

**MAR 13 2006**

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10 CFR 50.90

U S Nuclear Regulatory Commission  
ATTN: Document Control Desk  
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Prairie Island Nuclear Generating Plant Unit 2  
Docket 50-306  
License No. DPR-60

License Amendment Request (LAR) to Reduce Monthly Test Load for Emergency Diesel Generators (EDGs) D5 and D6

Pursuant to 10 CFR 50.90, the Nuclear Management Company, LLC (NMC) hereby requests an amendment to the TS for the Prairie Island Nuclear Generating Plant (PINGP) Unit 2 to reduce the monthly test load for EDG D5 and D6. The proposed changes involve revision of the surveillance test load in Technical Specification (TS) 3.8.1, "AC Sources – Operating," Surveillance Requirement (SR) 3.8.1.3. This LAR proposes to revise SR 3.8.1.3 to require testing D5 and D6 monthly at or above 4000 kW to demonstrate TS operability. In addition to the TS required testing, NMC will continue monthly operation at or above 90% of the EDG rated load to assist in early identification of degraded EDG capabilities which could prevent performance of their safety function. NMC has evaluated the proposed changes in accordance with 10 CFR 50.92 and concluded that they involve no significant hazards consideration.

Exhibit A contains the licensee's evaluation of this LAR. Exhibit B provides a markup of the TS page and Bases. Exhibit C provides the retyped TS page.

NMC requests approval of this LAR within one year of the submittal date. Upon NRC approval, NMC requests 30 days to implement the associated changes. In accordance with 10 CFR 50.91, NMC is notifying the State of Minnesota of this LAR by transmitting a copy of this letter and attachments to the designated State Official.

Summary of Commitments

This letter contains a new commitment in Exhibit D and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.  
Executed on **MAR 13 2006**



Thomas J. Palmisano  
Site Vice President, Prairie Island Nuclear Generating Plant Units 1 and 2  
Nuclear Management Company, LLC

cc: Administrator, Region III, USNRC  
Project Manager, Prairie Island, USNRC  
Resident Inspector, Prairie Island, USNRC  
State of Minnesota

Exhibits:

- A. Licensee's Evaluation
- B. Proposed Technical Specification and Bases Changes (markup)
- C. Proposed Technical Specification Changes (retyped)
- D. List of Commitments

## Exhibit A

### LICENSEE'S EVALUATION

#### License Amendment Request (LAR) to Reduce Monthly Test Load for Emergency Diesel Generators (EDGs) D5 and D6

1. DESCRIPTION
2. PROPOSED CHANGE
3. BACKGROUND
4. TECHNICAL ANALYSIS
5. REGULATORY SAFETY ANALYSIS
  - 5.1 No Significant Hazards Consideration
  - 5.2 Applicable Regulatory Requirements/Criteria
6. ENVIRONMENTAL CONSIDERATION
7. REFERENCES

#### 1.0 DESCRIPTION

This LAR is a request to amend Operating License DPR-60 for Prairie Island Nuclear Generating Plant (PINGP) Unit 2.

The Nuclear Management Company, LLC (NMC) requests Nuclear Regulatory Commission (NRC) review and approval of proposed revisions to TS 3.8.1, "AC Sources - Operating" Surveillance Requirement (SR) 3.8.1.3. The proposed changes will reduce the required monthly test loading on the Unit 2 Emergency Diesel Generators (EDGs), D5 and D6, which demonstrates Technical Specification (TS) operability. The proposed SR loading envelopes the loading these EDGs are required to supply to perform their safety function. As part of the basis for reducing the SR 3.8.1.3 test loading, NMC also proposes to continue testing of the Unit 2 EDGs at or above 90% of their rated loading on a schedule consistent with SR 3.8.1.3 and resolve any degradation through the corrective action and maintenance programs.

#### 2.0 PROPOSED CHANGE

A brief description of the associated proposed TS and TS Bases changes is provided below along with a discussion of the justification for each change. The specific wording changes to the TS and Bases are provided in Exhibits B and C.

##### **TS LCO 3.8.1, "AC Sources – Operating", SR 3.8.1.3 and associated Bases:**

Currently, SR 3.8.1.3 requires monthly testing of D5 and D6 monthly at loadings  $\geq 5100$  kW and  $\leq 5300$  kW. This LAR proposes to require monthly testing at loadings  $\geq 4000$  kW. This proposed test loading is acceptable because it will demonstrate that these

diesels are operable and capable of supplying the loads necessary to perform their safety function.

The Bases will also be revised where necessary to support these changes. Although the Bases changes are not a part of this LAR, marked up Bases pages are included for information.

### **3.0 BACKGROUND**

Originally, the two PINGP units were built with two EDGs, D1 and D2, to supply the onsite power sources for the safeguards buses for both units. In the early 1990's in response to the station blackout (SBO) rule, 10CFR 50.63, "Loss of All Alternating Current Power", EDGs D5 and D6 were installed to supply the onsite power source for the Unit 2 safeguards buses.

