

RS-11-117

10 CFR 50.90

August 15, 2011

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

Clinton Power Station, Unit 1  
Facility Operating License No. NPF-62  
NRC Docket No. 50-461

Subject: License Amendment Request to Modify Technical Specifications Section  
3.8.1, "AC Sources - Operating"

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (EGC) requests an amendment to the Technical Specifications (TS) of Facility Operating License No. NPF-62 for Clinton Power Station, Unit 1 (CPS).

The proposed amendment would revise the Limiting Condition for Operation (LCO) 3.8.1, "AC Sources - Operating," through a reduction to the maximum steady state voltage criteria for safety-related 4.16 kV buses from 4580 V to 4300 V in certain TS Section 3.8.1 Surveillance Requirements (SRs). The proposed amendment is based on a determination that the current acceptance criteria for steady state voltage are non-conservative. An evaluation of this condition within the EGC Corrective Action Program concluded that the maximum steady state voltage limits in TS SRs 3.8.1.2, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, and 3.8.1.20 are non-conservative with respect to existing design basis analyses. An Operability Evaluation (OE) was performed in accordance with NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety," and station procedures. The OE concluded that the TS SRs associated with maximum steady state voltage involve an improper or inadequate TS value and, as such, is considered a degraded or nonconforming condition. Consistent with NRC Administrative Letter 98-10, the imposition of administrative controls in response to improper or inadequate TS is considered an acceptable short-term corrective action. Administrative controls are currently contained in existing operating and surveillance procedures and ensure steady state voltage is limited to a maximum of 4300 V as required by existing design analysis.

This request is subdivided as follows:

- Attachment 1 provides an evaluation of the proposed change.
- Attachment 2 provides the markup pages of existing TS to show the proposed changes.
- Attachment 3 provides the markup pages of the existing TS Bases to show the proposed changes for information only and do not require NRC approval.

EGC requests approval of the proposed license amendment by August 15, 2012, with the implementation of the amendment occurring within 30 days.

In accordance with 10 CFR 50.91(a)(1), "Notice for Public Comment," the analysis about the issue of no significant hazards consideration using the standards in 10 CFR 50.92 is being provided to the NRC.

The proposed amendment has been reviewed by the CPS Plant Operations Review Committee and approved by the Nuclear Safety Review Board in accordance with the requirements of the EGC Quality Assurance Program.

EGC is notifying the State of Illinois of this application for a change to the TS by sending a copy of this letter and its attachments to the designated State Official in accordance with 10 CFR 50.91, "Notice for public comment; State consultation," paragraph (b).

There are no regulatory commitments contained within this letter. Should you have any questions concerning this letter, please contact Mr. Mitchel Mathews at (630) 657-2819.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 15<sup>th</sup> day of August 2011.

Respectfully,

A handwritten signature in black ink, appearing to read 'D M Gullott', with a stylized flourish at the end.

David M. Gullott  
Manager - Licensing

Attachments:

1. Evaluation of Proposed Changes
2. Markup pages of existing TS to show the proposed changes.
3. Markup pages of existing TS Bases to show the proposed changes – for information only.

cc: Illinois Emergency Management Agency – Division of Nuclear Safety

**ATTACHMENT 1**  
**Evaluation of Proposed Changes**

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Subject: License Amendment Request to Modify Technical Specifications Section  
3.8.1, "AC Sources - Operating"

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## **Evaluation of Proposed Changes**

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### **1.0 SUMMARY DESCRIPTION**

This evaluation supports a request to amend Facility Operating License No. NPF-62 for Clinton Power Station, Unit 1 (CPS).

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," Exelon Generation Company, LLC (EGC) requests an amendment to Facility Operating License No. NPF-62 for CPS. The proposed amendment would modify the CPS Technical Specifications (TS) Limiting Condition for Operation (LCO) 3.8.1, "AC Sources Operating," by revising the maximum steady state voltage limit specified in certain TS 3.8.1 Surveillance Requirements (SRs). Specifically, EGC proposes to reduce the maximum steady state voltage limit described in these SRs from 4580 V to 4300 V. This amendment is necessary because a recent evaluation determined that the current voltage limit was determined to be non-conservative. Administrative controls are currently in place to address this TS non-conservatism in accordance with NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety," and station procedures.

