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April 15, 2013

NL-13-057

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

SUBJECT: Response to Request For Additional Information Regarding Emergency Diesel Generator Fuel Oil System (TAC No. ME9264)
Indian Point Unit Number 3
Docket No. 50-286
License No. DPR-64

REFERENCES:

1. Entergy Letter NL-12-097 to NRC Regarding License Amendment Request for Emergency Diesel Generator Fuel Oil System, dated August 14, 2012 (Accession No. ML12234A250)
2. Entergy Letter NL-12-120 to NRC Regarding Supplement to License Amendment Request for Emergency Diesel Generator Fuel Oil System, dated August 17, 2012
3. NRC Letter to Entergy, Request for Additional Information Regarding Emergency Diesel Generator Fuel Oil System (TAC No. ME9264), Dated March 3, 2013

Dear Sir or Madam:

Entergy Nuclear Operations, Inc, (Entergy) requested a License Amendment, References 1 and 2, 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. On March 3, 2013 the NRC staff identified the need for additional information to complete their review (Reference 3). Entergy is providing additional information in response to this request (see Attachments).

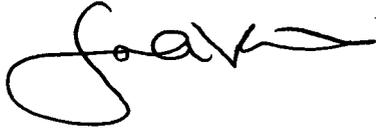
There are no new commitments being made in this submittal.

A081
MRR

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 April 15, 2013

Sincerely,



JAV/sp

- Attachment:
1. Response to Request For Additional Information Regarding Emergency Diesel Generator Fuel Oil
 2. Markup of Technical Specification Pages for Proposed Changes Regarding Emergency Diesel Generator Fuel Oil System
 3. Markup of Technical Specification Bases Associated with the Proposed Changes Regarding Emergency Diesel Generator Fuel Oil System

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-13-057

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
REGARDING EMERGENCY DIESEL GENERATOR FUEL OIL SYSTEM

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

By letter dated August 14, 2012, and supplemented in letter dated August 17, 2012, Entergy Nuclear Operations, Inc. (Entergy) submitted a license amendment request for U.S. Nuclear Regulatory Commission (NRC) review that would revise the Technical Specifications (TSs) for Indian Point 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. On March 3, 2013 the NRC staff identified the need for additional information to complete their review. The information requested and the responses are as follows:

Question 1 RAI-EPTB-1

Final Safety Analysis Report (FSAR) Section 8.2.3 states that the fuel oil tanks in the Indian Point 1 Superheater Building and the Buchanan Substation are classified as seismic Class III. Describe any contingency plan that is in place to provide fuel oil to the site for EDG operation for an extended period of time following a seismic event.

Response:

The fuel oil tanks in the Indian Point 1 Superheater Building and the Buchanan Substation are seismic Class III.

The FSAR (Section 8.2.3) notes "There are two 30,000 gallon seismic Class III tanks located in the Indian Point 1 Superheater Building and a 200,000 gallon seismic Class III tank in the Buchanan Substation located immediately across Broadway. These tanks contain fuel oil for operation of the IP2 SBO /Appendix R diesel. Each tank has a level indicator and a capacity check is made weekly. The maximum consumption of the IP2 SBO / Appendix R diesel generator over a three (3) day operating period is 12,500 gallons..... A truck with hose connections compatible with the underground storage tanks will be provided. If the diesels require the reserves in these tanks, the contents of these tanks would be transported by truck to the underground diesel storage tanks. Additional supplies of diesel oil are available locally. Under normal conditions, 25,000 gallons can be delivered on a one or two-day notice. Additional supplies are also maintained in the region (about 40 miles from the plant) and are available for use during emergencies, subject to extreme cold weather conditions (increased domestic heating usage) and available transportation."

