



**INDIANA
MICHIGAN
POWER®**

A unit of American Electric Power

Indiana Michigan Power
Cook Nuclear Plant
One Cook Place
Bridgman, MI 49106
AEP.com

June 27, 2007

AEP:NRC:6381-05
10 CFR 50.90

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

SUBJECT: Donald C. Cook Nuclear Plant Units 1 and 2
Docket Nos. 50-315 and 50-316
Technical Specification Change of Diesel Generator Maximum Steady State
Frequency

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant Units 1 and 2, proposes to amend Facility Operating Licenses DPR-58 and DPR-74. I&M proposes to modify Technical Specifications (TS) to change the diesel generator (DG) maximum steady state frequency of TS 3.8.1, "AC Sources – Operating." TS 3.8.2, "AC Sources – Shutdown," requires certain Surveillance Requirements from TS 3.8.1 to be performed that are necessary to ensure operability of the alternating current sources when shutdown. Therefore, the proposed change also affects TS 3.8.2 Surveillance Requirements.

The proposed change will correct a nonconservative TS value for Unit 1 and Unit 2. Two issues with a common resolution are driving the need for the proposed change. The first issue concerns Centrifugal Charging Pump (CCP) rotating elements installed in Unit 2 during the Fall 2004 outage for one train and during the Spring 2006 outage for the other train. During the Spring 2006 outage it was discovered that the CCP rotating elements could have resulted in the brake horsepower (BHP) requirement exceeding the nameplate maximum horsepower rating of the CCP motor. This could occur if the associated DG is operating at the maximum frequency allowed by TS 3.8.1 with the CCP operating at or near the runout flow rate. The second issue, identified during Winter 2007, concerns evaluations of DG load calculations which were completed for both Unit 1 and Unit 2. The evaluations indicated that all four DGs could have been overloaded if operating at the maximum steady state frequency allowed by TS 3.8.1. This condition may have existed since initial plant operation. As a result of the two issues described above, both units' maximum steady state frequency TS value is nonconservative. I&M has administratively implemented more conservative DG frequency limits on Surveillance Requirement acceptance criteria to ensure CCP motor BHP requirements are met and prevent DG overload.

A001

NRK


Enclosure 1 provides an affirmation statement pertaining to this letter. Enclosure 2 provides I&M's evaluation of the proposed change. Attachments 1A and 1B provide TS pages marked to show changes for Unit 1 and Unit 2, respectively. Attachments 2A and 2B provide TS pages with the proposed changes incorporated.

I&M requests approval of the proposed amendment in accordance with the normal Nuclear Regulatory Commission review schedule. The proposed changes to the Unit 1 and Unit 2 TS will be implemented within 45 days of approval.

Copies of this letter and its attachments are being transmitted to the Michigan Public Service Commission and Michigan Department of Environmental Quality, in accordance with the requirements of 10 CFR 50.91.

There are no commitments made in this letter. Should you have any questions, please contact Ms. Susan D. Simpson, Regulatory Affairs Manager, at (269) 466-2428.

Sincerely,



Joseph N. Jensen
Site Vice President

KAS/rdw

Enclosures:

1. Affirmation
2. Indiana Michigan Power Company's Evaluation

Attachments:

- 1A. Donald C. Cook Nuclear Plant Unit 1 Technical Specification Pages Marked To Show Changes
- 1B. Donald C. Cook Nuclear Plant Unit 2 Technical Specification Pages Marked To Show Changes
- 2A. Donald C. Cook Nuclear Plant Unit 1 Technical Specification Pages With the Proposed Changes Incorporated
- 2B. Donald C. Cook Nuclear Plant Unit 2 Technical Specification Pages With the Proposed Changes Incorporated

c: J. L. Caldwell, NRC Region III
K. D. Curry, Ft. Wayne AEP, w/o enclosures/attachments
J. T. King, MPSC
MDEQ – WHMD/RPMWS
NRC Resident Inspector
P. S. Tam, NRC Washington, DC

Enclosure 1 to AEP:NRC:6381-05

AFFIRMATION

I, Joseph N. Jensen, being duly sworn, state that I am Site Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this request with the Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

