



**Entergy Nuclear Northeast**  
Indian Point Energy Center  
450 Broadway, GSB  
P.O. Box 249  
Buchanan, NY 10511-0249  
Tel 914 254 6700

**John A Ventosa**  
Site Vice President

August 14, 2012

NL-12-097

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

**SUBJECT:** License Amendment Request for Emergency Diesel Generator Fuel Oil System  
Indian Point Unit Number 3  
Docket No. 50-286  
License No. DPR-64

**REFERENCES:** TSTF 501-A, Revision 1, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control"

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Nuclear Operations, Inc, (Entergy) hereby requests a License Amendment to Operating License DPR-64, Docket No. 50-286 for Indian Point Nuclear Generating Unit No. 3 (IP3).

The proposed changes revise Technical Specification (TS) Limiting Condition for Operation (LCO) 3.8.3, "Diesel Fuel Oil, and Starting Air," to relocate specific numerical values for fuel oil storage volumes from the TSs to the TS Bases in accordance with Technical Specification Task Force (TSTF) 501 Revision 1. The proposed changes also propose to revise the current bases to change the required amounts of fuel oil to be stored. The current Bases require sufficient fuel to operate 2 emergency diesel generators (EDG) with minimum safeguards equipment in operation for seven days. The revised bases require sufficient fuel oil storage volumes to operate three EDG at rated capacity for seven days. This proposed change was initiated because the existing TS volumes are considered non-conservative for the existing licensing basis of two EDG at minimum safeguards. Changing the licensing basis from two EDG to Regulatory Guide 1.137 is the conservative approach to fixing the non conservative TS.

Entergy has evaluated the proposed change in accordance with 10 CFR 50.91(a)(1) using the criteria of 10 CFR 50.92(c) and has determined that this proposed change involves no significant hazards consideration, as described in Attachment 1. The marked-up TS pages showing the proposed changes are provided in Attachment 2. The Bases changes are provided in Attachment 3. A copy of this application and the associated attachments are being submitted to the designated New York State official in accordance with 10 CFR 50.91.

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Entergy requests approval of the proposed amendment within one year with subsequent implementation within 30 days. There are no new commitments being made in this submittal.

If you have any questions or require additional information, please contact Mr. Robert Walpole, Manager, Licensing at (914) 254-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on 8/19, 2012.

Sincerely,

  
acting for J.V.

JAV/sp

- Attachments:
1. Analysis of Proposed Technical Specification and Bases Change Regarding Emergency Diesel Generator Fuel Oil System
  2. Markup of Technical Specification Pages for Proposed Changes Regarding Emergency Diesel Generator Fuel Oil and Lube Oil Systems
  3. Markup of Technical Specification Bases Associated with the Proposed Changes Regarding Emergency Diesel Generator Fuel Oil System

- Enclosure:
1. IP-CALC-11-00058, "IP3 Emergency Diesel Generator (EDG) Fuel Oil Consumption Licensing Basis Calculation," Rev 1.
  2. IP-CALC-EG-00217, "Emergency Diesel Generator Storage Tank Level Setpoints," Rev. 5

cc: Mr. Douglas Pickett, Senior Project Manager, NRC NRR DORL  
Mr. William M. Dean, Regional Administrator, NRC Region 1  
NRC Resident Inspectors Office  
Mr. Francis J. Murray, Jr., President and CEO, NYSERDA  
Ms. Bridget Frymire, New York State Dept. of Public Service

ATTACHMENT 1 TO NL-12-097

ANALYSIS OF PROPOSED TECHNICAL SPECIFICATION AND BASES  
CHANGES REGARDING EMERGENCY DIESEL  
GENERATOR FUEL OIL SYSTEMS

ENTERGY NUCLEAR OPERATIONS, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3  
DOCKET NO. 50-286

## **1.0 DESCRIPTION**

The proposed changes revise Technical Specification (TS) Limiting Condition for Operation (LCO) 3.8.3, "Diesel Fuel Oil, and Starting Air," to relocate specific numerical values for fuel oil storage volumes from the TSs to the TS Bases in accordance with Technical Specification Task Force (TSTF) 501 Revision 1. The proposed changes also propose to revise the current bases to change the required amounts of fuel oil to be stored. The current Bases require sufficient fuel to operate 2 emergency diesel generators (EDG) with minimum safeguards equipment in operation for seven days. The revised bases require sufficient fuel oil storage volumes to operate three EDG at modified rated capacity for seven days.

The relocation of the numerical values for fuel oil storage is consistent with the NRC approved Revision 1 to Technical Specification Task Force (TSTF) Improved Standard Technical Specification Change Traveler-501, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control." The availability of this TS improvement was announced in the Federal Register on May 26, 2010, (FR 29588) as part of the consolidated line item improvement process (CLIIP). The proposed changes relocate the stored diesel fuel oil numerical volume requirements from the TS to the TS Bases so that they may be modified under licensee control. The changes to the amount of fuel oil volume required are separate from the TSTF and are requiring a more conservative amount. This will result in a shorter period of time the EDGs can operate without refilling the Fuel Oil Storage Tanks.

There are differences between the approved TSTF and the IP3 proposed TS change.

1. The TSTF is written for sites licensed for a 7-day supply of fuel oil for each emergency diesel generator (EDG) whereas IP3 is licensed for 48 hours of fuel oil in the Fuel Oil Storage tanks.
2. Another difference is that the TSTF refers to the 7-day fuel oil supply maintained within an associated fuel oil storage tank whereas IP3 credits the volume in the reserve fuel oil tank(s) or from offsite supplies to meet the 7 day requirement.
3. The last difference is that the IP3 TS do not contain requirements for the Lube oil. Lube oil requirements are administratively controlled.

## **2.0 PROPOSED CHANGES**

The proposed TS changes are as follows:

Revise IP3 TS 3.8.3 "Condition", "Required Action", and "Completion Time" on IP3 by revising the following (and adjusting subsequent numbering):

<p>A. -----NOTE-----  Only applicable in  MODES 1, 2, 3 and 4.  -----</p> <p>One or more DGs with usable  fuel oil in associated DG fuel  oil storage tank &lt; 5365 gal.</p>	<p>A.1 Declare associated DG  inoperable.</p>	<p>Immediately</p>
<p>B. -----NOTE-----  Only applicable in  MODES 5 and 6 and  during movement of  irradiated fuel.  -----</p> <p>Total combined usable fuel  oil in DG fuel oil storage  tanks associated with the  operable DG(s) &lt; 5365 gal.</p>	<p>B.1 Declare all DGs  inoperable.</p>	<p>Immediately</p>
<p>C. -----NOTE-----  Only applicable in  MODES 1, 2, 3 and 4.  -----</p> <p>Total useable fuel oil in  reserve storage tank(s)  &lt; 26,826 gal.</p>	<p>C.1 Declare all DGs  inoperable.</p>	<p>Immediately</p>
<p>G. Required Action and  associated Completion Time  not met.</p> <p><u>OR</u></p> <p>One or more DGs diesel fuel  oil or starting air subsystem  not within limits for reasons  other than Condition A, B, C,  or D, E, or F.</p>	<p>G.1 Declare associated DG  inoperable.</p>	<p>Immediately</p>

