August 2, 1990

Docket No. 50-461

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Mr. Frank A. Spangenberg
Manager - Licensing and Safety
Clinton Power Station
Post Office Box 678
Mail Code V920
Clinton, Illinois 61727

Dear Mr. Spangenberg:

SUBJECT: AMENDMENT NO. 42 TO FACILITY OPERATING LICENSE NO. NPF-62
(TAC NO. 73799)

The Commission has issued the enclosed Amendment No. 42 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit No. 1. This amendment consists of changes to the Technical Specifications (TSs) in partial response to your application dated February 5, 1988.

This amendment incorporates the Startup Test Program data into the Clinton Technical Specifications.

A copy of our Safety Evaluation is also enclosed. Notice of issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

original signed by

John B. Hickman, Project Manager
Project Directorate III-3
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 42 to
License No. NPF-62
2. Safety Evaluation

cc w/enclosures:
See next page

PD33:LA	PD33:PM	PD33:D	OGC
PKREUTZER	JHICKMAN/bj	JHANNON	
7/16/90	7/25/90	7/26/90 8/2/90	7/27/90

DOCUMENT NAME: 73799 AMENDMENT

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

ILLINOIS POWER COMPANY, ET AL.

DOCKET NO. 50-461

CLINTON POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 42
License No. NPF-62

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Illinois Power Company* (IP) and Soyland Power Cooperative, Inc. (the licensees) dated February 5, 1988 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and 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 rules and 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 attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-62 is hereby amended to read as follows:

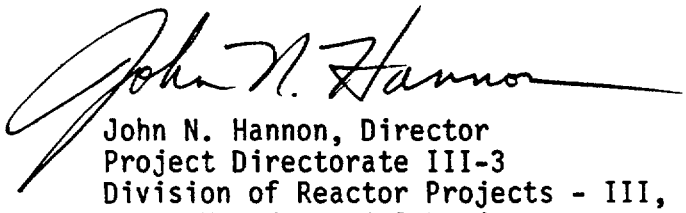
*Illinois Power Company is authorized to act as agent for Soyland Power Cooperative, Inc. and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 42 , are hereby incorporated into this license. Illinois Power Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION



John N. Hannon, Director
Project Directorate III-3
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of issuance: August 2, 1990

ATTACHMENT TO LICENSE AMENDMENT NO. 42

FACILITY OPERATING LICENSE NO. NPF-62

DOCKET NO. 50-461

Replace the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change. Corresponding overleaf pages are provided to maintain document completeness.

Remove	Insert
3/4 3-21	3/4 3-21
3/4 3-22	3/4 3-22
3/4 3-23	3/4 3-23
3/4 3-24	3/4 3-24
3/4 4-2	3/4 4-2
3/4 4-3	3/4 4-3
3/4 4-4	3/4 4-4
3/4 4-6	3/4 4-6
3/4 4-19	3/4 4-19
B 3/4 4-1	B 3/4 4-1

TABLE 3.3.2-2 (Continued)

CRVICS INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. PRIMARY AND SECONDARY CONTAINMENT ISOLATION (Continued)		
k. Containment Pressure - High	≤ 2.62 psid	≤ 3.00 psid
l. Main Steam Line Radiation - High	≤ 3.0 x full power background#	≤ 3.6 x full power background#
m. Fuel Building Exhaust Radiation - High	≤ 10 mR/hr	≤ 17 mR/hr
n. Manual Initiation	NA	NA
2. MAIN STEAM LINE ISOLATION		
a. Reactor Vessel Water Level - Low Low Low, Level 1	≥ -145.5 in.*	≥ -147.7 in.
b. Main Steam Line Radiation - High	≤ 3.0 x full power background#	≤ 3.6 x full power background#
c. Main Steam Line Pressure - Low	≥ 849 psig	≥ 837 psig
d. Main Steam Line Flow - High	≤ 170 psid	≤ 178 psid
e. Condenser Vacuum - Low	≥ 8.5 in. Hg vacuum	≥ 7.6 in. Hg vacuum
f. Main Steam Line Tunnel Temp. - High	≤ 165°F	≤ 176°F
g. Main Steam Line Tunnel Δ Temp. - High	≤ 54.5°F	≤ 60°F
h. Main Steam Line Turbine Bldg. Temp. - High		
(1) 1E31 - N559 A, B, C, D 1E31 - N560 A, B, C, D 1E31 - N561 A, B, C, D 1E31 - N562 A, B, C, D	≤ 131.2°F	≤ 138°F
(2) 1E31 - N563 A, B, C, D	≤ 143.2°F	≤ 150°F
i. Manual Initiation	NA	NA
3. REACTOR WATER CLEANUP SYSTEM ISOLATION		
a. Δ Flow - High	≤ 59 gpm	≤ 66.1 gpm
b. Δ Flow Timer	≥ 45 sec.	≤ 47 sec.

