

NSPS OOOOb Control Device NHV Monitoring Redlines^{1,2}

§60.5417b(d) Redline

(8) For an enclosed combustion device other than those listed in paragraphs (d)(1) through (3) and (7) of this section or for a flare, continuous monitoring systems as specified in paragraphs (d)(8)(i) through (iv) of this section and visible emission observations conducted as specified in paragraph (d)(8)(v) of this section. Additionally, for enclosed combustion devices or flares that are air-assisted or steam-assisted, the continuous monitoring systems specified in paragraph (d)(8)(vi) of this section.

>>>>>

(ii) Except as provided in this paragraph (d)(8)(ii) and paragraph (d)(8)(iii) of this section, use one of the following methods to continuously determine the NHV of the inlet gas to the enclosed combustion device or flare at standard conditions. If the ~~only~~ inlet gas stream to the enclosed combustion device or flare ~~is does not include associated gas streams from a well affected facility processes or equipment where inert gas is introduced upstream of the enclosed combustion device or flare,~~³ the NHV of the inlet stream is considered to be sufficiently above the minimum required NHV for the inlet gas, and you are not required to conduct the continuous monitoring in this paragraph (d)(8)(ii) or paragraph (d)(8)(vi)⁴ of this section or the demonstration in paragraph (d)(8)(iii) of this section.

- (A) A calorimeter with a minimum accuracy of ± 2 percent of span.
- (B) A gas chromatograph that meets the requirements in paragraphs

¹ We intend for these redlines to be the same for EG OOOOc. At a minimum, we believe EPA should remove §60.5417c(d)(8)(vi) from the final rule. We understand from EPA's comments in the final rule's preamble and in subsequent discussions that EPA did not intend to include §60.5417c(d)(8)(vi) in EG OOOOc. *See* 89 Fed. Reg. 16820, 16895/1, 16967/3.

² Note that certain redlines in this version of the document are highlighted **yellow**. The yellow highlighting in this document is intended to call attention to redline language that is new and appears for the first time in this current version of the document. These new redlines are more thoroughly discussed in the corresponding proposed NHV preamble document.

³ Where operators do not introduce inert gas upstream of the control device, the data indicates the stream NHV will far exceed any applicable minimum NHV requirement. In addition to the data API provided, we reference the March 19, 2024 letter submitted by SPL to EPA which states on the basis of thousands of vent gas samples, "it would be exceptionally uncommon for the heating value of vent gas to fall below the threshold the EPA has set."

⁴ In the redlines below, we propose to strike these paragraphs; however, if §60.5417b(d)(8)(vi) remains, we do not believe compliance is necessary for flares or ECDs controlling streams that have no added inert gas. Moreover, it is not clear how the operator would comply given that these provisions rely on measured vent gas NHV, which the operator would not have if exempt from vent gas NHV monitoring.

API/AXPC Recommended Redlines for Net Heating Value (NHV)

(d)(8)(ii)(B)(1) through (5) of this section.

(1) You must follow the procedure in Performance Specification 9 of appendix B of this part, except that a single daily mid-level calibration check can be used (rather than triplicate analysis), the multi-point calibration can be conducted quarterly (rather than monthly), and the sampling line temperature must be maintained at a minimum temperature of 60 °C (rather than 120 °C). Calibration gas cylinders must be certified to an accuracy of 2 percent and traceable to National Institute of Standards and Technology (NIST) standards.

(2) You must meet the accuracy requirements in Performance Specification 9 of appendix B of this part.

(3) You must use a calibration gas or multiple gases that includes the compounds that are reasonably expected to be present in the flare gas stream. If multiple calibration gases are necessary to cover all compounds, you must calibrate the instrument on all of the gases. You may only use the compounds used to calibrate the gas chromatograph in the calculation of the vent gas NHV.

