

10 CFR 50.90

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September 5, 2008

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

Clinton Power Station, Unit 1
Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Supplemental Information Related to Application for Technical Specification Change TSTF-374, Revision to TS 5.5.9 for Diesel Fuel Oil Using Consolidated Line Item Improvement Process

Reference: Letter from Darin M. Benyak (AmerGen Energy Company, LLC) to U. S. Nuclear Regulatory Commission, "Application for Technical Specification Change TSTF-374, Revision to TS 5.5.9 for Diesel Fuel Oil Using Consolidated Line Item Improvement Process," dated September 27, 2007

In accordance with 10 CFR 50.90, "Application for amendment of license or construction permit," AmerGen Energy Company, LLC (AmerGen) is providing additional information in support of its request for an amendment to Appendix A, Technical Specifications (TS), of Facility Operating License No. NPF-62 for Clinton Power Station (CPS), Unit 1.

In the referenced letter, AmerGen proposed a modification to the TS that relocates references to specific American Society for Testing and Materials (ASTM) standards for fuel oil testing to licensee-controlled documents. During a phone call on August 26, 2008, the NRC technical reviewer requested that AmerGen provide additional information in support of his review of the referenced letter. Specifically, the reviewer requested that AmerGen provide supplemental information to address why the CPS TS Bases were not revised to reflect the proposed Bases changes documented in Technical Specification Task Force (TSTF) Traveler No. 374 (i.e., TSTF-374).

In the referenced letter, AmerGen did not include any changes to the CPS Bases, as AmerGen had previously revised the CPS Bases to address diesel fuel oil testing through the CPS TS Bases Control Program. Therefore, AmerGen did not propose to make the TSTF-374 identified Bases changes.

To support the NRC review of the referenced letter, AmerGen is providing the following information as attachments to this letter. Attachment 1 provides a marked-up version of NUREG-1434, "Standard Technical Specifications General Electric Plants, BWR/6," Revision 3.1, to document the differences between the TSTF-374 version and CPS version of the TS Bases sections. Revision 3.1 of NUREG-1434 was used for this comparison since it includes

the changes to the TS Bases associated with TSTF-374. Where differences were noted, item numbers were assigned. These item numbers are displayed in dashed text boxes in the left margin of the document, and the associated justifications for the differences are provided in Table 1. These justifications describe why the CPS version is acceptable. Attachment 2 to this letter provides Table 1.

As shown in Attachment 1 and documented in Table 1, CPS is proposing to perform particulate contamination testing in accordance with ASTM D6217-98, "Standard Test Method for Particulate Contamination in Middle Distillate Fuels by Laboratory Filtration." Therefore, a markup of the CPS TS Bases is provided in Attachment 3 to this letter to document this proposed change. The TS Bases pages are provided for information only, and do not require NRC approval.

The information provided in this letter does not affect the No Significant Hazards Consideration, or the Environmental Consideration provided in Attachment 1 of the original license amendment request as described in the referenced submittal.

There are no regulatory commitments associated with the changes proposed by this request.

Should you have any questions concerning this letter, please contact Mr. Mitchel A. Mathews at (630) 657-2819.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 5th day of September 2008.

Respectfully,



Darin Benyak
Director - Licensing and Regulatory Affairs
AmerGen Energy Company

Attachments:

- Attachment 1: Markup of NUREG-1434, Revision 3.1, TS Bases Section SR 3.8.3.3
- Attachment 2: Table 1: Comparison Between NUREG-1434, Revision 3.1, and CPS TS Bases
- Attachment 3: Mark-up of CPS Technical Specifications Bases Pages (For Information Only)

ATTACHMENT 1

**Markup of NUREG-1434, Revision 3.1, Technical Specifications Bases
SR 3.8.3.3 Pages**

3.8.3-6

3.8.3-7

3.8.3-8

BASES

SURVEILLANCE REQUIREMENTS (continued)

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. These tests are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-95 (Ref. 6);
- b. Verify in accordance with the tests specified in ASTM D975-06b (Ref. 6) that the sample has an absolute specific gravity at 60/60°F of ≥ 0.83 and ≤ 0.89 or an API gravity at 60°F of $\geq 27^\circ$ and $\leq 39^\circ$ when tested in accordance with ASTM D1298-99 (Ref. 6), a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes; and a flash point of $\geq 125^\circ\text{F}$, and
- c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-93 (Ref. 6) or a water and sediment content within limits when tested in accordance with ASTM D2709-11 (Ref. 6) and ≤ 0.05 v/o when tested in accordance with ASTM-D975-06b.

the tests specified in ASTM D975-06b (Ref. 6) that the sample has

$\geq 30^\circ$ and $\leq 38^\circ$, and

1

D1298-99

93 (Ref. 6)

≤ 0.05 v/o

ASTM-D975-06b.