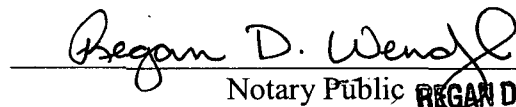
Indiana Michigan Power Company



Joseph N. Jensen
Site Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 27th DAY OF June, 2007


Notary Public **REGAN D. WENZEL**

My Commission Expires **Notary Public, Berrien County, MI**
My Commission Expires Jan. 21, 2009

Enclosure 2 to AEP:NRC:6381-05

INDIANA MICHIGAN POWER COMPANY'S EVALUATION

Subject: Technical Specification Change of Diesel Generator Maximum Steady State Frequency

1.0 DESCRIPTION

2.0 PROPOSED CHANGE

3.0 BACKGROUND

3.1 System Descriptions

3.2 Reason for Requesting Amendment

4.0 TECHNICAL ANALYSIS

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

5.2 Applicable Regulatory Requirements / Criteria

6.0 ENVIRONMENTAL CONSIDERATIONS

7.0 REFERENCES

8.0 PRECEDENT

1.0 DESCRIPTION

This letter is a request by Indiana Michigan Power Company (I&M) to amend Facility Operating Licenses DPR-58 and DPR-74 for the Donald C. Cook Nuclear Plant (CNP) Units 1 and 2. The proposed change modifies Technical Specifications (TS) to change the diesel generator (DG) Surveillance Requirements (SR) for maximum steady state frequency. The proposed change will correct a nonconservative TS value for Unit 1 and Unit 2. Two issues with a common resolution are driving the need for the proposed change. The first issue concerns Centrifugal Charging Pump (CCP) rotating elements installed in Unit 2 during the Fall 2004 outage for one train and during the Spring 2006 outage for the other train. During the Spring 2006 outage it was discovered that the CCP rotating elements could have resulted in the brake horsepower (BHP) requirement exceeding the nameplate maximum horsepower rating of the CCP motor. This could occur if the associated DG is operating at the maximum frequency allowed by TS 3.8.1 with the CCP operating at or near the runout flow rate. The second issue, identified during Winter 2007, concerns evaluations of DG load calculations which were completed for both Unit 1 and Unit 2. The evaluations indicated that all four DGs could have been overloaded if operating at the maximum steady state frequency allowed by TS 3.8.1. This condition may have existed since initial plant operation. As a result of the two issues described above, both units' maximum steady state frequency TS value is nonconservative. I&M has administratively implemented more conservative DG frequency limits on SR acceptance criteria to ensure CCP motor BHP requirements are met and prevent DG overload.

2.0 PROPOSED CHANGE

I&M proposes to change the DG maximum steady state frequency for TS 3.8.1, "AC Sources – Operating," SR 3.8.1.2, 3.8.1.8.b, 3.8.1.12.c.4, 3.8.1.13.b, 3.8.1.16.b, and 3.8.1.19.c.4 from 61.2 Hertz (Hz) to 60.5 Hz. This proposed change also affects TS 3.8.2, "AC Sources – Shutdown," since TS 3.8.2 requires the following TS 3.8.1 SRs affected by the change to be met: SR 3.8.1.2, SR 3.8.1.8, SR 3.8.1.12, and SR 3.8.1.16.

Changes to TS Bases 3.8.1 are required to reflect the new maximum steady state frequency. In addition, changes to TS Bases SR 3.8.1.10 for the single largest load rejection are planned prior to the next scheduled surveillance performance to remove the statement that the two second voltage and frequency requirements represent a steady state condition. These changes will be made in accordance with the CNP Technical Specification Bases Control Program.

3.0 BACKGROUND

3.1 System Descriptions

As stated in Updated Final Safety Analysis Report (UFSAR) Section 8.4, "Emergency Power System," the emergency power sources for the two units, including the DGs, are similar and are electrically and physically isolated from one another. Each unit has two full capacity DGs each supplying power to two safety-related 4160 volt buses. Loss of voltage to the 4160 volt buses is

sensed by loss of voltage relays. Upon sensing, master relays automatically start the DGs, trip the normal feed circuit breakers for the 4160 volt buses, and trip all motor feeder breakers and 480 volt bus transformer feeder breakers on the buses, the 600 volt bus tie breaker, non-essential 600 volt feeder breakers, and 480 volt bus breakers. The DG bus input circuit breakers which connect the DG output to the 4160/600 volt bus system are automatically closed when voltage and speed approach rated values. The DGs supply power to the 600 volt buses through the 4160 volt buses and transformers, respectively.