TABLE 3.3.2-2 (Continued)

CRVICS INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
3. REACTOR WATER CLEANUP SYSTEM ISOLATION (Continued)		
c. Equipment Area Temp. - High		
1. Pump Rooms - A, B, C	$\leq$ 186.5°F	$\leq$ 197.1°F
2. Heat Exchanger Rooms - East, West	$\leq$ 201°F	$\leq$ 212°F
d. Equipment Area Δ Temp. - High		
1. Pump Rooms - A, B, C	$\leq$ 54.5°F	$\leq$ 60°F
2. Heat Exchanger Rooms - East, West	$\leq$ 54.5°F	$\leq$ 60°F
e. Reactor Vessel Water Level - Low Low, Level 2	$\geq$ -45.5 in.*	$\geq$ -47.7 in.
f. Main Steam Line Tunnel Ambient Temp. - High	$\leq$ 165°F	$\leq$ 176°F
g. Main Steam Line Tunnel Δ Temp. - High	$\leq$ 54.5°F	$\leq$ 60°F
h. SLCS Initiation	NA	NA
i. Manual Initiation	NA	NA
4. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION		
a. RCIC Steam Line Flow - High	$\leq$ 110 in. H_2O	$\leq$ 118.5 in H_2O
b. RCIC Steam Line Flow - High Timer	$\geq$ 3 sec.	$\leq$ 13 sec.
c. RCIC Steam Supply Pressure - Low	$\geq$ 60 psig	$\geq$ 52 psig
d. RCIC Turbine Exhaust Diaphragm Pressure - High	$\leq$ 10 psig	$\leq$ 20 psig

TABLE 3.3.2-2 (Continued)

CRVICS INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
4. REACTOR CORE ISOLATION COOLING SYSTEM ISOLATION (Continued)		
e. RCIC Equipment Room Ambient Temp. - High	≤ 222.5°F	≤ 233.1°F
f. RCIC Equipment Room Δ Temp. - High	≤ 34.5°F	≤ 40°F
g. Main Steam Line Tunnel Ambient Temp. - High	≤ 165°F	≤ 176°F
h. Main Steam Line Tunnel Δ Temp. - High	≤ 54.5°F	≤ 60°F
i. Main Steam Line Tunnel Temp. Timer	≥ 25 min.	≤ 28 min.
j. Drywell Pressure - High	≤ 1.68 psig	≤ 1.88 psig
k. Manual Initiation	NA	NA
l. RHR/RCIC Steam Line Flow - High	≤ 179.5 in. H_2O	≤ 188 in. H_2O
m. RHR Heat Exchanger A, B Ambient Temperature - High	≤ 138.5°F	≤ 149.6°F
n. RHR Heat Exchanger A, B Δ Temp. - High	≤ 74.2°F	≤ 79.6°F
5. RHR SYSTEM ISOLATION		
a. RHR Heat Exchanger Rooms A, B Ambient Temperature - High	≤ 138.5°F	≤ 149.6°F
b. RHR Heat Exchanger Rooms A, B Δ Temperature - High	≤ 74.2°F	≤ 79.6°F

TABLE 3.3.2-2 (Continued)

CRVICS INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
5. RHR SYSTEM ISOLATION (Continued)		
c. Reactor Vessel Water Level - Low, Level 3	$\geq$ 8.9 in.*	$\geq$ 8.3 in.
d. Reactor Vessel Water Level - Low Low Low, Level 1	$\geq$ -145.5 in.*	$\geq$ -147.7 in.
e. Reactor Vessel (RHR Cut-in Permissive) Pressure - High	$\leq$ 135 psig	$\leq$ 150 psig
f. Drywell Pressure - High		
1) Containment Spray	$\leq$ 1.68 psig	$\leq$ 1.88 psig
2) Fuel Pool Cooling	$\leq$ 1.68 psig	$\leq$ 1.88 psig
g. Manual Initiation	NA	NA