#### Technical Description of D5 and D6

The Unit 2 Emergency Diesel Generators consist of two tandem-drive units (gensets) manufactured by Societe Alsacienne de Constructions Mecaniques de Mulhouse (SACM), each rated at 5400 KW continuous (8750 hour basis), 0.8 power factor, 1200 rpm, 4160V, 3-phase, 60 Hertz. Each engine is a SACM UD45 V-16, four-cycle diesel engine, that is, the 5400 kW generator is driven by two V-16 engines which share the load with a common electronic governor system. Subsequent to the purchase of D5 and D6, Wärtsilä bought the SACM company; thus, the engine vendor in the remainder of this LAR will be referred to as Wärtsilä SACM.

Since D5 and D6 were placed into service in early 1993, they have experienced EDG operating issues during some of their TS required surveillance tests, including monthly tests, which has resulted in engine shutdown by the plant operators prior to completion of the surveillance test. In April 2001, June 2004 and April 2005, surveillance tests of D5 or D6 were suspended due to high engine crankcase pressure and corrective maintenance was commenced to replace suspect cylinder liners and other degraded engine components. In February 2006, following scheduled maintenance, D6 "return to service" testing was also suspended due to high crankcase pressure and corrective maintenance was commenced to replace suspect cylinder liners and other degraded engine components. Three of these events required shutdown of Unit 2 to perform the required corrective maintenance.

In all of these events, crankcase pressure has only been an issue at or near the rated load. Whenever the load has been reduced (to near 4000 kW) crankcase pressure has returned to normal operating values. This includes the event in 2001 on D6 when cylinder liner degradation was most severe.

In 2005, NMC became aware of Wärtsilä SACM guidance to limit the sump oil level while the DGs are in standby and during engine operation. Reduced sump oil level improves the engine crankcase breather performance and eliminates a source of high crankcase pressure. Implementation of this guidance required changing setpoints of the lube oil sump level alarm switches on the PINGP SACM EDGs which required taking the EDGs out of service. In February 2006, NMC implemented the setpoint changes on the PINGP SACM EDGs to correct the lube oil sump level alarm switches settings. With these changes, NMC has incorporated the Wärtsilä SACM guidance into the D5 and D6 sump oil level setpoints and operating procedures.

### Licensing Precedent

SACM diesel generators are used in many applications throughout the world including many at nuclear power plants in France. It is NMC's understanding that there is only one other nuclear power plant in the United States that uses the SACM UD45 tandem diesel generators (DGs), the Calvert Cliffs Nuclear Power Plant (CCNPP). CCNPP installed two SACM UD45 DGs rated at 5400 kW of which one is an EDG and the other is the SBO alternate AC source required by 10 CFR 50.63 for both units.

The SACM diesel generators were incorporated into the CCNPP licensing basis through an LAR dated November 1, 1995 (Reference 1) the NRC Safety Evaluation dated April 2, 1996 (Reference 2). In Reference 1, CCNPP management proposed monthly testing of the SACM EDG at the loading of 4000 kW based on approximately 3400 kW of plant safety related loads and 566 kW necessary to support operation of the SACM EDG. The LAR provided the following support for this test loading:

Number 1A [SACM] EDG, with a continuous rating of 5400 kW, is capable of providing considerably more power than the 4000 kW proposed minimum test loading. As the Surveillance Requirements are intended to demonstrate the operability of the EDGs by ensuring that they are capable of providing a reliable source of power to mitigate the consequences of an accident, and shut down the unit following an accident, the acceptance criteria for the monthly surveillance for No. 1A [SACM] EDG will be 4000 kW. However, testing will normally be performed between 90 and 100 percent of the EDG's continuous rating, but the EDG will not necessarily be considered inoperable per the Technical Specifications unless it fails to maintain 4000 kW, which would indicate that the EDG would not be capable of performing its safety function. Any degradation in the EDG's performance between the continuous rating (5400 kW) and the capacity needed to perform the safety function (4000 kW) will be evaluated under BGE's [Baltimore Gas and Electric Company] [CCNPP owner and operator in 1995] corrective action program, and corrected under the maintenance program, which incorporates trending capabilities.

The NRC stated in Reference 2, page 3 of the Safety Evaluation:

The continuous rating of [SACM] EDG 1A is 5400 kW. The licensee stated that the proposed minimum test loading of 4000 kW for [SACM] EDG 1A is based on a maximum accident loading analysis. The licensee further stated that since the surveillance requirements are intended to demonstrate the operability of the EDGs by ensuring that they can provide a reliable source of power to mitigate the consequences of an accident and shut down the unit after an accident, the acceptance criterion for the monthly surveillance for [SACM] EDG 1A will be 4000 kW. However, the testing will normally be performed at between 90 percent and 100 percent of the EDG's continuous rating. The EDG will not be considered inoperable per TSs unless it fails to maintain a 4000 kW load, indicating that it may not be capable of performing its safety function. Any degradation in the EDG's performance between the continuous rating (5400 kW) and the capacity needed to perform the safety function (4000 kW) will be evaluated under the corrective action program and corrected under the maintenance program, which incorporated trending capabilities.

The NRC concluded in Reference 2, page 14 of the Safety Evaluation:

The staff agrees with the licensee that the proposed TSs will, as detailed above, adequately demonstrate the EDG's ability to perform their SR [safety related] function which is to provide a reliable source of electrical power to the SR buses that is necessary to power accident mitigation equipment if offsite power is unavailable. The staff has further determined that the proposed TSs are an improvement over the existing TSs, reflect the reconfiguration of the electrical system and account for the design differences in the EDGs. Therefore, we find the proposed changes to the TSs acceptable.

