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L-PI-10-001  
10 CFR 50.90

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

Prairie Island Nuclear Generating Plant Units 1 and 2  
Dockets 50-282 and 50-306  
License Nos. DPR-42 and DPR-60

License Amendment Request (LAR) to Revise Technical Specification (TS) 3.8.3,  
"Diesel Fuel Oil", Storage Requirements

Pursuant to 10 CFR 50.90, the Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, hereby requests an amendment to the Technical Specifications (TS) for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, to revise the Unit 1 diesel fuel oil (DFO) storage volumes in TS 3.8.3. This LAR also proposes a wording clarification in a TS 3.8.3 Condition statement. NSPM evaluated the proposed changes in accordance with 10 CFR 50.92 and concluded that they involve no significant hazards consideration.

The enclosure to this letter, "Evaluation of the Proposed Changes" contains the licensee's evaluation of the proposed changes.

NSPM requests approval of this LAR within one calendar year of the submittal date. Upon NRC approval, NSPM requests 90 days to implement the associated changes. In accordance with 10 CFR 50.91, NSPM is notifying the State of Minnesota of this LAR by transmitting a copy of this letter and enclosure to the designated State Official.

If there are any questions or if additional information is needed, please contact Mr. Dale Vincent, P.E., at 651-388-1121.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments

I declare under penalty of perjury that the foregoing is true and correct.

Executed on JAN 27 2010

A handwritten signature in black ink, appearing to read "Mark A. Schimmel". The signature is fluid and cursive, with the first name "Mark" being the most prominent.

Mark A. Schimmel  
Site Vice President  
Prairie Island Nuclear Generating Plant, Units 1 and 2  
Northern States Power Company - Minnesota

Enclosure: Evaluation of Proposed Changes

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

## **ENCLOSURE**

### **Evaluation of the Proposed Changes**

#### **License Amendment Request (LAR) to Revise Technical Specification (TS) 3.8.3, “Diesel Fuel Oil”, Storage Requirements**

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#### **ATTACHMENTS:**

1. Technical Specification Pages (Markup)
2. Technical Specification Pages (Retyped)
3. Excerpts from Prairie Island Nuclear Generating Plant (PINGP) Calculation ENG-ME-020

## 1. SUMMARY DESCRIPTION

This evaluation supports a request to amend Operating Licenses DPR-42 and DRP-60 for Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, respectively.

Pursuant to 10 CFR 50.90, the Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, hereby requests an amendment to the Technical Specifications (TS) for PINGP, Units 1 and 2, to revise TS 3.8.3, "Diesel Fuel Oil". This LAR proposes to revise the DFO storage volumes applicable to Unit 1 in TS 3.8.3 Condition statements A and D, and increase the Unit 1 diesel fuel oil (DFO) supply required by surveillance requirement (SR) 3.8.3.1. This LAR also proposes a wording clarification in the TS 3.8.3 Condition B statement which applies to both units.

Currently the DFO limits are administratively controlled under the provisions of NRC Administrative Letter (AL) 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety", Reference 1, since the existing TS limits were determined to be non-conservative. This LAR is submitted in accordance with the guidance of AL 98-10.

## 2. DETAILED DESCRIPTION

### 2.1 Proposed Changes

A brief description of the associated proposed TS changes is provided below along with a discussion of the justification for each change. The specific wording changes to the TS are provided in Attachments 1 and 2 to this enclosure.

**TS 3.8.3, "Diesel Fuel Oil":** This LAR proposes to revise: 1) the Condition A statement to "Unit 1 < 45,000 gal and >38,200 gal"; 2) the Condition D statement to "Unit 1 <38,200 gal"; and 3) Surveillance Requirement (SR) 3.8.3.1 to "Unit 1  $\geq$ 45,000 gal". These changes are acceptable because these revised DFO storage volumes are increased from the current TS DFO storage volume values and calculations demonstrate that 45,000 gallons will supply one emergency diesel generator (EDG) with its required licensing basis 14 day supply and 38,200 gallons exceeds the 12 day supply at which TS Required Actions apply.

For clarity, Condition B is also proposed to be modified by the addition of "properties" to state, "One or more required DG fuel oil tank(s) with stored fuel oil properties not within limits". Although PINGP TS 3.8.3 does not exactly align with the content guidance of NUREG-1431, "Standard Technical Specifications, Westinghouse Plants", Revision 3.0 (NUREG-1431), this change does make it more consistent with the statement of NUREG-1431 TS 3.8.3 Condition D. This change is acceptable because of the clarity it provides and it makes this condition statement consistent with NUREG-1431, TS 3.8.3 Condition D.

In summary these changes are acceptable because they assure the plant is operated in accordance with the current licensing basis and are consistent with current regulatory guidance. No TS Bases changes were identified as applicable to these proposed TS changes.

## **2.2 Background**

The NRC scheduled a component design basis inspection (CDBI) at PINGP for May and June 2007. During preparations for the 2007 CDBI, the Nuclear Management Company, LLC (NMC), the PINGP operating licensee at that time, identified and evaluated the impact of EDG operation at the upper or lower end of the frequency range specified in SRs 3.8.1.2, 3.8.1.6 and 3.8.1.9. If the EDGs were operated at the upper end of the range (61.2 Hz) they would consume more DFO than operation at the nominal 60 Hz. Administrative limits of  $\pm 0.5$  Hz have been placed on the allowable frequency range within which the EDGs can operate. If they were operated at the upper end of the administrative limit frequency range (+ 0.5 Hz), the Unit 1 EDGs would consume more DFO than currently required by SR 3.8.3.1.

The other TS implications of operating the EDGs at the upper or lower end of the TS specified frequency range is the subject of on-going discussions between NSPM and the Nuclear Regulatory Commission (NRC) and may be addressed in future separate LARs.

NRC Administrative Letter (AL) 98-10 (Reference 1) provides guidance for correction of facility TS when they are found to contain non-conservative values. The NRC staff expressed their expectation in AL 98-10 that, following imposition of administrative controls, an amendment to the TS will be submitted in a timely fashion. NSPM has imposed administrative controls on the Unit 1 DFO stored volumes and this LAR proposes to amend the stored volume requirements.