To

<p>A. One or more DGs with usable fuel oil level less than a 7 day supply and greater than a 6 day supply.</p>	<p>A.1 Restore fuel oil level to within limits.</p>	<p>48 hours</p>
<p>E. Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more DGs diesel fuel oil or starting air subsystem not within limits for reasons other than Condition A, B, C, or D.</p>	<p>E.1 Declare associated DG inoperable.</p>	<p>Immediately</p>

Revise IP3 TS 3.8.3 Surveillance Requirements on IP3 by revising the following (and adjusting subsequent numbering):

<p>SR 3.8.3.1</p> <p>-----NOTE-----  Only required in MODES 1, 2, 3 and 4.  -----</p> <p>Verify reserve storage tank(s) contain <math>\geq</math> 26,826 gal of fuel oil reserved for IP3 usage only.</p>	<p>24 hours</p>
<p>SR 3.8.3.2</p> <p>Verify DG fuel oil storage tanks contain:</p> <p>a. Usable fuel oil volume <math>\geq</math> 5365 gal in each storage tank when in MODES 1, 2, 3 and 4; and</p> <p>b. Total combined usable fuel oil volume <math>\geq</math> 5365 gal in any DG fuel oil storage tank(s) that are associated with the operable DG(s) when in MODES 5 and 6 and during movement of irradiated fuel assemblies.</p>	<p>31 days</p>
<p>SR 3.8.3.3</p> <p>Verify that fuel oil properties of new and stored fuel oil in the DG fuel oil storage tanks are tested</p>	<p>In accordance with the Diesel Fuel Oil Testing</p>

	and maintained in accordance with the Diesel Fuel Oil Testing Program.	Program
SR 3.8.3.4	<p>-----NOTE-----  Only required in MODES 1, 2, 3 and 4.  -----</p> <p>Verify that fuel oil properties in the reserve storage tank(s) are within limits specified in the Diesel Fuel Oil Testing Program.</p>	In accordance with the Diesel Fuel Oil Testing Program

To

SR 3.8.3.1	Verify DG fuel oil storage tanks and the reserve storage tank(s) contain a $\geq 7$ day supply of fuel.	31 days
SR 3.8.3.2	Verify that fuel oil properties of new and stored fuel oil in the DG fuel oil storage tanks and reserve storage tank(s) are tested and maintained in accordance with the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

The Technical Specification pages associated with this change are marked up in Attachment 2. The associated Technical Specification Bases are marked up consistent with TSTF 501 in Attachment 3.

### 3.0 **BACKGROUND**

The licensing basis is specified for the EDG fuel oil in the bases sections of TS 3.8.3 and FSAR section 8.2.

The fuel oil storage subsystem for each unit for the three safeguards DGs is stored in the three DG Fuel Oil Storage Tanks (one tank associated with each DG) and the common DG fuel oil reserve tank(s). The IP3 Fuel Oil Storage Tanks provide sufficient fuel for at least 48 hours of minimum safeguards equipment operation when any two of the DGs and the associated DG Fuel Oil Storage Tanks are available and TS 3.8.3 requires each to contain 5,365 usable gallons of fuel oil. Additional margin is provided by 115 gallons of fuel oil in the DG day tank but is not credited.

The additional DG fuel oil reserve is maintained in two 30,000 gallon tanks located in the Indian Point 1 Superheater Building and/or a 200,000 gallon tank in the Buchanan Substation which is located in close proximity to the IP3 site. Compliance with the TS is typically maintained based on the 200,000 gallon tank since the oil in the superheater building is also

used for the IP2 station blackout / Appendix R diesel which is not required to be operating when the EDG are required.

TS 3.8.3 requires at least 5,365 gallons of usable fuel oil in the Fuel Oil Storage Tanks and 26,826 gallons of usable fuel in the reserve storage tank(s) to provide for operation of two IP3 diesels with minimum safeguards for 7 days.

The TSTF noted as background that:

“In January 2001 and in June 2004, the U.S. Environmental Protection Agency (EPA) finalized the Clean Diesel Trucks and Buses Rule and the Clean Nonroad Diesel Rule, respectively, with more stringent standards for new diesel engines and fuels (See NRC Information Notice 2006-22, "New Ultra-Low-Sulfur Diesel Fuel Oil Could Adversely Impact Diesel Engine Performance," October 12, 2006). The EPA rules require a reduction in the sulfur content of highway diesel fuel from its current level of 500 parts per million (ppm) low sulfur diesel (LSD) to 15-ppm ultra low sulfur diesel (ULSD). Refiners were required to start producing the cleaner-burning diesel fuel ULSD, for use in highway vehicles beginning June 1, 2006.

The EPA required sulfur reductions for land-based nonroad diesel fuel to be accomplished in two steps, with an interim step from previous uncontrolled levels to a 500 ppm cap starting in June 2007 and the final step to 15 ppm in June 2010.

In general, the processing required to reduce sulfur in ULSD also reduces the aromatics content and density of diesel fuel, resulting in a reduction in volumetric energy content (BTU/gallon). The requirements on diesel fuel oil may continue to change in the future and the addition of additives to compensate for the issues associated with ULSD discussed in Information Notice 2006-022 may further affect the volumetric energy content (and, as a result, the stored diesel fuel oil volume requirements). These changes would result in future license amendments to revise the stored fuel oil volume in order to ensure that the volume provides for at least 7 days of emergency diesel generator operation. In order to facilitate the expeditious revision of the fuel oil volume requirement when needed, and to avoid the unnecessary expenditure of Licensee and NRC resources to prepare and review future license amendment requests that simply revise the volume equivalent to a 7-day supply, the proposed change places the requirement to have stored fuel oil sufficient to support 7 days of emergency diesel generator operation in the TS with the equivalent numerical volume under licensee control in the TS Bases.”

During the 2010 Component Design Basis Inspection (Inspection Report 05000286/2010009), the accuracy of the calculations for fuel oil usage was questioned due to the failure to consider the vendor identified 3% fuel consumption tolerance. Also identified in the inspection and associated discussions were the issues of any lost volume due to coating of the 32 fuel oil storage tank, whether load changes identified in revisions to IP3-CALC-ED-00207 since 1998 had been included, whether the fuel oil consumption necessary to lubricate the EDG fuel pump plungers and barrels was considered, and whether the usable volumes considered the net heat of combustion. A calculation was performed that addressed these issues and a procedurally required usable volume of 5,845 gallons was required for the Fuel Oil Storage Tanks and a usable volume of 27,826 gallons was required for the reserve tank(s). Instead of revising the TS to reflect these values, TSTF 501-A, Rev 1 is being used to relocate the volumes to the TS bases and a change to

the basis is requested to allow calculating the required fuel oil using the modified rated capacity for 7 days.