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

3/4.4 REACTOR COOLANT SYSTEM

3/4.4.1 RECIRCULATION SYSTEM

RECIRCULATION LOOPS

LIMITING CONDITION FOR OPERATION

3.4.1.1 Two reactor coolant system recirculation loops shall be in operation with:

a. Total core flow greater than or equal to 45% of rated core flow, or

b. THERMAL POWER within the unrestricted zone of Figure 3.4.1.1-1, or

c. THERMAL POWER within the restricted zone† of Figure 3.4.1.1-1 and APRM or LPRM†† noise levels not larger than three times their established baseline noise levels.

APPLICABILITY: OPERATIONAL CONDITIONS 1* and 2*.

ACTION:

a. With one reactor coolant system recirculation loop not in operation:

   1. Within 4 hours:

      a) Place the recirculation flow control system in the Local Manual (Position Control) mode, and

      b) Reduce THERMAL POWER TO $\leq$ 70% of RATED THERMAL POWER, and

      c) Increase the MINIMUM CRITICAL POWER RATIO (MCPR) Safety Limit by 0.01 to 1.08 per Specification 2.1.2, and

      d) Reduce the Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) limit per Specification 3.2.1 and the CORE OPERATING LIMITS REPORT, and

      e) Reduce the Average Power Range Monitor (APRM) Scram and Rod Block Trip Setpoints and Allowable Values to those applicable for single-recirculation-loop operation per Specifications 2.2.1 and 3.3.6, and

---

*See Special Test Exception 3.10.4.

†The operating region for which monitoring is required. See Surveillance Requirement 4.4.1.1.2.

††Detector levels A and C of one LPRM string per core octant plus detectors A and C of one LPRM string in the center of the core should be monitored.

RECIRCULATION LOOPS

LIMITING CONDITION FOR OPERATION

f) Reduce the volumetric flow rate of the operating recirculation loop to ≤ 31,341 gpm*

g) Perform Surveillance Requirement 4.4.1.1.4 if thermal power is ≤ 30%** of RATED THERMAL POWER or the recirculation loop flow in the operating loop is ≤ 30%** of rated loop flow.

2. The provisions of Specification 3.0.4 are not applicable.

3. Otherwise, place the unit in HOT SHUTDOWN within 12 hours.

b. With no reactor coolant system recirculation loops in operation, immediately initiate action to reduce THERMAL POWER so that it is in the unrestricted zone of Figure 3.4.1.1-1 within 4 hours and initiate measures to place the unit in at least STARTUP within 6 hours and in HOT SHUTDOWN within the next 6 hours.

c. With one or two reactor coolant system recirculation loops in operation and total core flow less than 45% but greater than 35.5%# of rated core flow and THERMAL POWER within the restricted zone of Figure 3.4.1.1-1, and with the APRM or LPRM† neutron flux noise levels greater than three times their established baseline noise levels, immediately initiate corrective action to restore the noise levels to within the required limits within 2 hours by increasing core flow or by reducing THERMAL POWER.

d. With one or two reactor coolant recirculation loops in operation, and total core flow less than or equal to 35.5%# and THERMAL POWER within the restricted zone of Figure 3.4.1.1-1, within 15 minutes initiate corrective action to reduce THERMAL POWER to within the unrestricted zone of Figure 3.4.1.1-1, or increase core flow to greater than 35.5%# within 4 hours.

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*This value represents the measured volumetric recirculation loop flow which produces 100% core flow at 100% THERMAL POWER.

**The threshold THERMAL POWER and recirculation loop flow which will sweep the cold water from the vessel bottom head preventing stratification.

#Core flow with both recirculation pumps at rated speed and minimum control valve position.

†Detector levels A and C of one LPRM string per core octant plus detectors A and C of one LPRM string in the center of the core should be monitored.

SURVEILLANCE REQUIREMENTS

4.4.1.1.1 Each reactor coolant system recirculation loop flow control valve shall be demonstrated OPERABLE at least once per 18 months by:

a. Verifying that the control valve fails "as is" on loss of hydraulic pressure at the hydraulic control unit, and

b. Verifying that the average rate of control valve movement is:

1. Less than or equal to 11% of stroke per second opening, and
2. Less than or equal to 11% of stroke per second closing.

