March 26, 1999

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Mr. Joseph V. Sipek
Director - Licensing
Clinton Power Station
P.0. Box 678
Mail Code V920
Clinton, IL 61727

SUBJECT: ISSUANCE OF AMENDMENT NO. 122 TO FACILITY OPERATING LICENSE NO. NPF-62 - CLINTON POWER STATION, UNIT 1 (TAC NO. MA4524)

Dear Mr. Sipek:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 122 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit 1. The amendment is in response to your application dated January 20, 1999, as supplemented February 4, 8, 25, and March 5, 1999.

The amendment changes the undervoltage relay setpoints.

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

Sincerely,

Original signed by:

Jon B. Hopkins, Senior Project Manager
Project Directorate III-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures: 1. Amendment No. 122 to NPF-62
2. Safety Evaluation

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 26, 1999

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Director - Licensing
Clinton Power Station
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Clinton, IL 61727

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Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-461

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2. Safety Evaluation

cc w/encls: See next page

Joseph V. Sipek
Illinois Power Company

Clinton Power Station, Unit 1

cc:

John. P. McElwain
Senior Vice President
Clinton Power Station
P.O. Box 678
Clinton, IL 61727

Wayne Romberg
Manager Nuclear Station
Engineering Department
Clinton Power Station
P.O. Box 678
Clinton, IL 61727

Resident Inspector
U.S. Nuclear Regulatory Commission
RR#3, Box 229 A
Clinton, IL 61727

R. T. Hill
Licensing Services Manager
General Electric Company
175 Curtner Avenue, M/C 481
San Jose, CA 95125

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Chairman of DeWitt County
c/o County Clerk's Office
DeWitt County Courthouse
Clinton, IL 61727

J. W. Blattner
Project Manager
Sargent & Lundy Engineers
55 East Monroe Street
Chicago, IL 60603

Illinois Department of Nuclear Safety
Office of Nuclear Facility Safety
ATTN: Mr. Frank Nizidlek
1035 Outer Park Drive
Springfield, IL 62704

Leah Manning Stetzner
VP, General Counsel & Corp. Secretary
500 South 27th Street
Decatur, IL 62525

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ILLINOIS POWER COMPANY

DOCKET NO. 50-461

CLINTON POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 122
License No. NPF-62

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

   A. The application for amendment by Illinois Power Company (the licensee), dated January 20, 1999, as supplemented February 4, 8, 25, and March 5, 1999, 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:

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(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. 122, 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, and shall be implemented within 45 days of issuance following a change to the Updated Safety Analysis Report to reflect the balance of plant loading on the electrical buses.

FOR THE NUCLEAR REGULATORY COMMISSION

Jon B. Hopkins

Jon B. Hopkins, Senior Project Manager
Project Directorate III-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: March 26, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 122

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.

Remove Pages	Insert Pages
3.3-78	3.3-78
3.3-80	3.3-80
3.8-4	3.8-4
3.8-6	3.8-6
3.8-8	3.8-8
3.8-9	3.8-9
3.8-10	3.8-10
3.8-13	3.8-13
3.8-14	3.8-14

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When the associated diesel generator (DG) is required to be OPERABLE by LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more channels inoperable.	A.1	Place channel in trip.	1 hour
	AND		
	A.2	--------NOTE-------- Only applicable for Functions 1.c, 1.d, 1.e, 2.c, 2.d, and 2.e. ---------- Restore channel to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1	Declare associated DG inoperable.	Immediately

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER DIVISION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Divisions 1 and 2 - 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage - 4.16 kV basis	6	SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 2345 V and ≤ 3395 V
b. Loss of Voltage - Time Delay	6	SR 3.3.8.1.3 SR 3.3.8.1.4	≤ 10 seconds
c. Degraded Voltage Reset - 4.16 kV basis	2	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 4090 V and ≤ 4111 V (a)
d. Degraded Voltage Drop-out - 4.16 kV basis	2	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 4051 V and ≤ 4092 V (b)
e. Degraded Voltage - Time Delay	1	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 14 seconds and ≤ 16 seconds
2. Division 3 - 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage - 4.16 kV basis	4	SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 2345 V and ≤ 2730 V
b. Loss of Voltage - Time Delay	1	SR 3.3.8.1.3 SR 3.3.8.1.4	≤ 3.0 seconds
c. Degraded Voltage Reset - 4.16 kV basis	2	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 4090 V and ≤ 4111 V (a)
d. Degraded Voltage Drop-out - 4.16 kV basis	2	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 4051 V and ≤ 4092 V (b)
e. Degraded Voltage - Time Delay	1	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 14 seconds and ≤ 16 seconds