Each DG comes up to speed and is capable of accepting load within 10 seconds. If either DG fails to start, the remaining one is capable of supplying the required engineered safeguard load. A Safety Injection (SI) signal will also start the DGs. To avoid overloading of the DGs, the non-essential loads are shed when the SI occurs and the safety buses are energized from the DGs.

The DGs are sized at 3500 kilowatts each to assure available power to operate one train of safety equipment assuming a loss-of-power concurrent with a loss-of-coolant accident with or without containment spray.

UFSAR Section 8.1.2, "Functional Criteria," provides functional requirements employed on electrical systems to achieve maximum reliability and operating efficiency. One of the criteria is that motor loading does not exceed its nameplate rating.

3.2 Reason for Requesting Amendment

Changing the DG maximum steady state frequency will correct a nonconservative TS value for Unit 1 and Unit 2. Two issues with a common resolution are driving the need for the proposed change. The first issue concerns Unit 2 CCP rotating elements which could have resulted in the BHP requirement exceeding the nameplate maximum horsepower rating of the CCP motor. The second issue concerns evaluations of DG load calculations completed for both Unit 1 and Unit 2, indicating that all four DGs could have been overloaded if they were operated at the maximum steady state frequency allowed by TS 3.8.1. As a result of the two issues, both units' maximum steady state frequency TS value is nonconservative.

4.0 TECHNICAL ANALYSIS

The initial condition of design basis accidents and transient analyses in UFSAR Chapter 14 assume engineered safety features systems are operable. The alternating current (AC) electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to engineered safety features systems so that the fuel, reactor coolant system, and containment design limits are not exceeded.

The operability of the AC electrical power sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This results in maintaining at least one train of the onsite or offsite AC sources operable during accident

conditions in the event of an assumed loss of all offsite power or all onsite AC power and a worst case single failure.

For induction motors, such as the CCP motors, the motor speed, and thus, the pump speed is directly proportional to the power supply frequency. As power supply frequency increases, motor and pump speed increase, resulting in an increase in the BHP requirements for the connected motors. While revalidating BHP design inputs used in DG loading calculations, I&M determined that installation or planned installation of refurbished CCP rotating elements could have resulted in higher BHP requirements for the motor. I&M continues to work with the vendor to prevent rotating element refurbishments that result in increased BHP demands on the motor. These efforts include the review of preliminary performance test results, follow-up discussions, and agreement on remediation of the results to assure maximum BHP requirements are acceptable.

The Unit 2 CCP motors could be overloaded if the frequency is allowed to reach 61.2 Hz, the current maximum steady state frequency limit in TS 3.8.1 SRs, with the pump operating at or near the runout flow rate. This flow rate would be demanded from the CCP in response to a large break or small break loss-of-coolant accident. The nameplate allowable continuous load, with service factor, on the CCP motors is 690 horsepower (600 horsepower, 1.15 service factor). A CCP operating at 61.2 Hz at or near the runout flow rate would result in a BHP that exceeds 690. I&M has validated that the concern with the BHP requirement exceeding the nameplate maximum horsepower rating of the motor is limited to the Unit 2 CCP motors.

Unit 1 and Unit 2 auxiliary power system model calculations, which form the basis for DG load calculations, were updated to reflect recent changes to the facility. The revised models were then used to evaluate DG loading at several frequencies between 60 Hz and 61.2 Hz. These evaluations determined that, at the TS maximum steady state frequency of 61.2 Hz, the DGs would become overloaded.

CNP Engineering has assessed 60.5 Hz as the frequency to ensure a BHP of less than the 1.15 service factor for the CCP motors and prevent DG overload. Since this is a more restrictive value and an acceptable frequency in current TS, the revised maximum steady state frequency limit will have no adverse affect on other components, such as motor operated valves, fans, pumps, and non-motorized equipment (e.g., instrumentation and heaters). Therefore, DG operation within this range will maintain operability of the engineered safety features systems equipment required for safe shutdown of the facility and the mitigation and control of accident conditions when powered by the DG. I&M currently has administrative controls in place on TS surveillance acceptance criteria for Unit 1 and Unit 2 that limit the maximum steady state frequency to 60.5 Hz, thereby, ensuring safe operation of engineered safety feature equipment that could be powered by the DGs and prevent DG overload.