(4) In lieu of the calibration gas described in paragraph (d)(8)(ii)(B)(3) of this section, you may use a surrogate calibration gas consisting of hydrogen and C1 through C5 normal hydrocarbons. All of the calibration gases may be combined in one cylinder. If multiple calibration gases are necessary to cover all compounds, you must calibrate the instrument on all of the gases. Use the response factor for the nearest normal hydrocarbon (i.e., n-alkane) in the calibration mixture to quantify unknown components detected in the analysis. Use the response factor for n-pentane to quantify unknown components detected in the analysis that elute after n-pentane.

(5) To determine the NHV of the vent gas, determine the product of the volume fraction [or weight fraction](#)⁵ of the individual component in the vent gas and the net heating value of that individual component. Sum the products for all components in the vent gas to determine the NHV for the vent gas. For the net heating value of each individual component, use the net heating value at 25 °C and 1 atmosphere.

(C) A mass spectrometer that meets the requirements in paragraphs (d)(8)(ii)(C)(1) through (6) of this section.

⁵ Weight fraction is commonly used to determine NHV and provides the same results as would using volume fraction.

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(1) You must meet applicable requirements in Performance Specification 9 of appendix B of this part for continuous monitoring system acceptance including, but not limited to, performing an initial multi-point calibration check at three concentrations following the procedure in Section 10.1. A single daily mid-level calibration check can be used (rather than triplicate analysis), the multi-point calibration can be conducted quarterly (rather than monthly), and the sampling line temperature must be maintained at a minimum temperature of 60 °C (rather than 120 °C). Calibration gas cylinders must be certified to an accuracy of 2 percent and traceable to NIST standards.

(2) The average instrument calibration error (CE) for each calibration compound at any calibration concentration must not differ by more than 10 percent from the certified cylinder gas value. The CE for each component in the calibration blend must be calculated using the following equation:

[EQUATION OMITTED]

(3) You must use a calibration gas or multiple gases that includes the compounds that are reasonably expected to be present in the flare gas stream. If multiple calibration gases are necessary to cover all compounds, you must calibrate the instrument on all of the gases. You may only use the compounds used to calibrate the mass spectrometer in the calculation of the vent gas NHV.

(4) In lieu of the calibration gas described in paragraph (d)(8)(ii)(C)(3) of this section, you may use a surrogate calibration gas consisting of hydrogen and C1 through C5 normal hydrocarbons. All of the calibration gases may be combined in one cylinder. If multiple calibration gases are necessary to cover all compounds, you must calibrate the instrument on all of the gases. For unknown gas components that have similar analytical mass fragments to calibration compounds, you may report the unknowns as an increase in the overlapped calibration gas compound. For unknown compounds that produce mass fragments that do not overlap calibration compounds, you may use the response factor for the nearest molecular weight hydrocarbon in the calibration mix to quantify the unknown component. You may use the response factor for n-pentane to quantify any unknown components detected with a higher molecular weight than n-pentane.

(5) You must perform an initial calibration to identify mass fragment overlap and response factors for the target compounds.

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(6) To determine the NHV of the vent gas, determine the product of the volume fraction of the individual component in the vent gas and the net heating value of that individual component. Sum the products for all components in the vent gas to determine the NHV for the vent gas. For the net heating value of each individual component, use the net heating value at 25 °C and 1 atmosphere.

(D) A grab sampling system capable of collecting an evacuated canister sample for subsequent compositional analysis at least once every eight hours. Subsequent compositional analysis of the samples must be performed according to ASTM D1945–14 (Reapproved 2019), [GPA 2286 \(revised 1995\)](#), or [GPA 2261 \(revised 2019\)](#)⁶. To determine the NHV of the vent gas, determine the product of the volume fraction of the individual component in the vent gas and the net heating value of that individual component. Sum the products for all components in the vent gas to determine the NHV for the vent gas. For the net heating value of each individual component, use the net heating value at 25°C and 1 atmosphere.

