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

April 10, 2006

AEP:NRC:6381
10 CFR 50.91(a)(5)

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

**SUBJECT: Donald C. Cook Nuclear Plant Unit 1 and Unit 2
Docket Nos. 50-315 and 50-316
License Amendment Request to Increase Voltage Limit for Emergency
Diesel Generator Load Rejection Surveillance Test**

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant Unit 1 and Unit 2, proposes to amend Facility Operating Licenses DPR-58 and DPR-74. I&M proposes to increase the voltage limit for the emergency diesel generator (DG) full load rejection Technical Specification (TS) Surveillance Requirement (SR). The proposed amendment is being requested on an emergency basis for Unit 2, pursuant to 10 CFR 50.91(a)(5). The proposed amendment is not being requested on an emergency basis for Unit 1.

The current TS SR requires verification, at least once per 24 months, that DG voltage is maintained less than or equal to (\leq) 5000 volts following a full load rejection. The basis for this requirement is to provide DG damage protection following a full load rejection. The 5000 volt limit was exceeded during a performance of the SR for the Unit 2 AB DG on March 26, 2006. A series of component replacements, re-tuning of the voltage regulator, and retesting of the DG have not resulted in test results that meet the \leq 5000 volt criteria. Based on engineering review and consultation with the vendor, I&M believes that the DG, including the voltage regulator, is performing as designed. I&M has determined that the basis for the \leq 5000 volt criteria, DG damage protection, can be maintained with a higher voltage limit. Accordingly, I&M is proposing a license amendment to increase the voltage limit for the DG load rejection surveillance test.

Enclosure 1 to this letter provides an affirmation affidavit pertaining to the proposed amendment. Enclosure 2 provides a detailed description and safety analysis to support the proposed amendment, including justification for approving the amendment on an emergency basis, an evaluation of significant hazards considerations pursuant to 10 CFR 50.92(c), and an environmental assessment. Attachments 1A and 1B provide TS pages marked to show changes

A001

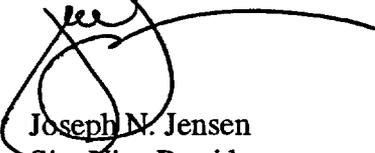
for Unit 1 and Unit 2, respectively. Attachments 2A and 2B provide TS pages with the proposed changes incorporated.

I&M requests approval of the proposed amendment for Unit 2 by April 12, 2006, to preclude a delay in the return to operation following the current Unit 2 refueling outage. I&M requests approval of the proposed amendment for Unit 1 by September 8, 2006, to allow use of the higher limit for Unit 1 DG testing during the fall 2006 refueling outage.

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 new regulatory commitments in this letter. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Supervisor, at (269) 466-2649.

Sincerely,



Joseph N. Jensen
Site Vice President

JRW/dmb

Enclosures:

1. Affirmation.
2. Application for License Amendment Request to Increase Voltage Limit for Emergency Diesel Generator Load Rejection Surveillance Test.

Attachments:

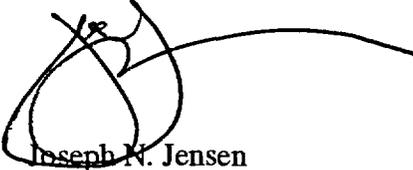
- 1A. Donald C. Cook Nuclear Plant Unit 1 Technical Specification Pages Marked To Show Changes.
- 1B. Donald C. Cook Nuclear Plant Unit 2 Technical Specification Pages Marked To Show Changes.
- 2A. Donald C. Cook Nuclear Plant Unit 1 Technical Specification Pages With the Proposed Changes Incorporated.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

AFFIRMATION

I, Joseph N. Jensen, being duly sworn, state that I am 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 10 DAY OF April, 2006



Notary Public

My Commission Expires Apr. 4, 2008

DANIELLE M. BURGOYNE
Notary Public, State of Michigan
County of Berrien
My Commission Expires Apr. 4, 2008
Acting in the County of Berrien

Enclosure 2 to AEP:NRC:6381

APPLICATION FOR LICENSE AMENDMENT REQUEST TO INCREASE VOLTAGE LIMIT FOR EMERGENCY DIESEL GENERATOR LOAD REJECTION SURVEILLANCE TEST

1.0 DESCRIPTION

Pursuant to 10 CFR 50.90, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP) Unit 1 and Unit 2, proposes to amend Facility Operating Licenses DPR-58 and DPR-74. I&M proposes to increase the voltage limit for the emergency diesel generator (DG) full load rejection Technical Specification (TS) surveillance test. The proposed amendment is being requested on an emergency basis for Unit 2 pursuant to 10 CFR 50.91(a)(5). The proposed amendment is not being requested on an emergency basis for Unit 1.