### Conclusions

CCNPP performs their SACM EDG TS surveillance at a loading which envelopes its safety function loading and determines its operability at that loading. CCNPP also normally tests their SACM EDG at loads above 90% rated loading and trends the results.

NMC has recently made physical changes to the SACM EDGs such that future operation will be consistent with the manufacturer's recommendations. This LAR proposes TS surveillance test changes similar to those required by the CCNPP TS for their SACM EDG. Specifically, this LAR proposes TS and Bases changes to require Unit 2 EDG monthly surveillance testing to be performed at or above 4000 kW to demonstrate TS operability. NMC will continue to test the Unit 2 EDGs at or above 90% of their rated load to assure that adverse operating conditions do not develop which could prevent performance of their safety function.

## **4.0 TECHNICAL ANALYSIS**

PINGP is a two unit plant located on the right bank of the Mississippi River approximately 6 miles northwest of the city of Red Wing, Minnesota. The facility is owned by the Northern States Power Company (NSP) and operated by NMC. Each unit at PINGP employs a two-loop pressurized water reactor designed and supplied by Westinghouse Electric Corporation. The initial PINGP application for a Construction Permit and Operating License was submitted to the Atomic Energy Commission (AEC) in April 1967. The Final Safety Analysis Report (FSAR) was submitted for application of an Operating License in January 1971. Unit 1 began commercial operation in December 1973 and Unit 2 began commercial operation in December 1974.

The PINGP was designed and constructed to comply with NSP's understanding of the intent of the AEC General Design Criteria (GDC) for Nuclear Power Plant Construction Permits, as proposed on July 10, 1967. PINGP was not licensed to NUREG-0800, "Standard Review Plan (SRP)." Since EDGs D5 and D6 were added to the plant in the early 1990's, the SRP was invoked on some aspects of their design as specified in the project design report, Reference 3.

Current TS 3.8.1, "AC Sources – Operating", SR 3.8.1.3 requirements and basis

SR 3.8.1.3 requires that every 31 days:

Verify each DG is synchronized and loaded and operates for  $\geq 60$  minutes at a load:

- a. Unit 1;  $\geq 1650$  kW; and
- b. Unit 2;  $\geq 5100$  kW and  $\leq 5300$  kW.

The Unit 1 EDG test load was established in license amendments 91 and 84 for PINGP Units 1 and 2, respectively, dated October 27, 1989. The LAR dated March 17, 1986 which provided the basis for these license amendments stated, "The requirement to load the engine to 1650 kW will conform to the manufacturer's recommendation to load the engine to at least 60% of rated load . . ."

License amendments 103 and 96 for PINGP Units 1 and 2, respectively, dated December 17, 1992 (Reference 4), approved use of D5 and D6 and issued revised TS pages which required monthly testing at the loads  $\geq 5100$  kW and  $\leq 5300$  kW. The NRC Safety Evaluation basis for this load range was:

Proposed changes to TS Sections 4.6.A.1.e, 4.6.A.2.c and 4.6.A.3.c will invoke new requirements for monthly, semi-annual, and 18-month surveillance testing for Unit 2 EDG to assure that the EDG have the capability to start, accelerate to synchronous speed, and accept load. They involve loading each Unit 2 EDG to between a minimum of 5100 kW and a maximum of 5300 kW. The minimum 5100 kW test load has been chosen to assure that either Unit 2 EDG has the capacity and the capability to assume the maximum auto-connected load for Unit 2. The maximum 5300 kW test load in TS Sections 4.6.A.1.e, 4.6.A.2.c and 4.6.A.3.c also corresponds to the load proposed for the TS surveillance Section

4.6.A.3.b.3. It is noted that, although 5100 kW is not the continuous rating of the Unit 2 EDG, it is significantly above the maximum auto-connected load. The current maximum auto-connected load is more than 100 kW under the 5100 kW minimum test load for the Unit 2 EDG. Therefore, the proposed TS Section 4.6.A.3.b.3 requirement to verify that the auto-connected loads do not exceed 5100 kW for each Unit 2 EDG is conservative.

(TS Sections 4.6.A.1.e and 4.6.A.3.c provided TS requirements for monthly and 18-month surveillance testing which the Improved TS (ITS) conversion license amendment translated into approximately equivalent requirements in SR 3.8.1.2, SR 3.8.1.3 and SR 3.8.1.9. TS Section 4.6.A.2.c semi-annual load testing requirements were removed from TS during ITS conversion. TS Section 4.6.A.3.b.3 requirements, for verification of the auto-connected loads every 18 months, were removed from TS prior to ITS conversion.)

The NRC Staff Safety Evaluation concluded:

The licensee's proposed TS operability and surveillance requirements for the new D5 and D6 diesel generator have been evaluated for conformance with the staff criteria of the Standard Technical Specifications (STS). They have been found to conform to this guidance with the exception noted above relating to testing at less than the rated continuous load. This exception is acceptable to the staff based on the large margin between the emergency load requirement and the test load.

Neither the NRC Staff Safety Evaluation nor the supporting LAR, dated March 20, 1992, cited specific regulatory guidance for selecting the SR test loads. For the purpose of completeness, NMC notes that a design report, Reference 3, for the addition of EDGs D5 and D6 was supplied to the NRC by letter dated December 23, 1991; the design report cited applicable regulatory guidance and standards which were the basis for D5 and D6 design criteria and acceptance testing; and, the LAR dated March 20, 1992 referenced the design report.