The SER Supplement 1 (January 16, 1975) accepted this design. "When the diesel fuel in the 7700 gallon storage tanks is exhausted additional supplies can be obtained both on site and immediately adjacent to the site. Two 30,000 gallon tanks on site and one 200,000 gallon tank at the Consolidated Edison Buchanan site store fuel oil that is compatible with the diesel generators. The Technical Specifications require that the oil stored in these tanks be compatible with the diesels and that at least seven days of fuel supply for Indian Point 3 be available. Since these large storage tanks are not directly piped into the 7700 gallon underground fuel storage tanks, provisions have been made to transfer the oil in the larger tanks to the underground tanks. The applicant has a contract with a local company to supply an oil truck, on a priority basis, to affect this transfer if necessary. Oil transfer hoses with the appropriate fittings are installed near the outlets of these large storage tanks to facilitate this transfer. Adequate space is available around the storage facilities to place an oil truck there while it is being filled."

Based on design, offsite supplies would be used to provide fuel oil following a seismic event that resulted in loss of the seismic Class III tanks. IPEC has a contract with the vendor, Bottini Oil, to deliver fuel oil by truck or supply a truck to transfer fuel oil from GT-2/3 or GT-1N/S within 24 hours of notification. An onsite tanker is also maintained for the events where the FO tanks are available.

Question 2 RAI-EPTB-2

The fuel oil tanks in the IP1 Superheater building and the Buchanan Substation are not protected from tornados, floods, and other natural phenomena. Describe any contingency plan that is in place to provide fuel oil to the site for EDG operation for an extended period of time following a tornado, flood, or other natural phenomena.

Response

The fuel oil tanks in the Indian Point 1 Superheater building and the Buchanan substation have not been specifically analyzed for tornados, floods, and other natural phenomena. This is their licensing basis. The separation of the tanks in the Unit 1 Superheater Building from the Buchanan substation tank provide a measure of protection from natural phenomena such as tornado and this was in the original licensing basis. Based on design, offsite supplies would be used to provide fuel oil following natural phenomena that resulted in loss of the tanks. Contracts are in place to supply this fuel oil.

RAI-EPTB-3

This license amendment request (LAR) states that "If the diesel generators (DGs) require fuel oil from the fuel oil reserve tanks(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."

- a. Describe how the operators know where the truck is located. Where will the truck normally be located, and is the normal location in a building or outside?
- b. What is the maximum capacity of the truck, and are the hose connections unique to this truck, the reserve storage tanks, or the fuel oil storage tanks?
- c. Explain how the truck will be maintained to be capable of transporting fuel oil, who is responsible for this maintenance, and by whom and at what frequency is the capability to transport fuel oil verified.
- d. Explain how the truck pathway(s) and access to the tank connections will be verified to be clear of obstructions. Who will perform this verification.
- e. Where is the licensed truck driver located? Is a licensed truck driver available near the truck 24 hours a day?
- f. Describe how the fuel oil is transferred from the Buchanan Station tank to

the truck and from the truck to the underground fuel oil storage tanks during plant operation and during or following a natural disaster (earthquake, flood, hurricane, tornado, major icing or snowstorm). Also describe how the fuel oil is transferred from the Indian Point 1 Superheater building tank to the underground fuel oil storage tanks during plant operation and during or following a natural disaster. If electrical power is required, explain how it is available during and after a natural disaster or a plant emergency condition. If the licensed driver is located off-site, explain how you can ensure that the driver can get to the site during or following a natural disaster.

- g. Describe any contingency plans for addressing a failure to transfer fuel oil from the Buchanan Station or Indian Point 1 Superheater building tanks to the underground fuel oil storage tanks.