### **2.0 DETAILED DESCRIPTION**

A recent EGC review of TS Section 3.8.1 steady state voltage acceptance criteria at CPS within the EGC Corrective Action Program under Issue Report (IR) Number 1226340 concluded that the maximum steady state voltage limit specified in TS SRs 3.8.1.2, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, and 3.8.1.20 are non-conservative with respect to existing design basis analyses for certain 120 VAC safety-related components. In response, an operability evaluation (OE) was performed in accordance with NRC Administrative Letter 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety," and station procedures. The OE concluded that the TS SR acceptance criteria for maximum diesel generator (DG) steady state voltage involve improper or inadequate TS values and that this issue is considered a degraded or nonconforming condition. According to NRC Administrative Letter 98-10, the imposition of administrative controls in response to improper or inadequate TS is considered an acceptable short-term corrective action. As previously stated, these administrative controls are currently contained in existing operating and surveillance procedures and ensure DG steady state voltage is limited to a maximum of 4300 V as required by existing design analysis. Consequently, EGC is proposing to revise the maximum steady state voltage described in SRs 3.8.1.2, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, and 3.8.1.20 from 4580 V to 4300 V to align the TS 3.8.1 steady state output voltage limits with the supporting design analysis value.

### **3.0 TECHNICAL EVALUATION**

According to Surveillance Requirements Section of the TS 3.8.1 Bases, the minimum and maximum steady state output voltages of 4084 V and 4580 V respectively, are equal to - 2% and + 10% of the nominal 4160 V output voltage. The specified minimum and maximum frequencies of the DGs are 58.8 Hz and 61.2 Hz, respectively, are equal to  $\pm 2\%$  of the 60 Hz nominal frequency. The specified steady state voltage and frequency ranges were developed in accordance with recommendations provided in Regulatory Guide 1.9, "Selection, Design, Qualification, and Testing of Emergency Diesel-Generator Units Used as Class 1E Onsite

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Electric Power Systems at Nuclear Power Plants." However, the minimum voltage was increased at CPS to ensure adequate voltage to operate all safety-related loads during a Design Basis Accident (DBA). In addition, General Electric (GE) documented in Licensing Topical Report NEDO-10905, "HPCS System Power Supply Unit (i.e., Reference 1)," that the HPCS DG meets the power quality requirement of Institute of Electrical and Electronic Engineers (IEEE) Standard 387, "IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations (i.e., Reference 2)." Specifically, NEDO-10905 states that maintaining voltage and frequency within limits would not degrade the performance of any of the design loads below their minimum requirements, including the duration of transients caused by load application or load removal.

The current maximum output voltage of 4580 V for the DGs is specific to recovery of the DGs from voltage transients during starting or load sequencing. This is consistent with CPS Updated Safety Analysis Report (USAR) Section 8.3.1.2.2 and Regulatory Guide 1.9, in that during load sequencing, restoration of voltage to within 10% of nominal (i.e., 4580 V) is required within 60% of the load sequence time interval (i.e., 2 seconds). In addition, the DG 4.16 kV voltage regulators are designed to provide regulation of 0.5% with a response time less than 17 milliseconds. The voltage regulation and automatic voltage reset (i.e., on startup and the initiation of a loss of coolant accident signal), ensure the DG output voltages are maintained to account for instrument uncertainties during normal conditions and during recovery from transient conditions.

CPS analyses in Calculations 19-AK-13, 19-AK-06, and 19-AJ-74, specify that the maximum acceptable voltage on the 4.16 kV safety-related buses is 4454 V for 30 minutes and 4300 V for continuous operation. These calculations evaluated the effects of the overvoltage condition on the connected loads in the 120 V distribution panels and determined that continuous operation above 4300 V on the 4.16 kV 1E buses would result in voltages above allowable for certain safety-related 120 V devices. The analysis allows for elevated voltages up to 4454 V for 30 minutes that account for overvoltage conditions that can occur if the Reserve Auxiliary Transformer Static VAR Compensator trips coincident with high 345 kV transmission system voltages. The 30-minute duration was considered sufficient time to restore 4.16 kV voltages to within specification without damaging downstream AC loads. Implementation of these voltage limits are currently controlled by CPS Operating and Surveillance Procedures.

In summary, due to the inability of CPS to operate at a steady state voltage of 4580 V as described in TS Section 3.8.1 SRs 3.8.1.2, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, and 3.8.1.20, EGC proposes to reduce the upper steady state voltage criteria in these SRs from 4580 V to 4300 V as allowed by the design analyses described above.

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**Evaluation of Proposed Changes**

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#### **4.0 REGULATORY EVALUATION**

##### **4.1 Applicable Regulatory Requirements/Criteria**

Title 10 of the Code of Federal Regulations (10 CFR), Part 50, specifies that the TS shall be included by applicants for a license authorizing operation of a production or utilization facility. The regulation at 10 CFR 50.36(c) requires that TSs include items in five specific categories related to station operation. These categories include (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operations; (3) surveillance requirements (SRs); (4) design features; and (5) administrative controls. The proposed changes to the TS, as discussed above, fall within the SRs category.