4.4.1.1.2 When THERMAL POWER is within the restricted zone of Figure 3.4.1.1-1, and one or two pumps are in operation, establish a baseline APRM and LPRM* neutron flux noise value within 2 hours of entering this operating region unless baselining has previously been performed in the region since the last CORE ALTERATION, and

a. Determine the APRM and LPRM* noise levels at least once per 8 hours, and
b. Determine the APRM and LPRM* noise levels within 30 minutes after the completion of a THERMAL POWER increase of at least 5% of RATED THERMAL POWER.

4.4.1.1.3 With one reactor system recirculation loop not in operation, at least once per 12 hours verify that:

a. Reactor THERMAL POWER is $\leq$ 70% of RATED THERMAL POWER.

b. The recirculation flow control system is in the Local Manual (Position Control) mode,

c. The volumetric flow rate of the operating loop is $\leq$ 31,341 gpm**, and

d. Core flow is greater than 35.5%# when THERMAL POWER is within the restricted zone of Figure 3.4.1.1-1.

4.4.1.1.4 With one reactor coolant system recirculation loop not in operation, within no more than 15 minutes prior to either THERMAL POWER increase or recirculation loop flow increase, verify that the following differential temperature

*Detector levels A and C of one LPRM string per core octant plus detectors A and C of one LPRM string in the center of the core should be monitored.

**This value represents the measured volumetric recirculation loop flow which produces 100% core flow at 100% THERMAL POWER.

#Core flow with both recirculation pumps at rated speed and minimum control valve position.

SURVEILLANCE REQUIREMENTS

requirements are met if THERMAL POWER is $\leq$ 30%* of RATED THERMAL POWER or the recirculation loop flow in the operating loop is $\leq$ 30%* of rated loop flow:

a. $\leq$ 100°F between reactor vessel steam space coolant and bottom head drain line coolant,

b. $\leq$ 50°F between the reactor coolant within the loop not in operation and the coolant in the reactor pressure vessel, and

c. $\leq$ 50°F between the reactor coolant within the loop not in operation and the operating loop.

The differential temperature requirments of Specification 4.4.1.1.4.b and c do not apply when the loop not in operation is isolated from the reactor pressure vessel.

*The threshold THERMAL POWER and recirculation loop flow which will sweep the cold water from the vessel bottom head preventing stratification.