The FSAR changes to reflect the changes in the TS and TS bases will be processed pending TS approval

#### **4.0 TECHNICAL ANALYSIS**

The technical Analyses for TSTF-501-A, Rev 1 state;

"Regulatory Guide 1.137, (Ref. 1), Regulatory Position 1 states that ANSI N195-1976 provides a method acceptable to the NRC staff for complying with the pertinent requirements of General Design Criterion 17 of Appendix A to 10 CFR Part 50. Regulatory Position 1.c states that the fuel oil storage requirements should either be based on the assumption that the diesel generator operates continuously for 7 days at its rated capacity or calculations based on the time-dependent loads of the diesel generator. The NRC's Standard Review Plan, NUREG-0800, Section 9.5.4, paragraph I.d, states that one of the areas of review by the NRC is to ensure "A minimum of seven days' supply of fuel oil, for each redundant diesel generator system, has been provided onsite to meet the engineered safety feature load requirements following a loss of offsite power and a design basis accident." The Specification 3.8.3 LCO Bases states, "Stored diesel fuel oil is required to have sufficient supply for 7 days of full load operation." From these sources, it is clear that the principal safety concern with the volume of the stored diesel fuel oil is that there is a 7 day supply. Some licensees are required to maintain a stored diesel fuel oil volume equivalent to a different number of days. The proposed change does not alter the licensing basis of the plant, but only revises the presentation of the licensing basis assumption (days versus gallons).

Historically, the specific volume of fuel oil required to provide a 7 day supply was specified in the Technical Specifications to facilitate the comparison by the operator of the indicated tank level to the volume limit. However, recent state and federal regulatory changes that affect diesel fuel oil energy content and the anticipation of future changes, supports the relocation of the specific volume limit to licensee control and placing the basis of the limit in the Technical Specifications. There is ample precedent for this type of relocation of specific limits to licensee control while retaining the requirement in the Technical Specifications, such as Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," Generic Letter 96-03, "Relocation of the Pressure Temperature Limit Curves and Low Temperature Overpressure Protection System Limits," and TSTF-2-A, "Relocate the 10 year sediment cleaning of the fuel oil storage tank to licensee control."

The methodology for calculating the fuel oil storage volume equivalent to a [7] day supply is well established. The Bases will state that the fuel oil level equivalent to a [7] day supply is calculated in accordance with Regulatory Guide 1.137 and ANSI N195-1976. The volume will be stated in the Technical Specification Bases and changes to the volume must be reviewed under the Technical Specification Bases Control Program, located in the Administrative Controls chapter of the Technical Specifications, which requires changes to be evaluated under 10 CFR 50.59. Future changes to the fuel oil volume or method of calculation that do not meet the criteria in 10 CFR 50.59 will be submitted to the NRC for prior review under 10 CFR 50.90.

The [7] day diesel fuel oil inventory requirement is based on the concept of supporting diesel generator operation for [7] days without requiring resupply. To support that goal, a [7] day supply of lube oil for the diesel generators must also be available. The volume equivalent to a [7] day supply is based on supporting at least [7] days of full load operation for each DG at the diesel generator manufacturer's lube oil consumption values for the diesel generator under those conditions. It is proposed to relocate the specific value of lube oil equivalent to a [7] day supply to the Bases in order to be consistent with the diesel fuel oil requirements. In addition, NRC Information Notice 96-67, "Vulnerability of Emergency Diesel Generators to Fuel Oil/Lubricating Oil Incompatibility," noted that the reduced amount of sulfur in ULSD will result in more unreacted additive in the lubricating oil. This may result in the formation of deposits when some of the oil is burned, which may affect the volume of lube oil required to support [7] day operation. Relocating the specific volume of lube oil equivalent to a [7] day supply to licensee control will allow licensees to adjust the required volume without submitting a license amendment request to the NRC.

The Technical Specifications provide a limited Completion Time to continue to operate with available diesel fuel oil or lube oil inventory less than the [7] day supply, but greater than a [6] day supply. These circumstances may be caused by events such as full load operation required for an inadvertent start while at minimum required level, or feed and bleed operations that may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time to obtain the requisite replacement volume and to perform the analyses required prior to addition of the fuel oil to the tank. The calculation of the volume equivalent to a [6] day supply is performed in the same manner as the calculation of the [7] day supply. Relocating the specific volume in the Technical Specifications with the condition that a [6] day supply is available and placing the numerical value in the Bases is acceptable for the same reasons provided above for relocating the [7] day limit."

The above provides the TSTF 501 bases for the relocation of the fuel oil volume requirements. There are differences between the approved TSTF, the proposed TS and the current TS:

1. The TSTF is written for sites licensed for a 7-day supply of fuel oil for each emergency diesel generator (EDG). Another difference is that the TSTF refers to the 7-day fuel oil supply as being maintained within an associated fuel oil storage tank. IP3 is licensed for 48 hours of fuel oil in the associated Fuel Oil Storage Tanks which are buried for missile protection and seismic 1. IP3 is licensed to contain the volume of fuel oil in the reserve fuel oil tank(s) or from offsite supplies to meet the 7 day requirement. However, these reserve fuel oil tank(s) are not missile protected or seismic tanks. The TSTF recognizes this somewhat and says "The licensing basis for most licensees requires a 7 day supply of fuel oil and lube oil. Some plants have received NRC approval of a current license basis volume less than 7 days. Licensees should insert the number of days of fuel oil and lube oil required by the current licensing basis for the bracketed value of [7] days. Licensees should insert one day less than their current licensing basis required volume for the bracketed value of [6] days in Conditions A and B." IP3 has kept the full 7 days of fuel oil in the TS, even though they have different storage tank qualifications, by using the TSTF specification. The proposed bases changes do distinguish in the LCO section the number of gallons required in the Fuel Oil Storage Tanks and the amount in the reserve storage tank(s).
2. The IP3 TS do not contain requirements for the Lube oil. As stated in the TSTF, "the licensing basis for most licensees requires a 7 day supply of fuel oil and lube oil." Since

IP3 is not licensed for this requirement it is not added into the TS. Note the NRC inspects (see Inspection Report 05000286/2010009) IP3 to assure adequate lube oil is maintained under our administrative control.