(a) This value is to be used after release for operation (RFO) of the corresponding plant modification. Prior to RFO of the corresponding plant modification the Degraded Voltage Reset - 4.16 kV basis Allowable Value shall be ≥ 3876 V and ≤ 3901 V.
(b) This value is to be used after release for operation (RFO) of the corresponding plant modification. Prior to RFO of the corresponding plant modification the Degraded Voltage Drop-out - 4.16 kV basis Allowable Value shall be ≥ 3848 V and ≤ 3876 V.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. Three or more required AC sources inoperable.	G.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	7 days
SR 3.8.1.2	----------NOTES---------- 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met. ---------- Verify each DG starts from standby conditions and achieves steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	As specified in Table 3.8.1-1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify each DG starts from standby condition and achieves: a. In ≤ 12 seconds, voltage ≥ 4084 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	184 days
SR 3.8.1.8	----------NOTE---------- This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses for Divisions 1 and 2; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 12 seconds, 2. energizes auto-connected shutdown loads, 3. maintains steady state voltage ≥ 4084 V and ≤ 4580 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: a. In ≤ 12 seconds after auto-start and during tests, achieves voltage ≥ 4084 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and c. Operates for ≥ 5 minutes.	18 months
SR 3.8.1.13	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify each DG's automatic trips are bypassed on an actual or simulated ECCS initiation signal except: a. Engine overspeed; b. Generator differential current; and c. Overcrank for DG 1A and DG 1B.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	----------NOTE---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3482 kW for DG 1A, ≥ 3488 kW for DG 1B, and ≥ 1980 kW for DG 1C. Momentary transients outside of the load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. ----------	
	Verify each DG starts and achieves: a. In ≤ 12 seconds, voltage ≥ 4084 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.19	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses for Divisions 1 and 2; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 12 seconds, 2. energizes auto-connected emergency loads, 3. achieves steady state voltage ≥ 4084 V and ≤ 4580 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify, when started simultaneously from standby condition, each DG achieves: a. In ≤ 12 seconds, voltage ≥ 4084 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	10 years

UNITED STATES
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 122 TO FACILITY OPERATING LICENSE NO. NPF-62

ILLINOIS POWER COMPANY

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated January 20, 1999, Illinois Power Company (IP, or the licensee) proposed an amendment to the Clinton Power Station (CPS) Technical Specifications to revise the setpoint of the degraded voltage protection and the diesel generator minimum required voltages. The licensee provided additional information in letters dated February 4, February 8, and February 25, 1999, and March 5, 1999.

The four supplemental submittals provided additional information and did not change the requested amendment or affect the proposed no significant hazards consideration.

Illinois Power stated that the changes are prompted by recent developments in IP's implementation of plant modifications to resolve degraded voltage concerns for CPS, the subject of which has been addressed in meetings and previous correspondence with the NRC, and in several CPS Operating License amendments. Modifications completed or nearly completed include installation of new, more accurate degraded voltage relays, installation of a load tap changing transformer to replace the existing emergency reserve auxiliary transformer (ERAT), and the addition of static volt amperes reactive (VAR) compensators (SVCs) on the ERAT and reserve auxiliary transformer (RAT). These modifications were supported or authorized by License Amendments 110, 116, and 117 respectively.

In addition to the above modifications, a number of 480/120 volt regulating transformers are being installed within the auxiliary power system at CPS during the current outage. IP performed a reassessment to identify the number of transformers actually required to be installed during the outage since they had determined that there were alternative solutions to ensure adequate voltage for some of the affected 120 volt circuits. As a result of the reassessment, IP found that adequate voltage for some of the circuits could be achieved by increasing the value of the minimum required 4.16 kV bus voltage. IP intends to accomplish this on the offsite system by boosting the RAT secondary voltage through a change in its tap setting, and by raising the setpoint of the degraded voltage relays. The change will be accomplished on the onsite system by increasing the value of the minimum required diesel generator voltages.

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2.1 Reserve Auxiliary Transformer (RAT) Tap Change

The 4.16 kV safety buses at CPS are normally powered from the RAT during plant operation. The RAT is the primary source of offsite power to the safety buses and is connected to the 345 kV grid at CPS. The RAT is also the backup source of power to the 6.9 kV and 4.16 kV balance of plant buses, when the unit auxiliary transformers (UATs) connected to the output of the CPS generator are unavailable. The 345 kV grid voltage operating range used for this amendment (0.94 pu to 1.05 pu) is that which is projected to occur over the next CPS operating cycle assuming single contingency outage conditions and additional margin for future load growth.

In order to support the establishment of a higher value for the minimum required 4.16 kV safety bus voltage (as explained above), IP is boosting the secondary output voltage of the RAT by moving the tap setting of the transformer from tap 1 to tap 3. As shown in Figure 2 of IP's letter dated January 20, 1999, this will allow the SVC (recently installed on the output of the RAT) to maintain a level 4.16 kV bus voltage down to a lower value of the 345 kV grid voltage operating range, than was possible prior to the tap change. This, in turn, allows IP to move the setpoint of the degraded voltage relays to a higher value without risking an unnecessary trip of the relays when the 345 kV grid is at the lower limit of its operating voltage range. Maintaining a higher voltage value at the 4.16 kV safety buses also allows adequate voltages to be maintained down at some 120 volt circuits, without reliance on voltage regulating transformers.