Response:

- a. The transfer trailer is typically located outside at the Maintenance Training Center. Operators are trained on its location.
- b. The maximum capacity of the current Fuel Oil Transfer Trailer is 6800 gallons. The required connections and fittings are contained on the trailer to match up with connections at the RFO Tanks and EDG FOSTs.
- c. Maintenance support is responsible for maintaining the NYS Inspection of all IPEC vehicles current. The ability to transfer Fuel oil was demonstrated on 5/23/12 and documented in CR-IP2-2012-520 CA-3. In addition, prior to use of the trailer, a pre transfer inspection is performed per 2-SOP-29.20.
- d. The personnel would be supplied by the ERO, or by the watch when conditions (e.g., storms, tornado, etc.) require such assurance as part of refilling the fuel oil storage tanks.
- e. Rad Waste Department provides a Commercial Drivers Licensed individual. This is not a scheduled position. This position would be supplied by the ERO. Based on the anticipated resupply in about 24 hours, the driver is not required to staff the ERO in 60 minutes.
- f. SOP-29.20 governs transfer of Fuel Oil from GT-1N, GT-1S and GT-2/3 RFO Tank to Unit 2 EDG FOSTs. 3-SOP-EL-009 provides guidance to transfer to the Unit 3 EDG FOSTs. The GT-2/3 tank transfer pump is powered from two 13.8 kv sources, GT-2 and GT-3. In addition the Black Start Diesel Generator supplies power to the transfer pump if offsite power is not available. There is also a DC powered transfer pump from batteries supplied from a battery charger off GT-2. The transfer to both units' EDG FOSTs is by gravity drain. The licensed driver would come from the ERO, which would be activated during this event.
- g. IPEC has a contract with the vendor, Bottini Oil, to deliver fuel oil by truck or supply a truck to transfer fuel oil from GT-2/3 or GT-1N/S within 24 hours of notification. Normal deliveries are directly to the EDG fuel oil storage tanks, subject to the appropriate testing.

RAI-EPTB-4

Section 3.0 of the reference states that, "Additional margin is provided by 115 gallons of fuel oil in the DG day tank but is not credited." What is the additional time that this fuel oil provides as a percentage of the seven-day fuel oil requirement? In Attachment 3 of the reference, it is stated in the second paragraph of the background section of B3.8.3 that "Additional margin is provided by 115 gallons of fuel oil in the DG day tank." Is this 115 gallons credited for additional margin in the DG day tank? If it is credited, please explain any discrepancy between the two statements noted above.

Response

The existing TS Bases state that the DG day tank provides 115 gallons of fuel oil that is margin. The Bases also says "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." This is identified as margin since the 115 gallons in the storage tanks will not be used as long as there is oil in the storage tank to refill the day tank and this occurs automatically. At the 1750 kW rating the oil would last less than an hour since the EDG consumes 141 gallons per hour per the submitted calculations.

The Bases 3.8.3 have been revised (see Attachment 3) to delete, in the second paragraph of the background section, "Additional margin is provided by 115 gallons of fuel oil in the DG day tank." The fifth paragraph of the bases background section has not been changed since it is consistent with "Section 3.0 of the reference." This sentence reads "The Technical Specification required volume of fuel oil includes the usable fuel oil in the reserve tanks, and the usable gallons in the three DG fuel oil storage tanks, without crediting the additional margin of fuel in the day tanks." This should eliminate confusion.

RAI-EPTB-5

The marked up Bases for the Indian Point 3 (IP3) Technical Specification (TS) Surveillance Requirement (SR) 3.8.3.2 states that "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." Also, in the Bases under IP3 TS SR 3.8.3.2, it is stated, in part, that "The periodic tests of the fuel oil stored in the DG fuel oil storage tanks verify..." and "Each DG fuel oil storage tank must be considered and tested separately." There is no mention of the reserve storage tanks in these paragraphs. Should the reserve storage tanks be added to the SR and the Bases information in IP3 TS SR 3.8.3.2?

Response

The intent of the TS surveillance requirements and the associated bases is to require the periodic tests to apply to both. For this reason SR 3.8.3.1 and 3.8.3.2 both apply to "fuel oil storage tanks and the reserve storage tank(s)." The failure

of the Bases to fully clarify this intent has been corrected by revising the last paragraph in SR 3.8.3.2 Bases to say “The periodic tests of the fuel oil stored in the DG fuel oil storage tanks **and the reserve storage tank(s)** verify...” and “Each DG fuel oil storage tank **and the reserve storage tank(s)** must be considered and tested separately.” See Attachment 3.