3. The TSTF does not require that fuel oil volumes be revised but does revise the Bases to say that "Stored diesel fuel oil is required to have sufficient supply for [7] days of full load operation" and the Bases are revised to Reference Regulatory Guide (RG) 1.137 for this calculation. The Technical Basis above says "Regulatory Guide 1.137, (Ref. 1), Regulatory Position 1 states that ANSI N195-1976 provides a method acceptable to the NRC staff for complying with the pertinent requirements of General Design Criterion 17 of Appendix A to 10 CFR Part 50. Regulatory Position 1.c states that the fuel oil storage requirements should either be based on the assumption that the diesel generator operates continuously for 7 days at its rated capacity or calculations based on the time-dependent loads of the diesel generator. " IP3 is currently licensed for fuel oil requirements based on operation of 2 emergency diesel generators (EDG) with minimum safeguards equipment in operation for seven days. IP3 is proposing 7 days of operation at the rated capacity per RG 1.137 as the new licensing basis The fuel oil volumes in the proposed TS change are based on a more conservative calculation than the proposed licensing basis. That is operation of three EDG (IP3 has 3 EDG rather than the two EDG at most plants) at the following loading. TS Bases 3.8.1 identifies the rating and these were modified by using the ½ hour load  $\leq$  2000 kW, the 2 hour load of  $\leq$ 1950 kW, and the  $\leq$  1750 kW for the remainder of the 24 hours even though that would exceed the rating. This 24 hour load was then multiplied by the 7 days to give the modified rated load used for the calculation (i.e., 3.5 hours at 2000 kW, 14 hours at 1950 kW and 150.5 hours at 1750 kW). The calculated values in the TS Bases used fuel oil of specific gravity 0.83 which has minimal energy content for acceptable fuel. This loading exceeds the time dependent loads of the EDG (see TS Amendment 242 (Reference 1) which reviewed these loads.) Therefore the proposed volumes meet the proposed licensing basis (i.e., RG 1.137 requirement that the fuel oil consumption be based on the diesel generator operating continuously for 7 days at its rated capacity) and provides margin should there be subsequent load changes. One effect of this change is to decrease the time before the Fuel Oil Storage Tanks will be required to be filled. Previously these tanks contained sufficient fuel for 48 hours of operation but they now support 40 hours of operation. Because of the prior approval of the 48 hours, this change requires approval of the Bases.
4. The existing IP3 Conditions are separate for the Fuel Oil Storage Tanks and the reserve storage tanks. These have been combined into a single Condition A and action statement consistent with the format of the TSTF. The 6 and 7 day values for the FOST and the reserve tank are specified in the bases for EDG so that the condition can be entered for each diesel and, if the 6 day value is not met, individual diesels may be declared inoperable under Condition E. This revision has no effect on the operations of the plant or the application of the TS.
5. The completion times when the required fuel oil in any Fuel Oil Storage Tank or the reserve storage tank(s) are not met have been revised from the requirement to immediately declare the associated EDG inoperable to allowing 48 hours to restore the required level. This change is associated with the change to the condition which now allows entry when the fuel oil supply is between two values (6 and 7 day supplies). This is the way the Standard Technical Specifications (STS) are now written. As noted above, if

the 6 day supply is not met then the diesel is declared inoperable immediately. Therefore the change to meet the TSTF also adopts changes that have been made in the STS. The proposed change to Condition A.1 requires Fuel Oil Storage Tanks and the reserve storage tank(s) to meet the levels between a six day supply and a seven day supply. The requirements for a seven day supply are identified in the LCO section of the bases which require "Stored diesel fuel oil is required to have sufficient supply for 7 days of operation for 3 DGs at modified rated load. This is (calculated values) 5,712 gallons in each DG storage tank and 54,684 gallons in the reserve storage tank(s) (no instrument error accounted for) of usable fuel." This makes it clear what is required to meet the fuel oil requirements.

6. The TSTF does not mention any changes to the surveillance requirements. The IP3 TS have two different surveillance intervals in the TS 3.8.3 for the fuel oil inventory. Surveillance 3.8.3.1 is for the reserved fuel oil and required the inventory to be verified every 24 hours. Surveillance 3.8.3.2 is for the storage tanks associated with the EDG and requires the inventory to be verified every 31 days. The appropriate inventory surveillance interval for the fuel oil storage subsystem is 31 days. The 24 hour requirement was appropriate when the gas turbines were being used as peaking units and could cause a significant drop in the reserve fuel oil tank(s) volume. With the retirement of the gas turbines the IP2 Appendix R / SBO diesel is the only user connected to a storage tank. All other uses require manual removal of the fuel oil (i.e., pumping) and restoration of required margin of the fuel oil would be required if not met. The proposed Surveillance 3.8.3.1 will require the inventory of all tanks to be verified every 31 days.
7. The current IP3 Surveillances 3.8.3.3 and 3.8.3.4 to verify fuel oil properties in accordance with the Diesel Fuel Oil Testing Program do not require the reserve fuel oil storage tank(s) to be tested in Modes 5 and 6. The proposed Surveillance 3.8.3.2 for testing all fuel oil in accordance with the Diesel Fuel Oil Testing Program will require this testing in Modes 5 and 6. This is more conservative since the change adds a requirement to perform fuel oil testing of the reserve storage tank(s) during modes 5 and 6 and therefore requires the availability of these tank(s) during these modes. This reflects the fact that a reduced loading calculation has not been performed for Modes 5 and 6 to identify required fuel oil requirements

The calculations for the new TS volumes for 7 days (References 2 and 3) are enclosed for information. These are all usable volumes. Calculation IP-CALC-11-00058 determined the total fuel usage for seven days and six days of three EDG operating at a modified rated loading (i.e., 3.5 hours at 2000kw, 14 hours at 1950 kw and 150.5 hours at 1750 kw) using fuel oil with specific gravity of 0.83 to 0.89. Calculation IP-CALC-EG-00217 determined the following for fuel oil with a specific gravity of 0.83 (see Section 10.2):

- 5,712 gallons in each Fuel Oil Storage Tank (FOST) was sufficient for 40 hours of operation.
- 54,684 gallons of fuel oil in the reserve storage tank(s) would provide sufficient additional fuel to operate the 3 EDG for the remainder of the seven days.
- A total volume of 71,820 (three times 23940 gallons used by each EDG in 7 days) gallons and 61,560 (three times 20520 gallons used by each EDG in 6 days) gallons would be required for seven and six days of operation, respectively.

The six day fuel oil supply for each Fuel Oil Storage Tank(s) was not calculated but can be apportioned with the oil in the reserve tank. The 6 day equivalent supply is taken as 40 hours times 1 divided by 7 days with the total multiplied by 141 gallons per hour (the rate of consumption from 40 to 48 hours in the calculation). This rounds up to 806 gallons. The 7 day equivalent supply of 5,712 gallons less the one day equivalent supply of 806 gallons is 4906 gallons. The 6 day equivalent in the reserve tank is 20520 gallons (full 6 days for each EDG) minus 4907 gallons or 15613 gallons. Since three EDG run the total reserve is 46839 gallons.

This can all be summarized as

Duration	FOST	Reserve per EDG	Reserve
7 Days	5712 gallons	18228 gallons	54684 gallons
6 Days	4906 gallons	15613 gallons	46839 gallons

The Fuel Oil Storage Tanks are monitored to assure compliance with volume requirements. Calculation IP-CALC-EG-00217 discusses the level indicators which are calibrated for a specific gravity of 0.86. For the most conservative tank, the reading of 85.95 inches is equivalent to 6,579 gallons of fuel with a 0.86 specific gravity or 6802 gallons with a 0.83 specific gravity. The instruments are pneumatic so it would take a greater amount of fuel with a specific gravity of 0.83 to give this reading. There are also provisions for dip sticking the tanks. Pages 24 to 32 of the calculation discuss this.