#### Proposed SR 3.8.1.3 changes and benefits

This LAR proposes to revise the Unit 2 EDG monthly surveillance testing requirement from the range greater than or equal to 5100 kW and less than or equal to 5300 kW to greater than or equal to 4000 kW. The revised SR 3.8.1.3 would state:

Verify each DG is synchronized and loaded and operates for  $\geq 60$  minutes at a load:

- a. Unit 1;  $\geq 1650$  kW; and
- b. Unit 2;  $\geq 4000$  kW.



NMC proposes that testing for TS operability at 4000 kW will adequately demonstrate that the EDGs have the capacity and the capability to assume the maximum auto-connected load.

Through this LAR, NMC proposes a better method for managing EDG operating events. Continuing to remove these engines from service for unnecessary repairs increases plant vulnerability instead of decreasing vulnerability. The proposed TS operability testing at or above 4000 kW will allow resolution of EDG issues through the corrective action program and maintenance program in a deliberate planned fashion instead of removing the engines from service for each emergent EDG operating event.

NMC also proposes to continue testing the Unit 2 EDGs at, or near, full load for trending purposes. The corrective action process will be used to evaluate abnormal trends identified during operation above the SR required test loading and schedule repairs without unnecessary forced EDG and plant outages.

Continued surveillance testing at near full load (>90% rated loading) will continue to identify abnormal trends in engine health which can be addressed using the corrective action program and the normal work control process. Due to the recent February 2006 modifications of the sump oil level alarms, future monitoring of high crankcase pressure should more accurately provide indications of true engine health concerns, such as, piston ring and liner degradation causing blow-by.

NMC also anticipates that the Unit 2 plant availability may be increased by avoiding plant shutdown associated with D5 or D6 corrective maintenance for emergent EDG operating issues. With the TS changes proposed in this LAR, Unit 2 EDG issues identified during operation above the required SR loading may be trended and scheduled for resolution during planned EDG maintenance outages or during plant refueling outages if necessary.

#### Technical basis for proposed changes to SR 3.8.1.3

The plant safeguards buses are normally supplied power from offsite sources. The safety function of the EDGs is to supply power to its associated unit during a design basis accident (DBA) concurrent with a loss of offsite power (LOOP). The PINGP EDGs also provide the alternate AC source specified in 10 CFR 50.63 during an SBO in the opposite unit.

If the offsite sources should fail, backup power is provided by two EDGs in each unit sized and connected to serve the engineered safety features equipment of the unit. Each EDG is sized to start and carry the engineered safety features load required for the design basis accident (DBA) and concurrent LOOP. For PINGP Unit 2 the "worst case" loads, provided in the PINGP Updated Safety Analysis Report (USAR) Table 8.4.-2, are 3609 kW.

In addition for PINGP, in the event of an SBO condition, each EDG is capable of

sequentially starting and supplying the LOOP loads for its unit as well as the essential loads of the blacked out unit. The limiting Unit 2 LOOP loads are given in USAR Table 8.4-4. The maximum predicted LOOP-SBO load on D5 or D6 is approximately 3652 kW.

NMC conservatively chose 4000 kW as the proposed Unit 2 EDGs test loading in SR 3.8.1.3 which, as discussed above, is well above the safety function load (3609 kW) and the LOOP-SBO load (3652 kW).

The plant TS include a Limiting Condition for Operation (LCO) for the EDGs under the requirements of 10CFR 50.36(c)(2)(ii) which requires an LCO of a nuclear reactor for an item meeting one or more of the specified criteria. The EDGs meet Criterion 3 because they are components that are part of the primary success path to mitigate a design basis accident. 10CFR 50.36 requires SRs in TS to assure that the LCO will be met. LCO 3.8.1 requires two EDGs to be operable and SR 3.8.1.3 is one of the SRs which demonstrates D5 and D6 are operable. TS Section 1.1 defines TS operability as:

A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).

The proposed 4000 kW test loading is well above the safety function loads on D5 and D6 and the necessary EDG attendant instrumentation, controls, cooling, lubrication and other auxiliary equipment required for the EDGs to perform their safety function loads are also tested at this loading. Thus, testing D5 and D6 at or above 4000 kW will demonstrate that the EDGs are operable within the TS definition of operability. The current test loading of 5100 kW is unnecessarily conservative in that a lower test load will adequately demonstrate EDG operability.

The proposed 4000 kW test loading meets the acceptance criteria that the NRC established when the current PINGP TS SR test loading was approved. The NRC stated in Reference 4 that:

. . . although 5100 kW is not the continuous rating of the Unit 2 EDG, it is significantly above the maximum auto-connected load. The current maximum auto-connected load is more than 100 kW under the 5100 kW minimum test load for the Unit 2 EDG.

NMC has performed testing and analyses that demonstrate that the current maximum auto-connected loads are more than 100 kW under the proposed 4000 kW minimum test loading for the Unit 2 EDGs.