RAI-EPTB-6

On Page 10 of 25 of Calculation IP-CALC-0058, Rev. 1, it is stated that “The method chosen for this IP3 fuel oil usage determination is the ANSI N195 Method 1.” On Page 24 of 25 of Calculation IP-CALC-11-00058, Rev. 1, it is stated that “Therefore, it can be concluded that under the Regulatory Guide 1.137 requirement of EDG operation at rated capacity (1750 kW), with no conservative assumptions made as to ALCO test data uncertainty or fuel oil heat values, a fuel oil storage tank (FOST) would contain sufficient “usable” fuel to allow its associated EDG to run for 48 hours.” ANSI N195-1976 states that if the fuel oil storage requirements are calculated by the conservative alternative (by assuming that the EDG operates at its rated capacity), the calculation shall include an explicit allowance for fuel consumption required by periodic testing. Explain why an explicit allowance for fuel consumption required by periodic testing is not included in your calculation.

Response

The referenced calculation, IP-CALC-0058, did not identify any of the requirements for fuel consumption for testing because that value was identified in calculation IP3-CALC-EG-00217, “Emergency Diesel Generator Storage Tank Level Setpoints,” Revision 5. See page 26 of calculation IP3-CALC-EG-00217 that was previously submitted in our letter of August 14, 2012 for compliance with the ANSI-N195-1976 requirement for an allowance of fuel oil for testing..

RAI-STSB-1

It appears that the TS language for the proposed 7-day fuel oil requirement is written such that it can be interpreted that the requirement is satisfied by having the minimum fuel oil volume contained only in the reserve storage tanks or solely in the Buchanan storage tank and none in the three underground fuel oil storage tanks. Please explain how the TS (not the Bases) insure that the minimum fuel oil volume cannot be contained in only the reserve storage tanks or solely in the Buchanan storage tank.

Response

The changes to the TS proposed in the Entergy letter of August 14, 2012 should be revised to ensure the TS cannot be interpreted that the requirement is satisfied by having the minimum fuel oil volume contained only in the reserve storage tanks or solely in the Buchanan storage tank and none in the three underground fuel oil storage tanks. This was not the intent. This can be accomplished by revising the Condition A from that which was proposed in order to address only the fuel oil storage tanks and by adding a revised Condition B, which replaces the proposed

deletion of the existing Condition B, in order to address only the reserve storage tank(s). The proposed Condition B, C, D and E will re-numbered Condition C, D, E and F and the new condition F will capture all the actions. The proposed revisions to Conditions A, B and F would read as follows (a marked up TS is in Attachment 2):

<p>A. One or more DGs with usable fuel oil storage tank level less than a 40 hour supply.</p>	<p>A.1 Restore fuel oil level to within limits.</p>	<p>48 hours</p>
<p>B. Usable fuel oil in the reserve storage tank(s) less than their 7 day supply and greater than their 6 day supply.</p>	<p>B.1 Restore fuel oil level to within limits.</p>	<p>48 hours</p>
<p>F. 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, or E.</p>	<p>F.1 Declare associated DG inoperable.</p>	<p>Immediately</p>

The above approach is not fully consistent with the TSTF 501 approach of providing a TS condition for a fuel oil storage tank that provides less than a 7 day supply but more than a 6 day supply (note the Condition B specifies “their” 6 and 7 day supplies to reflect the specific information in the Bases). The 7 day supply of fuel oil required the fuel oil storage tanks to each have a 40 hour supply of fuel and the reserve storage tank(s) to have the balance of the 7 day supply. The proposed change does not require the fuel oil storage tank(s) to have at least a 6 day supply like contemplated in the TSTF because the reserve storage tanks supply the bulk of the 7 day supply and fuel oil storage tank(s) can be rapidly refilled. Also, the fuel oil storage tanks have historically been kept above the 40 hour supply level since there is margin to allow testing.