## 5.0 REGULATORY ANALYSIS

The proposed revision to IP3 Technical Specification (TS) 3.8.3 will relocate the required volume of fuel oil to the TS Bases, consolidate the TS requirements for separate action statements and surveillances, and revise the required amount of fuel oil to reflect three operating EDG using a modified rated loading. In accordance with the criteria set forth in 10 CFR 50.92, the proposed changes have been evaluated. The changes are consistent with TSTF 501-A, Revision 1 and the additional changes to consolidate action statements and surveillances are within the intent of the TSTF. The revised fuel oil requirements are more conservative and are consistent with the intent of Regulatory Guide 1.137. Entergy determined the changes do not represent a significant hazards consideration. The following is provided in support of this conclusion consistent with the TSTF:

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

Response: No

The proposed change relocates the volume of diesel fuel oil required to support 7 day operation of the onsite diesel generators to licensee control, revises the action statement to reflect the volume equivalent to a 6 day supply and locates the volume in the TS Bases under licensee control, consolidates surveillance requirements and recalculates the fuel oil volume required for the EDG. The revised specific volume of fuel oil equivalent to a 7 and 6 day supply is calculated consistent with the NRC approved methodology described in Regulatory Guide 1.137, Revision 1, "Fuel Oil Systems for Standby Diesel Generators" and ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators." Because the requirement to maintain a 7 day supply of diesel fuel oil is not changed and is revised to be more consistent with the assumptions in the accident analyses, the consolidated

surveillances are more conservative, and the actions taken when the volume of fuel oil is less than a 6 day supply have not changed, neither the probability or the consequences of any accident previously evaluated will be affected. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No

The change does not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. The change does not alter assumptions made in the safety analysis but ensures that the diesel generator operates as assumed in the accident analysis. The proposed change is consistent with the safety analysis assumptions. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No

The proposed change relocates the volume of diesel fuel oil required to support 7 day operation of the onsite diesel generators, revises the action statement to reflect the volume equivalent to a 6 day supply, locates the volume in the TS Bases under licensee control, consolidates surveillance requirements and recalculates the fuel oil volume required for the EDG. Although the bases for the existing limits on diesel fuel oil are changed, no change is made to the accident analysis assumptions and no margin of safety is reduced as part of this change. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, the TSTF concludes that the proposed change 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

General Design Criterion (GDC) 17, "Electric Power Systems," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title 10 of the Code of Federal Regulations (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," requires that an onsite electric power system and an offsite electric power system be provided to permit functioning of structures, systems, and components important to safety. In addition, GDC 17 contains requirements concerning system capacity, capability, independence, redundancy, availability, testability, and reliability. Regulatory Guide 1.137, Revision 1, "Fuel Oil Systems for Standby Diesel Generators" dated October 1979, describes a method acceptable to the NRC staff for complying with the Commission's regulations regarding diesel fuel oil systems for standby diesel generators and assurance of adequate diesel fuel oil quality. Regulatory Guide 1.137 states that Appendix B to ANSI N195-1976 should be used as a basis for a program to ensure the initial and continuing quality of diesel fuel oil as supplemented by eight additional provisions described in the Regulatory

Guide for maintaining the properties and quality of diesel fuel oil. ANSI N195-1976, "Fuel Oil Systems for Standby Diesel Generators," requires that onsite fuel oil storage shall be sufficient to operate the minimum number of diesel generators following the limiting design basis accident for either seven (7) days, or the time required to replenish the oil from sources outside the plant site following any limiting design basis event without interrupting the operation of the diesel, whichever is longer. The ANSI standard also provides guidance for calculating storage requirements.

The proposed change does not affect the design of the onsite electric power system, the quality of the onsite electric power system, or the method of determining the necessary quantity of onsite diesel fuel oil. The current IP3 Licensing basis does not specifically require compliance with RG 1.137 or ANSI N195-1975 but many of the requirements are met by this Licensing basis. These are sufficient to assure the high quality of the fuel and sufficient fuel oil to operate the minimum number of diesel generators following the limiting design basis accident for seven days. Additional oil from offsite sources is available.

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 approval of the proposed change will not be inimical to the common defense and security or to the health and safety of the public.

### 5.3 Environmental Considerations

As noted in the TSTF, a review has determined that the proposed change 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 change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed change 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 change.

### 6.0 REFERENCES

1. NRC Letter to Entergy, Indian Point 3 Issuance of Amendment Regarding Emergency Diesel Generator Testing (TAC No. ME2869) (ML110100307), dated January 25, 2011
2. IP-CALC-11-00058, "IP3 Emergency Diesel Generator (EDG) Fuel Oil Consumption Licensing Basis Calculation," Rev 1.
3. IP-CALC-EG-00217, "Emergency Diesel Generator Storage Tank Level Setpoints," Rev. 5

ATTACHMENT 2 TO NL-12-097

MARKUP OF TECHNICAL SPECIFICATION PAGES FOR  
PROPOSED CHANGES REGARDING EMERGENCY DIESEL GENERATOR  
FUEL OIL SYSTEMS

Changes indicated by lineout for deletion and Bold/Italics for additions

Unit 3 Affected Pages  
3.8.3-1 to 4

ENERGY NUCLEAR OPERATIONS, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3  
DOCKET NO. 50-286

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil and Starting Air

LC0 3.8.3 The stored diesel fuel oil and starting air subsystem shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each DG.  
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CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. <del>NOTE</del> Only applicable in <del>MODES 1, 2, 3 and 4.</del></p> <hr/> <p>One or more DGs with usable fuel oil <b>level less than a 7 day supply and greater than a 6 day supply</b> in associated DG fuel oil storage tank &lt; 5365 gal.</p>	<p>A.1 <del>Declare associated DG inoperable.</del> <b>Restore fuel oil level to within limits.</b></p>	<p>Immediately <b>48 hours</b></p>
<p>B. <del>NOTE</del> Only applicable in <del>MODES 5 and 6 and during movement of irradiated fuel.</del></p> <hr/> <p>Total combined usable fuel oil in DG fuel oil storage tanks associated with the operable DG(s) &lt; 5365 gal.</p>	<p>B.1 <del>Declare all DGs inoperable.</del></p>	<p>Immediately</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p><del>C.</del> <del>NOTE</del>  <del>Only applicable in</del>  <del>MODES 1, 2, 3 and 4.</del></p> <hr/> <p><del>Total useable fuel oil</del>  <del>in reserve storage</del>  <del>tank(s) &lt; 26,826 gal.</del></p>	<p><del>C.1</del> <del>Declare all DGs</del>  <del>inoperable.</del></p>	<p>Immediately</p>
<p><del>DB.</del> One or more DG fuel oil storage tanks or reserve fuel oil storage tanks with fuel oil total particulates not within limits.</p>	<p><del>DB.1</del> Restore fuel oil total particulates within limit.</p>	<p>7 days for DG fuel oil storage tank</p> <p><u>AND</u></p> <p>30 days for reserve fuel oil storage tank</p>
<p><del>EC.</del> One or more DG fuel oil storage tanks or reserve fuel oil storage tanks with fuel oil properties other than particulates not within limits.</p>	<p><del>EC.1</del> Restore fuel oil properties to within limits.</p>	<p>30 days for DG fuel oil storage tank</p> <p><u>AND</u></p> <p>60 days for reserve fuel oil storage tank</p>
<p><del>FD.</del> One or more DGs with starting air receiver pressure &lt; 250 psig and ≥ 90 psig.</p>	<p><del>FD.1</del> Restore starting air receiver pressure to ≥ 250 psig.</p>	<p>48 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p><b>GE.</b> Required Action and associated Completion Time not met.</p> <p><u>OR</u></p> <p>One or more DGs diesel fuel oil or starting air subsystem not within limits for reasons other than Condition A, B, C, D, E, or <b>FD</b>.</p>	<p><b>GE.1</b> Declare associated DG inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p><del>SR 3.8.3.1</del> <del>NOTE</del>  <del>Only required in MODES 1, 2, 3 and 4.</del></p> <hr/> <p><del>Verify reserve storage tank(s) contain <math>\geq</math> 26,826 gal of fuel oil reserved for IP3 usage only.</del></p>	<p><del>24 hours</del></p>
<p>SR 3.8.3.21 Verify DG fuel oil storage tanks <b>and the reserve storage tank(s)</b> contain <b><math>\geq</math> a 7 day supply of fuel.</b></p> <p>a. Usable fuel oil volume <math>\geq</math> 5365 gal in each storage tank when in MODES 1, 2, 3 and 4; and</p> <p>b. Total combined usable fuel oil volume <math>\geq</math> 5365 gal in any DG fuel oil storage tank(s) that are associated with the operable DG(s) when in MODES 5 and 6 and during movement of irradiated fuel assemblies.</p>	<p>31 days</p>
<p>SR 3.8.3.32 Verify that fuel oil properties of new and stored fuel oil in the DG fuel oil storage tanks <b>and the reserve storage tank(s)</b> are tested and maintained in accordance with the Diesel Fuel Oil Testing Program.</p>	<p>In accordance with the Diesel Fuel Oil Testing Program</p>