With the TS changes proposed in this LAR the plant will continue to operate safely and the health and welfare of the public is protected.

## **3. TECHNICAL EVALUATION**

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 and operated by Northern States Power Company, a Minnesota corporation (NSPM). 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 the licensee'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)."

#### Unit 1 EDG DFO Storage Description

Each unit is provided with a fuel oil capacity sufficient to operate an EDG for a period of 14 days while the EDG is supplying maximum post loss of coolant accident load demand with a loss of offsite power. This onsite fuel oil capacity is sufficient to operate the EDG for longer than the time to replenish the onsite supply from outside sources. Each unit has its own DFO storage system. Since this LAR proposes changes to Unit 1 DFO storage requirements, the Unit 1 DFO storage system description is provided.

There are four Design Class I DFO storage tanks for the Unit 1 EDGs and two Design Class I DFO storage tanks for the diesel driven cooling water pumps. Each tank has an available volume of 17,500 gallons, that is, the four EDG DFO tanks have a total capacity of 70,000 gallons. These six Design Class I tanks are interconnected such that any tank can be manually aligned to supply any Unit 1 EDG or diesel driven cooling water pump day tank. Any combination of inventory in these six tanks may be used to satisfy the inventory requirements for the Unit 1 EDGs and the diesel driven cooling water pumps. The TS specified fuel oil inventory for the Unit 1 EDGs in TS 3.8.3 is in addition to the TS required DFO inventory specified for the diesel driven cooling water pumps in TS 3.7.8 that must be available in the Unit 1 DFO storage system.

#### Unit 1 EDG Description

The Unit 1 EDGs, D1 and D2, are Fairbanks-Morse opposed piston EDGs which provide onsite standby power sources for 4 kV safeguards buses 15 and 16, respectively. These EDGs are each rated at 2750 kW continuous (8760 hour basis), 0.8 power factor, 900 rpm, 4160 Volt, three phase, 60 Hertz, synchronous generators. The 1,000 hour rating of each EDG is 3000 kilowatts. The 30 minute rating of each unit is 3250 kW maximum. Ratings for the Unit 1 EDGs meet the intent of Safety Guide 9.

#### Current TS Requirements, Basis and Limitations

Current TS 3.8.3 Condition A specifies Required Actions when the Unit 1 DFO supply is less than 42,000 gallons and greater than 36,000 gallons. Further, Required Actions are specified in Condition D when the DFO supply is less than 36,000 gallons for Unit 1. SR 3.8.3.1 requires the DFO volume of 42,000 gallons for Unit 1. The current TS 3.8.3 Unit 1 DFO storage volume and Condition statement volumes were issued with the TS conversion to improved TS (ITS) by license amendments 158 and 149 (LA-158/149) (Reference 2), Units 1 and 2, respectively.

### Proposed Changes

This LAR proposes to revise TS 3.8.3 Condition A to state:

Stored DG [diesel generator] fuel oil supply:

Unit 1 < 45,000 gal and > 38,200 gal:

Unit 2 < 75,000 gal and > 65,000 gal.

Proposed TS 3.8.3 Condition D would state:

Stored DG fuel oil supply:

Unit 1 < 38,200 gal;

Unit 2 < 65,000 gal.

OR

Required Action and associated Completion Time of Conditions A or C not met.

Proposed SR 3.8.3.1 would state:

Verify stored DG fuel oil supply contains:

Unit 1  $\geq$  45,000 gal; and

Unit 2  $\geq$  75,000 gal of fuel.

A minor clarification of TS 3.8.3 Condition B is also proposed by the addition of "properties" to the condition statement which would state, "One or more required DG fuel oil tank(s) with stored fuel oil properties not within limit(s)."

### Technical Basis for Change

The Unit 1 design minimum storage capacity of DFO is based on one EDG, D1 or D2, operating with the loads associated with loss of coolant accident (LOCA) with a loss of offsite power (LOOP), shown in Section 5.1 of engineering calculation ENG-ME-020 (Attachment 3), plus one diesel driven cooling water pump for 14 days. The electrical loads for Unit 1 are based on Train B operation which bounds the loads for Train A.

Due to the concern that an EDG could operate at the high end of its frequency range and consume more DFO, the fuel consumption calculations were performed at the administrative upper frequency limit, +0.5 Hz, for both units. The Unit 2 EDG DFO consumption was well below the TS 3.8.3 storage volume limits. The Unit 1 revised

calculation, ENG-ME-020, determined that the Unit 1 DFO storage capacity requirement for the EDGs is 42,146 gallons which is slightly over the SR 3.8.3.1 requirement of 42,000 gallons. This LAR proposes to increase the TS required volume to 45,000 gallons which would provide approximately 6.8% margin over the actual calculated required volume. NSPM proposes to use this volume requirement as the upper limit in TS 3.8.3 Condition A and in SR 3.8.3.1. Portions of the Unit 1 DFO calculation, ENG-ME-020, Revision 3, are provided in Attachment 3 to this Enclosure.

TS 3.8.3 Conditions A and D also specify a lower DFO storage volume as part of the Condition statements. The TS 3.8.3 Bases states, "... the Condition is restricted to fuel oil supply reductions that maintain at least a 12 day supply." The revised DFO calculation also determined that the volume required to supply one EDG for 12 days is 36,220 gallons. This LAR proposes to increase the TS specified lower limit as 38,200 gallons which would provide approximately 5.5% margin over the actual calculated required 12 day volume. NSPM proposes to use this volume as the lower limit in TS 3.8.3 Condition A and Condition D.