The Bases have been revised to reflect this change (see Attachment 3). Since the Conditions are now separate for the Fuel Oil Storage Tanks and the reserve storage tanks, the 6 and 7 day values for the FOST and the reserve tank are specified in the bases for EDG so that the values to meet the Action and surveillances can be identified. The six day value for each Fuel Oil Storage Tank is 5007 gallons using the values in the calculation (6/7 times 40 is rounded to

35 hours, and the 5 hours times the 141 gallons per hour is 705 gallons). The 6 day supply for each EDG in the reserve tank is 6 full days of EDG operation (20520 gallons) less the six day value for each Fuel Oil Storage Tank. The six day value for the Reserve tank is 46,839 gallons (20520 (6 full days for each diesel) minus 4907 gallons (six days in the Fuel Oil Storage Tank) times three is 46,839 gallons). This can all be summarized as:

Duration	FOST (each)	Reserve per EDG	Reserve
7 Days	5712 gallons	18228 gallons	54684 gallons
6 Days	5007 gallons	15613 gallons	46839 gallons

RAI-BOP-1

Section 8.1.1 of the Indian Point (IP) Unit 3 Final Safety Analysis Report Update (UFSAR) provides the principal Design Criterion for emergency power, which states:

An emergency power source shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning of the engineered safety features and protection systems required to avoid undue risk to the health and safety of the public. This power source shall provide this capacity assuming a failure of a single component.

Section 8.2.3 of the IPS FSAR Update states:

The minimum required usable inventory for each of the three storage tanks is specified in the Technical Specifications. The safety design criteria are based on the need to provide adequate fuel to support forty-eight (48) hour operation of minimum safeguards equipment following a design basis accident.

This section of the FSAR also states that all components of the Emergency Diesel Generator (EDG) supply system are seismic Class I and protected from the effects of the design-basis tornado. Reserve fuel oil necessary to assure continuous operation of minimum safeguards loads for a total of 168 hours is maintained in seismic Class III tanks onsite and at the Buchanan Station. In the License Amendment Request (LAR), the licensee states that previously these tanks [the three EDG fuel tanks] contained sufficient fuel for 48 hours of operation, but with the proposed change would support only 40 hours of operation. The licensee cites the TSTF-501 bases for a 7 day fuel supply as supporting the LAR, but does not provide a basis for the 40 hour fuel supply in the technical or regulatory analysis sections. IP-CALC-EG-00217, "EDG Storage Tank Level, includes the following statement: "fuel oil for 40 hours of EDG operation at 24 hour maximum profile would provide adequate fuel oil while allowing for required testing without requiring unreasonable frequency of EDG FAST refill." Also, Calculation IP-CALC-11-00058, "IP3 EDG Fuel Oil Consumption Licensing Basis Calculation," Rev 1, indicates that: (1) the maximum consumption of 0.83 SG fuel oil in one emergency diesel generator over 48 hours would be 6840 gallons, and (2) the usable inventory of fuel oil in a full EDG storage tank would be at least 6669 gallons.

As noted in the LAR, the provisions of TSTF-501 do not fully apply to IP Unit 3. The bases for Westinghouse ISTS 3.8.3, Condition A.1 in NUREG-1431 indicates that the volume between the 7 day and 6 day supply is intended to allow for fuel oil consumption resulting from full load operation following an inadvertent start or feed and bleed operations to correct degraded fuel oil conditions. The bases also include a statement that the 48 hour supply in the EDG storage tank is considered

adequate to obtain the required replacement volume and completing analysis of fuel oil quality prior to fuel addition but justification for less than 48 hour supply capability is not provided.

Request:

1. Provide a safety-basis for the minimum required inventory of fuel oil in each EDG fuel oil storage tank.
2. Provide justification for any deviation from the volume necessary to support 48 hours operation of minimum safeguards equipment given that additional volume is available and not credited in the licensing basis.