(iii) For an unassisted or pressure-assisted flare or enclosed combustion device, if you demonstrate according to the methods described in paragraphs (d)(8)(iii)(A) through (~~FE~~) of this section that the NHV of the inlet gas to the enclosed combustion device or flare consistently exceeds the applicable operating limit specified in §60.5415b(f)(1)(vii)(B) or (C), continuous monitoring of the NHV is not required, but you must conduct the ongoing sampling in paragraph (d)(8)(iii)(~~GF~~) of this section. For flares and enclosed combustion devices that use only perimeter assist air and do not use steam assist or premix assist air, if you demonstrate according to the methods described in paragraphs (d)(8)(iii)(A) through (~~FE~~) of this section that the NHV of the inlet gas to the enclosed combustion device or flare consistently exceeds 300 Btu/scf, continuous monitoring of the NHV is not required, but you must conduct the ongoing sampling in paragraph (d)(8)(iii)(~~GF~~) of this section. For an unassisted or pressure-assisted flare or enclosed combustion device, in lieu of conducting the demonstration outlined in paragraphs (d)(8)(iii)(A) through (~~DC~~) of this section, you may conduct the demonstration outlined in paragraph (d)(8)(iii)(~~HG~~) of this section, but you must still comply with paragraphs (d)(8)(iii)(~~ED~~) through (~~GF~~) of this section.

(A) Continuously monitor the inlet stream for 7 operating days⁷ or collect a

⁶ GPA 2261 and 2286 are accepted industry standards for analysis of gas. ASTM D1945 is not widely available, as noted in the March 19, 2024 letter from SPL to EPA.

⁷ This revision is meant to clarify continuous monitoring is required for only 7 operating days, as specified in subparagraph (D) below.

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~~representative grab~~ sample⁸ of the inlet gas to the enclosed combustion device or flare ~~twice~~ ~~once~~ daily to determine the average NHV of the gas stream for 14 ~~consecutive~~ operating days, ~~or~~ ~~twice daily for 7 operating days~~, with no monitoring or sampling day to be spaced more than 3 operating days apart.⁹¹⁰ ~~If you do not continuously monitor the NHV, the minimum time of collection for each individual sample be at least one hour. Consecutive~~ ~~Representative grab~~ samples must be separated by at least 6 hours. If inlet gas flow is intermittent such that there are not at least ~~28-14~~ samples over the ~~7 or~~ 14 operating day period, you must continue to collect ~~representative grab~~ samples of the inlet gas beyond the ~~14 applicable~~ operating day period until you collect a minimum of ~~28-14~~ samples.

(B) If you collect ~~representative grab~~ samples ~~twice per day~~, ~~count the number of samples where~~ ~~determine~~ the average NHV value ~~of all representative grab samples collected. If the average NHV value of all representative samples is equal to or greater than less than 1.2 times the~~ applicable operating limit specified in §60.5415b(f)(1)(vii)(B), (C), or paragraph (d)(8)(iii) of this section (i.e., values that are less than ~~240200~~, ~~360300~~, or ~~960800~~ Btu/scf, as applicable), ~~the gas stream is considered to consistently exceed the applicable NHV operating limit and on-going continuous monitoring is not required during the sample collection period in paragraph (d)(8)(iii)(A) of this section. If the average NHV value of all representative grab samples is at least 2 times the applicable operating limit specified in §60.5415b(f)(1)(vii)(B), (C), or paragraph (d)(8)(iii) of this section, periodic sampling under paragraph (d)(8)(iii)(F) of this section is not required.~~¹¹

⁸ We believe that representative grab samples are appropriate. Grab samples are standard industry practice for demonstrating the composition of natural gas. 14 separate grab samples provides a sufficient basis for exempting continuous NHV monitoring. There is precedent for this approach in refinery MACT, 40 C.F.R. §63.670. There, EPA allows demonstration through grab sampling and does not require continuous NHV monitoring where the operator demonstrates—through 14 grab samples for frequently used flares, and only 7 for infrequently used flares—that flare vent gas stream has a consistent composition or a fixed minimum NHV. Regarding what constitutes a representative grab sample, per SPL’s March 19, 2024 letter to EPA, “Typical methods for the collection of natural gas samples call for spot sampling techniques that procure gas on very short (seconds to minutes) timescales...sample collection methods such as those referenced in GPA 2166-22 should be considered permissible...”