The required DFO volumes were calculated based on the highest limiting EDG fuel oil consumption rate for 14 days, the required TS days supply requirements, including operation at the upper administrative frequency limit. Allowance is also included for performance of EDG testing between the demand for an EDG and the last verification of the stored volume. Since the TS also include a lower DFO volume equivalent to 12 days supply, the calculation also provides that volume for use in the TS. The tanks and their interconnecting piping are buried below the frost line. Fuel oil temperature variations were not considered in the calculations. As noted in Section 5.2 of the D1/D2 and diesel driven cooling water pump fuel oil storage capacity calculation, ENG-ME-020, each of the six storage tanks associated with the Unit 1 DFO storage system have a nominal capacity of 19,500 gallons. However, the usable volume is 17,500 gallons to account for the loss of pump suction level and level instrumentation uncertainty. Excerpts from the engineering calculation, ENG-ME-020, are provided in Attachment 3 to this Enclosure to support NRC review and approval of the LAR.

This LAR also proposes to revise TS 3.8.3, Condition B to state, "... with stored fuel oil properties not within limit(s)." to clarify the meaning and be consistent with NUREG-1431. This is an administrative change that does not affect plant operation and thus is acceptable.

### Conclusions

This LAR proposes to revise the TS required Unit 1 DFO storage volume and the Condition statement volumes. These changes will assure that the Unit 1 EDGs can operate for the required time following a design basis accident with loss of offsite power. A minor administrative change is also proposed to the TS to improve their clarity. Operation, maintenance and testing of the Prairie Island Nuclear Generating Plant with the proposed TS revisions will continue to protect the health and safety of the public.



## 4. REGULATORY SAFETY ANALYSIS

### 4.1 Applicable Regulatory Requirements/Criteria

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

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

2) *Limiting conditions for operation.* (i) Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

\*\*\*\*

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 to revise the Technical Specification diesel fuel oil storage volumes. The volumes specified in the Technical Specification remedial actions (Condition statements and Required Actions) have been increased and the volume specified in the Surveillance Requirements has been increased. With these changes, the Technical Specifications will continue to assure that the necessary quality of the emergency diesel generators and their components is maintained, an adequate supply of fuel is maintained and the limiting conditions for operation of the emergency diesel generators will continue to be met.

Thus with the changes proposed in this license amendment request, the requirements of Title 10 CFR 50.36 continue to be met.

### General Design Criteria

The construction of the Prairie Island Nuclear Generating Plant was significantly complete prior to issuance of 10 CFR 50, Appendix A, General Design Criteria. The Prairie Island Nuclear Generating Plant 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. AEC GDC proposed Criterion 39 provides design guidance for the operating capability of alternate power systems.

### 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.

AEC GDC Criterion 39 is partially met for Unit 1 through the redundant source of onsite power from two emergency diesel generators installed at the plant. This license amendment request proposes to increase the required diesel fuel oil storage volume and Condition statement action levels for Unit 1 in the Technical Specifications. These changes assure the onsite power system has sufficient stored diesel fuel oil to permit the functioning required of the engineered safety features for the required duration. With these changes, the AEC GDC stated above will continue to be met when the plant is operated with the plant Technical Specifications revised as proposed. Thus with the changes proposed in this license amendment request, the requirements of AEC GDC 39 continue to be met 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 provides content and format guidance for Technical Specifications for Westinghouse designed plants such as the Prairie Island Nuclear Generating Plant. NUREG-1431 Technical Specification 3.8.3 provided the content model for Prairie Island Nuclear Generating Plant Technical Specification 3.8.3. Specifically, the Prairie Island Nuclear Generating Plant Technical Specification 3.8.3 Condition B was modeled after NUREG-1431 Condition D. This license amendment proposes an administrative change to add "properties" to the statement of Technical Specification 3.8.3, Condition B to provide clarity. With this change, the plant Condition B statement will be consistent with the NUREG-1431 Condition D statement. This is an administrative change which does not affect plant operations.

## **4.2 Precedent**

Northern States Power Company, a Minnesota corporation (NSPM) is not aware of precedent for revising the Technical Specification emergency diesel generator fuel oil storage volume requirements due to consideration of emergency diesel generator operation at the upper allowable frequency. Two industry license amendments (References 3 and 4) issued within the last three years revised the Technical Specification required emergency diesel generator fuel oil storage volume requirements for other reasons.

## **4.3 Significant Hazards Consideration**

Northern States Power Company, a Minnesota corporation (NSPM) 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:

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

Response: No

This license amendment request proposes to increase the emergency diesel generator fuel oil storage volumes specified in the Technical Specification Condition statements and Surveillance Requirements. Also a word was added to a Condition statement to clarify its meaning.

The emergency diesel generators and their supporting diesel fuel oil storage systems are not accident initiators and therefore the proposed fuel oil storage volume increases do not involve an increase in the probability of an accident.

The proposed increased diesel fuel oil storage volumes provide sufficient volumes to maintain the current licensing basis for emergency diesel generator operation. Thus the proposed fuel oil storage volume increases do not involve a significant increase in the consequences of an accident.

The proposed Technical Specification Condition statement wording clarification is administrative and thus does not involve an increase in the probability of an accident or an increase in the consequences of an accident.

Therefore, the proposed Technical Specification changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No

This license amendment request proposes to increase the emergency diesel generator fuel oil storage volumes specified in the Technical Specification Condition statements and Surveillance Requirements. Also a word was added to a Condition statement to clarify its meaning.

The proposed Technical Specification changes which increase emergency diesel generator fuel oil storage volumes do not change any system operations or maintenance activities. The changes do not involve physical alteration of the plant, that is, no new or different type of equipment will be installed. The changes do not alter assumptions made in the safety analyses but ensures that the diesel generators operate as assumed in the accident analyses. These

changes do not create new failure modes or mechanisms which are not identifiable during testing and no new accident precursors are generated.

The proposed Technical Specification Condition statement wording clarification is administrative and thus does not create the possibility of a new or different kind of accident.

Therefore, the proposed Technical Specification changes do not create the possibility of a new or different kind of accident from any previously evaluated.

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

Response: No

This license amendment request proposes to increase the emergency diesel generator fuel oil storage volumes specified in the Technical Specification Condition statements and Surveillance Requirements. Also a word was added to a Condition statement to clarify its meaning.