Raising the tap setting however also creates an overvoltage condition when the SVC trips off or is otherwise unavailable. This is due to the fact that with the new tap position, the SVC is relied upon to hold down the 4.16 kV safety bus voltage to a voltage that will not result in greater than permissible voltages on the downstream 120 volt circuits, when the 345 kV grid is operating in its upper voltage region. The 345 kV grid would typically be in this upper region whenever CPS is online. IP has indicated that it will preclude the overvoltage condition from happening by shifting 4.16 kV balance of plant (BOP) buses 1AP06E and 1AP08E over to the RAT. These buses, which are normally powered by the UATs and automatically transferred to the RAT following a plant trip, will now be powered full time from the RAT during power operation. The loading afforded from these BOP buses that are powered from the same RAT secondary winding that feeds the safety buses, will result in additional secondary winding voltage drop that will preclude the overvoltage on the safety buses following an SVC trip. IP has indicated in its submittal that if the total RAT loading becomes less than required to protect against an overvoltage condition (in the event of an SVC trip), procedures will be in place that direct the operators to transfer either the Division 1 or Division 2 safety bus to the ERAT. This will reduce the potential for overvoltage to be a common mode condition. IP has stated that the measures to maintain BOP loading on the RAT, and the contingency action to transfer either the Division 1 or Division 2 safety bus to the ERAT if the BOP loading is determined to be insufficient, will be reflected in the Clinton Updated Safety Analysis Report (USAR). The staff will require the USAR change as part of implementation of this license amendment.

The staff finds the proposed RAT tap change and the measures used to preclude the accompanying potential overvoltages to be acceptable.

2.2 Emergency Reserve Auxiliary Transformer (ERAT)

The ERAT is the second required source of offsite power to the safety buses and is supplied from the 138 kV offsite system at CPS. The 138 kV system voltage operating range used for this amendment (0.89 pu to 1.05 pu) is that which is projected to occur over the next CPS operating cycle assuming single contingency outage conditions and additional margin for future load growth. Upon loss of the RAT the safety buses are automatically transferred to the ERAT. Similar to the RAT, the ERAT also has an SVC that was recently installed on its output. Unlike the RAT however, BOP loads are not connected to the ERAT. The staff notes that, although the ERAT is configured with an automatic load tap changer, IP has chosen for the present to operate the transformer at a fixed tap position during power operation and rely upon the SVC to regulate voltage at the 4.16 kV level.

IP indicated in its submittal that an overvoltage at the 120 volt level is not a concern for the ERAT because a tap setting for the ERAT will be chosen such that the possibility of a high voltage condition (caused by an ERAT SVC trip) will not be created. They indicate therefore that there will be no need to maintain a minimum load level on the ERAT to prevent an overvoltage condition on the safety buses with the 138 kV system at its maximum expected operating voltage.

With regard to undervoltage, IP stated in its February 4, 1999, letter that, while overvoltage concerns are less severe for the ERAT, with respect to potential undervoltage at minimum expected offsite 138 kV system voltage, the ERAT SVC is required to maintain the 4.16 kV bus voltage above the degraded voltage relay settings. This is illustrated in a figure provided in IP's February 4, 1999, letter that shows that even the unloaded ERAT voltage falls below the degraded voltage relay setting without the SVC, when the 138 kV system voltage is in the lower half of its operating range. However, with the 138 kV system voltage at its maximum projected value (1.05) the figure also shows that, unlike the RAT, the ERAT voltage does not exceed the maximum 4.16 kV bus voltage (1.033 pu) that would result in overvoltages at the 120 volt level.

The staff finds the provisions planned to be made for the ERAT to be acceptable. The staff notes that an NRC safety system engineering inspection (SSEI) team is reviewing the CPS calculations associated with the ERAT for their quality and completeness.

2.3 Degraded Voltage Protection

Consistent with the intent to establish a higher value for the minimum required 4.16 kV safety bus voltage, IP is increasing the setpoint of the degraded voltage relays which sense the 4.16 kV bus voltage. The higher value for the minimum required 4.16 kV safety bus voltage is being established in order to provide a higher voltage to the downstream 120 volt circuits, allowing IP to eliminate the need for some 120 volt regulating transformers. The higher degraded voltage relay setpoint is necessary in order to properly protect these downstream

circuits against low voltages, which can now occur at a higher value of 4.16 kV bus voltage due to the lack of regulating transformers.

The staff previously approved the existing degraded voltage relay setpoints in Amendment 110 to the CPS Operating License dated December 4, 1996. The minimum analytical limit that was used for the pickup (reset) value of those setpoints was based on the voltage necessary for safety motors to start and run properly following the initial voltage sag caused by the simultaneous starting of the motors in response to a LOCA. That analytical value was 3870 volts. The minimum analytical limit for the dropout setpoint of the relays was based on the voltage necessary for safety loads to operate properly during steady state operation following a LOCA. That analytical value was 3832 volts. The upper analytical limit for the pickup setpoint of the relay was based on the minimum expected steady state voltage at a 4.16 kV safety bus when the 345 kV grid is at its minimum expected value. This analytical value was 3938 volts.

The staff reviewed Calculation 19-AN-19, Rev. 2, Vol. F, for this evaluation. It was found that the methodology used to establish the degraded voltage relay setpoints and setpoint allowable values from the analytical values was essentially the same as previously reviewed and found acceptable for Amendment 110. The analytical values themselves however have of course changed. The new values are all higher than the old values. Calculation 19-AN-19 Rev. 2, Vol. F, uses 4084 volts as the lower analytical limit for the pickup setpoint of the relays as compared to 3870 volts in the old calculation. The lower analytical limit for the dropout setpoint of the relays is 4035 volts as compared to 3832 volts in the old calculation. The upper analytical value for the pickup setpoint of the relays is 4149 volts as compared to 3938 Volts in the old calculation.