⁹ As described more cleanly in the proposed NHV preamble document, we noted that for maximum flexibility, we suggest as an alternative to collecting samples once a day for 14 days that operators could collect samples twice a day for 7 days. In our previous version of this document, this proposed change appeared in fn. 6, but is now included in the redline language of this most current version.

¹⁰ We suggest allowing breaks during the 7-day sampling period to account for weekends and holidays.

¹¹ We expect the NHV to be consistent over time. Accordingly, we propose the NHV demonstration needs to demonstrate the average NHV exceeds the applicable minimum NHV without need of a buffer, and where the

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(C) If you continuously sample-monitor the inlet stream for 14-7 days, determine the block average NHV value for each 1-hour period and count the number of use each 1-hour block average NHV to determine the hourly average NHV for the 7 day period.¹² If the hourly average NHV for the 7 day period is values that are less than the equal to or greater than the applicable operating limit specified in §60.5415b(f)(1)(vii)(B), ~~§60.5415b(f)(1)(vii)(C)(I)~~, or paragraph (d)(8)(iii) of this section (i.e., values that are less than 200, 300, or 800 Btu/scf, as applicable), the gas stream is considered to consistently exceed the applicable NHV operating limit and on-going continuous monitoring is not required~~during the sample collection period in paragraph (d)(8)(iii)(A) of this section.~~ If the hourly average NHV for the 7 day period is at least 2 times the applicable operating limit specified in §60.5415b(f)(1)(vii)(B), (C), or paragraph (d)(8)(iii) of this section, periodic sampling under paragraph (d)(8)(iii)(F) of this section is not required.

~~(D) — If there are no samples counted under paragraph (d)(8)(iii)(B) of this section or there are no hourly values counted under paragraph (d)(8)(iii)(C) of this section, the gas stream is considered to consistently exceed the applicable NHV operating limit and on-going continuous monitoring is not required.~~¹³

~~(E)(D)~~ If process operations are revised that could impact-reduce¹⁴ the NHV of the gas sent to the enclosed combustion device or flare, such as the removal or addition of process equipment, and at any time the Administrator requires, re-evaluation of the gas stream must be performed according to paragraphs (d)(8)(iii)(A) through ~~(D)~~ of this section to ensure the gas stream still consistently exceeds the applicable operating limit specified in §60.5415b(f)(1)(vii)(B), ~~(d)(8)(iii)(C)(I)~~, or paragraph (d)(8)(iii) of this section.

~~(F)(E)~~ When collecting samples under paragraph (d)(8)(iii)(A) of this section, the owner or operator must account for any sources of inert gases that can be sent to the enclosed combustion device or flare (e.g., streams from compressors in acid gas service, streams from enhanced oil recovery facilities). The report in §60.5420b(b)(11)(v)(I) and the records of the demonstration in §60.5420b(c)(11)(vi) must note whether the enclosed combustion device or

demonstrated NHV is at least double the applicable minimum NHV, no further demonstration is necessary. This comment also applies to continuous monitoring demonstration in the following paragraph.

¹² The block average concept is consistent with how operators must demonstrate compliance with NHV standards where the operator is continuously monitoring NHV under §60.5417b(d)(8)(ii). We believe it makes sense to use that concept here. See §60.5417b(e)(5), (g)(1).

¹³ With the proposed revisions, we believe moving the concepts in this paragraph to the two above is clearer.

¹⁴ A change could increase the expected NHV, which should not trigger a re-evaluation. We propose this clarifying revision, which we believe is consistent with the intent.