Regulatory Guide 1.9, Revision 3, " Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," (i.e., Reference 3) provides certain recommendations for the EDG design and testing, which in general, are used as guidance to develop the SRs for the DGs.

##### **4.2 Precedent**

Similar revisions to TS were approved by the NRC for use at Catawba Nuclear Station and D. C. Cook Nuclear Power Plant (i.e., References 4 and 5, respectively).

##### **4.3 No Significant Hazards Consideration Determination**

The proposed changes revise the Clinton Power Station, Unit 1 (CPS) Technical Specifications (TS) limiting condition for operation (LCO) 3.8.1, "AC Sources - Operating," to reduce the maximum steady state voltage criteria in SRs 3.8.1.2, 3.8.1.7, 3.8.1.11, 3.8.1.12, 3.8.1.15, 3.8.1.19, and 3.8.1.20, from 4580 V to 4300 V as allowed by current design analyses.

Exelon Generation Company, LLC (EGC) has evaluated the proposed changes to the TS using the criteria in 10 CFR 50.92 and has determined that the proposed changes do not involve a significant hazards consideration. An analysis of the issue of no significant hazards consideration is presented below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed change does not significantly increase the probability of an accident previously evaluated in the Updated Safety Analysis Report (USAR). The revised steady state voltage ensures that the diesel generators (DGs) and equipment powered by the DGs will continue to function as required to mitigate accidents as described in the USAR. The DGs and the equipment they power are part of the systems required to mitigate an accident. Mitigation equipment is not a factor in accident initiation; therefore, the probability of a previously evaluated accident will not significantly increase due to operating in the proposed manner.

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The reduction of the DG maximum steady state voltage limit ensures that the DGs and the safety-related components downstream of the DG are operated within their design limitations; therefore, the consequences of an accident previously evaluated in the USAR will not be increased by operating in the proposed manner. The change to the DG maximum steady state voltage limit ensures the DGs and equipment powered by the DGs will perform as analyzed and mitigate the consequences of any accident described in the USAR. Therefore, the change in the maximum steady state voltage limit is within the bounds of previous analysis in the USAR and does not involve an increase in the consequences of an accident previously evaluated.

Therefore, the proposed change does not involve a significant increase in the probability or consequence of any previously evaluated accident.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

This TS amendment request does not involve any changes to the operation, testing, or maintenance of any safety-related, or otherwise important to safety system. All systems that are important to safety will continue to be operated and maintained within their design bases. The proposed changes to LCO 3.8.1 will resolve a non-conservatism, which will serve to ensure that all associated systems and components are operated reliably within their design capabilities.

Since all systems will continue to be operated within their design capabilities, no new failure modes are introduced, nor is the possibility of a new or different kind of accident created through operation in the proposed manner.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

The proposed change is limited to the diesel generator maximum steady state voltage limit acceptance criterion in TS 3.8.1 Surveillance Requirements. No other surveillance criterion is affected. The surveillance frequencies and test requirements are unchanged. The proposed change provides increased assurance that the diesel generators and equipment powered by the diesel generators will perform as designed.

Therefore, the proposed amendment does not involve a significant reduction in a margin of safety.

Based upon the above analysis, EGC concludes that the requested change does not involve a significant hazards consideration, as set forth in 10 CFR 50.92(c), "Issuance of Amendment," and, accordingly, a finding of no significant hazards consideration is justified.

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### **4.4 Conclusions**

In conclusion, based on the considerations discussed above, (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.

### **5.0 ENVIRONMENTAL CONSIDERATION**

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the amounts of any effluents that may be released off site, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

### **6.0 REFERENCES**

1. General Electric (GE) Licensing Topical Report NEDO-10905, "HPCS System Power Supply Unit," dated May 1973
2. Institute of Electrical and Electronic Engineers (IEEE) Standard 387, "IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations," 1977
3. NRC Regulatory Guide 1.9, " Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electric Power Systems at Nuclear Power Plants," Revision 3, dated July 1993
4. Letter from J. Thompson (U. S. NRC) to J. R. Morris (Duke Energy Carolinas, LLC), Catawba Nuclear Station, Units 1 and 2, Issuance of Amendments Regarding Changes to Technical Specification 3.8.1, 'AC Sources-Operating,' (TAC Nos. ME1456 and ME1457), dated May 27, 2010
5. Letter from T. L. Beltz (U. S. NRC) to J. N. Jensen (Indiana Michigan Power Company), "Donald C. Cook Nuclear Plant, Units 1 and 2 – Issuance of Amendment to Renewed Facility Operating License Regarding Technical Specification Change Relating to Diesel Generator Steady-State Parameters (TAC Nos. MD8773 and MD8774)," dated April 30, 2009