Woodward Model 2301A load sharing and speed control with dual dynamics is used in the DG electronic governing systems. Design specifications for this equipment indicate a steady state speed band of plus or minus 0.25 percent of rated speed. The control is set as close as practical

for the DG rated speed of 514 revolutions per minute (rpm), which is equivalent to 60 Hz. As such, the equipment is nominally capable of maintaining DG speed at 514 rpm plus or minus 1.3 rpm, or between 59.85 Hz and 60.15 Hz. This is well within the proposed allowable band of 59.4 Hz to 60.5 Hz. Historical surveillance data has also been reviewed to confirm that the DG governors are generally capable of maintaining frequency within the band of 0.25 percent of rated speed. The review confirmed that a properly tuned and adjusted governor is capable of maintaining DG frequency within 59.4 to 60.5 Hz.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

Indiana Michigan Power Company (I&M) has evaluated whether a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability of occurrence 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 Final Safety Analysis Report (UFSAR). The more restrictive steady state frequency range ensures that the diesel generators and equipment being powered by the diesel generators will function as required to mitigate an accident as described in the UFSAR. The diesel generators and the equipment they power are part of the systems required to mitigate an accident. Mitigation equipment is not a factor in accident initiation and, therefore, the probability of an accident previously evaluated will not be significantly increased.

The change to the diesel generator maximum steady state frequency limit does not increase the probability of a diesel generator failure. Therefore, this change does not increase the probability of a station blackout event.

The consequences of an accident previously evaluated in the UFSAR will not be significantly increased. The more restrictive change to the diesel generator maximum steady state frequency limit ensures the diesel generators and equipment powered by the diesel generators will perform as analyzed and mitigate the consequences of any accident described in the UFSAR. Therefore, the change in the maximum steady state frequency limit is within the bounds of previous analysis in the UFSAR and does not involve a significant increase in the consequences of an accident previously evaluated.

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

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

Response: No

The possibility of an accident of a new or different kind from any accident previously evaluated has not been created. The more restrictive change to the diesel generator maximum steady state frequency limit ensures that the diesel generators and equipment powered by the diesel generators will perform as analyzed. This equipment and the diesel generators mitigate the consequences of an accident. Mitigation equipment does not contribute to accident initiation. Making existing requirements more restrictive will not alter the plant configuration (no new or different type of equipment will be installed) or change the methods governing normal plant operation. These changes are consistent with the assumptions made in the safety analysis.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

Response: No

The change to the diesel generator maximum steady state frequency limit ensures that the diesel generators and equipment powered by the diesel generators will perform as analyzed. This equipment and the diesel generators mitigate the consequences of an accident. This change maintains the required function of the diesel generators and the equipment powered by the diesel generators and ensures the required operation of the plant and any structures, systems, or components is as intended by the safety analysis.

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

Based on the above, I&M concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

10 CFR 50.36 (c) (2) (ii), stipulates that a technical specification limiting condition for operation must be established for each item meeting one or more of the following criteria:

1. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

2. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of, or presents a challenge to the integrity of a fission product barrier.
3. A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.
4. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

The change to the diesel generator maximum steady state frequency limit continues to meet this regulation in that it provides assurance that the diesel generator and the equipment powered by the diesel generator will be available to actuate to mitigate a design basis accident or transient.

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 Nuclear Regulatory Commission's (NRC) regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health or safety of the public.

6.0 ENVIRONMENTAL CONSIDERATIONS

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 SR. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

None

8.0 PRECEDENT

The NRC has approved a similar submittal for changes to DG steady state frequency limits for the Palo Verde Nuclear Generating Station (Accession No. ML003758500).

