay timer, and that these instruments be calibrated at each refueling outage. The proposed Technical Specification operability requirements limiting conditions for operations, and surveillance requirements for the CRD charging water header low pressure scram instrumentation are consistent with other protection system instrumentation at La Salle Unit 1 and the BWR-5 Standard Technical Specifications, and therefore, are acceptable. The licensee has stated that the CRD charging water header low pressure alarm (which is independent of the trip function) will be tested at each refueling outage as part of calibration procedures LISRD-204 and 404. Response time testing is not required for these instruments because credit is not taken for the CRD charging water header low pressure scram function in any of the Chapter 15 analyses of the Final Safety Analysis Report. Based on the above, the NRC staff concludes that the proposed changes to the La Salle Unit 1 Technical Specifications concerning implementation of the CRD charging water header low pressure scram function are acceptable, and accordingly the licensee has satisfied the License Condition 2.C.(15).

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation and use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The staff has determined that this amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued

a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (50 FR 49784) on December 4, 1985. No public comments were received, and the state of Illinois did not have any comments.

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: A. Bournia, BWR Project Directorate No. 3, DBL

Dated: **FEB 04 1986**