Response

Question 1

The tanks that are associated with the EDG have a fixed volume. The usage of the fuel oil was based on ANSI N195-1976 and calculated by the conservative ANSI alternative (by assuming that the EDG operates at its 24 hour load profile capacity). The rate at which the fuel oil is used determines the rate at which it must be replaced. This is discussed in response to Question RAI-EPTB-6. The 40 hour period is considered adequate to replace the fuel oil in the fuel oil storage tanks considering that fuel oil and equipment are readily available or resort will have been made to our contractor. The basis for the 40 hour period relative to tank size is further explained in the response to Question 2. No additional testing is required for fuel oil transferred from the reserve tanks (see the response to RAI-EPTB-5).

Question 2

The deviation from the 48 hours in the existing TS is based on the change from the current TS (minimum safeguards for two diesels) to the TSTF method (rated capacity for three diesels for calculating the hours of fuel available from a fixed size tank). This change is consistent with the latest NRC guidance for calculation of fuel oil supplies.

The calculation notes (page 31) that the actual capacity of each fuel oil storage tank is 7693 gallons and that the maximum level (page 26) is 7650 gallons to prevent local instrument flooding. If 846 gallons is allowed for testing (page 26) the maximum level is 6804 gallons. This is the low level alarm setpoint (page 26) at which the tank is refilled but is not the usable volume. To reach the usable volume a value of 925 gallons (tanks 31 and 32) or 956 gallons (tank 33) must be deducted (page 24). Additionally, an additional 90 gallons must be deducted as a specific gravity adjustment and for instrument accuracy (page 25). This leaves usable volumes of 5789 (tanks 31 and 32) and 5738 (Tank 33). The value of 5712 which is used for the proposed change represents the nearest hourly value to these values (tanks 31 and 32 are approximately 33 minutes additional while tank 31 is 11 minutes additional).

RAI-BOP-2

Section 8.2.3 of the IPS FSAR Update states:

The minimum required usable inventory for each of the three storage tanks is specified in the Technical Specifications. The safety design criteria are based on the need to provide adequate fuel to support forty-eight (48) hour operation of minimum safeguards equipment following a design basis accident.

Request:

1. Explain how ownership rights, operational control of equipment, and procedures would ensure that the transfer of fuel from the reserve tank(s) to the EDG storage tanks would be completed within the minimum supported period of operation under abnormal conditions.
2. Explain how the fuel oil testing program ensures acceptable fuel would be available for transfer from the reserve tanks to enable continuous operation of the EDGs for 7 days. TS 5.5.12 (a) require the verification of additional FO added to the DFO system meet acceptability requirements of relative density, kinematic viscosity, and appearance. Please provide procedures that ensure that verification of acceptability can be made in the reduced time period of 40 hours can be met.

Response

Question 1

The procedure for fuel oil transfer is 2-SOP-29.20. Entergy owns the reserve tank and the truck used for transport so there are no ownership rights questions.

Question 2

The reserve tanks and the fuel oil storage tanks are under the same testing procedures. Once the oil is tested for the reserve tank it is acceptable for transfer. Per RAI-EPTB-5, SR 3.8.3.2 has been revised to clarify this (see attachment 2).

ATTACHMENT 2 TO NL-13-057

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

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

Unit 3 Affected Pages
3.8.3-1 to 4

ENTERGY 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

LCO 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.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Only applicable in MODES 1, 2, 3 and 4. -----</p> <p>One or more DGs with usable fuel oil storage tank level less than a 40 hour supply in associated DG fuel oil storage tank < 5365 gal.</p>	<p>A.1 Declare associated DG inoperable. Restore fuel oil level to within limits.</p>	<p>Immediately 48 hours</p>