Since this license amendment proposes Technical Specification changes which increase the required fuel oil storage volumes, margins of safety are increased and thus no margin of safety is reduced as part of this change.

The proposed Technical Specification Condition statement wording clarification is administrative and thus does not involve a significant reduction in a margin of safety.

Therefore, the proposed Technical Specification changes do not involve a significant reduction in a margin of safety.

Based on the above, the Northern States Power Company, a Minnesota corporation (NSPM) concludes that the proposed amendment does not involve a 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.

**4.4 Conclusions**

In conclusion, based on the considerations discussed in above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

## **5. 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.

## **6. REFERENCES**

1. NRC Administrative Letter (AL) 98-10, "Dispositioning of Technical Specifications That Are Insufficient to Assure Plant Safety".
2. Prairie Island Nuclear Generating Plant, Units 1 and 2 – Issuance of Amendments RE: Conversion to Improved Technical Specifications (TAC Nos. MB0695 and MB0696), dated July 26, 2002, Accession Number ML022070613.
3. Calloway, Unit 1, Issuance of Amendment No. 185 Re: Technical Specification 3.8.3, "Diesel Fuel Oil, Lube Oil and Starting Air", dated August 27, 2008, Accession Number ML082190681.
4. San Onofre, Units 2 and 3, License Amendments 211 and 203 regarding Emergency Diesel Generator Fuel Oil Volume Requirements, dated April 4, 2007, Accession Number ML070380316.

**ENCLOSURE, ATTACHMENT 1**

**Technical Specification Pages (Markup)**

3.8.3-1

3.8.3-2

2 pages follow

### 3.8 ELECTRICAL POWER SYSTEMS

#### 3.8.3 Diesel Fuel Oil

LCO 3.8.3 The stored diesel generator (DG) fuel oil supply shall be within limits.

APPLICABILITY: When the DG(s) is required to be OPERABLE.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. Stored DG fuel oil supply:</p> <p>Unit 1 &lt; 452,000 gal and &gt; 38,26,000 gal;</p> <p>Unit 2 &lt; 75,000 gal and &gt; 65,000 gal.</p>	A.1 Restore fuel oil supply to within limits.	48 hours
B. One or more required DG fuel oil tank(s) with stored fuel oil <u>properties</u> not within limit(s).	B.1 Restore fuel oil tank(s) properties to within limit(s).	7 days
C. Required Action and associated Completion Time of Condition B not met.	C.1 Isolate the associated DG fuel oil tank(s).	2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Stored DG fuel oil supply:</p> <p>Unit 1 &lt; 38,26,000 gal;</p> <p>Unit 2 &lt; 65,000 gal.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Conditions A or C not met.</p>	<p>-----NOTE-----</p> <p>Enter applicable Conditions and Required Actions of LCO 3.7.8, "CL System" for CL train(s) made inoperable as a result of stored fuel oil properties not within limits.</p> <p>-----</p> <p>D.1 Declare DGs inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.3.1 Verify stored DG fuel oil supply contains:</p> <p>Unit 1 <math>\geq</math> 452,000 gal; and</p> <p>Unit 2 <math>\geq</math> 75,000 gal of fuel.</p>	<p>31 days</p>
<p>SR 3.8.3.2 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.</p>	<p>In accordance with the Diesel Fuel Oil Testing Program</p>



**ENCLOSURE, ATTACHMENT 2**

**Technical Specification Pages (Retyped)**

3.8.3-1

3.8.3-2

2 pages follow

### 3.8 ELECTRICAL POWER SYSTEMS

#### 3.8.3 Diesel Fuel Oil

LCO 3.8.3 The stored diesel generator (DG) fuel oil supply shall be within limits.

APPLICABILITY: When the DG(s) is required to be OPERABLE.

#### ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. Stored DG fuel oil supply:</p> <p>Unit 1 &lt; 45,000 gal and &gt; 38,200 gal;</p> <p>Unit 2 &lt; 75,000 gal and &gt; 65,000 gal.</p>	<p>A.1 Restore fuel oil supply to within limits.</p>	<p>48 hours</p>
<p>B. One or more required DG fuel oil tank(s) with stored fuel oil properties not within limit(s).</p>	<p>B.1 Restore fuel oil tank(s) properties to within limit(s).</p>	<p>7 days</p>
<p>C. Required Action and associated Completion Time of Condition B not met.</p>	<p>C.1 Isolate the associated DG fuel oil tank(s).</p>	<p>2 hours</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. Stored DG fuel oil supply:</p> <p>Unit 1 &lt; 38,200 gal;</p> <p>Unit 2 &lt; 65,000 gal.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Conditions A or C not met.</p>	<p>-----NOTE-----</p> <p>Enter applicable Conditions and Required Actions of LCO 3.7.8, "CL System" for CL train(s) made inoperable as a result of stored fuel oil properties not within limits.</p> <p>-----</p> <p>D.1 Declare DGs inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.3.1 Verify stored DG fuel oil supply contains:</p> <p>Unit 1 <math>\geq</math> 45,000 gal; and</p> <p>Unit 2 <math>\geq</math> 75,000 gal of fuel.</p>	<p>31 days</p>
<p>SR 3.8.3.2 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.</p>	<p>In accordance with the Diesel Fuel Oil Testing Program</p>

**ENCLOSURE, ATTACHMENT 3**

**Excerpts from  
Prairie Island Nuclear Generating Plant Calculation**

**ENG-ME-020**

D1/D2 and DDCLP Fuel Oil Storage Capacity

Revision 3

4/15/09

12 pages follow

## PINGP CALCULATION

NUMBER:	ENG-ME-020	REVISION:	3	MINOR REVISION:	NA	SHEET NO:	1 OF 12
TITLE:	D1/D2 AND DDCLP FUEL OIL STORAGE CAPACITY					DATE:	4/15/09
						COMP. BY:	CJS

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## PINGP CALCULATION

NUMBER:	ENG-ME-020	REVISION:	3	MINOR REVISION:	NA	SHEET NO:	2 OF 12
TITLE:	D1/D2 AND DDCLP FUEL OIL STORAGE CAPACITY					DATE:	4/15/09
						COMP. BY:	CJS

### 1.0 Purpose and Summary Result

The purpose of this calculation is to document the required fuel oil storage capacity for the D1 and D2 emergency diesel generators (EDG) and the diesel driven cooling water pumps (DDCLP).