Calculation 19-AN-19, Rev. 2, Vol. F, states that the new analytical values used are assumed values from preliminary results of Calculation 19-AQ-02 and that the values require verification. This statement was made because, at the time that the 19-AN-19, Rev. 2, Vol. F calculation was performed, IP had not completed all of the necessary hardware modifications and associated calculations necessary to support the analytical values. The modifications being made were being made with the criteria that the modifications would be consistent with the assumed analytical values. Following completion of the modifications, the calculations associated with the mods would verify that the assumed analytical values had been met.

The staff has reviewed the text portion of the newly revised 19-AQ-02 calculation (19-AQ-02, Rev. 3, Vol. AS) submitted by IP in a letter dated March 5, 1999. The staff found the calculation to be acceptable, however, it is noted that the calculation identifies a number of assumptions that require verification. The verifications required are MOV and 120 volt calculations that will establish acceptable operation of those circuits and equipment at the levels determined in the 19-AQ-02 calculation. Verification is also required for the RAT and ERAT SVC regulation and response time characteristics assumed in the 19-AQ-02 calculation. This last item will be accomplished by a test of the SVCs.

The IP Nuclear Quality Assurance Manual (QAM) requires design control measures such that the verification of all of the applicable tests and calculations must be completed acceptably prior to declaring the systems operable. The QAM is referenced in USAR Chapter 17, and changes to it are controlled by 10 CFR 50.54(a) The staff finds these regulatory controls to be acceptable for completing these verification issues.

Therefore, the staff finds the 19-AQ-02, Rev. 3, Vol. AS calculation that establishes the analytical values used in the 19-AN-19, Rev. 2, Vol. F setpoint calculation, to be acceptable based, in part, on QAM design control measures that require IP's successful verification of the assumptions identified above. The staff notes that an NRC SSEI team is auditing the calculations that feed into the 19-AQ-02 calculation for quality and completeness.

The methodology used in Calculation 19-AN-19, Rev. 2, Vol. F, to develop the setpoints and setpoint allowable values from the analytical values described above, was found by the staff to be essentially the same as previously reviewed and found acceptable for Amendment 110. This methodology is therefore acceptable. The setpoint allowable values themselves which are contained in revised Table 3.3.8.1-1 of the CPS Technical Specifications are also acceptable. This, in part, is based on QAM design control measures that require IP's successful verification of all of the assumptions identified above for Calculation 19-AQ-02, Rev. 3, Vol. AS. The changes made to the footnotes of Table 3.3.8.1-1 are acceptable because they accurately reflect the point at which the new setpoints will take effect.

2.4 Minimum Required Diesel Generator Voltages

Consistent with the changes to the offsite system power supply, IP is proposing to increase the minimum required diesel generator voltage wherever it appears in diesel generator surveillance requirements in the CPS Technical Specifications. This is needed because the new higher minimum required 4.16 kV safety bus voltage necessary to provide adequate downstream 120 volt circuit voltage, is needed irrespective of the source of power to those 4.16 kV buses.

IP has used 4084 volts as the new required minimum voltage in the diesel generator surveillances. This is the same value as the lower analytical limit used for the reset setpoint of the degraded voltage relays. Calculation 19-AQ-02, Rev. 3, Vol. AS, has shown this value to be adequate to start and operate all safety equipment following a LOCA (provided all the 19-AQ-02 assumptions requiring verification are successfully verified). Because the LOCA event provides the worst case loading to the safety buses this minimum limit is acceptable, conditioned on IP's successful verification of the assumptions identified above for Calculation 19-AQ-02, Rev. 3, Vol. AS.

2.5 Finding

The staff finds the licensee's proposed CPS Technical Specification Amendment to be acceptable, as detailed in Section 2 (Evaluation) of this safety evaluation. A USAR change to reflect the BOP loading on the electrical buses, as committed to by IP, will be required as part of the implementation of this license amendment.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes a surveillance requirement. The NRC 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 the amendment involves no significant hazards consideration and there has been no public comment on such finding (64 FR 4474). Accordingly, the 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 the amendment.

5.0 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Lazevnick

Date: March 26, 1999

March 26, 1999

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Mr. Joseph V. Sipek
Director - Licensing
Clinton Power Station
P.0. Box 678
Mail Code V920
Clinton, IL 61727

SUBJECT: ISSUANCE OF AMENDMENT NO. 122 TO FACILITY OPERATING LICENSE NO. NPF-62 - CLINTON POWER STATION, UNIT 1 (TAC NO. MA4524)

Dear Mr. Sipek:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 122 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit 1. The amendment is in response to your application dated January 20, 1999, as supplemented February 4, 8, 25, and March 5, 1999.

The amendment changes the undervoltage relay setpoints.