The 4000 kW test loading proposed in this LAR also meets the acceptance criteria that the NRC Staff applied to the CCNPP SACM EDG surveillance test loading. In Reference 2 the NRC Staff stated,

The licensee stated that the proposed minimum test loading of 4000 kW for EDG 1A is based on a maximum accident loading analysis. The licensee further stated that since the surveillance requirements are intended to demonstrate the operability of the EDGs by ensuring that they can provide a reliable source of power to mitigate the consequences of an accident and shut down the unit after an accident, the acceptance criterion for the monthly surveillance for EDG 1A will be 4000 kW.

. . . .

The staff agrees with the licensee that the proposed TSs will, as detailed above, adequately demonstrate the EDG's ability to perform their [safety related] SR function which is to provide a reliable source of electrical power to the [safety related] SR busses that is necessary to power accident mitigation equipment if offsite power is unavailable.

The proposed minimum test loading of 4000 kW for PINGP Unit 2 EDGs is above the maximum accident loading and thus, this proposed test loading will adequately demonstrate the EDGs' ability to perform their safety function.

NMC will continue to operate D5 and D6 at or above 90% rated loading on a schedule consistent with the performance of SR 3.8.1.3 to monitor engine health at, or near, full load. Operation at or above 90% rated power is adequate to identify engine degradation that could jeopardize the ability of the EDG capacity and the capability to assume their auto-connected safety function loads and assume the LOOP-SBO loads. Any degradation in the EDGs' performance between the continuous rating (5400 kW) and the capacity needed to perform the safety function (4000 kW) will be evaluated under NMC's corrective action program, which includes trending capabilities, and corrected under the maintenance program.

For example, crankcase pressure will continue to be one of the parameters which will be monitored. Wärtsilä SACM has provided guidance for normal and abnormal crankcase pressures which is included in PINGP procedures. Following engine overhaul the crankcase pressure is set into the range of 5 to 20 mm H<sub>2</sub>O using the underpressure regulators. Operation with the crankcase pressure in the range from 20 to 40 mm H<sub>2</sub>O is acceptable in accordance with Wärtsilä SACM guidance. However, per PINGP procedures, in this range an Action Request would be written and an evaluation would be performed under the plant's corrective action program.

### Conclusions

This LAR proposes to revise SR 3.8.1.3 testing loading for the Unit 2 EDGs to greater than or equal to 4000 kW. This proposed test loading will assure that both Unit 2 EDGs have the capacity and the capability to assume the maximum auto-connected load for

Unit 2. This test loading also demonstrates that both Unit 2 EDGs have the capacity and the capability to assume the LOOP-SBO loadings. These TS changes are expected to increase the Unit 2 EDG availability by allowing plant management to focus corrective maintenance activities on EDG issues which truly challenge EDG operability. These changes may also increase the Unit 2 plant availability. NMC will continue to operate the Unit 2 EDGs at or near their rated loading to monitor for engine degradation. Issues identified will be trended in the plant corrective action program and corrected under the maintenance program. Operation and maintenance of the Prairie Island Nuclear Generating Plant with the proposed Technical Specification revisions will continue to protect the health and safety of the public.

## **5.0 REGULATORY SAFETY ANALYSIS**

### **5.1 No Significant Hazards Consideration**

The Nuclear Management Company has evaluated whether or not 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 for each of these characterizations:

#### **1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?**

Response: No

This license amendment request proposes to reduce the Prairie Island Nuclear Generating Plant Unit 2 emergency diesel generator's monthly test loading which demonstrates Technical Specification operability. The proposed test load will continue to assure that both Unit 2 emergency diesel generators have the capacity and the capability to assume the maximum auto-connected loads for Unit 2.

The emergency diesel generators are required to be operable in the event of a design basis accident coincident with a loss of offsite power to mitigate the consequences of the accident. They are also the alternate AC source for a station blackout on the other Prairie Island Nuclear Generating Plant unit. The emergency diesel generators are not accident initiators and therefore this change does not involve a significant increase in the probability of an accident previously evaluated.

The accident analyses assume that at least one safeguards bus is provided with power either from the offsite sources or the emergency diesel generators. The Technical Specification changes proposed in this license amendment request will continue to assure that both Unit 2 emergency diesel generators have the

capacity and the capability to assume the maximum auto-connected loads for Unit 2. Thus, the changes proposed in this license amendment request do not involve a significant increase in the consequences of an accident previously evaluated.

The changes proposed in this license amendment do not involve a significant increase the probability or consequences of an accident previously evaluated.

**2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?**

Response: No

This license amendment request proposes to reduce the Prairie Island Nuclear Generating Plant Unit 2 emergency diesel generator's monthly test loading which demonstrates Technical Specification operability. The proposed test load will continue to assure that both Unit 2 emergency diesel generators have the capacity and the capability to assume the maximum auto-connected loads for Unit 2.

The proposed Technical Specification changes do not involve a change in the plant design, system operation, or the use of the emergency diesel generators. The proposed changes allow the emergency diesel generator to be tested at a reduced load which envelopes the required safety function loads and continues to demonstrate the capability and capacity of the emergency diesel generators to perform their required functions. There are no new failure modes or mechanisms created due to testing the emergency diesel generators at the proposed test loading. Testing of the emergency diesel generators at the proposed test loading does not involve any modification in the operational limits or physical design of plant systems. There are no new accident precursors generated due to the proposed test loading.

The Technical Specification changes proposed in this license amendment do not create the possibility of a new or different kind of accident from any previously evaluated.