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. NOTE Only applicable in MODES 5 and 6 and during movement of irradiated fuel.</p> <hr/> <p>Usable fuel oil in the reserve storage tank(s) less than their 7 day supply and greater than their 6 day supply. Total combined usable fuel oil in DG fuel oil storage tanks associated with the operable DG(s) < 5365 gal.</p>	<p>B.1 Declare all DGs inoperable. Restore fuel oil level to within limits.</p>	<p>Immediately 48 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>C. NOTE Only applicable in MODES 1, 2, 3 and 4.</p> <hr/> <p>Total useable fuel oil in reserve storage tank(s) < 26,826 gal.</p>	<p>C.1 Declare all DGs inoperable.</p>	<p>Immediately</p>
<p>DC. One or more DG fuel oil storage tanks or reserve fuel oil storage tanks with fuel oil total particulates not within limits.</p>	<p>DC.1 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>ED. 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>ED.1 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>FE. One or more DGs with starting air receiver pressure < 250 psig and ≥ 90 psig.</p>	<p>FE.1 Restore starting air receiver pressure to ≥ 250 psig.</p>	<p>48 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>GF. 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 FE.</p>	<p>GF.1 Declare associated DG inoperable.</p>	<p>Immediately</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.8.3.1 NOTE</p> <p>Only required in MODES 1, 2, 3 and 4.</p> <hr/> <p>Verify reserve storage tank(s) contain \geq 26,826 gal of fuel oil reserved for IP3 usage only.</p>	<p>24 hours</p>
<p>SR 3.8.3.21 Verify DG fuel oil storage tanks and the reserve storage tank(s) contain: a 7 day supply of fuel.</p> <p>a. Usable fuel oil volume \geq 5365 gal in each storage tank when in MODES 1, 2, 3 and 4; and</p> <p>b. Total combined usable fuel oil volume \geq 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 and the reserve storage tank(s) 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
SR 3.8.3.4	<p style="text-align: center;">NOTE</p> <p>Only required in MODES 1, 2, 3 and 4.</p> <hr/> <p>Verify that fuel oil properties in the reserve storage tank(s) are within limits specified in the Diesel Fuel Oil Testing Program.</p>	<p>In accordance with the Diesel Fuel Oil Testing Program</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-13-057

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

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

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.

(continued)

BASES

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.

(continued)

BASES

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.

LCO

Stored diesel fuel oil is required to have sufficient supply for 7 days of operation for 2 of 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 ≥ 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 ≥ 260 psig and ≥ 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 minimum usable fuel oil in the associated DG fuel oil storage tanks required by SR 3.8.3.1 are not met so the 7 day fuel oil supply for a DG is not available. 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. The reserve tanks have the requisite replacement volume and the oil is tested so performing the analyses required prior to addition of fuel oil to the tank is not required. A period of 40 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable.

~~In this condition, 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)

BASES

ACTIONS

~~(continued)~~

B.1

In this Condition, the minimum usable fuel oil in the reserve fuel oil storage tanks required by SR 3.8.3.1 are not met so the 7 day fuel oil supply for a DG is not available. However, the Condition allows 48 hours to refill the tank if the fuel oil level maintains 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 tank(s) is:

<i>Duration</i>	<i>FOST/each EDG</i>	<i>Reserve/each EDG</i>	<i>Reserve</i>
<i>7 Days</i>	<i>5712</i>	<i>18228</i>	<i>54684</i>
<i>6 Days</i>	<i>5007</i>	<i>15613</i>	<i>46839</i>

These values can be used when the 6 day value is not met for the reserve tank. 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. The reserve tank may be used to refill the fuel oil storage tanks in Condition A (no delay is needed for testing) and 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 fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.

~~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)

BASES

ACTIONS
(continued)

D C.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.

ED.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

(continued)

BASES

ACTIONS

ED.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.

FE.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.

GF.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.

(continued)

BASES

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 71,820 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 71,820 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

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)

BASES

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

(continued)

BASES

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 **and the reserve storage tank(s)** 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 **and the reserve storage tank(s)** 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.~~

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BASES

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 3.8.3.53

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

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.

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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