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

Sincerely,

Original signed by:

Jon B. Hopkins, Senior Project Manager
Project Directorate III-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures: 1. Amendment No. 122 to NPF-62
2. Safety Evaluation

cc w/encls: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 26, 1999

Mr. Joseph V. Sipek
Director - Licensing
Clinton Power Station
P.0. Box 678
Mail Code V920
Clinton, IL 61727

SUBJECT: ISSUANCE OF AMENDMENT NO. 122 TO FACILITY OPERATING LICENSE NO. NPF-62 - CLINTON POWER STATION, UNIT 1 (TAC NO. MA4524)

Dear Mr. Sipek:

The U.S. Nuclear Regulatory Commission (Commission) has issued the enclosed Amendment No. 122 to Facility Operating License No. NPF-62 for the Clinton Power Station, Unit 1. The amendment is in response to your application dated January 20, 1999, as supplemented February 4, 8, 25, and March 5, 1999.

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Jon B. Hopkins, Senior Project Manager
Project Directorate III-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-461

Enclosures: 1. Amendment No. 122 to NPF-62
2. Safety Evaluation

cc w/encls: See next page

cc:

John. P. McElwain
Senior Vice President
Clinton Power Station
P.O. Box 678
Clinton, IL 61727

Wayne Romberg
Manager Nuclear Station
Engineering Department
Clinton Power Station
P.O. Box 678
Clinton, IL 61727

Resident Inspector
U.S. Nuclear Regulatory Commission
RR#3, Box 229 A
Clinton, IL 61727

R. T. Hill
Licensing Services Manager
General Electric Company
175 Curtner Avenue, M/C 481
San Jose, CA 95125

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Chairman of DeWitt County
c/o County Clerk's Office
DeWitt County Courthouse
Clinton, IL 61727

J. W. Blattner
Project Manager
Sargent & Lundy Engineers
55 East Monroe Street
Chicago, IL 60603

Illinois Department of Nuclear Safety
Office of Nuclear Facility Safety
ATTN: Mr. Frank Nizidlek
1035 Outer Park Drive
Springfield, IL 62704

Leah Manning Stetzner
VP, General Counsel & Corp. Secretary
500 South 27th Street
Decatur, IL 62525

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ILLINOIS POWER COMPANY

DOCKET NO. 50-461

CLINTON POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 122
License No. NPF-62

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

   A. The application for amendment by Illinois Power Company (the licensee), dated January 20, 1999, as supplemented February 4, 8, 25, and March 5, 1999, 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:

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(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. 122, 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, and shall be implemented within 45 days of issuance following a change to the Updated Safety Analysis Report to reflect the balance of plant loading on the electrical buses.

FOR THE NUCLEAR REGULATORY COMMISSION

Jon B. Hopkins

Jon B. Hopkins, Senior Project Manager
Project Directorate III-2
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: March 26, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 122

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.

Remove Pages	Insert Pages
3.3-78	3.3-78
3.3-80	3.3-80
3.8-4	3.8-4
3.8-6	3.8-6
3.8-8	3.8-8
3.8-9	3.8-9
3.8-10	3.8-10
3.8-13	3.8-13
3.8-14	3.8-14

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LCO 3.3.8.1 The LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
When the associated diesel generator (DG) is required to be OPERABLE by LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more channels inoperable.	A.1	Place channel in trip.	1 hour
	AND		
	A.2	--------NOTE-------- Only applicable for Functions 1.c, 1.d, 1.e, 2.c, 2.d, and 2.e. ---------- Restore channel to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1	Declare associated DG inoperable.	Immediately

Table 3.3.8.1-1 (page 1 of 1)
Loss of Power Instrumentation

FUNCTION	REQUIRED CHANNELS PER DIVISION	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Divisions 1 and 2 - 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage - 4.16 kV basis	6	SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 2345 V and ≤ 3395 V
b. Loss of Voltage - Time Delay	6	SR 3.3.8.1.3 SR 3.3.8.1.4	≤ 10 seconds
c. Degraded Voltage Reset - 4.16 kV basis	2	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 4090 V and ≤ 4111 V (a)
d. Degraded Voltage Drop-out - 4.16 kV basis	2	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 4051 V and ≤ 4092 V (b)
e. Degraded Voltage - Time Delay	1	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 14 seconds and ≤ 16 seconds
2. Division 3 - 4.16 kV Emergency Bus Undervoltage			
a. Loss of Voltage - 4.16 kV basis	4	SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 2345 V and ≤ 2730 V
b. Loss of Voltage - Time Delay	1	SR 3.3.8.1.3 SR 3.3.8.1.4	≤ 3.0 seconds
c. Degraded Voltage Reset - 4.16 kV basis	2	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 4090 V and ≤ 4111 V (a)
d. Degraded Voltage Drop-out - 4.16 kV basis	2	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 4051 V and ≤ 4092 V (b)
e. Degraded Voltage - Time Delay	1	SR 3.3.8.1.2 SR 3.3.8.1.3 SR 3.3.8.1.4	≥ 14 seconds and ≤ 16 seconds