**3. Do the proposed changes involve a significant reduction in a margin of safety?**

Response: No

This license amendment request proposes to reduce the Prairie Island Nuclear Generating Plant Unit 2 emergency diesel generator's monthly test loading which demonstrates Technical Specification operability. The proposed test load will continue to assure that both Unit 2 emergency diesel generators have the

capacity and the capability to assume the maximum auto-connected loads for Unit 2.

The proposed Technical Specification changes will continue to demonstrate that the emergency diesel generators meet the Technical Specification definition of operability, that is, the proposed testing will demonstrate that the emergency diesel generators will perform their safety function and the necessary emergency diesel generator attendant instrumentation, controls, cooling, lubrication and other auxiliary equipment required for the emergency diesel generators to perform their safety function loads are also tested at this loading. The proposed testing will also continue to demonstrate the capability and capacity of the emergency diesel generators to supply the required Unit 2 loss of offsite power coincident with Unit 1 station blackout loads. Since the proposed surveillance testing will continue to demonstrate operability, and the capability and capacity to supply their required Unit 2 loss of offsite power coincident with Unit 1 station blackout loads, the proposed Technical Specification changes do not involve a significant reduction in a margin of safety.

The Technical Specification changes proposed in this license amendment do not involve a significant reduction in a margin of safety.

Based on the above, the Nuclear Management Company 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**

Title 10 Code of Federal Regulations 50.36, "Technical specifications":

(c) Technical specifications will include items in the following categories:

(3) *Surveillance requirements.* Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met.

This license amendment request proposes changes to surveillance requirements (SR) 3.8.1.3 relating to testing to assure that the necessary quality of the Unit 2 emergency diesel generators is maintained and that the limiting conditions for operation will be met. The Technical Specification limiting conditions for operation requires two emergency diesel generators to be operable. SR 3.8.1.3 fulfills the requirements of this regulation by demonstrating that the emergency diesel generators meet the Prairie Island Nuclear Generating Plant Technical Specification definition for operability which states:

A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instrumentation, controls, normal or emergency electrical power, cooling and seal water, lubrication, and other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its specified safety function(s) are also capable of performing their related support function(s).

This license amendment request proposes to revise SR 3.8.1.3 to require testing the Unit 2 emergency diesel generators at 4000 kW. This test loading is well above the safety function loads that the Unit 2 emergency diesel generators are required to supply. Furthermore, at this proposed test loading the necessary emergency diesel generator attendant instrumentation, controls, cooling, lubrication and other auxiliary equipment required for the emergency diesel generators to perform their safety function loads are also tested. Thus, testing the Unit 2 emergency diesel generators at the loading proposed in this license amendment request will demonstrate that the emergency diesel generators are operable within the Technical Specification definition of operability.

Thus with the changes proposed in this license amendment request, the requirements of Title 10 Code of Federal Regulations 50.36 continue to be met and the plant Technical Specifications will continue to provide the basis for safe plant operation.

Title 10 Code of Federal Regulations 50.63, "Loss of all alternating current power":

2) *Alternate AC source*: The alternate AC power source(s), as defined in Section 50.2, will constitute acceptable capability to withstand station blackout provided an analysis is performed which demonstrates that the plant has this capability from onset of the station blackout until the alternate AC source(s) and required shutdown equipment are started and lined up to operate.

The Prairie Island Nuclear Generating Plant Unit 2 emergency diesel generators are the alternate AC power source for a Unit 1 station blackout event. A station blackout exists when there is a loss of offsite power and concurrent loss of both of a unit's emergency diesel generator sources. The station blackout analyses assume a loss of offsite power on one unit and a station blackout on the other unit. A station blackout is assumed to occur on only one unit of a two unit site in accordance with Regulatory Guide 1.155, "Station Blackout", August 1988. After either Unit 2 emergency diesel generator has completed load sequencing and has provided power to the designated safeguards equipment (identified in Reference 5, Table 8.4-4), the plant operators will manually close two series bustie breakers. Thus, the Unit 2 emergency diesel generators must have the capacity and capability to supply their required Unit 2 loss of offsite power coincident with Unit 1 station blackout loads.

As stated in Reference 5, the maximum predicted load on either Unit 2 emergency diesel generator during a Unit 2 loss of offsite power coincident with Unit 1 station

blackout is approximately 3652 kW. The SR 3.8.1.3 test loading proposed in this license amendment request (4000 kW) is well above the Unit 2 loss of offsite power loads coincident with Unit 1 station blackout loads. Therefore, SR 3.8.1.3 will continue to demonstrate that the Unit 2 emergency diesel generators have the capacity and capability to assume their required Unit 2 loss of offsite power and Unit 1 station blackout loads.

Thus with the changes proposed in this license amendment request, the requirements of Title 10 Code of Federal Regulations 50.63 continue to be met and the plant Technical Specifications will continue to provide the basis for safe plant operation.

### General Design Criteria

The construction of the PINGP was significantly complete prior to issuance of 10 CFR 50, Appendix A, General Design Criteria. The PINGP was designed and constructed to comply with the Atomic Energy Commission General Design Criteria as proposed on July 10, 1967 (AEC GDC) as described in the plant Updated Safety Analysis Report (USAR). AEC GDC proposed Criterion 39 provides guidance applicable to the design of the AC electrical power system supplies to the engineered safety features.