ATTACHMENT 2

CLINTON POWER STATION,  
UNIT 1

Docket No. 50-461

License No. NPF-62

Markup Pages of Existing Technical Specifications to Show the Proposed Changes

MARKUP OF EXISTING REVISED TS PAGES

3.8-4  
3.8-6  
3.8-8  
3.8-9  
3.8-11  
3.8-14  
3.8-15

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.	In accordance with the Surveillance Frequency Control Program
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 $\geq 4084$ V and $\leq 4580$ V and frequency $\geq 58.8$ Hz and $\leq 61.2$ Hz.	In accordance with the Surveillance Frequency Control Program

4300

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.7 -----NOTE----- All DG starts may be preceded by an engine prelube period. -----</p> <p>Verify each DG starts from standby condition and achieves:</p> <p>a. In <math>\leq 12</math> seconds, voltage <math>\geq 4084</math> V and frequency <math>\geq 58.8</math> Hz; and</p> <p>b. Steady state voltage <math>\geq 4084</math> V and <math>\leq 4580</math> V and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p> <p>4300</p>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>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. -----</p> <p>Verify automatic and manual transfer of unit power supply from the normal offsite circuit to the alternate offsite circuit.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>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.</li> </ol> <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses;</li> <li>b. Load shedding from emergency buses for Divisions 1 and 2; and</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. energizes permanently connected loads in <math>\leq 12</math> seconds,</li> <li>2. energizes auto-connected shutdown loads,</li> <li>3. maintains steady state voltage <math>\geq 4084</math> V and <math>\leq 4580</math> V,</li> <li>4. maintains steady state frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz, and</li> <li>5. supplies permanently connected and auto-connected shutdown loads for <math>\geq 5</math> minutes.</li> </ol> </li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.</li> </ol> <p>-----</p> <p>Verify on an actual or simulated Emergency Core Cooling System (ECCS) initiation signal each DG auto-starts from standby condition and:</p> <ol style="list-style-type: none"> <li>a. In <math>\leq 12</math> seconds after auto-start and during tests, achieves voltage <math>\geq 4084</math> V and frequency <math>\geq 58.8</math> Hz;</li> <li>b. Achieves steady state voltage <math>\geq 4084</math> V and <math>\leq 4580</math> V and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz; and</li> <li>c. Operates for <math>\geq 5</math> minutes.</li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>
<p>SR 3.8.1.13 -----NOTE-----</p> <p>Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each DG's automatic trips are bypassed on an actual or simulated ECCS initiation signal except:</p> <ol style="list-style-type: none"> <li>a. Engine overspeed;</li> <li>b. Generator differential current; and</li> <li>c. Overcrank for DG 1A and DG 1B.</li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.15 -----NOTE-----</p> <p>1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated <math>\geq 2</math> hours loaded <math>\geq 3482</math> kW for DG 1A, <math>\geq 3488</math> kW for DG 1B, and <math>\geq 1980</math> kW for DG 1C.</p> <p>Momentary transients outside of the load range do not invalidate this test.</p> <p>2. All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each DG starts and achieves:</p> <p>a. In <math>\leq 12</math> seconds, voltage <math>\geq 4084</math> V and frequency <math>\geq 58.8</math> Hz and</p> <p>b. Steady state voltage <math>\geq 4084</math> V and <math>\leq 4580</math> V and frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz.</p> <p>4300</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. All DG starts may be preceded by an engine prelube period.</li> <li>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.</li> </ol> <p>-----</p> <p>Verify, on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ECCS initiation signal:</p> <ol style="list-style-type: none"> <li>a. De-energization of emergency buses;</li> <li>b. Load shedding from emergency buses for Divisions 1 and 2; and</li> <li>c. DG auto-starts from standby condition and:               <ol style="list-style-type: none"> <li>1. energizes permanently connected loads in <math>\leq 12</math> seconds,</li> <li>2. energizes auto-connected emergency loads,</li> <li>3. achieves steady state voltage <math>\geq 4084</math> V and <math>\leq 4580</math> V <span style="border: 1px solid black; padding: 0 5px;">4300</span></li> <li>4. achieves steady state frequency <math>\geq 58.8</math> Hz and <math>\leq 61.2</math> Hz, and</li> <li>5. supplies permanently connected and auto-connected emergency loads for <math>\geq 5</math> minutes.</li> </ol> </li> </ol>	<p>In accordance with the Surveillance Frequency Control Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.20 -----NOTE----- All DG starts may be preceded by an engine prelube period. -----</p> <p>Verify, when started simultaneously from standby condition, each DG achieves:</p> <p>a. In <math>\leq 12</math> seconds, voltage <math>\geq 4084</math> V and frequency <math>\geq 58.8</math> Hz; and</p> <p>b. Steady state voltage <math>\geq 4084</math> V and  <div data-bbox="378 695 459 737" style="border: 1px solid black; padding: 2px;">4300</div> <del><math>\leq 4580</math></del> V and frequency <math>\geq 58.8</math> Hz and  <math>\leq 61.2</math> Hz.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>