(a) This value is to be used after release for operation (RFO) of the corresponding plant modification. Prior to RFO of the corresponding plant modification the Degraded Voltage Reset - 4.16 kV basis Allowable Value shall be ≥ 3876 V and ≤ 3901 V.
(b) This value is to be used after release for operation (RFO) of the corresponding plant modification. Prior to RFO of the corresponding plant modification the Degraded Voltage Drop-out - 4.16 kV basis Allowable Value shall be ≥ 3848 V and ≤ 3876 V.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. Three or more required AC sources inoperable.	G.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	7 days
SR 3.8.1.2	----------NOTES---------- 1. Performance of SR 3.8.1.7 satisfies this SR. 2. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 3. A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met. ---------- Verify each DG starts from standby conditions and achieves steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	As specified in Table 3.8.1-1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.7	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify each DG starts from standby condition and achieves: a. In ≤ 12 seconds, voltage ≥ 4084 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	184 days
SR 3.8.1.8	----------NOTE---------- This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses for Divisions 1 and 2; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 12 seconds, 2. energizes auto-connected shutdown loads, 3. maintains steady state voltage ≥ 4084 V and ≤ 4580 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and: a. In ≤ 12 seconds after auto-start and during tests, achieves voltage ≥ 4084 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz; and c. Operates for ≥ 5 minutes.	18 months
SR 3.8.1.13	----------NOTE---------- This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify each DG's automatic trips are bypassed on an actual or simulated ECCS initiation signal except: a. Engine overspeed; b. Generator differential current; and c. Overcrank for DG 1A and DG 1B.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.15	----------NOTE---------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3482 kW for DG 1A, ≥ 3488 kW for DG 1B, and ≥ 1980 kW for DG 1C. Momentary transients outside of the load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. ----------	
	Verify each DG starts and achieves: a. In ≤ 12 seconds, voltage ≥ 4084 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.19	----------NOTES---------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, or 3. However, credit may be taken for unplanned events that satisfy this SR. ---------- Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses for Divisions 1 and 2; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 12 seconds, 2. energizes auto-connected emergency loads, 3. achieves steady state voltage ≥ 4084 V and ≤ 4580 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.20	----------NOTE---------- All DG starts may be preceded by an engine prelube period. ---------- Verify, when started simultaneously from standby condition, each DG achieves: a. In ≤ 12 seconds, voltage ≥ 4084 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 4084 V and ≤ 4580 V and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	10 years

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 122 TO FACILITY OPERATING LICENSE NO. NPF-62

ILLINOIS POWER COMPANY

CLINTON POWER STATION, UNIT 1

DOCKET NO. 50-461

1.0 INTRODUCTION

By letter dated January 20, 1999, Illinois Power Company (IP, or the licensee) proposed an amendment to the Clinton Power Station (CPS) Technical Specifications to revise the setpoint of the degraded voltage protection and the diesel generator minimum required voltages. The licensee provided additional information in letters dated February 4, February 8, and February 25, 1999, and March 5, 1999.

The four supplemental submittals provided additional information and did not change the requested amendment or affect the proposed no significant hazards consideration.

Illinois Power stated that the changes are prompted by recent developments in IP's implementation of plant modifications to resolve degraded voltage concerns for CPS, the subject of which has been addressed in meetings and previous correspondence with the NRC, and in several CPS Operating License amendments. Modifications completed or nearly completed include installation of new, more accurate degraded voltage relays, installation of a load tap changing transformer to replace the existing emergency reserve auxiliary transformer (ERAT), and the addition of static volt amperes reactive (VAR) compensators (SVCs) on the ERAT and reserve auxiliary transformer (RAT). These modifications were supported or authorized by License Amendments 110, 116, and 117 respectively.

In addition to the above modifications, a number of 480/120 volt regulating transformers are being installed within the auxiliary power system at CPS during the current outage. IP performed a reassessment to identify the number of transformers actually required to be installed during the outage since they had determined that there were alternative solutions to ensure adequate voltage for some of the affected 120 volt circuits. As a result of the reassessment, IP found that adequate voltage for some of the circuits could be achieved by increasing the value of the minimum required 4.16 kV bus voltage. IP intends to accomplish this on the offsite system by boosting the RAT secondary voltage through a change in its tap setting, and by raising the setpoint of the degraded voltage relays. The change will be accomplished on the onsite system by increasing the value of the minimum required diesel generator voltages.

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2.1 Reserve Auxiliary Transformer (RAT) Tap Change

The 4.16 kV safety buses at CPS are normally powered from the RAT during plant operation. The RAT is the primary source of offsite power to the safety buses and is connected to the 345 kV grid at CPS. The RAT is also the backup source of power to the 6.9 kV and 4.16 kV balance of plant buses, when the unit auxiliary transformers (UATs) connected to the output of the CPS generator are unavailable. The 345 kV grid voltage operating range used for this amendment (0.94 pu to 1.05 pu) is that which is projected to occur over the next CPS operating cycle assuming single contingency outage conditions and additional margin for future load growth.

In order to support the establishment of a higher value for the minimum required 4.16 kV safety bus voltage (as explained above), IP is boosting the secondary output voltage of the RAT by moving the tap setting of the transformer from tap 1 to tap 3. As shown in Figure 2 of IP's letter dated January 20, 1999, this will allow the SVC (recently installed on the output of the RAT) to maintain a level 4.16 kV bus voltage down to a lower value of the 345 kV grid voltage operating range, than was possible prior to the tap change. This, in turn, allows IP to move the setpoint of the degraded voltage relays to a higher value without risking an unnecessary trip of the relays when the 345 kV grid is at the lower limit of its operating voltage range. Maintaining a higher voltage value at the 4.16 kV safety buses also allows adequate voltages to be maintained down at some 120 volt circuits, without reliance on voltage regulating transformers.