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
<del>SR 3.8.3.4</del>	<p style="text-align: center;"><del>NOTE</del></p> <p style="text-align: center;"><del>Only required in MODES 1, 2, 3 and 4.</del></p> <hr/> <p><del>Verify that fuel oil properties in the reserve storage tank(s) are within limits specified in the Diesel Fuel Oil Testing Program.</del></p>	<p><del>In accordance with the Diesel Fuel Oil Testing Program</del></p>
SR 3.8.3.53	Verify each DG air start receiver pressure is $\geq 250$ psig.	31 days
SR 3.8.3.64	Check for and remove accumulated water from each DG fuel oil storage tank.	92 days

ATTACHMENT 3 TO NL-12-097

MARKUP OF TECHNICAL SPECIFICATION BASES ASSOCIATED WITH  
THE PROPOSED CHANGES REGARDING  
EMERGENCY DIESEL GENERATOR FUEL OIL SYSTEMS

Changes indicated by lineout for deletion and Bold/Italics for additions

ENTERGY NUCLEAR OPERATIONS, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3  
DOCKET NO. 50-286

## B 3.8 ELECTRICAL POWER SYSTEMS

### B 3.8.3 Diesel Fuel Oil and Starting Air

#### BASES

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##### BACKGROUND

Fuel oil for the safeguards DGs is stored in three 7,700 gallon DG fuel oil storage tanks located on the south side of the Diesel Generator Building. The offsite DG fuel oil reserve is maintained in two 30,000 gallon tanks located in the Indian Point 1 Superheater Building and/or a 200,000 gallon tank in the Buchanan Substation which is located in close proximity to the IP3 site. The IP3 offsite fuel oil reserve is maintained by the operators of IP2, in accordance with formal agreements. The IP3 offsite DG fuel oil reserve is normally stored in the same tanks used to store the IP2 offsite DG fuel oil reserve.

*The licensing basis for fuel oil storage is based on RG 1.137 compliance with EDG rated capacity but the calculations used for the existing balance are more conservative.* Sufficient fuel for at least 4840 hours of *three EDG at a modified rated load (i.e., the half hour load, the 2 hour load and the continuous load for the remainder of 24 hours every day for 7 days is 3.5 hours at 2000kw, 14 hours at 1950 kw and 150.5 hours at 1750 kw) that was calculated (Reference 1 and 2) to be 5,712 gallons per DG fuel oil storage tank.* ~~minimum safeguards equipment operation is available when any two of the DG fuel oil storage tanks are available and each contains 5,365 usable gallons of fuel oil.~~ Additional margin is provided by 115 gallons of fuel oil in the DG day tank required by SR 3.8.1.4. The maximum DG loadings for design basis transients that actuate safety injection are summarized in FSAR 8.2 (Ref. 3 ±). These transients include large and small break loss of coolant accidents (LOCA), main steamline break and steam generator tube rupture (SGTR).

The three DG fuel oil storage tanks are filled through a common fill line that is equipped with a truck hose connection and a shutoff valve at each tank. The overflow from any DG fuel oil storage tank will cascade into an adjacent tank. Each DG fuel oil storage tank is equipped with a single vertical fuel oil transfer pump that discharges to either the normal or emergency header. Either header can be used to fill the day tank at each diesel. Each DG fuel oil storage tank has an alarm that sounds in the control room when the level in the tank approaches the level equivalent of the minimum required usable inventory. Each tank is also equipped with a sounding connection and a level indicator.

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BASES

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BACKGROUND  
(continued)

Each emergency diesel is equipped with a 175-gallon day tank with an operating level that provides sufficient fuel for approximately one hour of DG operation. A decrease in day tank level to approximately 115 gallons (65% full) will cause the normal and emergency fill valves on that day tank to open and the transfer pump in the corresponding DG fuel oil storage tank to start. Once started, the pump will continue to run until that day tank is filled. However, any operating transfer pump will fill any day tank with a normal or emergency fill valve that is open. When a day tank is at approximately 158 gallons (90% full), a switch initiates closing of the day tank normal and emergency fill valves.

Technical Specifications require sufficient fuel oil to operate ~~2 of~~ the 3 ~~required~~ DGs **for 7 days** which was calculated at ~~minimum a modified rated load safeguards load for 7 days~~. The Technical Specification required volume of fuel oil includes the ~~26,826~~ gallons of usable fuel oil in the reserve tanks, and ~~10,730~~ the usable gallons in ~~two~~ **the three** DG fuel oil storage tanks (~~assuming a failure makes the oil in the third DG fuel oil storage tank unavailable~~), without crediting the additional margin of ~~230~~ gallons **fuel** in ~~two~~ **the** day tanks (~~assuming a failure makes the oil in the day tank associated with the third DG unavailable~~).

If the DGs require fuel oil from the fuel oil reserve tank(s), the fuel oil will be transported by truck to the DG fuel oil storage tanks. A truck with appropriate hose connections and capable of transporting oil is available either on site or at the Buchanan Substation. Commercial oil supplies and trucking facilities are also available in the vicinity of the plant.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Requirements for DG fuel oil testing methodology, frequency, and acceptance criteria are maintained in the program required by Specification 5.5.12, Diesel Fuel Oil Testing Program.

Each DG has an air start system with adequate capacity for four successive start attempts on the DG without recharging the air start receiver(s). The air starting system is designed to shutdown and lock out any engine which does not start during the initial start attempt so that only enough air for one automatic start is used. This conserves air for subsequent DG start attempts.

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BASES

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## APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 14 (Ref. 35), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of 10 CFR 50.36.

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LCO

Stored diesel fuel oil is required to have sufficient supply for 7 days of operation for ~~2 of 3~~ 3 DGs ***which are calculated at minimum modified rated load safeguards load. This is (calculated values) 5,712 gallons in each DG storage tank and 54,684 gallons in the reserve storage tank(s) (no instrument error accounted for) of usable fuel.*** Fuel oil is also required to meet specific standards for quality. This requirement, in conjunction with an ability to obtain replacement supplies within 7 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. DG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown."