This calculation will verify that the fuel oil capacities required by the Technical Specifications for Unit 1 are sufficient to supply the required Unit 1 loads for greater than 14 days, as specified in the USAR and Technical Specifications basis, as well as determine the minimum fuel oil capacity required for 12 days.

This calculation is being revised to incorporate the recent revision of ENG-EE-021 to Revision 4 including Minor Revision A. EDGs D5 and D6 are not addressed by this calculation.

The total maximum fuel oil consumption for one EDG and one DDCLP for Unit 1 over the 12 day time period is 52,873 gallons and over the 14 day time period is 61,574 gallons, at the specified loading (Design Input 5.1). The 14 day maximum consumption is significantly less than the 105,000 gallons that are available in the fuel oil storage tanks (Section 3.0), but is slightly more than the minimum of 61,500 gallons. The procedurally maintained minimum fuel volume of 64,000 gallons provides a margin of 2,616 gallons of diesel fuel oil for Unit 1. The maximum consumption encompasses all time periods less than 14 days.

### 2.0 Methodology

The calculation determines the fuel consumption rates for the D1/D2 EDGs (emergency diesel generators) using the load profiles provided in Design Input 5.1. A consumption rate for the DDCLP (diesel driven cooling water pump) is also calculated based on full load test data from Design Input 5.4. The fuel consumption rates for the EDGs and the DDCLP are both summed over a 12 day and a 14 day period. A 12 day consumption is calculated to determine a minimum allowable fuel oil level, if the level drops below this 12 day value the EDG is to be declared inoperable per Tech Spec 3.8.3 Action D.1 (Reference 5). The 14 day time frame ensures an adequate supply is maintained for a sufficient time to place the unit in a safe shutdown condition, and allows sufficient time to bring in replacement fuel from an offsite location, Tech Spec Bases 3.8.3 (Reference 5). A total consumption for one of the two EDGs and the DDCLP for 14 days was determined, including an allowance for periodic testing, and these totals were combined to determine the needed fuel oil volume.

### 3.0 Acceptance Criteria

The fuel oil storage requirements are provided in the USAR and Tech Specs (References 1 & 2) based upon the results of this calculation. A total fuel supply of 105,000 gallons [6 tanks with 17,500 gallons each] (Reference 1) must be capable of supplying one DDCLP and one Unit 1 EDG (D1 or D2) [as loaded per Design Input 5.1] for 14 days. The basis for the acceptance criteria is developed from the following UFSAR and Tech Spec (including the Tech Spec Bases) statements:

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### USAR 8.4.2:

Sufficient fuel is stored in the day tank for each Unit 1 Emergency Diesel Generator for up to two hours operation at full load. Sufficient fuel is stored in the day tank for each Unit 2 EDG for at least 60 minutes of operation at the level where oil is automatically added to the day tank based on the fuel consumption at a load of 100% of the continuous rating of the EDG plus a minimum margin of 10% per ANSI N195-1976. Fuel from interconnected storage tanks can be transferred to the day tanks by electric pumps for operation of any single Emergency Diesel Generator up to two weeks.

### USAR 10.3.13.1.2.1:

The Unit 1 design minimum storage capacity of diesel fuel oil is based on one emergency diesel generator (EDG), D1 or D2, operating at the loads stated in Table 8.4-1 plus one diesel driven cooling water pump for 14 days.

### USAR 10.3.13.3.1:

There are four Design Class I fuel oil storage tanks (19,500 nominal, 17,500 available gallons each) for the Unit 1 EDGs and two Design Class I fuel oil storage tanks (19,500 nominal, 17,500 available gallons each) for the diesel driven cooling water pumps. The six Design Class I tanks are interconnected such that any tank can be manually aligned to supply any diesel day tank. Therefore any combination of four tanks will meet the storage capacity requirements.

### Tech Spec 3.7.8, D.1:

Diesel driven CL pumps stored fuel oil supply < 19,500 gal and > 17,000 gal.

### Tech Spec SR 3.7.8.3:

Verify stored diesel driven CL pumps fuel oil supply  $\geq$  19,500 gal.

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### Tech Spec SR 3.8.1.3

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

a. Unit1;  $\geq 2500$  kW

Frequency: 31 days

### Tech Spec Bases 3.7.8, D.1:

In this Condition, the 14 day fuel oil supply for the diesel driven CL pumps is not available. However, the Condition is restricted to fuel oil supply reductions that maintain at least a 12 day supply. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank(s). A period of 48 hours is considered sufficient to complete restoration of the required supply prior to declaring the diesel driven CL pumps inoperable. This period is acceptable based on the remaining 12 day fuel oil supply, the fact that procedures will be initiated to obtain replenishment, availability of the vertical motor driven CL pump and the low probability of an event during this brief period.

### Tech Spec Bases SR 3.7.8.3:

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support the operation of one diesel driven CL pump for 14 days. The 14 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

The specified fuel oil inventory for the diesel cooling water pumps is in addition to the fuel oil inventory specified for the Unit 1 diesel generators (DGs) (LCO 3.8.3) that must be available in the Unit 1 diesel fuel oil storage system. There are four Design Class I fuel oil storage tanks for the Unit 1 DGs and two Design Class I fuel oil storage tanks for the diesel driven cooling water pumps. These six Design Class I tanks are interconnected such that any tank can be manually aligned to supply any Unit 1 DG or diesel driven cooling water pump day tank. Any combination of inventory in these six tanks may be used to satisfy the inventory requirements for the diesel driven cooling water pumps and the Unit 1 DGs.