#### AEC GDC Criterion 39 - Emergency Power For Engineered Safety Features

*Alternate power systems shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning required of the engineered safety features. As a minimum, the onsite power system and the offsite power system shall each, independently, provide this capacity assuming a failure of a single active component in each power system.*

This license amendment request proposes to reduce the required monthly test loading to 4000 kW for the Unit 2 emergency diesel generators. The proposed test loading will continue to assure that both Unit 2 emergency diesel generators have the capacity and the capability to assume the maximum auto-connected loads for Unit 2. With this change, independent alternate power systems continue to be provided with adequate capacity and testability to supply the required engineered safety features and protections. Thus the changes proposed in this license amendment request do not change the Prairie Island Nuclear Generating Plant's means for addressing AEC GDC Criterion 39 and the plant Technical Specifications will continue to provide the basis for safe plant operation.

#### NUREG-1431 Standard Technical Specifications, Westinghouse Plants, Revision 3.0

NUREG-1431, "Standard Technical Specifications, Westinghouse Plants," Revision 3.0 (NUREG-1431) provides format and content guidance for Technical Specifications for plants with Westinghouse Nuclear Steam Supply Systems and has been approved for



use by the Nuclear Regulatory Commission. The proposed Technical Specification changes are consistent with the guidance of NUREG-1431 as follows.

NUREG-1431 Specification 3.8.1, Surveillance Requirement 3.8.1.3 states, "Verify each DG is synchronized and loaded and operates for  $\geq$  60 minutes at a load  $\geq$  [4500] kW and  $\leq$  [5000] kW." The NUREG-1431 Bases for Specification 3.8.1 states in the Background Section, "Ratings for Train A and Train B DGs [diesel generators] satisfy the requirements of Regulatory Guide 1.9 (Ref. 3). The continuous service rating of each DG is [7000] kW with [10]% overload permissible for up to 2 hours in any 24 hour period." NUREG-1431 Bases for SR 3.8.1.3 provides the basis for the specified test loads as follows:

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the equivalent of the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

Because NUREG-1431 provides format and content guidance for many plants, information or values are provided for a typical plant in brackets, that is, the brackets indicate plant specific information is to be provided. For this reason, the example test loadings specified in SR 3.8.1.3 and the example continuous rating in the Bases Background are bracketed. Note that the continuous rating for the hypothetical NUREG-1431 plant is 7000 kW and the test loading is between 4500 kW and 5000 kW. The test loading proposed in this license amendment request, compared to the diesel rating, is consistent with the guidance of NUREG -1431. The Prairie Island Nuclear Generating Plant Unit 2 emergency diesel generators' continuous ratings are 5400 kW and the proposed test loading is 4000 kW.

The NUREG-1431 basis for the test loading is that it verifies the capability to accept "loads greater than or equivalent to the maximum expected accident loads". The surveillance test loading in this license amendment is also consistent with this guidance in that 4000 kW greater than the maximum expected accident loads.

Thus, with the changes proposed in this license amendment request, the format and content guidance NUREG-1431 is met as discussed above and the plant Technical Specifications will continue to provide the basis for safe plant operation.

### Regulatory Guides

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", July 1993 (RG 1.9)

RG 1.9 provides guidance for emergency diesel generator monthly testing during normal plant operation. (RG 1.9, Revision 3, issued after NRC approval of the Unit 2

emergency diesel generators in December 1992, incorporated the testing provisions of Regulatory Guide 1.108, Revision 1, "Periodic Testing of Diesel Units Used as Onsite Electric Power Systems at Nuclear Power Plants", August 1977 (RG 1.108) and on that basis, RG 1.108 was withdrawn.)

The RG 1.9 Introduction states:

Diesel generator units have been widely used as the power source for onsite electric power systems. This regulatory guide provides guidance acceptable to the NRC staff for complying with the Commission's requirements that diesel generator units intended for use as onsite emergency power sources in nuclear power plants be selected with sufficient capacity, be qualified, and have the necessary reliability and availability for station blackout and design basis accidents.

The specific RG 1.9 guidance for monthly testing of emergency diesel generators is that the test should demonstrate 90 to 100 percent of the continuous rating of the emergency diesel generator.

Regulations specify requirements; Regulatory Guides, as the name suggests, provide guidance. This is spelled out in the front page footer of each Regulatory Guide which states:

Regulatory Guides are issued to describe and make available to the public methods acceptable to the NRC staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission.

The revision to Technical Specification 3.8.1 Surveillance Requirement 3.8.1.3 proposed in this license amendment request is a method different from those set out in RG 1.9. The Nuclear Management Company requests the NRC Staff to determine that this license amendment request provides an acceptable basis for the findings requisite to the issuance of a license amendment with the proposed changes.

There is precedent for NRC approval of emergency diesel generator testing which departs from the guidance of RG 1.9. On April 2, 1996, the NRC Staff approved testing of an emergency diesel generator for the Calvert Cliffs Nuclear Generating Plant, which is very similar in design and use to the Prairie Island Nuclear Generating Plant Unit 2 emergency diesel generators, at the same test loading (4000 kW) proposed in this license amendment request. Furthermore, the NRC Staff has approved NUREG-1431 which does not cite RG 1.9 as the basis for monthly test loadings and provides example loadings which depart from RG 1.9 guidance.