The starting air system is required to be maintained  $\geq 250$ psig to meet SR 3.3.8.5. At this pressure the system meets its design criteria because it has the capability for four diesel starts, without recharging the air start receivers, each within the 10 seconds assumed for a LOCA. At 90 psig the system has the capability for one diesel start within the 10 seconds assumed for a LOCA. The 250 psig and 90 psig limits for air start receiver pressure are analytical limits. Therefore, an appropriate allowance for instrument uncertainty must be applied when ensuring these limits are met. To allow for instrument uncertainty, administrative limits for starting air pressure if  $\geq 260$  psig and  $\geq 100$  psig are used, respectively.

(continued)

BASES

**APPLICABILITY** The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil and starting air are required to be within limits when the associated DG is required to be OPERABLE.

**ACTIONS** The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

A.1

***In this Condition, the 7 day fuel oil supply for a DG is not available. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6 day supply. The gallons of fuel oil level equivalent to a 6 and 7 day supply in each EDG fuel oil storage tank and in the reserve tanks is:***

Duration	FOST/each EDG	Reserve/each EDG	Reserve
7 Days	5712	18228	54684
6 Days	4906	15613	46839

***These values can be used when the 6 day value is not met for only one EDG and Condition E must be met. These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, 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. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that procedures***

*will be initiated to obtain replenishment, and the low probability of an event during this brief period.*

~~the requirements of SR 3.8.3.2.a are not met. Therefore, a DG will not be able to support 48 hours of continuous operation at minimum safeguards load and replenishment of the DG fuel oil storage tanks will be required in less than 48 hours following an accident. The DG associated with the DG fuel oil storage tank not within limits must be declared inoperable immediately because replenishment of the DG fuel oil storage tank requires that fuel be transported from the offsite DG fuel oil reserve by truck and the volume of fuel oil remaining in the DG fuel oil storage tank may not be sufficient to allow continuous DG operation while the fuel transfer is planned and conducted under accident conditions.~~

~~This Condition is preceded by a Note stating that Condition A is applicable only in MODES 1, 2, 3 and 4. This Note provides recognition that reduced DG loading required to respond to events in MODES 5 and 6 significantly reduces the amount of fuel oil required in the DG fuel oil storage tanks when in these MODES.~~

(continued)

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BASES

ACTIONS

~~(continued)~~

B.1

~~In this Condition, the requirements of SR 3.8.3.2.b are not met. With less than the total required minimum fuel oil in one or more DG fuel oil storage tanks, the one or two DGs required to be operable in MODES 5 and 6 and during movement of irradiated fuel may not have sufficient fuel oil to support continuous operation while a fuel transfer from the offsite DG fuel oil reserve or from another offsite source is planned and conducted under accident conditions. Fuel oil credited to meet this requirement must be in one or more storage tanks associated with the operable DG(s) because the fuel transfer pump in each tank may depend on power from that DG.~~

~~This condition requires that all DGs be declared inoperable immediately because minimum fuel oil level requirements in SR 3.8.3.2.b is a condition of Operability of all DGs when in the specified MODES.~~

~~This Condition is preceded by a Note stating that Condition B is applicable only in MODES 5 and 6 and during the movement of irradiated fuel. This Note provides recognition that reduced DG loading required to respond to events in MODES 5 and 6 significantly reduces the amount of fuel oil required in the DG fuel oil storage tanks when in these MODES.~~

C.1

~~In this Condition, the fuel oil remaining in the offsite DG fuel oil reserve is not sufficient to operate 2 of the 3 DGs at minimum safeguards load for 7 days. Therefore, all 3 DGs are declared inoperable immediately.~~

~~This Condition is preceded by a Note stating that Condition D is applicable only in MODES 1, 2, 3 and 4 because the offsite DG fuel oil reserve is required to be available only in these MODES. This Note provides recognition that reduced DG loading required to respond to events in MODES 5 and 6 significantly reduces the amount of fuel oil required when in these MODES.~~

continued)

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BASES

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ACTIONS  
(continued)

D B.1

This Condition is entered as a result of a failure to meet the acceptance criteria of SR 3.8.3.32 ~~or SR 3.8.3.4~~ when the DG fuel oil storage tanks or reserve storage tanks are verified to have particulate within the allowable value in Specification 5.5.12, Diesel Fuel Oil Testing Program. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7-day and 30-day Completion Times, for the onsite tanks and the reserve storage tanks, respectively, allows for further evaluation, resampling and re-analysis of the DG fuel oil.

EC.1

This condition is entered as a result of a failure to meet the acceptance criteria of SR 3.8.3.32 ~~or SR 3.8.3.4~~ when the DG fuel oil storage tanks or reserve storage tanks are verified to have properties (other than particulates) within the allowable values of Specification 5.5.12, Diesel Fuel Oil Testing Program. A period of 30 days is allowed to restore the properties of the fuel oil in the DG fuel oil storage tank to within the limits established by Specification 5.5.12. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore

the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that

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BASES

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ACTIONS

EC.1. (continued)

the DG would still be capable of performing its intended function. A period of 60 days is allowed to restore the properties of the fuel oil stored in the affected reserve storage tank to within the limits established by Specification 5.5.12. This period provides sufficient time to perform the actions described above for the DG fuel oil storage tanks. The additional time allowed for the reserve tanks is acceptable because reserve oil is not immediately needed to support DG operation and reserve oil is available from more than one reserve tank. Reserve oil is also available from commercial suppliers in the vicinity of the plant.

FD.1

With starting air receiver pressure < 250 psig, sufficient capacity for four successive DG start attempts does not exist. However, as long as the receiver pressure is  $\geq$  90 psig, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. The SR 3.8.3.53 limit for air start receiver pressure of 250 psig is an analytical limit. Therefore an appropriate allowance for instrument uncertainty must be applied when ensuring this limit is met. To allow for this instrument uncertainty, an administrative limit for starting air pressure of  $\geq$  260 psig is used. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period. Entry into Condition F is not required when air receiver pressure is less than required limits while the DG is operating following a successful start.

GE.1

With a Required Action and associated Completion Time not met, or one or more DG's fuel oil or starting air subsystem not within limits for reasons other than addressed by Conditions A through **DF**,

the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

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BASES

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SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the *storage tanks to support each DG's operation for 7 days. The fuel oil level equivalent to a 7 day supply is 71,817 gallons when calculated and no instrument inaccuracies are accounted for (References 1 and 2). The required fuel storage volume is determined using the most limiting energy content of the stored fuel. Using the known correlation of diesel fuel oil absolute specific gravity or API gravity to energy content, the required diesel generator output, and the corresponding fuel consumption rate, the onsite fuel storage volume required for 7 days of operation can be determined. SR 3.8.3.2 requires new fuel to be tested to verify that the absolute specific gravity or API gravity is within the range assumed in the diesel fuel oil consumption calculations. The 7 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 71,817 gallons is based upon the calculated values of 5,712 gallons in each fuel oil storage tank for 40 hours of operation and 54,684 gallons in the reserve storage tanks(s)(no instrument inaccuracies considered ).*

~~The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.~~

~~offsite DG fuel oil reserve to support 2 DGs at minimum safeguards load for 7 days assuming requirements for the DG fuel oil storage tanks and day tanks are met. The 7 day duration with 2 of the 3 DGs at minimum safeguards load is sufficient to place the unit in a safe shutdown condition and to bring in replenishment fuel from a commercial source.~~