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flare has the potential to receive inert gases, and if so, whether the sampling included periods where the highest percentage of inert gases were sent to the enclosed combustion device or flare. If the introduction of inerts is intermittent and does not occur during the initial demonstration, ~~the taking actions to~~¹⁵ ~~introduction of~~ inerts will be considered a revision to process operations that triggers a re-evaluation under paragraph (d)(8)(iii)(~~ED~~) of this section. If conditions at the site did not allow sampling during periods where the introduction of inert gases was at the highest percentage possible, actions taken that will increasing-increase the percentage of inerts will be considered a revision to process operations that triggers a re-evaluation under paragraph (d)(8)(iii)(~~ED~~) of this section.

~~(G)(F)~~ You must collect three representative grab samples of the inlet gas to the enclosed combustion device or flare at least once every 5 years. ~~The minimum time of collection for each individual sample must be at least one hour.~~ The grab samples must be taken during the period with the lowest expected NHV (i.e., the period with the highest percentage of inerts), if possible. The first set of periodic grab samples must be taken, or continuous monitoring commenced, no later than 60 calendar months following the last sample taken under paragraph (d)(8)(iii)(A) of this section. Subsequent periodic grab samples must be taken, or continuous monitoring commenced, no later than 60 calendar months following the previous sample. If ~~any~~ the average of the three grab samples taken during a 60-calendar month period has an NHV value less than ~~1.2 times~~ the applicable operating limit specified in §60.5415b(f)(1)(vii)(B), ~~§60.5415b(f)(1)(vii)(C)~~, or paragraph (d)(8)(iii) of this section (i.e., values that are less than ~~240~~200, ~~360~~300, or ~~960~~800 Btu/scf, as applicable), within 60 days of receipt of the results of the final grab sample,¹⁶ you must conduct the monitoring required by paragraph (d)(8)(ii) of this section or demonstrate according to the methods described in paragraphs (d)(8)(iii)(A) through (E) of this section that the NHV of the inlet gas to the enclosed combustion device or flare consistently exceeds the applicable operating limit specified in §60.5415b(f)(1)(vii)(B), (C), or paragraph (d)(8)(iii) of this section.

(G) You may request an alternative test method under §60.5412b(d) to demonstrate

¹⁵ The changes in this paragraph clarify that an operator must take an action to introduce inerts to trigger the requirement to re-evaluate NHV.

¹⁶ Without some period to commence continuous monitoring or make an NHV demonstration, arguably a deviation automatically occurs through no fault of the operator. This is of great concern for operators, particularly because a single deviation cuts off the waste emission charge fee exemption under EPA's proposed rule. We propose a 60-day period, which is necessary to acquire, install, and commission continuous monitoring equipment or to complete an NHV demonstration.

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that the flare or enclosed combustion device reduces methane and VOC in the gases vented to the device by 95.0 percent by weight or greater. You must use an alternative test method that demonstrates compliance with the combustion efficiency limit; you may not use an alternative test method that demonstrates compliance with NHV_{cz} and NHV_{dil} in lieu of measuring combustion efficiency directly. You must measure data values at the frequency specified in the alternative test method and conduct the quality assurance and quality control requirements outlined in the alternative test method at the frequency outlined in the alternative test method. You must monitor the combustion efficiency of the flare continuously for ~~14~~7 days. If there are no values of the combustion efficiency measured by the alternative test method that are less than 95.0 percent, the gas stream is considered to consistently exceed the applicable NHV operating limit, and you are not required to continuously monitor the NHV of the inlet gas to the flare or enclosed combustion device.