2.0 PROPOSED CHANGE

The proposed change would increase the TS Surveillance Requirement (SR) 3.8.1.11 limit on maximum voltage following a DG full load rejection from a value of less than or equal to (\leq) 5000 to a value of \leq 5350 volts.

Attachments 1A and 1B to this letter 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.

3.0 BACKGROUND

Description of Events

Existing TS SR 3.8.1.11 requires verification, at least once per 24 months, that each DG does not trip and voltage is maintained \leq 5000 volts during and following a full load rejection, i.e., rejection of a load greater than or equal to (\geq) 3150 kilowatts (kW) and \leq 3500 kW. The basis for the 5000 volt limit is DG damage protection. During a performance of SR 3.8.1.11 for the Unit 2 AB DG on March 26, 2006, the maximum measured voltage was 4993 volts. Adding the 55 volt instrument uncertainty margin to the measured values resulted in a test value, 5048 volts, which exceeded the 5000 volt TS criterion.

The voltage regulator was replaced and "tuned" to optimize the system response. The full load rejection test was reperfomed on April 8, 2006. During this test, the peak measured voltage reached 5105 volts, again exceeding the test criterion. Additional voltage regulator tuning was initiated. While performing the tuning, an abnormal voltage regulator response was observed when shifting to manual voltage control. Based on troubleshooting results, the transfer switch

contacts were replaced. Tuning was recommenced on April 9, 2006, and was terminated when manual voltage control did not respond as expected.

Subsequently, the manual voltage regulator card was replaced and voltage regulator tuning was successfully completed. A full load rejection test was performed on April 9, 2006, resulting in a maximum measured DG output voltage of 5042 volts. The voltage regulator was re-tuned and another full load rejection was performed. The maximum measured voltage was 5049 volts, again exceeding the acceptance criterion. After consulting with the vendor, it was determined that the regulator was functioning as designed and that additional tuning would have no impact on the ability to meet the acceptance criterion.

Reason for Requesting Amendment

I&M believes that the Unit 2 AB DG is functioning as designed. A higher voltage limit is needed to accommodate normal variations in grid conditions that cannot be controlled by CNP personnel. These variations in grid conditions are illustrated by the following table showing the conditions that existed for previous performances of DG full load rejection testing and the conditions that existed for the Unit 2 AB DG full load rejection testing described above.

DG	Test date	Outage	Initial Voltage	Peak Voltage
1AB	4/17/2005	U1C20	4120	4473
1CD	4/26/2005	U1C20	4100	4443
2CD	10/28/2004	U2C15	4113	4347
2AB	10/17/2004	U2C15	4105	4268
2AB	3/26/2006	U2C16	4150	4993
2AB	4/8/2006	U2C16	4201	5105
2AB	4/9/2006	U2C16	4145	5049

As described below, a higher voltage limit would continue to fulfill the basis for the voltage criteria. Accordingly, I&M is proposing a license amendment to increase the voltage limit for the DG full load rejection surveillance test.

Basis for Current TS SR Requirements

TS SR 3.8.1.11 demonstrates the DG capability to reject a full load (90% to 100% of the DG continuous rating) without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This SR ensures proper DG load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide for DG damage protection. While the DG is not expected to experience this transient

during an event, the SR requirements ensure that the DG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

The existing 5000 volt limit in TS SR 3.8.1.11 is a standard industry value as indicated in NUREG 1431. This value was incorporated in the CNP TS as part of the conversion to improved standard technical specifications in September 2005. I&M believed that the 5000 volt limit would be readily achievable based on the 2004 testing identified in the above table. This was the only previous DG full load rejection testing conducted prior to the conversion to improved standard technical specifications. The previous TS did not specify a voltage limit for the DG full load rejection test SR.

Reason the Amendment is Requested on an Emergency Basis

Regulation 10 CFR 50.91(a)(5) states that where the U. S. Nuclear Regulatory Commission (NRC) finds that an emergency situation exists, in that failure to act in a timely way would result in derating or shutdown of a nuclear power plant, or in prevention of either resumption of operation, or of increase in power output up to the plant's licensed power level, it may issue a license amendment involving no significant hazards consideration without prior notice and opportunity for a hearing or for public comment. The regulation requires that a licensee requesting an emergency amendment explain why the emergency situation occurred and why the licensee could not avoid the situation. As explained below, an emergency amendment is needed to allow resumption of Unit 2 operation, and I&M could not have reasonably avoided the situation or made timely application for an amendment.