These additional analyses are required by Specification 5.5.9, Diesel Fuel Oil Testing Program, to be performed within 31 days following sampling and addition. This 31 days is intended to assure: 1) that the sample taken is not more than 31 days old at the time of adding the fuel oil to the storage tank, and 2) that the results of a new fuel oil sample (sample obtained prior to addition but not more than 31 days prior to) are obtained within 31 days after addition.

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F 7

3

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

Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-06b (Ref. 6) are met for new fuel oil when tested in accordance with ASTM D975-06b (Ref. 6), except that the analysis for sulfur may be performed in accordance with ASTM D1522-03, ASTM D2622-03, or ASTM D4294-03 (Ref. 6). The 31 day period is acceptable because the fuel oil properties of interest, even if not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.

Fuel oil degradation during long term storage shows up as an increase in particulate, mostly due to oxidation. The presence of particulate does not mean that the fuel oil will not burn properly in a diesel engine. However, the particulate can cause fouling of filters and fuel oil injection equipment, which can cause engine failure.

BASES

SURVEILLANCE REQUIREMENTS (continued)

4

D6217-98

With regard to fuel oil property values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is considered to be a nominal value and therefore does not require compensation for instrument indication uncertainties (Ref. 9).

Particulate concentrations should be determined in accordance with ASTM D5452-10 (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. ~~[For these designs in which the total volume of stored fuel oil is contained in two or more interconnected tanks, each tank must be considered and tested separately.]~~

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

SR 3.8.3.4

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 five engine start cycles without recharging. [A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed.] The pressure specified in this SR is intended to reflect the lowest value at which the [five] 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.

SR 3.8.3.5

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 storage tanks once every 31 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, contaminated fuel oil, and from breakdown of the fuel oil by bacteria.

BASES

SURVEILLANCE REQUIREMENTS (continued)

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 established by Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. The presence of water does not necessarily represent a failure of this SR provided that accumulated water is removed during performance of the Surveillance.

REFERENCES

1. ~~FSAR~~, Section [9.5.4].
 2. Regulatory Guide 1.137.
 3. ANSI N195, Appendix B, 1976.
 4. ~~FSAR~~ Chapter [6].
 5. ~~FSAR~~ Chapter [15].
 6. ASTM Standards: D4057-[95]; D975-[06b]; ~~D1298-[99]~~; D4176-[93];
[D2709 []; D1552 []; D2622 []; D4294 []; D5452 [];
-
7. ASME, Boiler and Pressure Vessel Code, Section XI.
 8. Calculation IP-0-0120.
 9. Calculation IP-0-0121.
 10. Calculation IP-0-0122.
 11. Calculation IP-C-0111.
- D6217-98.
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ATTACHMENT 2

Table 1: Comparison Between NUREG-1434, Revision 3.1, and CPS TS Bases

Table 1: Comparison of TSTF-374 Technical Specifications (TS) 3.8.3 Bases Wording to the Clinton Power Station Wording and Justification of Differences

Item	Section	NUREG-1434 Version	CPS Version	Differences	Justification
1	SR 3.8.3.3.b. Bases	Verify in accordance with the tests specified in ASTM D975- [] (Ref. 6) that the sample has an absolute specific gravity at 60/60°F of ≥ 0.83 and ≤ 0.89 or an API gravity at 60°F of $\geq 27^\circ$ and $\leq 39^\circ$ when tested in accordance with ASTM D1298- [] (Ref. 6), a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of $\geq 125^\circ\text{F}$, and	Verify in accordance with the tests specified in ASTM D1298-99 (Ref. 6) that the sample has an API gravity at 60°F of $\geq 30^\circ$ and $\leq 38^\circ$, and in accordance with the tests specified in ASTM D975-06b (Ref. 6) that the sample has a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes; and	The CPS version contains no discussion of sampling for absolute specific gravity. Additionally, the order that the ASTM Standards are discussed is reversed in CPS version. The discussion of the use of ASTM D1298-99 for determining API gravity precedes the discussion of the tests specified by ASTM D975- []. The CPS version contains a more-restrictive acceptable API Gravity band than the specifications listed in the TSTF-374 version of this section. Lastly, the CPS version does not contain a discussion of the acceptance criteria for flash point.	CPS fuel consumption and stored volume calculations are based on API gravity, so this option is specified for Surveillance Requirement (SR) 3.8.3.b monitoring rather than the absolute specific gravity option. Compliance is assured by the current CPS version through testing of API gravity in accordance with ASTM D1298-99 within a more restrictive range than the TSTF version specifies. The acceptance criteria for flash point is contained within Table 1 of ASTM D975-06b, and was therefore, not included in the CPS TS Bases. Consequently, the CPS version is acceptable.
2	SR 3.8.3.3.c. Bases	Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176- [] or a water and sediment content within limits when tested in accordance with [ASTM D2709- []] (Ref. 6).	Verify that the new fuel oil has clear and bright appearance with proper color when tested in accordance with ASTM D4176-93 (Ref. 6), or a water and sediment content ≤ 0.05 v/o when tested in accordance with ASTM-D975-06b.	The CPS version references the use of ASTM D975-06b versus ASTM D2709- [] as shown in Insert 3 of TSTF-374.	ASTM D975-06b, "Standard Specification for Diesel Fuel Oils," is a parent document that specifies test methods and acceptable limits for diesel fuel oil. As ASTM D2709 is the approved referee method specified in ASTM D975-06b, the current CPS version is acceptable.