~~(vi) If you use a flare or enclosed combustion device that is air assisted or steam assisted, you must also meet the following requirements.¹⁷~~

~~(A) Except as allowed by paragraph (d)(8)(iv)(E) of this section, you must monitor and calculate NHV_{cz} as specified in § 63.670(m) of this chapter. Additionally, for flares and enclosed combustion devices that use only perimeter assist air and do not use steam assist or premix assist air, the NHV_{cz} is equal to the vent gas NHV. When NHV_{cz} is equal to the vent gas NHV, you are not required to continuously monitor NHV_{cz} if you meet the requirements in paragraph (d)(8)(iii) of this section.~~

~~(B) Except as allowed by paragraph (d)(8)(iv)(D) of this section, for each flare using perimeter assist air, you must also monitor and calculate NHV_{dil} as specified in § 63.670(n) of this chapter. If the only assist air provided to the flare or enclosed combustion control device is perimeter assist air intentionally entrained in lower and/or upper steam at the flare tip and the effective diameter is 9 inches or greater, you are only required to comply with the NHV_{cz} limit specified in paragraph (f)(8)(vi)(A) of this section.~~

~~(C) Except as allowed by paragraph (d)(8)(iv) of this section, you must monitor the flare vent gas and assist gas as specified in § 63.670(i) of this chapter.~~

~~(D) You must determine the flare vent gas net heating value as specified in § 63.670(l) of this~~

¹⁷ We propose to strike §60.5417b(d)(8)(vi), which incorporates onerous refinery MACT standards that are not appropriate for the upstream. Please see our comments at pages 1 through 4 of our April 5, 2024 letter, *Provisions in EPA's Final Rule "New Source Performance Standards and Emission Guidelines for Crude Oil and Natural Gas Facilities: Climate Review" Creating Immediate Compliance and Implementation Issues*.

~~chapter using one of the methods specified in paragraph (d)(8)(ii) of this section. Where the phrase “petroleum refinery” is used, for purposes of this subpart, it will refer to flares controlling an affected facility under this subpart. If you are not required to continuously monitor the NHV of the inlet gas because you have demonstrated that it consistently exceeds the applicable operating limit as provided in paragraph (d)(8)(iii) of this section, you must use the lowest net heating value measured in the sampling program in paragraph (d)(8)(iii) of this section for the calculations performed in paragraphs (d)(8)(vi)(A) and (B). You must update this value if a subsequent sampling result of the NHV of the inlet gas to the enclosed combustion device or flare under paragraph (d)(8)(iii) of this section is lower than the NHV vent gas value used in your calculations.~~

§60.5430b Redline¹⁸

Representative Grab Sample means, for the purposes of the representative grab sample requirements in §60.5417b(d)(8)(iii), a sample of gas that is representative of the inlet gas stream to the flare or enclosed combustion device. To be representative, the sample must meet at least one of the conditions in (1), (2), (3), or (4) below:

- (1) The sample is collected from the inlet to the flare or enclosed combustion device;
- (2) If only one process stream can vent to the flare or enclosed combustion device, the sample is collected from the process that vents to the flare or enclosed combustion device;
- (3) If multiple processes may vent to the flare or enclosed combustion device, the sample is collected from the process with the lowest expected NHV that may vent to the flare or enclosed combustion device; or
- (4) For flares or enclosed combustion devices located at a well site or centralized production facility, the sample is collected from a representative well site or centralized production facility that meets all the following criteria:
 - (i) The sample must originate from the same producing reservoir/formation as the process stream for which the representative sample will be used;
 - (ii) The representative well site or centralized production facility must be located within 10 miles of the affected facility for which the representative sample will be used;
 - (iii) The petroleum liquids produced at the representative well site or centralized production facility and the well site or centralized production facility where the affected or designated facility is located must have an API gravity within three degrees;
 - (iv) The process or vessel immediately before where the sample is collected must be within ± 20 psi pressure and ± 20 degrees Celsius temperature of the process or vessel stream that is being represented; and

¹⁸ We are proposing these additional definitions to add necessary and appropriate clarification to these terms, as they are used in these redlines.

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(v) The sample must be taken within 3 years before the date of the demonstration in §60.5417b(d)(8)(iii).