Attachment 1A to AEP:NRC:6381-05

**DONALD C. COOK NUCLEAR PLANT UNIT 1 TECHNICAL SPECIFICATION PAGES
MARKED TO SHOW CHANGES**

3.8.1-6

3.8.1-8

3.8.1-11

3.8.1-12

3.8.1-14

3.8.1-16

SURVEILLANCE REQUIREMENTS

NOTES

1. SR 3.8.1.1 through SR 3.8.1.22 are applicable only to the AC electrical power sources for Unit 1.
2. SR 3.8.1.23 is applicable only to the Unit 2 required AC electrical power sources. The Surveillances referenced in SR 3.8.1.23 are the Unit 2 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	<p>NOTES</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 2. A modified DG start involving 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 3.8.1.8 must be met. <p>Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3910 V and ≤ 4400 V, and frequency ≥ 59.4 Hz and $\leq 61.260.5$ Hz.</p>	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.8</p> <p>-----NOTE----- All DG starts may be preceded by an engine prelube period. -----</p> <p>Verify each DG starts from standby condition and achieves:</p> <ul style="list-style-type: none"> a. In ≤ 10 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3910 V and ≤ 4400 V, and frequency ≥ 59.4 Hz and $\leq 61.260.5$ Hz. 	<p>184 days</p>
<p>SR 3.8.1.9</p> <p>-----NOTE----- SR 3.8.1.9.a is only required to be met when the auxiliary source is supplying the electrical power distribution subsystem. -----</p> <p>Verify:</p> <ul style="list-style-type: none"> a. Automatic transfer from the auxiliary source to the preferred offsite circuit; and b. Manual alignment to the alternate offsite circuit. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. Energizes permanently connected loads in ≤ 10 seconds; 2. Energizes auto-connected shutdown loads through time delay relays, where applicable; 3. Maintains steady state voltage ≥ 3910 V and ≤ 4400 V; 4. Maintains steady state frequency ≥ 59.4 Hz and $\leq 61.260.5$ Hz; and 5. Supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds achieves voltage ≥ 3740 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 3910 V and ≤ 4400 V and frequency ≥ 59.4 Hz and $\leq 61.260.5$ Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are auto-connected through the time delay relays, where applicable, from the offsite power system. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.16 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3150 kW and ≤ 3500 kW. <p style="padding-left: 40px;">Momentary transients outside of load range do not invalidate this test.</p> <ol style="list-style-type: none"> 2. All DG starts may be preceded by an engine prelube period. <p>-----</p> <p>Verify each DG starts and achieves:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3910 V and ≤ 4400 V and frequency ≥ 59.4 Hz and $\leq 61.260.5$ Hz. 	<p>24 months</p>
<p>SR 3.8.1.17 -----NOTE-----</p> <p>This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each DG:</p> <ol style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. Energizes permanently connected loads in ≤ 10 seconds; 2. Energizes auto-connected emergency loads through time delay relays, as applicable; 3. Achieves steady state voltage ≥ 3910 V and ≤ 4400 V; 4. Achieves steady state frequency ≥ 59.4 Hz and $\leq 64.260.5$ Hz; and 5. Supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>24 months</p>