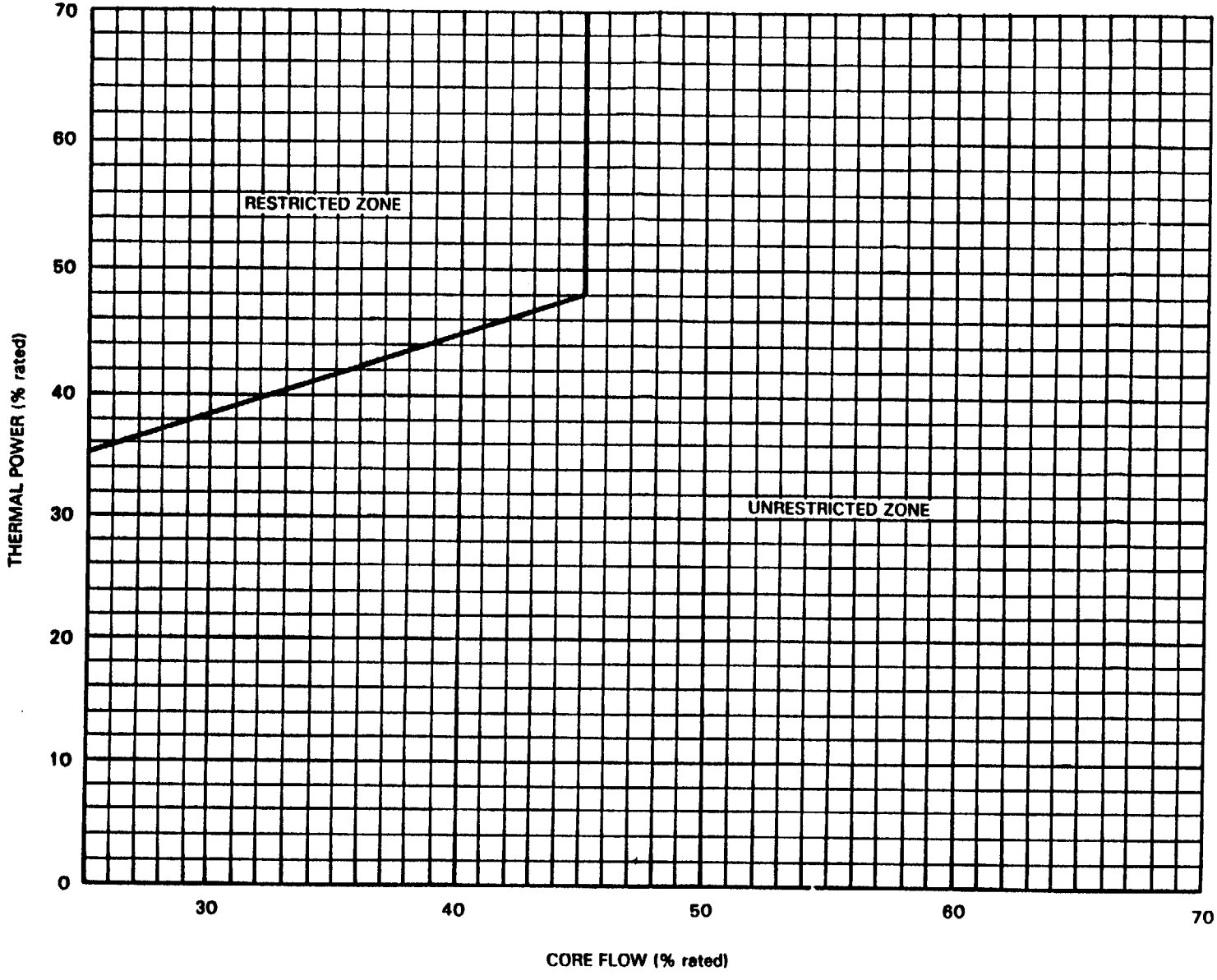

Figure 3.4.1.1-1 Thermal Power Versus Core Flow

JET PUMPS

LIMITING CONDITION FOR OPERATION

3.4.1.2 All jet pumps shall be OPERABLE.

APPLICABILITY: OPERATIONAL CONDITIONS 1 and 2.

ACTION:

With one or more jet pumps inoperable, be in at least HOT SHUTDOWN within 12 hours.

SURVEILLANCE REQUIREMENTS

4.4.1.2 All jet pumps shall be demonstrated OPERABLE as follows:

Each of the above required jet pumps in an operating loop shall be demonstrated OPERABLE at least once per 24 hours when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER# by determining recirculation loop flow, total core flow and diffuser-to-lower plenum differential pressure for each jet pump and verifying that no two of the following conditions occur:

a. The indicated recirculation loop flow differs by more than 10% from the established flow control valve position-loop flow characteristics.

b. The indicated total core flow differs by more than 10% from the established total core flow value derived from recirculation loop flow measurements.

c. The indicated jet pump diffuser-to-lower plenum differential pressure (or jet pump flow) of any individual jet pump differs from established patterns by more than 20% (10% for flow).

#The provisions of Specification 4.0.4 are not applicable.

3/4.4.5 SPECIFIC ACTIVITY

LIMITING CONDITION FOR OPERATION

3.4.5 The specific activity of the primary coolant shall be limited to:

a. Less than or equal to 0.2 microcuries per gram DOSE EQUIVALENT I-131, and
b. Less than or equal to 100/$\bar{E}$ microcuries per gram.

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

ACTION:

a. In OPERATIONAL CONDITIONS 1, 2, or 3 with the specific activity of the primary coolant:

   1. Greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131 but less than or equal to 4.0 microcuries per gram DOSE EQUIVALENT I-131 for more than 48 hours during one continuous time interval or greater than 4.0 microcuries per gram DOSE EQUIVALENT I-131, be in at least HOT SHUTDOWN with the main steam line isolation valves closed within 12 hours.