Raising the tap setting however also creates an overvoltage condition when the SVC trips off or is otherwise unavailable. This is due to the fact that with the new tap position, the SVC is relied upon to hold down the 4.16 kV safety bus voltage to a voltage that will not result in greater than permissible voltages on the downstream 120 volt circuits, when the 345 kV grid is operating in its upper voltage region. The 345 kV grid would typically be in this upper region whenever CPS is online. IP has indicated that it will preclude the overvoltage condition from happening by shifting 4.16 kV balance of plant (BOP) buses 1AP06E and 1AP08E over to the RAT. These buses, which are normally powered by the UATs and automatically transferred to the RAT following a plant trip, will now be powered full time from the RAT during power operation. The loading afforded from these BOP buses that are powered from the same RAT secondary winding that feeds the safety buses, will result in additional secondary winding voltage drop that will preclude the overvoltage on the safety buses following an SVC trip. IP has indicated in its submittal that if the total RAT loading becomes less than required to protect against an overvoltage condition (in the event of an SVC trip), procedures will be in place that direct the operators to transfer either the Division 1 or Division 2 safety bus to the ERAT. This will reduce the potential for overvoltage to be a common mode condition. IP has stated that the measures to maintain BOP loading on the RAT, and the contingency action to transfer either the Division 1 or Division 2 safety bus to the ERAT if the BOP loading is determined to be insufficient, will be reflected in the Clinton Updated Safety Analysis Report (USAR). The staff will require the USAR change as part of implementation of this license amendment.

The staff finds the proposed RAT tap change and the measures used to preclude the accompanying potential overvoltages to be acceptable.

2.2 Emergency Reserve Auxiliary Transformer (ERAT)

The ERAT is the second required source of offsite power to the safety buses and is supplied from the 138 kV offsite system at CPS. The 138 kV system voltage operating range used for this amendment (0.89 pu to 1.05 pu) is that which is projected to occur over the next CPS operating cycle assuming single contingency outage conditions and additional margin for future load growth. Upon loss of the RAT the safety buses are automatically transferred to the ERAT. Similar to the RAT, the ERAT also has an SVC that was recently installed on its output. Unlike the RAT however, BOP loads are not connected to the ERAT. The staff notes that, although the ERAT is configured with an automatic load tap changer, IP has chosen for the present to operate the transformer at a fixed tap position during power operation and rely upon the SVC to regulate voltage at the 4.16 kV level.

IP indicated in its submittal that an overvoltage at the 120 volt level is not a concern for the ERAT because a tap setting for the ERAT will be chosen such that the possibility of a high voltage condition (caused by an ERAT SVC trip) will not be created. They indicate therefore that there will be no need to maintain a minimum load level on the ERAT to prevent an overvoltage condition on the safety buses with the 138 kV system at its maximum expected operating voltage.

With regard to undervoltage, IP stated in its February 4, 1999, letter that, while overvoltage concerns are less severe for the ERAT, with respect to potential undervoltage at minimum expected offsite 138 kV system voltage, the ERAT SVC is required to maintain the 4.16 kV bus voltage above the degraded voltage relay settings. This is illustrated in a figure provided in IP's February 4, 1999, letter that shows that even the unloaded ERAT voltage falls below the degraded voltage relay setting without the SVC, when the 138 kV system voltage is in the lower half of its operating range. However, with the 138 kV system voltage at its maximum projected value (1.05) the figure also shows that, unlike the RAT, the ERAT voltage does not exceed the maximum 4.16 kV bus voltage (1.033 pu) that would result in overvoltages at the 120 volt level.

The staff finds the provisions planned to be made for the ERAT to be acceptable. The staff notes that an NRC safety system engineering inspection (SSEI) team is reviewing the CPS calculations associated with the ERAT for their quality and completeness.

2.3 Degraded Voltage Protection

Consistent with the intent to establish a higher value for the minimum required 4.16 kV safety bus voltage, IP is increasing the setpoint of the degraded voltage relays which sense the 4.16 kV bus voltage. The higher value for the minimum required 4.16 kV safety bus voltage is being established in order to provide a higher voltage to the downstream 120 volt circuits, allowing IP to eliminate the need for some 120 volt regulating transformers. The higher degraded voltage relay setpoint is necessary in order to properly protect these downstream

circuits against low voltages, which can now occur at a higher value of 4.16 kV bus voltage due to the lack of regulating transformers.

The staff previously approved the existing degraded voltage relay setpoints in Amendment 110 to the CPS Operating License dated December 4, 1996. The minimum analytical limit that was used for the pickup (reset) value of those setpoints was based on the voltage necessary for safety motors to start and run properly following the initial voltage sag caused by the simultaneous starting of the motors in response to a LOCA. That analytical value was 3870 volts. The minimum analytical limit for the dropout setpoint of the relays was based on the voltage necessary for safety loads to operate properly during steady state operation following a LOCA. That analytical value was 3832 volts. The upper analytical limit for the pickup setpoint of the relay was based on the minimum expected steady state voltage at a 4.16 kV safety bus when the 345 kV grid is at its minimum expected value. This analytical value was 3938 volts.