Reason Emergency Situation Has Occurred

The emergency situation resulted from the unexpectedly high voltage following a full load rejection during performance of a TS SR with the Unit 2 reactor defueled for a scheduled refueling outage. Successful completion of the SR is required to establish operability of the Unit 2 AB DG. The Unit 2 CD DG has been removed from service to perform required inspection and maintenance. Operability of the Unit 2 AB DG is required, in accordance with TS 3.8.2, to commence the fuel movements needed to reload fuel into the Unit 2 reactor. These fuel movements are currently planned to commence the morning of April 12, 2006. These fuel movements are on the critical path for restoring Unit 2 to operation. Neither a routine nor an exigent amendment can be processed prior to April 12, 2006. Therefore, an emergency amendment is requested for Unit 2 to allow resumption of scheduled Unit 2 operation. The proposed amendment is not being requested on an emergency basis for Unit 1.

Reason the Situation Could Not Have Been Avoided

The failure of the Unit 2 AB DG to maintain voltage ≤ 5000 volts following a full load rejection was unexpected since voltage had remained below this value during previous full load rejection tests of all four Unit 1 and Unit 2 DGs.

I&M therefore considers that there is sufficient justification for requesting the proposed license amendment on an emergency basis.

4.0 TECHNICAL ANALYSIS

The proposed amendment to increase the TS SR limit on maximum voltage following a DG full load rejection is in accordance with the basis for the test as described above under "Basis for Current TS SR Requirements." The intent of the acceptance criteria is to provide for DG damage protection. As described below, I&M has determined that an increased value for the limit would still provide DG damage protection.

Voltage overshoot following a full load rejection is a transient condition typically lasting for only a few seconds, with the peak voltages lasting for a much shorter period. The DG control components quickly reduce excitation and return voltage to its normal control point. The DG full load rejection tests show that the maximum voltage was present for approximately two cycles. Components subjected to these transient voltages include the generator, the cables that connect the DG to the safety buses, the 4160 volt switchgear, and the DG control components. The effect of an increased voltage limit on these components was analyzed as described below.

Generator

The factory hi-potential (hi-pot) test value for the DG is $2E + 1000$ volts, where E is the rated line-to-line voltage of the machine. The CNP DGs are rated 4160 volts. Therefore, the factory ac hi-pot test value is 9320 volts. For initial field testing, the vendor recommends the test be conducted at 75 percent of this value, or 6990 volts. After initial testing and generator service or repair, the vendor recommends a test value of $1-1/4E + 500$ volts. This equates to 5700 volts.

Cables

Cables used in the 4160 volt system at CNP are rated at a nominal 5 kilovolts. Electric Power Research Institute (EPRI) guidance for factory hi-pot tests recommends a five minute, 13 kilovolt test for 5 kilovolt rated cables. The EPRI guidance indicates a typical maintenance hi-potential test value of 60 percent of the factory value, or 7800 volts. The DG control cable is rated at a minimum of 600 volts, which provides acceptable margin over the 163 volt value which would result from a DG voltage of 5700 volts.

Switchgear

A review of industry standards applicable at the time CNP was constructed shows that the insulation withstand capability of 4kV rated breakers significantly exceeds 5700 volts. Accordingly, the 4kV breakers and switchgear are not limiting with respect to peak voltage during a full load rejection.

Control Components

I&M's analysis determined that the most limiting control system component required to function for operation of the DG is the voltage regulator. Discussions with the vendor determined that the voltage transient that would result from a short term DG output voltage of 5700 volts would not prevent the voltage regulator from fulfilling its safety function, although its service life could be shortened.

As described above, I&M has determined that the DG and associated components can withstand a transient resulting from a short DG output voltage transient of 5700 volts. To provide added margin, I&M is proposing that the TS SR 3.8.1.11 limit be changed to ≤ 5350 volts.

5.0 REGULATORY SAFETY ANALYSIS

No Significant Hazards Consideration

Indiana Michigan Power Company (I&M) has evaluated whether or not a significant hazards consideration is involved with the proposed change 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

Probability of Occurrence of an Accident Previously Evaluated

The proposed change is an increase in the Technical Specification (TS) Surveillance Requirement (SR) limit on maximum voltage following an emergency diesel generator (DG) full load rejection. The DGs' safety function is solely mitigative and is not needed unless there is a loss of offsite power. The DGs do not affect any accident initiators or precursors of any accident previously evaluated. The proposed increase in the TS SR limit does not affect the DGs' interaction with any system whose failure or malfunction can initiate an accident. Therefore, the probability of occurrence of an accident previously evaluated is not significantly increased.