### Tech Spec 3.8.3, A.1:

Stored DG fuel oil supply: Unit 1  $< 42,000$  gal and  $> 36,000$  gal;

### Tech Spec SR 3.8.3.1:

Verify stored DG fuel oil supply contains: Unit 1  $\geq 42,000$  gal;



## PINGP CALCULATION

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### Tech Spec Bases 3.8.3, BACKGROUND:

Each unit is provided with a fuel oil capacity sufficient to operate the diesel generator (DGs) for a period of 14 days while the DG is supplying maximum post loss of coolant accident load demand as discussed in the USAR. This onsite fuel oil capacity is sufficient to operate the DGs for longer than the time to replenish the onsite supply from outside sources.

### Tech Spec Bases 3.8.3, LCO:

Stored diesel fuel oil is required to have sufficient supply for one DG on each unit to operate for 14 days. It is also required to meet specific standards for quality. This requirement, in conjunction with an ability to obtain replacement supplies within 14 days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power.

### Tech Spec Bases 3.8.3, A.1:

In this Condition, the 14 day fuel oil supply for the DGs is not available. However, the Condition is restricted to fuel oil supply reductions that maintain at least a 12 day supply. These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required supply, or feed and bleed operations, which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank(s). A period of 48 hours is considered sufficient to complete restoration of the required supply prior to declaring the DGs inoperable. This period is acceptable based on the remaining capacity (> 12 days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.

### Tech Spec Bases SR 3.8.3.1:

This SR provides verification that there is an adequate inventory of fuel oil in the storage tanks to support the operation of one DG for 14 days. The 14 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.

## 4.0 Assumptions

### 4.1 Unverified Assumptions

#### 4.1.1 None

## PINGP CALCULATION

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### 4.2 Verified Assumptions

- 4.2.1 Fuel oil density conservatively assumed to be the minimum allowed by ANSI/ANS 59.51-1989 [Attachment B], Appendix C, per testing done according to ASTM D975-82, which specifies a minimum absolute specific gravity at 60/60°F of 0.83. This corresponds to a density of approximately 6.91 lb/gal [Attachment E].
- 4.2.2 Any shorter term (<14 days) fuel capacity requirements are met by the 14 day capacity requirements.
- 4.2.3 Diesel Engine efficiency is assumed to be 0.974. This value represents the 75% loading efficiency as reported in Attachment D. Use of the 75% loading efficiency is more conservative than the 100% loading efficiency because it results in higher fuel consumption.
- 4.2.4 Only the fuel consumed for one performance of SR 3.8.1.3 on both EDGs is considered in this calculation ( $\geq 60$  minutes of operation  $\geq 2500$  kW, which is conservatively modeled as 90 minutes at 2500 kW). This test is conducted every 31 days, which is also the frequency requirement for the fuel storage capacity verification. Therefore it is not considered credible for this surveillance test to be performed more than once per EDG without fuel replenishment.

### 5.0 Design Inputs

- 5.1 The D1 / D2 electrical loading profiles are as given in ENG-EE-021 (Reference 3). The EDG loads during Unit 1 LOCA/DBA coincident with LOOP Unit 1 Train B (Reference 3, Section 7.0, Table 1) are provided in Table 5-1. Train B [D2] is used since it is the more limiting profile due to D2 being more heavily loaded.

**TABLE 5-1**  
**EDG Loading During LOCA/DBA with a LOOP**

Load Period	Total Load (kW)
0 – 5 Minutes	2513.3
5 – 30 Minutes	2465.54
30 Minutes – 1 Hour	2446.72
1 Hour – 14 Days	1524.27

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- 5.2 Four safety related Fuel Oil Storage Tanks are available for supplying either of the two EDGs, each equipped with a transfer pump to pump fuel from the storage tank to the day tank on the diesel generator. For the DDCLP fuel is provided from two storage tanks, each with a transfer pump to transfer the fuel from the storage tanks to the DDCLP day tank (Reference 4). Each of the six storage tanks has a nominal capacity of 19,500 gallons, with 17,500 gallons available (Reference 1, Section 10.3.13.3.1).

Reference 6, establishes a total combined full volume for the six tanks to be 115,300 gallons. Due to the location of the loss of pump suction point and the level instrumentation inaccuracy, 1,600 gallons of five of the tanks and 2,100 gallons of one the tanks is considered unusable. With a total of 10,100 gallons unusable, the total available fuel is 105,200. Fuel level is controlled through Surveillance Procedure 1001B (Reference 7) which maintains a usable combined fuel volume of 61,500 gallons. At this time an administrative minimum is in effect that increases the minimum combined usable volume of fuel to 64,000 gallons per CAP 01090847 (Reference 8).

- 5.3 The fuel oil consumption rates for D1 and D2 are provided in Table 5-2. These consumption rates include auxiliary loads of 58 BHP [Attachment D].

**TABLE 5-2**  
**EDG Fuel Consumption Test Data**  
(As reported in Table 1 (page 7 of 8) of Revision 0 of this calculation)

Source	BHP <sub>gross</sub>	lb/BHP <sub>g</sub> * hr
D1 (Pre-Op)	2586	0.386
[Attachment C]	3999	0.391
D1(Mfgr)	2200	0.411
[Attachment D]	3232	0.386
	4280	0.364
D2 (Pre-Op)	2935	0.389
[Attachment C]	3937	0.384
D2 (Mfgr)	2200	0.404
[Attachment D]	3232	0.384
	4276	0.380

- 5.4 The fuel oil consumption for DDCLP is provided in Table 5-3.

**TABLE 5-3**  
**DDCLP Full Load Test Data**

Engine	gph [Attachment A]
35B554	55.6
35B556	55.7
Test API [Attachment A]	Test Density (lb/gal) [Attachment E]
32.6 (approximately 32.5)	7.173
Minimum Allowable Density (lb/gal)	6.91

## PINGP CALCULATION

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The DDCLP fuel rate is considered constant at 55.7 gallons per hour (gph) as provide as the maximum consumption in the August 16, 1971 Quality Assurance Inspection Report [Attachment A] data on the performance test.