The staff reviewed Calculation 19-AN-19, Rev. 2, Vol. F, for this evaluation. It was found that the methodology used to establish the degraded voltage relay setpoints and setpoint allowable values from the analytical values was essentially the same as previously reviewed and found acceptable for Amendment 110. The analytical values themselves however have of course changed. The new values are all higher than the old values. Calculation 19-AN-19 Rev. 2, Vol. F, uses 4084 volts as the lower analytical limit for the pickup setpoint of the relays as compared to 3870 volts in the old calculation. The lower analytical limit for the dropout setpoint of the relays is 4035 volts as compared to 3832 volts in the old calculation. The upper analytical value for the pickup setpoint of the relays is 4149 volts as compared to 3938 Volts in the old calculation.

Calculation 19-AN-19, Rev. 2, Vol. F, states that the new analytical values used are assumed values from preliminary results of Calculation 19-AQ-02 and that the values require verification. This statement was made because, at the time that the 19-AN-19, Rev. 2, Vol. F calculation was performed, IP had not completed all of the necessary hardware modifications and associated calculations necessary to support the analytical values. The modifications being made were being made with the criteria that the modifications would be consistent with the assumed analytical values. Following completion of the modifications, the calculations associated with the mods would verify that the assumed analytical values had been met.

The staff has reviewed the text portion of the newly revised 19-AQ-02 calculation (19-AQ-02, Rev. 3, Vol. AS) submitted by IP in a letter dated March 5, 1999. The staff found the calculation to be acceptable, however, it is noted that the calculation identifies a number of assumptions that require verification. The verifications required are MOV and 120 volt calculations that will establish acceptable operation of those circuits and equipment at the levels determined in the 19-AQ-02 calculation. Verification is also required for the RAT and ERAT SVC regulation and response time characteristics assumed in the 19-AQ-02 calculation. This last item will be accomplished by a test of the SVCs.

The IP Nuclear Quality Assurance Manual (QAM) requires design control measures such that the verification of all of the applicable tests and calculations must be completed acceptably prior to declaring the systems operable. The QAM is referenced in USAR Chapter 17, and changes to it are controlled by 10 CFR 50.54(a) The staff finds these regulatory controls to be acceptable for completing these verification issues.

Therefore, the staff finds the 19-AQ-02, Rev. 3, Vol. AS calculation that establishes the analytical values used in the 19-AN-19, Rev. 2, Vol. F setpoint calculation, to be acceptable based, in part, on QAM design control measures that require IP's successful verification of the assumptions identified above. The staff notes that an NRC SSEI team is auditing the calculations that feed into the 19-AQ-02 calculation for quality and completeness.

The methodology used in Calculation 19-AN-19, Rev. 2, Vol. F, to develop the setpoints and setpoint allowable values from the analytical values described above, was found by the staff to be essentially the same as previously reviewed and found acceptable for Amendment 110. This methodology is therefore acceptable. The setpoint allowable values themselves which are contained in revised Table 3.3.8.1-1 of the CPS Technical Specifications are also acceptable. This, in part, is based on QAM design control measures that require IP's successful verification of all of the assumptions identified above for Calculation 19-AQ-02, Rev. 3, Vol. AS. The changes made to the footnotes of Table 3.3.8.1-1 are acceptable because they accurately reflect the point at which the new setpoints will take effect.

2.4 Minimum Required Diesel Generator Voltages

Consistent with the changes to the offsite system power supply, IP is proposing to increase the minimum required diesel generator voltage wherever it appears in diesel generator surveillance requirements in the CPS Technical Specifications. This is needed because the new higher minimum required 4.16 kV safety bus voltage necessary to provide adequate downstream 120 volt circuit voltage, is needed irrespective of the source of power to those 4.16 kV buses.

IP has used 4084 volts as the new required minimum voltage in the diesel generator surveillances. This is the same value as the lower analytical limit used for the reset setpoint of the degraded voltage relays. Calculation 19-AQ-02, Rev. 3, Vol. AS, has shown this value to be adequate to start and operate all safety equipment following a LOCA (provided all the 19-AQ-02 assumptions requiring verification are successfully verified). Because the LOCA event provides the worst case loading to the safety buses this minimum limit is acceptable, conditioned on IP's successful verification of the assumptions identified above for Calculation 19-AQ-02, Rev. 3, Vol. AS.

2.5 Finding

The staff finds the licensee's proposed CPS Technical Specification Amendment to be acceptable, as detailed in Section 2 (Evaluation) of this safety evaluation. A USAR change to reflect the BOP loading on the electrical buses, as committed to by IP, will be required as part of the implementation of this license amendment.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendment. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

This amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or changes a surveillance requirement. The NRC 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 the amendment involves no significant hazards consideration and there has been no public comment on such finding (64 FR 4474). Accordingly, the 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 the amendment.

5.0 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Lazevnick

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