ATTACHMENT 3

CLINTON POWER STATION  
UNIT 1

Docket No. 50-461

License No. NPF-62

Markup Pages of Existing Technical Specifications Bases to Show the Proposed Change

MARKUP OF EXISTING TS BASES PAGES

B 3.8-13a

B 3.8-32a

BASES (continued)

SURVEILLANCE  
REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, GDC 18 (Ref. 9). Periodic component tests are supplemented by extensive functional tests during refueling outages under simulated accident conditions. The SRs for demonstrating the OPERABILITY of the DGs are in accordance with the recommendations of Regulatory Guide 1.9 (Refs. 3 and 16), Regulatory Guide 1.108 (Ref. 10), and Regulatory Guide 1.137 (Ref. 11).

Where the SRs discussed herein specify voltage and frequency tolerances, the minimum and maximum steady state output voltages of 4084 V and 4580 V respectively, are equal to - 2% and +10% of the nominal 4160 V output voltage. The specified minimum and maximum frequencies of the DG is 58.8 Hz and 61.2 Hz, respectively, are equal to  $\pm 2\%$  of the 60 Hz nominal frequency. The specified steady state voltage and frequency ranges are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3). However, the minimum voltage was increased to ensure adequate voltage to operate all safety-related loads during a DBA (Ref. 15).

In general, surveillances performed for each of the required DGs are similar, with one notable difference due to the fact that the Division 3 DG utilizes a mechanical governor, while the Division 1 and 2 DGs utilize an electronic governor. As such, the Division 1 and 2 DGs are capable of operating in both an isochronous mode as well as a "droop" mode for when the DGs are paralleled to the offsite source during testing. The Division 3 DG, on the other hand, is capable of operating only in the droop mode (through a droop setting of zero can be utilized). This difference may affect the Division 3 DGs capability to achieve rated frequency following automatic switchover from the test mode to ready-to-load operation upon receipt of a LOCA initiation signal (as verified per SR 3.8.1.17).

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Analyses in References 26, 27, and 28 specify that the maximum acceptable voltage on the 4.16 kV safety-related buses is 4454 V for 30 minutes and 4300 V for continuous operation. These analyses evaluated the effects of the overvoltage condition on the connected loads in the 120 V distribution panels and determined that continuous operation above 4300 V on the 4.16 kV 1E buses would result in voltages above allowable for certain 120 V devices. The analyses allow for elevated voltages up to 4454 V for 30 minutes to account for overvoltage conditions that can occur if the Reserve Auxiliary Transformer Static VAR Compensator trips coincident with high 345 kV transmission system voltages. The 30-minute duration was considered sufficient time to restore 4.16 kV voltages to within specification without damaging downstream AC loads.

BASES (continued)

REFERENCES

1. 10 CFR 50, Appendix A, GDC 17.
2. USAR, Chapter 8.
3. Regulatory Guide 1.9, Revision 2.
4. USAR, Chapter 6.
5. USAR, Chapter 15.
6. Regulatory Guide 1.93.
7. Generic Letter 84-15, July 2, 1984.
8. NEDC-32988-A, Revision 2, Technical Justification to Support Risk-Informed Modification to Selected Required End States for BWR Plants, December 2002.
9. 10 CFR 50, Appendix A, GDC 18.
10. Regulatory Guide 1.108.
11. Regulatory Guide 1.137.
12. ANSI C84.1, 1982.
13. NUMARC 87-00, Revision 1, August 1991.
14. IEEE Standard 308.
15. IP Calculation 19-AN-19.
16. Regulatory Guide 1.9, Revision 3.
17. Calculation IP-C-0050.
18. Calculation IP-C-0051.
19. Calculation IP-C-0054.
20. Calculation IP-0-0114.
21. Calculation IP-C-0111.
22. Calculation IP-0-0106.
23. Calculation IP-0-0143.
24. Calculation IP-0-0110.
25. Calculation IP-0-0116.
26. Calculation 19-AJ-74.
27. Calculation 19-AK-06.
28. Calculation 19-AK-13.