### 6.0 Calculations

#### 6.1 EDG Consumption

From the test data provided in Design Input 5.3 (Table 5-2) the fuel consumption rate by the EDGs during testing can be calculated. This calculated data is provided in Table 6-1.

**TABLE 6-1**  
**EDG Fuel Consumption Calculated from Test Data**

Source	Load (kW) <sup>NOTE 1</sup>	gph <sup>NOTE 2</sup>	gph/kW <sup>NOTE 3</sup>
D1 (Pre-Op)	1936	144.5	0.0746
	3019	226.2	0.0749
D1(Mfgr)	1641	130.9	0.0798
	2431	180.5	0.0743
	3234	225.5	0.0697
D2 (Pre-Op)	2204	165.2	0.0750
	2971	218.7	0.0736
D2 (Mfgr)	1641	128.6	0.0784
	2431	179.6	0.0739
	3231	235.1	0.0728

NOTE 1: The kW loads for the manufacturers tests were calculated based on:

$$\text{Load (kW)} = (\text{BHP}_{\text{act}}) * 0.746 / \text{efficiency}$$

$$\text{BHP}_{\text{act}} = \text{BHP}_{\text{gross}} - 58$$

where auxiliary loads are 58 BHP [Attachment D], and  
efficiency is 0.974 (Assumption 4.2.3).

NOTE 2: gph values were calculated as follows, using Assumption 4.2.1:

$$\text{gph} = (\text{BHP}_{\text{gross}}) * (\text{lb} / \text{BHP}_{\text{gross}} * \text{hr}) / (6.91 \text{ lb} / \text{gal})$$

NOTE 3: gph / kW values were calculated as follows:

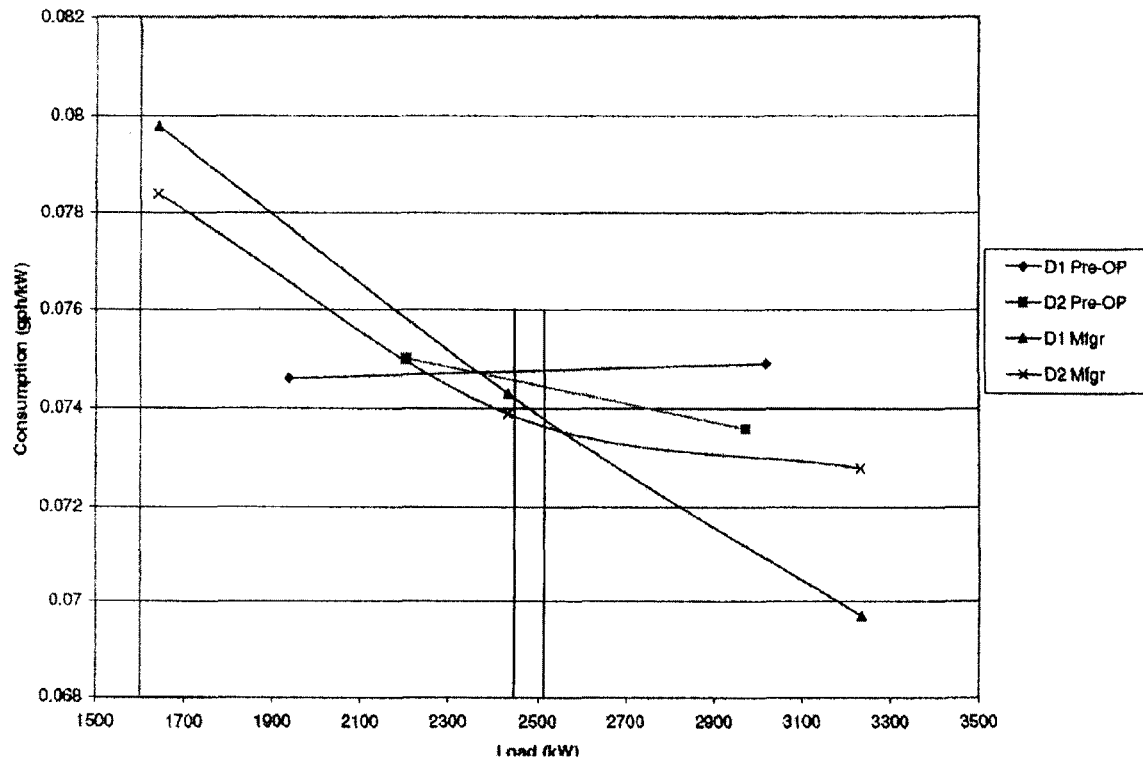
$$\text{gph} / \text{kW} = (\text{gph}) / (\text{load [kW]})$$

The data in Table 6-1 is shown graphically in Figure 6-1 in order to allow for a determination of fuel consumption rates at other load values.

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**FIGURE 6-1  
EDG Consumption Rate per Load**



From Table 5-1 two load ranges are present over the 14 day time frame; 2446.72 kW – 2513.3 kW (0 minutes to 1 hour) and 1500 kW – 1600 kW (1 hour to 14 days). The maximum consumption for these two load ranges, as shown in Figure 6-1, are 0.075 gph/kW (at 2446.72-2513.3 kW) and 0.081 gph/kW (at 1500-1600 kW).

Summing the EDG consumption rate over 12 days for these two loading ranges results in the following maximum consumption for the EDGs:

$$\begin{aligned}
 \text{EDG Consumption [gallons]} &= \text{Sum (time [hr] * load [kW] * consumption @ load [gph/kW])} \\
 \text{EDG Consumption} &= ((5/60)*2513.3*0.075) + ((25/60)*2465.54*0.075) + ((30/60)*2446.72*0.075) \\
 &\quad + ((287)*1524.27*0.081) \\
 \text{EDG Consumption} &= 35619.21 \text{ gallons}
 \end{aligned}$$

Over the 12 day time frame one EDG would require, at the specified loading, a maximum of 35620 gallons of fuel oil.