Item	Section	NUREG-1434 Version	CPS Version	Differences	Justification
3	SR 3.8.3.3	<p>Within 31 days following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-[] (Ref. 6) are met for new fuel oil when tested in accordance with ASTM D975-[] (Ref. 6), except that the analysis for sulfur may be performed in accordance with ASTM D1522-[], ASTM D2622-[], or ASTM D4294-[] (Ref. 6). The 31 day period is acceptable because the fuel oil properties of interest, even if not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.</p>	<p>Following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-06b (Ref. 6) are met for new fuel oil when tested in accordance with ASTM D975-06b (Ref. 6). These additional analyses are required by Specification 5.5.9, Diesel Fuel Oil Testing Program, to be performed within 31 days following sampling and addition. This 31 days is intended to assure: 1) that the sample taken is not more than 31 days old at the time of adding the fuel oil to the storage tank, and 2) that the results of a new fuel oil sample (sample obtained prior to addition but not more than 31 days prior to) are obtained within 31 days after addition. The 31 day period is acceptable because the fuel oil properties of interest, even if not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.</p>	<p>The CPS version contains no discussion of Sulfur analysis according to ASTM D1522-[], ASTM D2622-[], or ASTM-D4294-[], as shown in Insert 4 of TSTF-374.</p>	<p>ASTM D975-06b is a parent document that specifies test methods and acceptable limits for diesel fuel oil. Note B at the top of Table 1 in ASTM D975-06b states, "The test methods indicated are the approved referee methods. Other acceptable methods are indicated in 4.1." Section 4.1.8 includes acceptable methods for testing for sulfur, depending on fuel grade. ASTM D1552, ASTM D2622, and ASTM D4294 are included in the list of methods that may be used. As these methods are already included in ASTM D975-06b, no change is necessary for compliance.</p>

Item	Section	NUREG-1434 Version	CPS Version	Differences	Justification
4	SR 3.8.3.3 Bases	<p>Particulate concentrations should be determined in accordance with ASTM D5452-[] (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. [For those designs in which the total volume of stored fuel oil is contained in two or more interconnected tanks, each tank must be considered and tested separately.]</p>	<p>Particulate concentrations should be determined in accordance with ASTM D6217-98. This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.</p>	<p>The CPS version contains no mention of ASTM D5452-[]. CPS proposes the use of ASTM D6217-98 for the determination of particulate concentration.</p>	<p>ASTM D5452 (as referenced in the TSTF-374 Bases markup) and its predecessor D2276 were developed for aviation fuel testing. ASTM D975-06b, Section 2.1, references ASTM D6217, Standard Test Method for Particulate Contamination in Middle Distillate Fuels by Laboratory Filtration. The diesel fuel oil utilized by CPS is a middle-distillate-type fuel. Accordingly, and as shown in the attached markup of the CPS TS Bases, CPS is proposing the use of ASTM D6217-98 as a current and appropriate method of testing for particulate contamination in Diesel Fuel Oil, and in lieu of ASTM D5452. As discussed in Paragraph 1.1 of ASTM D6217-98, the test methodology covers the determination of the mass of particulate contamination in middle distillate fuels by filtration, and is suitable for all No. 1 and No. 2 fuel oil grades described in ASTM D975.</p>