~~The 24 hour Frequency was needed because the DG fuel oil reserve is stored in fuel oil tanks that used to support the operation of gas turbine peaking units that are not under IP3 control. Specifically, the 26,826 gallons needed to support 7 days of DG operation is maintained in two 30,000 gallon tanks located in the Indian Point 1 Superheater Building and/or a 200,000 gallon tank in the Buchanan Substation. Although the volume of fuel oil required to support IP3~~

~~DG operability is designated as for the exclusive use of IP3, the fact that the oil in the storage tanks is used for purposes other than IP3 DGs and oil consumption is not under the direct control of IP3 operators warrants frequent verification that required offsite DG fuel oil reserve volume is being maintained.~~

~~SR 3.8.3.2~~

~~SR 3.8.3.2.a provides verification when in MODES 1, 2, 3, and 4, that there is an adequate inventory of fuel oil in the storage DG fuel oil tanks to support each DG's operation for at least 48 hours of operation of minimum safeguards equipment when any two of the DG fuel oil storage tanks are available and 5,365 gallons of usable fuel oil is contained in each tank.~~

~~SR 3.8.3.2.b provides verification when in MODES 5 and 6 and during movement of irradiated fuel that the minimum required fuel oil for operation in these MODES is available in one or more DG fuel oil storage tanks. The minimum required volume of fuel oil~~

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BASES

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SURVEILLANCE REQUIREMENTS

~~SR 3.8.3.2 (continued)~~

~~takes into account the reduced DG loading required to respond to events in MODES 5 and 6 is sufficient to support the two DGs required to be operable in MODES 5 and 6 and during movement of irradiated fuel while a fuel transfer from the offsite DG fuel oil reserve or from another offsite source is planned and conducted under accident conditions.~~

~~This minimum volume required by SR 3.8.3.2.a and SR 3.8.3.2.b is the usable volume and does not include allowances for fuel not usable due to the fuel oil transfer pump cutoff switch (worst case 956 gallons for #33 tank and 915 gallons for #31 and #32 tanks) and margin (20 gallons per tank). If the installed level indicators are used to measure tank volume, an additional allowance of 50 gallons for instrument uncertainty associated with the level indicators must be included. Appropriate adjustments are required for SR 3.8.3.2.b if the required volume is found in more than one DG fuel oil storage tank.~~

~~The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.~~

SR 3.8.3.32

This surveillance verifies that the properties of new and stored fuel oil meet the acceptance criteria established by Specification 5.5.12, "Diesel Fuel Oil Testing Program." Specific sampling and testing requirements for diesel fuel oil in accordance with applicable ASTM Standards are specified in the administrative program developed to ensure Specification.

New fuel oil is sampled prior to addition to the DG fuel oil storage tanks *or reserve storage tank(s)* and stored fuel oil is periodically sampled from the DG fuel oil storage tanks *and reserve storage tank(s)*. Requirements and acceptance

(continued)

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BASES

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SURVEILLANCE REQUIREMENTS

SR 3.8.3.-32 (continued)

criteria for fuel oil are divided into 3 parts as follows:

a) tests of the sample of new fuel sample and acceptance criteria that must be met prior to adding the new fuel to the DG fuel oil storage tanks *or reserve storage tank(s)*; b) tests of the sample of new fuel that may be completed after the fuel is added to the DG fuel oil storage tanks *or reserve storage tank(s)*; and, c) tests of the fuel oil stored in the DG fuel oil storage tanks *and reserve storage tank(s)*. The basis for each of these tests is described below.

The tests of the sample of new fuel and acceptance criteria that must be met prior to adding the new fuel to the DG fuel oil storage tanks *or reserve storage tank(s)* are a means of determining that the new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. The tests, limits, and applicable ASTM Standards needed to satisfy Specification 5.5.12 are listed in the administrative program developed to implement Specification 5.5.12.

Failure to meet any of the specified limits is cause for rejecting the new fuel oil, but does not represent a failure to meet the LCO because the fuel oil is not added to the storage tanks.

The tests of the sample of new fuel that may be completed after the fuel is added to the DG fuel oil storage tanks **or reserve storage tank(s)** must be completed Within 31 days. The fuel oil is analyzed to establish that the other properties of the fuel oil meet the acceptance criteria of Specification 5.5.12. The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate

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## BASES

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### SURVEILLANCE REQUIREMENTS

#### SR 3.8.3.-32 (continued)

effect on DG operation. Failure to meet the specified acceptance criteria requires entry into Condition E and restoration of the quality of the fuel oil in the DG fuel oil storage tank **or reserve storage tank(s)** within the associated Completion Time and explained in the Bases for Condition E. This Surveillance ensures the availability of high quality fuel oil for the DGs.

The periodic tests of the fuel oil stored in the DG fuel oil storage tanks verify that the length of time or conditions of storage has not degraded the fuel in a manner that could impact DG OPERABILITY. Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure. Particulate concentrations must meet the acceptance criteria of Specification 5.5.12. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. Each DG fuel oil storage tank must be considered and tested separately.

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

#### SR 3.8.3.4

~~The IP3 offsite fuel oil reserve is maintained by the operators of IP2, in accordance with formal agreements. The IP3 offsite DG fuel~~

~~oil reserve is normally stored in the same tanks used to store the IP2 offsite DG fuel oil reserve. Fuel oil properties of new and stored fuel are controlled in accordance with IP2 Technical Specifications and FSAR in order to meet requirements for the Operability of IP2 and IP3 DGs.~~

(continued)

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## BASES

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### SURVEILLANCE REQUIREMENTS

#### SR 3.8.3.4 (continued)

~~Required testing of the properties of new and stored fuel in the offsite DG fuel oil reserve is performed by IP2 in accordance with programs established by IP2. IP3 performs periodic verification that fuel oil stored in the offsite DG fuel oil reserve meet the requirements of Specification 5.5.12.~~

~~Failure to meet the specified acceptance criteria, whether identified by IP2 or IP3, requires entry into Condition D or E and restoration of the quality of the fuel oil in the offsite DG fuel oil reserve within the associated Completion Time and explained in the Bases for Conditions D and E.~~

#### SR 3.8.3.5

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of four engine starts without recharging. Failure of the engine to start within approximately 15 seconds indicates a malfunction at which point the overcrank relays terminate the start cycle. In this condition, sufficient starting air will still be available so that the DG can be manually started. The pressure specified in this SR is intended to reflect the lowest value at which the four starts can be accomplished.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

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BASES

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SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.3.64

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks once every 92 days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are consistent with Regulatory Guide 1.137 (Ref. 24). This SR is for preventive maintenance. Unless the volume of water is sufficient that it could impact DG OPERABILITY, presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed within 7 days of performance of the Surveillance.

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REFERENCES

1. IP-CALC-11-00058, "IP3 Emergency Diesel Generator (EDG) Fuel Oil Consumption Licensing Basis Calculation," Rev 1.
  2. IP-CALC-EG-00217, "Emergency Diesel Generator Storage Tank Level Setpoints," Rev. 5
  3. FSAR, Section 8.2.
  4. Regulatory Guide 1.137.
  5. FSAR, Chapter 14.
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