Summing the EDG consumption rate over 14 days for these two loading ranges results in the following maximum consumption for the EDGs:

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EDG Consumption [gallons] = Sum (time [hr] \* load [kW] \* consumption @ load [gph/kW])  
EDG Consumption = ((5/60)\*2513.3\*0.075) + ((25/60)\*2465.54\*0.075) + ((30/60)\*2446.72\*0.075)  
+ ((335)\*1524.27\*0.081)  
EDG Consumption = 41545.57 gallons

Over the 14 day time frame one EDG would require, at the specified loading, a maximum of 41546 gallons of fuel oil.

### 6.2 DDCLP Consumption

From the test data provided in Design Input 5.4 (Table 5-3) the fuel consumption rate for the DDCLP during testing can be calculated at minimum fuel density. This calculated data is as follows:

*Min Density Consumption Rate [gph] = Max Test consumption Rate [gph] \* (Test Density [lb/gallon] / Min Allowed Density [lb/gallon])*  
*Min Density Consumption Rate = 55.7 \* (7.173 / 6.91)*  
*Min Density Consumption Rate = 57.82 gph*

Summing the DDCLP consumption rate over 12 days results in the following consumption for the DDCLP:

DDCLP Consumption [gallons] = Min Density Consumption Rate \* Time [hr]  
DDCLP Consumption = 57.82 \* (24 \* 12)  
DDCLP Consumption = 16652.16 gallons

Over the 12 day time frame one DDCLP would require a maximum of 16,653 gallons of fuel oil.

Summing the DDCLP consumption rate over 14 days results in the following consumption for the DDCLP:

DDCLP Consumption [gallons] = Min Density Consumption Rate \* Time [hr]  
DDCLP Consumption = 57.82 \* (24 \* 14)  
DDCLP Consumption = 19427.52 gallons

Over the 14 day time frame one DDCLP would require a maximum of 19,428 gallons of fuel oil.

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### 6.3 Monthly Surveillance Testing Consumption

Per Assumption 4.2.4 the total fuel consumed during the required monthly surveillance testing for 2 diesel generators (Tech Spec SR 3.8.1.3) is conservatively calculated for 90 minutes at a loading of 2500 kW in the following manner:

EDG Testing Consumption [gallons] = time [hr] \* load [kW] \* consumption @ load [gph/kW]  
EDG Testing Consumption =  $2 * 1.5 * 2500 * 0.08$   
EDG Testing Consumption = 600 gallons

The monthly testing would conservatively consume 600 gallons of fuel oil.

### 6.4 Total Combined Consumption

The total combined consumption of fuel oil over 12 days for the EDGs and the DDCLP for Unit 1 would be as follows:

Total Unit 1 Consumption [gallons] = EDG Consumption [gallons] + DDCLP Consumption [gallons] + EDG Testing Consumption [gallons]  
Total Unit 1 Consumption =  $35620 + 16653 + 600$   
Total Unit 1 Consumption = 52873 gallons

Over the 12 day time frame Unit 1 would require a total maximum of 52,873 gallons of fuel oil to supply one EDG and one DDCLP.

The total combined consumption of fuel oil over 14 days for the EDGs and the DDCLP for Unit 1 would be as follows:

Total Unit 1 Consumption [gallons] = EDG Consumption [gallons] + DDCLP Consumption [gallons] + EDG Testing Consumption [gallons]  
Total Unit 1 Consumption =  $41546 + 19428 + 600$   
Total Unit 1 Consumption = 61574 gallons

Over the 14 day time frame Unit 1 would require a total maximum of 61,574 gallons of fuel oil to supply one EDG and one DDCLP.

## 7.0 Conclusions

The total maximum fuel oil consumption for one EDG and one DDCLP for Unit 1 over the 12 day time period is 52,873 gallons and over the 14 day time period is 61,574 gallons, at the specified loading (Design Input 5.1). The 14 day maximum consumption is significantly less than the 105,000 gallons that are available in the fuel oil storage tanks (Section 3.0), but is slightly more than the minimum of 61,500 gallons. The procedurally maintained minimum fuel volume of 64,000 gallons provides a margin of 2,616 gallons of diesel fuel oil for Unit 1. The maximum consumption encompasses all time periods less than 14 days.

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### 8.0 Plant Impact / Future Needs

- 8.1 USAR update AR 01170118 was created to update the results of this calculation in USAR section 10.3.13.1.2.1.
- 8.2 EC 9065 was updated to include revision of ENG-ME-293 with respect to this calculation.
- 8.3 GAR 01170132 was initiated to update GEN-PI-052 "SAFE SHUTDOWN EQUIPT FOR COMPL WITH 10CFR50, APP R" Rev 3 (Reference 9) with the results of this calculation.

### 9.0 References

- 9.1 Prairie Island Updated Safety Analysis Report (USAR), Rev. 30
- 9.2 Prairie Island Unit 1 & 2 Technical Specification, Rev. 190 & 179
- 9.3 ENG-EE-021, Rev. 4 & 4A, "Diesel Generator Steady State Load"
- 9.4 NF-39232, Rev 76 "FLOW DIAGRAM FUEL & DIESEL OIL SYSTEM"
- 9.5 Prairie Island Unit 1 & 2 Technical Specification Bases, Rev. 199
- 9.6 ENG-ME-293, Rev. 4, Safety Related Tank Useable Volume Evaluation
- 9.7 SP 1001B, Rev. 12, Unit 1 Control Room Log – Modes 1 and 2
- 9.8 CAP 01090847 "Min fuel oil inventory for Unit 1 with EDG at max frequency"
- 9.9 GEN-PI-052 "SAFE SHUTDOWN EQUIPT FOR COMPL WITH 10CFR50, APP R" Rev 3

### 10.0 Attachments

- 10.1 Attachment A Quality Assurance Inspection Report 081671
- 10.2 Attachment B ANSI/ANS 59.51-1989
- 10.3 Attachment C Prairie Island Pre-Operational Test Procedure, Test 20.1 & 20.2
- 10.4 Attachment D Prairie Island Receipt Inspection Report RSN-96C & RSN-96D
- 10.5 Attachment E Fairbanks Morse D3963A2-3