Consequences of an Accident Previously Evaluated

The DG safety function is to provide power to safety related components needed to mitigate the consequences of an accident following a loss of offsite power. The purpose of the TS SR voltage limit is to assure DG damage protection following a full load rejection. The technical analysis performed to support this proposed amendment has demonstrated that the DGs can withstand voltages above the new proposed limit without a loss of protection. The proposed higher limit will continue to provide assurance that the DG is protected, and the safety function of the DG will be unaffected by the proposed change. Therefore, the consequences of an accident previously evaluated will not be significantly increased.

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

Response: No

There are no new DG failure modes created and the DGs are not an initiator of any new or different kind of accident. The proposed increase in the TS SR limit does not affect the interaction of the DGs with any system whose failure or malfunction can initiate an accident. 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 margins of safety applicable to the proposed change are those associated with the ability of the DGs to perform their safety function. The technical analysis performed to support this amendment demonstrates that this ability will be unaffected. The increase in the TS SR limit will not affect this ability. Therefore, the proposed change does not involve a significant reduction in margin of safety.

In summary, based upon the above evaluation, I&M has concluded that the proposed change involves 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.

6.0 ENVIRONMENTAL CONSIDERATIONS

I&M has evaluated this license amendment request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. I&M 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 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(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment needs to be prepared concerning the proposed amendment.

7.0 REFERENCES

1. Letter from V. L. Rooney, NRC, to J. F. Opeka, Northeast Nuclear Energy Company, "Issuance of Amendment (TAC No. M91285)," dated May 1, 1995.
2. Letter from J. C. Stone, NRC, to S. E. Miltenberger, Public Service Electric and Gas Company, "Increase Voltage Limit when Performing Emergency Diesel Generator Full Load Rejection Test, Hope Creek Generating Station (TAC No. M86473)," dated February 4, 1994.
3. Letter from D. E. Labarge, NRC, to M. O. Medford, Tennessee Valley Authority, "Issuance of Amendments (TAC Nos. M85950 and M85951) (TS 93-03)," dated August 27, 1993.

8.0 PRECEDENTS

The NRC has approved similar amendments, on a non-emergency basis, for the Millstone 3, Hope Creek, and Sequoyah 1 and 2 nuclear power plants in References 1, 2, and 3.

Attachment 1A to AEP:NRC:6381

**DONALD C. COOK NUCLEAR PLANT UNIT 1 TECHNICAL SPECIFICATION PAGES
MARKED TO SHOW CHANGES
3.8.1-10**

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11</p> <p style="text-align: center;">-----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not normally be performed in MODE 1 or 2. 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. 2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.86. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. <p>-----</p> <p>Verify each DG does not trip and voltage is maintained ≤ 5000 5350 V during and following a load rejection of ≥ 3150 kW and ≤ 3500 kW.</p>	<p>24 months</p>

Attachment 1B to AEP:NRC:6381

**DONALD C. COOK NUCLEAR PLANT UNIT 2 TECHNICAL SPECIFICATION PAGES
MARKED TO SHOW CHANGES
3.8.1-10**

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11</p> <p style="text-align: center;">-----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not normally be performed in MODE 1 or 2. 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. 2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.86. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. <hr/> <p>Verify each DG does not trip and voltage is maintained ≤ 5000 3350 V during and following a load rejection of ≥ 3150 kW and ≤ 3500 kW.</p>	<p>24 months</p>

Attachment 2A to AEP:NRC:6381

**DONALD C. COOK NUCLEAR PLANT UNIT 1 TECHNICAL SPECIFICATION PAGES
WITH THE PROPOSED CHANGES INCORPORATED
3.8.1-10**

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11</p> <p style="text-align: center;">NOTES</p> <ol style="list-style-type: none"> 1. This Surveillance shall not normally be performed in MODE 1 or 2. 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. 2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.86. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. <hr/> <p>Verify each DG does not trip and voltage is maintained ≤ 5350 V during and following a load rejection of ≥ 3150 kW and ≤ 3500 kW.</p>	<p>24 months</p>

Attachment 2B to AEP:NRC:6381

**DONALD C. COOK NUCLEAR PLANT UNIT 2 TECHNICAL SPECIFICATION PAGES
WITH THE PROPOSED CHANGES INCORPORATED
3.8.1-10**

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.11</p> <p style="text-align: center;">-----NOTES-----</p> <ol style="list-style-type: none"> 1. This Surveillance shall not normally be performed in MODE 1 or 2. 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. 2. If performed with DG synchronized with offsite power, it shall be performed at a power factor ≤ 0.86. However, if grid conditions do not permit, the power factor limit is not required to be met. Under this condition the power factor shall be maintained as close to the limit as practicable. <p>-----</p> <p>Verify each DG does not trip and voltage is maintained ≤ 5350 V during and following a load rejection of ≥ 3150 kW and ≤ 3500 kW.</p>	<p>24 months</p>