   2. Greater than 100/$\bar{E}$ microcuries per gram, be in at least HOT SHUTDOWN with the main steamline isolation valves closed within 12 hours.

b. In OPERATIONAL CONDITIONS 1, 2, 3, or 4, with the specific activity of the primary coolant greater than 0.2 microcuries per gram DOSE EQUIVALENT I-131 or greater than 100/$\bar{E}$ microcuries per gram, perform the sampling and analysis requirements of Item 4a of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

c. In OPERATIONAL CONDITION 1 or 2, with:

   1. THERMAL POWER changed by more than 15% of RATED THERMAL POWER in one hour, or

   2. The off-gas level, at the off-gas recombiner effluent, increased by more than 10,000 microcuries per second in one hour during steady state operation at release rates less than 75,000 microcuries per second, or

   3. The off-gas level, at the off-gas recombiner effluent, increased by more than 15% in one hour during steady state operation at release rates greater than 75,000 microcuries per second,

   perform the sampling and analysis requirements of Item 4b of Table 4.4.5-1 until the specific activity of the primary coolant is restored to within its limit.

SPECIFIC ACTIVITY

SURVEILLANCE REQUIREMENTS

4.4.5 The specific activity of the reactor coolant shall be demonstrated to be within the limits by performance of the sampling and analysis program of Table 4.4.5-1.

3/4.4.1 RECIRCULATION SYSTEM

The impact of single recirculation loop operation upon plant safety is assessed and shows that single-loop operation is permitted if the MCPR fuel cladding safety limit is increased as noted by Specification 2.1.2, APRM scram and control rod block setpoints are adjusted as noted in Tables 2.2.1-1 and 3.3.6-2, respectively, MAPLHGR limits are decreased in accordance with the values specified in the CORE OPERATING LIMITS REPORT, and MCPR operating limits are adjusted in accordance with the values specified in the CORE OPERATING LIMITS REPORT.

Additionally, surveillance on the volumetric flow rate of the operating recirculation loop is imposed to exclude the possibility of excessive core internals vibration. The surveillance on differential temperatures below 30%* THERMAL POWER or 30%* rated recirculation loop flow is to mitigate the undue thermal stress on vessel nozzles, recirculation pump, and vessel bottom head during the extended operation of the single recirculation loop mode.

An inoperable jet pump is not, in itself, a sufficient reason to declare a recirculation loop inoperable, but it does, in case of a design-basis-accident, increase the blowdown area and reduce the capability of reflooding the core; thus, the requirement for shutdown of the facility with a jet pump inoperable. Jet pump failure can be detected by monitoring jet pump performance on a prescribed schedule for significant degradation. Significant degradation is indicated if more than one of three specified surveillances performed confirms unacceptable deviations from established patterns or relationships. The surveillances, including the associated acceptance criteria, are in accordance with General Electric Service Information Letter No. 330, the recommendations of which are considered acceptable for verifying jet pump operability according to NUREG/CR-3052, "Closeout of IE Bulletin 80-07: BWR Jet Pump Assembly Failure." Performance of the specified surveillances, however, is not required when thermal power is less than 25% RATED THERMAL POWER because flow oscillations and jet noise precludes the collection of repeatable meaningful data during low flow conditions approaching the threshold response of the associated flow instrumentation.

Recirculation loop flow mismatch limits are in compliance with ECCS LOCA analysis design criteria for two recirculation loop operation. The limits will ensure an adequate core flow coastdown from either recirculation loop following a LOCA. In the case where the mismatch limits cannot be maintained during two loop operation, continued operation is permitted in a single recirculation loop mode.

In order to prevent undue stress on the vessel nozzles and bottom head region, the recirculation loop temperatures shall be within 50°F of each other prior to startup of an idle loop. The loop temperature must also be within 50°F of the reactor pressure vessel coolant temperature to prevent thermal shock to the recirculation pump and recirculation nozzles. Sudden equilization of a temperature difference > 100°F between the reactor vessel bottom head coolant and the coolant in the upper region of the reactor vessel by increasing core flow rate would cause undue stress in the reactor vessel bottom head.

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*The threshold THERMAL POWER and recirculation loop flow which will sweep the cold water from the vessel bottom head preventing stratification.