Attachment 1B to AEP:NRC:6381-05

**DONALD C. COOK NUCLEAR PLANT UNIT 2 TECHNICAL SPECIFICATION PAGES
MARKED TO SHOW CHANGES**

3.8.1-6

3.8.1-8

3.8.1-11

3.8.1-12

3.8.1-14

3.8.1-16

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. SR 3.8.1.1 through SR 3.8.1.22 are applicable only to the AC electrical power sources for Unit 2.
 2. SR 3.8.1.23 is applicable only to the Unit 1 required AC electrical power sources. The Surveillances referenced in SR 3.8.1.23 are the Unit 1 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	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 2. A modified DG start involving 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 3.8.1.8 must be met. <p>-----</p> <p>Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3910 V and ≤ 4400 V, and frequency ≥ 59.4 Hz and $\leq 61.260.5$ Hz.</p>	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.8</p> <p>-----NOTE----- All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each DG starts from standby condition and achieves:</p> <p>a. In ≤ 10 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and</p> <p>b. Steady state voltage ≥ 3910 V and ≤ 4400 V, and frequency ≥ 59.4 Hz and $\leq 61.260.5$ Hz.</p>	<p>184 days</p>
<p>SR 3.8.1.9</p> <p>-----NOTE----- SR 3.8.1.9.a is only required to be met when the auxiliary source is supplying the electrical power distribution subsystem.</p> <p>-----</p> <p>Verify:</p> <p>a. Automatic transfer from the auxiliary source to the preferred offsite circuit; and</p> <p>b. Manual alignment to the alternate offsite circuit.</p>	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. Energizes permanently connected loads in ≤ 10 seconds; 2. Energizes auto-connected shutdown loads through time delay relays, where applicable; 3. Maintains steady state voltage ≥ 3910 V and ≤ 4400 V; 4. Maintains steady state frequency ≥ 59.4 Hz and ≤ 61.2605 Hz; and 5. Supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds achieves voltage ≥ 3740 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 3910 V and ≤ 4400 V and frequency ≥ 59.4 Hz and $\leq 61.260.5$ Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are auto-connected through the time delay relays, where applicable, from the offsite power system. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.16</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3150 kW and ≤ 3500 kW. <p>Momentary transients outside of load range do not invalidate this test.</p> <ol style="list-style-type: none"> 2. All DG starts may be preceded by an engine prelube period. <p>-----</p> <p>Verify each DG starts and achieves:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3910 V and ≤ 4400 V and frequency ≥ 59.4 Hz and $\leq 61.260.5$ Hz. 	<p>24 months</p>
<p>SR 3.8.1.17</p> <p>-----NOTE-----</p> <p>This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each DG:</p> <ol style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. Energizes permanently connected loads in ≤ 10 seconds; 2. Energizes auto-connected emergency loads through time delay relays, as applicable; 3. Achieves steady state voltage ≥ 3910 V and ≤ 4400 V; 4. Achieves steady state frequency ≥ 59.4 Hz and ≤ 61.2605 Hz; and 5. Supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>24 months</p>

Attachment 2A to AEP:NRC:6381-05

**DONALD C. COOK NUCLEAR PLANT UNIT 1 TECHNICAL SPECIFICATION PAGES
WITH THE PROPOSED CHANGES INCORPORATED**

3.8.1-6

3.8.1-8

3.8.1-11

3.8.1-12

3.8.1-14

3.8.1-16

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. SR 3.8.1.1 through SR 3.8.1.22 are applicable only to the AC electrical power sources for Unit 1.
 2. SR 3.8.1.23 is applicable only to the Unit 2 required AC electrical power sources. The Surveillances referenced in SR 3.8.1.23 are the Unit 2 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	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 2. A modified DG start involving 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 3.8.1.8 must be met. <p>-----</p> <p>Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3910 V and ≤ 4400 V, and frequency ≥ 59.4 Hz and ≤ 60.5 Hz.</p>	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.8</p> <p>-----NOTE----- All DG starts may be preceded by an engine prelube period. -----</p> <p>Verify each DG starts from standby condition and achieves:</p> <ul style="list-style-type: none"> a. In ≤ 10 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3910 V and ≤ 4400 V, and frequency ≥ 59.4 Hz and ≤ 60.5 Hz. 	<p>184 days</p>
<p>SR 3.8.1.9</p> <p>-----NOTE----- SR 3.8.1.9.a is only required to be met when the auxiliary source is supplying the electrical power distribution subsystem. -----</p> <p>Verify:</p> <ul style="list-style-type: none"> a. Automatic transfer from the auxiliary source to the preferred offsite circuit; and b. Manual alignment to the alternate offsite circuit. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. Energizes permanently connected loads in ≤ 10 seconds; 2. Energizes auto-connected shutdown loads through time delay relays, where applicable; 3. Maintains steady state voltage ≥ 3910 V and ≤ 4400 V; 4. Maintains steady state frequency ≥ 59.4 Hz and ≤ 60.5 Hz; and 5. Supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds achieves voltage ≥ 3740 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 3910 V and ≤ 4400 V and frequency ≥ 59.4 Hz and ≤ 60.5 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are auto-connected through the time delay relays, where applicable, from the offsite power system. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.16</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3150 kW and ≤ 3500 kW. <p>Momentary transients outside of load range do not invalidate this test.</p> <ol style="list-style-type: none"> 2. All DG starts may be preceded by an engine prelube period. <p>-----</p> <p>Verify each DG starts and achieves:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3910 V and ≤ 4400 V and frequency ≥ 59.4 Hz and ≤ 60.5 Hz. 	<p>24 months</p>
<p>SR 3.8.1.17</p> <p>-----NOTE-----</p> <p>This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each DG:</p> <ol style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. Energizes permanently connected loads in ≤ 10 seconds; 2. Energizes auto-connected emergency loads through time delay relays, as applicable; 3. Achieves steady state voltage ≥ 3910 V and ≤ 4400 V; 4. Achieves steady state frequency ≥ 59.4 Hz and ≤ 60.5 Hz; and 5. Supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>24 months</p>