The Nuclear Management Company submits that the testing proposed in this license amendment request will demonstrate the Unit 2 emergency diesel generators have the necessary reliability and availability to supply the loads for station blackout and design basis accidents.

### Regulatory Requirements/Criteria 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.

## **6.0 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 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 need be prepared in connection with the proposed amendment.

## **7.0 REFERENCES**

1. Calvert Cliffs Nuclear Power Plant, Units 1 & 2; Docket Nos. 50-317 & 50-318; License Amendment Request; Enhancement of the Engineered Safety Features, dated November 1, 1995.
2. Calvert Cliffs, Units 1 and 2, Amendments 214 and 191, Reflecting the New Plant Electrical Distribution Configuration, dated April 2, 1996, Accession Number ML010510322.
3. Prairie Island Nuclear Generating Plant; Design Report for the Station Blackout/Electrical Safeguards Upgrade Project, Revision 1 (TAC Nos. 68588 and 68599), dated December 23, 1991.
4. Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2 – Amendment Nos. 103 and 96 to Facility Operating License Nos. DPR-42 and DPR-60 (TAC Nos.

M83070 and M83071), dated December 17, 1992, Accession Number ML022240504.

5. Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2, Updated Safety Analysis Report, Section 8.0.

**Exhibit B**

**Proposed Technical Specification and Bases Changes (markup)**

Technical Specification Page

3.8.1-7

Bases Page  
(for information only)

B 3.8.1-17

2 pages follow

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. DG loadings may include gradual loading in consideration of manufacturer's recommendations.</li> <li>2. Momentary transients outside the load range do not invalidate this test.</li> <li>3. This Surveillance shall be conducted on only one DG at a time.</li> <li>4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.6.</li> </ol> <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for <math>\geq 60</math> minutes at a load:</p> <ol style="list-style-type: none"> <li>a. Unit 1; <math>\geq 1650</math> kW; and</li> <li>b. Unit 2; <math>\geq 4000</math> kW and <math>\leq 5300</math> kW.</li> </ol>	<p>31 days</p>
<p>SR 3.8.1.4 Verify fuel oil level above lower limit switch in each day tank.</p>	<p>31 days</p>
<p>SR 3.8.1.5 Verify the fuel oil transfer system operates to transfer fuel oil from storage tank to the day tank.</p>	<p>31 days</p>

BASES

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SURVEILLANCE  
REQUIREMENTS

SR 3.8.1.2 and SR 3.8.1.6 (continued)

Since SR 3.8.1.6 requires a 10 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2. This is the intent of Note 1 of SR 3.8.1.2.

The 31 day Frequency for SR 3.8.1.2 and the 184 day Frequency for SR 3.8.1.6 provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.

SR 3.8.1.3

This Surveillance verifies that the Unit 1 DGs are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to the manufacturer's recommended loads (Ref. 2). This Surveillance verifies that the Unit 2 DGs are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to their safety function loads (Ref. 2). The Unit 1 and Unit 2 diesel generators have different loading requirements since their individual loads are different. As an example, the Unit 2 diesel generators supply emergency power to the cooling water pump whereas the Unit 1 diesel generators do not. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

The 31 day Frequency for this Surveillance is consistent with SR 3.8.1.2.

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing loads or system

**Exhibit C**

**Proposed Technical Specification Changes (retyped)**

Technical Specification Page

3.8.1-7

1 page follows



SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.3 -----NOTES-----</p> <ol style="list-style-type: none"> <li>1. DG loadings may include gradual loading in consideration of manufacturer's recommendations.</li> <li>2. Momentary transients outside the load range do not invalidate this test.</li> <li>3. This Surveillance shall be conducted on only one DG at a time.</li> <li>4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 or SR 3.8.1.6.</li> </ol> <p>-----</p> <p>Verify each DG is synchronized and loaded and operates for <math>\geq 60</math> minutes at a load:</p> <ol style="list-style-type: none"> <li>a. Unit 1; <math>\geq 1650</math> kW; and</li> <li>b. Unit 2; <math>\geq 4000</math> kW.</li> </ol>	<p>31 days</p>
<p>SR 3.8.1.4 Verify fuel oil level above lower limit switch in each day tank.</p>	
<p>SR 3.8.1.5 Verify the fuel oil transfer system operates to transfer fuel oil from storage tank to the day tank.</p>	<p>31 days</p>

## EXHIBIT D

### LIST OF COMMITMENTS

The following table identifies those actions to which NMC committed in this document. Any other statements in this submittal are provided for information purposes and are not considered to be commitments. Please direct questions regarding these commitments to Mr. Gabe Salamon at the Nuclear Management Company, 715-377-3324.

<b>REGULATORY COMMITMENT</b>	<b>DUE DATE</b>
The Nuclear Management Company (NMC) shall test the Prairie Island Nuclear Generating Plant Unit 2 Emergency Diesel Generators (EDGs) at or above 90% of the rated load on a schedule consistent with SR 3.8.1.3. Any degradation in the EDG performance between the SR 3.8.1.3 test load and the rated load will be evaluated under NMC's corrective action program, which incorporates trending capabilities, and corrected under the maintenance program.	Implementation date of the license amendment requested in letter L-PI-06-017