3/4.4.1 RECIRCULATION SYSTEM (Continued)

The objective of GE BWR plant and fuel design is to provide stable operation with margin over the normal operating domain. However, at the high power/low flow corner of the operating domain, a small probability of neutron flux limit cycle oscillations exists depending on combinations of operating conditions (e.g., rod pattern, power shape). To provide assurance that neutron flux limit cycle oscillations are detected and suppressed, APRM and LPRM neutron flux noise levels should be monitored while operating in this region.

Stability tests at operating BWRs were reviewed to determine a generic region of the power/flow map in which surveillance of neutron flux noise levels should be performed. A conservative decay ratio of 0.6 was chosen as the bases for determining the generic region for surveillance to account for the plant to plant variability of decay ratio with core and fuel designs. This generic region has been determined to correspond to a core flow of less than or equal to 45% of rated core flow and a THERMAL POWER greater than that specified in Figure 3.4.1.1-1.

Plant specific calculations can be performed to determine an applicable region for monitoring neutron flux noise levels. In this case the degree of conservatism can be reduced since plant to plant variability would be eliminated. In this case, adequate margin will be assured by monitoring the region which has a decay ratio greater than or equal to 0.8.

Neutron flux noise limits are also established to ensure early detection of limit cycle neutron flux oscillations. BWR cores typically operate with neutron flux noise caused by random boiling and flow noise. Typical neutron flux noise levels of 1-12% or rated power (peak-to-peak) have been reported for the range of low to high recirculation loop flow during both single and dual recirculation loop operation. Neutron flux noise levels which significantly bound these values are considered in the thermal/mechanical design of GE BWR fuel and are found to be of negligible consequence. In addition, stability tests at operating BWRs have demonstrated that when stability related neutron flux limit cycle oscillations occur they result in peak-to-peak neutron flux limit cycles of 5-10 times the typical values. Therefore, actions taken to reduce neutron flux noise levels exceeding three (3) times the typical value are sufficient to ensure early detection of limit cycle neutron flux oscillations.

Typically, neutron flux noise levels show a gradual increase in absolute magnitude as core flow is increased (constant control rod pattern) with two reactor recirculation loops in operation. Therefore, the baseline neutron flux noise level obtained at a specific core flow can be applied over a range of core flows. To maintain a reasonable variation between the low flow and high flow end of the flow range, the range over which a specific baseline is applied should not exceed 20% of rated core flow with two recirculation loops in operation. Data from tests and operating plants indicate that a range of 20% of rated core flow will result in approximately a 50% increase in neutron flux noise level during operation with two recirculation loops. Baseline data should be taken near the maximum rod line at which the majority of operation will occur. However, baseline data taken at low rod lines (i.e. lower power) will result in a conservative value since the neutron flux noise level is proportional to the power level at a given core flow.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 42 TO FACILITY OPERATING LICENSE NO. NPF-62

CLINTON POWER STATION, UNIT NO. 1

ILLINOIS POWER COMPANY

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated February 5, 1988, the Illinois Power Company (IP), et al. (the licensees), requested an amendment to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit 1. The proposed amendment would revise the Technical Specifications to incorporate the results of the Startup Test Program data.

2.0 EVALUATION

At multiple locations in the Clinton Power Station (CPS) Technical Specifications (TS) preliminary values for trip setpoints or operating parameters were inserted pending the actual specific values being determined during startup testing. These preliminary values were so noted in the TS and the licensee committed to provide the appropriate values from the startup test program data within 90 days of the completion of the startup test program. By this proposed amendment, the licensee has provided the parameters from the startup test program for incorporation into the TS. Each of the changes is discussed individually below.

On page 3/4 3-21 item 2.d, the "**" is deleted from the trip setpoint and allowable value. This is acceptable to the staff since the same values are retained that were originally found to be acceptable.

On page 3/4 3-22 item 4.a, the trip setpoint is changed from "<257.5" to "<110" and the allowable value is changed from "<266" to "<118.5" and the "**" note is deleted from both values. This is acceptable to the staff since the revised values represent the measured parameter and are more conservative than the original.

On page 3/4 3-23 item 4.1, the "**" is deleted from the trip setpoint and allowable value. This is acceptable to the staff since the same values are retained that were originally found to be acceptable.

On page 3/4 3-24 item 5.e, the "**" is deleted from the trip setpoint and allowable value. This is acceptable to the staff since the same values are retained that were originally found to be acceptable.