Item	Section	NUREG-1434 Version	CPS Version	Differences	Justification
5	Bases Section 3.8.3 References	1. FSAR, Section [9.5.4]. 2. Regulatory Guide 1.137. 3. ANSI N195, Appendix B, 1976. 4. FSAR, Chapter [6]. 5. FSAR, Chapter [15]. 6. ASTM Standards: D4057-[]; D975-[]; D1298-[]; D4176-[]; [D2709-[];] D1552-[]; D2622-[]; D4294-[]; D5452-[].	1. USAR, Section 9.5.4. 2. Regulatory Guide 1.137. 3. ANSI N195, Appendix B, 1976. 4. USAR, Chapter 6. 5. USAR, Chapter 15. 6. ASTM Standards: D4057-95; D1298-99; D975-06b; D4176-93; D6217-98. 7. ASME, Boiler and Pressure Vessel Code, Section XI. 8. Calculation IP-0-0120. 9. Calculation IP-0-0121. 10. Calculation IP-0-0122. 11. Calculation IP-C-0111.	The CPS version lists ASTM D6217-98 and the NUREG- 1434 version does not. The NUREG-1434 version lists ASTM D1552, D2622, D2709, D4294, and D5452, while the CPS version does not.	The referenced methods: ASTM D1552, D2622, D2709, and D4294 are included in ASTM D975-06b, which is the parent document for diesel fuel oil referenced in the current CPS version. As noted above, and in the provided markup of the CPS TS Bases, ASTM D6217- 98 is the appropriate test methodology for particulate contamination, and an acceptable equivalent of ASTM D2276 and D5452.

ATTACHMENT 3

**Markup of CPS Technical Specifications Bases Pages
(For Information Only)**

3.8-46

3.8-47

3.8-48a

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.3.3 (continued)

tests listed in the Diesel Fuel Oil Testing Program of Specification 5.5.9 are as follows:

- a. Sample the new fuel oil in accordance with ASTM D4057-95 (Ref. 6);
- b. Verify in accordance with the tests specified in ASTM D1298-99 (Ref. 6) that the sample has an API gravity at 60°F of $\geq 30^\circ$ and $\leq 38^\circ$, and in accordance with the tests specified in ASTM D975-06b (Ref. 6) that the sample has a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes; and
- c. Verify that the new fuel oil has clear and bright appearance with proper color when tested in accordance with ASTM D4176-93 (Ref. 6), or a water and sediment content ≤ 0.05 v/o when tested in accordance with ASTM-D975-06b.

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

Following the initial new fuel oil sample, the fuel oil is analyzed to establish that the other properties specified in Table 1 of ASTM D975-06b (Ref. 6) are met for new fuel oil when tested in accordance with ASTM D975-06b (Ref. 6). These additional analyses are required by Specification 5.5.9, Diesel Fuel Oil Testing Program, to be performed within 31 days following sampling and addition. This 31 days is intended to assure: 1) that the sample taken is not more than 31 days old at the time of adding the fuel oil to the storage tank, and 2) that the results of a new fuel oil sample (sample obtained prior to addition but not more than 31 days prior to) are obtained within 31 days after addition. The 31 day period is acceptable because the fuel oil properties of interest, even if not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.

(continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.3.3 (continued)

Fuel oil degradation during long term storage shows up as an increase in particulate, mostly due to oxidation. The presence of particulate does not mean that the fuel oil will not burn properly in a diesel engine. However, the particulate can cause fouling of filters and fuel oil injection equipment, which can cause engine failure.

D6217-98

Particulate concentrations should be determined in accordance with ASTM D2276-88, Method A (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing.

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

With regard to fuel oil property values obtained pursuant to this SR, as read from plant indication instrumentation, the specified limit is considered to be a nominal value and therefore does not require compensation for instrument indication uncertainties (Ref. 9).

SR 3.8.3.4

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design provides for multiple start attempts without recharging when pressurized above the low pressure alarm setpoint. The pressure specified in this SR reflects a value at which multiple starts can be accomplished, but is not so high as to result in failing the limit due to normal cycling of the recharge compressor.

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.

(continued)

BASES

SURVEILLANCE
REQUIREMENTS

SR 3.8.3.6

Draining of the fuel oil stored in the supply tanks, removal of accumulated sediment, and tank cleaning are required at 10 year intervals by Regulatory Guide 1.137 (Ref. 2), paragraph 2.f. This SR is typically performed in conjunction with the ASME Boiler and Pressure Vessel Code, Section XI (Ref. 7), examinations of the tanks. To preclude the introduction of surfactants in the fuel oil system, the cleaning should be accomplished using sodium hypochlorite solutions, or their equivalent, rather than soap or detergents. This SR is for preventive maintenance. The presence of sediment does not necessarily represent a failure of this SR provided that accumulated sediment is removed during performance of the Surveillance.

REFERENCES

1. USAR, Section 9.5.4.
 2. Regulatory Guide 1.137.
 3. ANSI N195, Appendix B, 1976.
 4. USAR, Chapter 6.
 5. USAR, Chapter 15.
 6. ASTM Standards: D4057-95; D1298-99; D975-06b; D4176-93; ~~D2276-89~~ ← D6217-98
 7. ASME, Boiler and Pressure Vessel Code, Section XI.
 8. Calculation IP-0-0120.
 9. Calculation IP-0-0121.
 10. Calculation IP-0-0122.
 11. Calculation IP-C-0111.
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