Attachment 2B to AEP:NRC:6381-05

**DONALD C. COOK NUCLEAR PLANT UNIT 2 TECHNICAL SPECIFICATION PAGES
WITH THE PROPOSED CHANGES INCORPORATED**

3.8.1-6

3.8.1-8

3.8.1-11

3.8.1-12

3.8.1-14

3.8.1-16

SURVEILLANCE REQUIREMENTS

-----NOTES-----

1. SR 3.8.1.1 through SR 3.8.1.22 are applicable only to the AC electrical power sources for Unit 2.
 2. SR 3.8.1.23 is applicable only to the Unit 1 required AC electrical power sources. The Surveillances referenced in SR 3.8.1.23 are the Unit 1 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	<p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period and followed by a warmup period prior to loading. 2. A modified DG start involving 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 3.8.1.8 must be met. <p>-----</p> <p>Verify each DG starts from standby conditions and achieves steady state voltage ≥ 3910 V and ≤ 4400 V, and frequency ≥ 59.4 Hz and ≤ 60.5 Hz.</p>	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.8</p> <p>-----NOTE----- All DG starts may be preceded by an engine prelube period.</p> <p>-----</p> <p>Verify each DG starts from standby condition and achieves:</p> <p>a. In ≤ 10 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and</p> <p>b. Steady state voltage ≥ 3910 V and ≤ 4400 V, and frequency ≥ 59.4 Hz and ≤ 60.5 Hz.</p>	<p>184 days</p>
<p>SR 3.8.1.9</p> <p>-----NOTE----- SR 3.8.1.9.a is only required to be met when the auxiliary source is supplying the electrical power distribution subsystem.</p> <p>-----</p> <p>Verify:</p> <p>a. Automatic transfer from the auxiliary source to the preferred offsite circuit; and</p> <p>b. Manual alignment to the alternate offsite circuit.</p>	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.12</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. Energizes permanently connected loads in ≤ 10 seconds; 2. Energizes auto-connected shutdown loads through time delay relays, where applicable; 3. Maintains steady state voltage ≥ 3910 V and ≤ 4400 V; 4. Maintains steady state frequency ≥ 59.4 Hz and ≤ 60.5 Hz; and 5. Supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13 -----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1 or 2. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds achieves voltage ≥ 3740 V and frequency ≥ 58.8 Hz; b. Achieves steady state voltage ≥ 3910 V and ≤ 4400 V and frequency ≥ 59.4 Hz and ≤ 60.5 Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are auto-connected through the time delay relays, where applicable, from the offsite power system. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.16 -----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3150 kW and ≤ 3500 kW. <p>Momentary transients outside of load range do not invalidate this test.</p> <ol style="list-style-type: none"> 2. All DG starts may be preceded by an engine prelube period. <p>-----</p> <p>Verify each DG starts and achieves:</p> <ol style="list-style-type: none"> a. In ≤ 10 seconds, voltage ≥ 3740 V and frequency ≥ 58.8 Hz; and b. Steady state voltage ≥ 3910 V and ≤ 4400 V and frequency ≥ 59.4 Hz and ≤ 60.5 Hz. 	<p>24 months</p>
<p>SR 3.8.1.17 -----NOTE-----</p> <p>This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, this Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR.</p> <p>-----</p> <p>Verify each DG:</p> <ol style="list-style-type: none"> a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation. 	<p>24 months</p>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.19</p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the unit is maintained or enhanced. Credit may be taken for unplanned events that satisfy this SR. <p>-----</p> <p>Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:</p> <ol style="list-style-type: none"> a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: <ol style="list-style-type: none"> 1. Energizes permanently connected loads in ≤ 10 seconds; 2. Energizes auto-connected emergency loads through time delay relays, as applicable; 3. Achieves steady state voltage ≥ 3910 V and ≤ 4400 V; 4. Achieves steady state frequency ≥ 59.4 Hz and ≤ 60.5 Hz; and 5. Supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes. 	<p>24 months</p>