Also on page 3/4 3-24, the "**" note at the bottom of the page is deleted entirely. This is acceptable since the note is no longer referenced in the TS.

Changes proposed for pages 3/4 3-66 and 3/4 3-67 were withdrawn by the licensees during a telephone conversation on June 28, 1990. Due to hardware changes that will be made during the second refueling outage beginning in October 1990, the values that were submitted would no longer be correct. Therefore, the licensee will submit revised values following the startup testing after refueling No. 2.

The first change on page 3/4 4-2, to item a.1.f, replaces "33,000 gpm" with "31,341 gpm." This revised figure representing the measured volumetric recirculation loop flow that produces 100% core flow at 100% Thermal Power is within expected values and acceptable to the staff.

The second change on page 3/4 4-2, to item a.1.g, replaces "<50%** of rated loop flow" with "<30%** of rated loop flow." This change provides the measured loop flow at 30% thermal power that will sweep the cold water from the vessel bottom head preventing stratification. This change is within the range of expected flows and provides an appropriate initiation for the surveillance. The change is acceptable to the staff.

The next change on page 3/4 4-2, to items c and d, replaces "(39)#%" with "35.5%#." This figure represents the core flow with both recirculation pumps at rated speed and minimum control valve position. This change is within expected values and is acceptable to the staff.

The last change to page 3/4 4-2 is to notes *, **, and #. The changes to all three delete reference to the values being preliminary with final values to be determined during startup testing. The portion of the notes that clarifies what the value represents is retained. With the revision of the values, the portion of the notes that refers to final values to be determined is no longer needed, therefore this change is acceptable to the staff.

The first change on page 3/4 4-3, to item 4.4.1.1.3.c, replaces "33,000 gpm**" with "31,341 gpm**." This revised figure representing the measured volumetric recirculation loop flow that produces 100% core flow at 100% Thermal Power is within expected values and acceptable to the staff.

The next change on page 3/4 4-3, to item 4.4.1.1.3.d, replaces "(39)#%" with "35.5%#." This figure represents the core flow with both recirculation pumps at rated speed and minimum control valve position. This change is within expected values and is acceptable to the staff.

The final change to page 3/4 4-3 is to note #. The change deletes reference to the final value to be determined during startup testing. The portion of the note that clarifies what the value represents is retained. With the revision of the value, the portion of the note that refers to final values to be determined is no longer needed, therefore this change is acceptable to the staff.

On page 3/4 4-4 item 4.4.1.1.4, "50%*" is replaced with "30%*." This change provides the measured loop flow at 30% thermal power which will sweep the cold water from the vessel bottom head preventing stratification. This change is within the range of expected flows and provides an appropriate initiation for the surveillance. The change is acceptable to the staff.

Also on page 3/4 4-4, the "*" note, which is still included with the revised value discussed previously, is revised to delete the reference to startup testing. The note retains the description of the basis for the value and is acceptable to the staff.

On page 3/4 4-6 the "*" note is deleted from items 4.4.1.2.b.1, .2, and .3 and from the bottom of the page. The note indicated that single recirculation flow control valve position-loop flow characteristics would be determined during the startup test program. These have been determined and are included in this amendment. Therefore, this reference is no longer needed and the deletion is acceptable.

On page 3/4 4-19 the "*" note is deleted from ACTION c.1 and from the bottom of the page. The note indicated that condition 1 for action c was not applicable during the startup test program. Since the program has been completed, that note is no longer necessary. The deletion is acceptable.

On page B 3/4 4-1, in the second paragraph, the "( )" is deleted from around "(30%)*" and "(50%)*" is replaced with "30%*." These values represent the threshold thermal power and recirculation loop flow which will sweep the cold water from the vessel bottom head preventing stratification. The values are within the expected range and are acceptable to the staff.

Finally, the portion of the "*" note at the bottom of page B 3/4 4-1 that refers to initial values with the final values to be determined during startup testing is deleted. The measured values are included as part of this amendment and the portion of the note that describes the basis for the values is retained. Therefore, the change is acceptable.

In summary, the proposed changes to incorporate the results of the startup test program in the TS have been reviewed by the NRC staff and found to be acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or a change to a surveillance requirement. The staff has determined that the 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 staff has 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.

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Dated: August 2, 1990