6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2014-0738; FRL-9960-13-OAR]

Notice of Requests for Approval of an Alternative Means of Emission Limitation at Chevron Phillips Chemical Company LP

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice; request for comments.

SUMMARY: This action provides public notice and solicits comment on the alternative means of emission limitation (AMEL) request from Chevron Phillips Chemical Company LP (CP Chem), requested under the Clean Air Act (CAA), to operate a multi-point ground flare (MPGF) at their new ethylene plant in Baytown, Texas, and an MPGF at their new polyethylene plant in Old Ocean, Texas.[1] In this action, the Environmental Protection Agency (EPA) is soliciting comment on all aspects of this request for an AMEL and the alternative operating conditions that would be sufficient to achieve a reduction in emissions of volatile organic compounds (VOC) and hazardous air pollutants (HAP) at least equivalent to the reduction in emissions required by various standards in 40 CFR parts 60, 61, and 63 that apply to emission sources controlled by these MPGFs. These standards incorporate the design and operating requirements for flares in the General Provisions to parts 60 and 63, respectively, as part of the emission reduction requirements. The proposed MPGF designs cannot meet the velocity requirements in these General Provisions; however, CP Chem's request for an alternative means of emission limit demonstrates that the alternative proposed would achieve at least equivalent emissions reductions as flares that meet the standards in the General Provisions.

[1] The MPGF at both the ethylene plant and polyethylene plant will utilize pressure-assisted burners on all the high pressure stages; however, the first two stages on the MPGF at the polyethylene plant will also be steam-assisted.

DATES: *Comments*. Comments must be received on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, unless a public hearing is requested by **[INSERT DATE 5 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. If a public hearing is requested on this action, written comments must be received by **[INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

Public Hearing. If a public hearing is requested by **[INSERT DATE 5 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**, we will hold a public hearing on [**INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**], from 1:00 p.m. [Central Daylight Time] to 5:00 p.m. [Central Daylight Time] in the Houston, Texas, area. We will provide details on the public hearing, if one is requested, on our Web site at: *https://www3.epa.gov/ttn/atw/groundflares/groundflarespg.html*. The EPA does not intend to publish another notice in the **Federal Register** announcing any updates on the request for a public hearing, so please be sure to check the Web site above for updates. Again, a public hearing will not be held unless someone specifically requests that the EPA hold a public hearing regarding these requests. Please contact Ms. Virginia Hunt, Sector Policies and Programs Division (E143-01), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711; telephone number: (919) 541-0832; email address: *hunt.virginia@epa.gov*; to request a public hearing, to register to speak at the public hearing or to inquire as to whether a public hearing will be held. The last day to pre-register in advance to speak at the public hearing will be **[INSERT DATE 12 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: *Comments*. Submit your comments, identified by Docket ID No. EPA-HQ-OAR-2014-0738, at *http://www.regulations.gov*. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or removed from Regulations.gov. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.*, on the Web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *http://www2.epa.gov/dockets/commenting-epa-dockets*.

Instructions. Direct your comments to Docket ID No. EPA-HQ-OAR-2014-0738. The EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *http://www.regulations.gov*, including any personal information provided, unless the comment includes information claimed to be CBI or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *http://www.regulations.gov* or email. The *http://www.regulations.gov* Web site is an "anonymous access" system, which means the EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email comment directly to the EPA without going through *http://www.regulations.gov*, your email address will be automatically captured and included as

part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, the EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If the EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, the EPA may not be able to consider your comment. Electronic files should not include special characters or any form of encryption and be free of any defects or viruses. For additional information about the EPA's public docket, visit the EPA Docket Center homepage at *http://www.epa.gov/dockets*.

Docket. The EPA has established a docket for this rulemaking under Docket ID No. EPA-HQ-OAR-2014-0738. All documents in the docket are listed in the Regulations.gov index. Although listed in the index, some information is not publicly available, *e.g.*, CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy. Publicly available docket materials are available either electronically in Regulations.gov or in hard copy at the EPA Docket Center, Room 3334, EPA WJC West Building, 1301 Constitution Avenue, NW, Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the EPA Docket Center is (202) 566-1742.

FOR FURTHER INFORMATION CONTACT: For questions about this action, contact Mr. Andrew Bouchard, Sector Policies and Programs Division (E143-01), Office of Air Quality Planning and Standards (OAQPS), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711; telephone number: (919) 541-4036; fax number: (919) 541-0246; and email address: *bouchard.andrew@epa.gov*.

SUPPLEMENTARY INFORMATION:

Acronyms and Abbreviations. We use multiple acronyms and terms in this notice. While this list may not be exhaustive, to ease the reading of this notice and for reference purposes, the EPA defines the following terms and acronyms here:

AMEL	alternative means of emission limitation
Btu/scf	British thermal units per standard cubic foot
CAA	Clean Air Act
CBI	confidential business information
CFR	Code of Federal Regulations
CP Chem	Chevron Phillips Chemical Company LP
EPA	Environmental Protection Agency
Eqn	equation
HAP	hazardous air pollutants
HP	high pressure
LFL	lower flammability limit
LFL_{cz}	lower flammability limit of combustion zone gas
LFL_{vg}	lower flammability limit of flare vent gas
MPGF	multi-point ground flares
NESHAP	national emission standards for hazardous air pollutants
NHV	net heating value
NHV_{cz}	net heating value of combustion zone gas
NHV_{vg}	net heating value of flare vent gas
NSPS	new source performance standards
OAQPS	Office of Air Quality Planning and Standards
scf	standard cubic feet
VOC	volatile organic compounds

Organization of This Document. The information in this notice is organized as follows:

I. Background

A. Regulatory Flare Requirements and CP Chem's AMEL Request

CP Chem submitted a complete MPGF AMEL request, following the MPGF AMEL framework that was published in the **Federal Register** (see 81 FR 23480, April 21, 2016), to the EPA on November 28, 2016. CP Chem is seeking an AMEL to operate an MPGF for use during limited high-pressure maintenance, startup, and shutdown events, as well as during upset events at their ethylene plant in Baytown, Texas. In addition, CP Chem is seeking an AMEL to operate an MPGF during certain routine operations (*i.e.*, the first two stages only), as well as during periods of maintenance, startup, shutdown, and upset at their polyethylene plant in Old Ocean, Texas (see section II.B. below for more details). In their request, CP Chem cited various regulatory requirements in 40 CFR parts 60, 61, and 63 that will apply to the flare vent gas streams that will be collected and routed to their MPGF at each of these two plants. See Table 1 for a list of regulations, by subparts, that CP Chem has identified as applicable to the two plants described above. These new source performance standards (NSPS) and national emissions standards for hazardous air pollutants (NESHAP) require that flares subject to these subparts meet the flare design and operating requirements in the General Provisions of part 60 and 63, respectively (*i.e.*, 40 CFR 60.18(b) and 63.11(b)). CP Chem is requesting that the EPA approve an AMEL for the flare requirements in these subparts.

Table 1 — Summary of Applicable Rules that May Apply to Vent Streams Controlled by Multi-Point Ground Flares

Applicable rules with vent streams going to control device(s)	CP Chem Ethylene Plant	CP Chem Polyethylene Plant	Rule citation from Title 40 CFR that allow for use of a flare	Provisions for Alternative Means of Emission Limitation
NSPS Subpart VV		X	60.482-10(d)	60.484(a)-(f)
NSPS Subpart VVa	X		60.482-10a(d)	60.484a(a)-(f)
NSPS Subpart DDD		X	60.562-1(a)(1)(i)(C)	CAA section 111(h)(3)
NSPS Subpart NNN	X		60.662(b)	CAA section 111(h)(3)
NSPS Subpart RRR	X		60.702(b)	CAA section 111(h)(3)
NESHAP Subpart FF	X		61.349(a)(2)	61.353(a); also see 61.12(d)
NESHAP Subpart SS	X		63.982(b)	CAA section 112(h)(3)
NESHAP Subpart UU	X		63.1034	63.1021(a)-(d)
NESHAP Subpart XX	X		63.1091	63.1097(b)(1)

			*Note - This subpart cross-references to NESHAP subpart FF above	
NESHAP Subpart YY	X		Table 7 to §63.1103(e) cross-references to NESHAP subpart SS above	63.1113
NESHAP Subpart FFFF		X	63.2450(e)(2)	63.2545(b)(1); also see 63.6(g)

The provisions in each NSPS and NESHAP cited above that ensure flares meet certain specific requirements when used to satisfy the requirements of the NSPS or NESHAP were established as work practice standards pursuant to CAA sections 111(h)(1) or 112(h)(1). For standards established according to these provisions, CAA sections 111(h)(3) and 112(h)(3) allow the EPA to permit the use of an AMEL by a source if, after notice and opportunity for comment,[2] it is established to the Administrator's satisfaction that such an AMEL will achieve emissions reductions at least equivalent to the reductions required under the CAA section 111(h)(1) or 112(h)(1) standard. As noted in Table 1, many of the NSPS and NESHAP also include specific regulatory provisions allowing sources to request an AMEL.

CP Chem submitted an AMEL request because their MPGFs are designed to operate above the maximum permitted velocity requirements for flares in the General Provisions in 40 CFR parts 60 and 63. CP Chem provided information that the MPGF designs they propose to use at both sites will achieve a reduction in emissions at least equivalent to the reduction in emissions for flares complying with these General Provisions requirements. For further information on CP Chem's specific AMEL request, see supporting materials from CP Chem at Docket ID No. EPA-HQ-OAR-2014-0738.

II. Requests for AMEL

[2] CAA section 111(h)(3) specifically requires that the EPA provide an opportunity for a hearing.

A. CP Chem's Ethylene Plant

CP Chem indicates in their MPGF AMEL request that they plan to construct and operate an MPGF at their Cedar Bayou ethylene plant in Baytown, Texas. This new ethylene plant will use ethane as a feedstock and be able to produce approximately 1.5 million metric tons per year of ethylene. CP Chem is proposing to use a staged flare design to control emissions of VOC and HAP from various process vents during normal operations, as well as during maintenance, startup, shutdown, and upset operating conditions. During normal operation and most of the routine maintenance activities, CP Chem will operate a low pressure steam-assisted ground flare consisting of eight Callidus MP4U burners. This low pressure stage of the flare is not specifically part of the AMEL request, because this flare can comply with the General Provisions requirements of 40 CFR 60.18(b) and 63.11(b), which are cross-referenced in the applicable NSPS and NESHAP provisions. CP Chem has submitted an AMEL request to operate the 17 high pressure (HP) stages (*i.e.*, 16 stages plus one spare stage) of the MPGF because the designed flaring scenarios for when this portion of the MPGF will be used (*i.e.*, during limited HP maintenance, startup, and shutdown events, as well as during upset events) will exceed the maximum permitted velocity requirements in the General Provisions at 40 CFR 60.18(b) and 40 CFR 63.11(b). The HP stages will also use Callidus MP4U burners and have anywhere from 6 to 62 burners per stage (see supporting materials from CP Chem at Docket ID No. EPA-HQ-OAR-2014-0738 for more details).

B. CP Chem's Polyethylene Plant

CP Chem indicates in their MPGF AMEL request that they also plan to construct and operate an MPGF at their new polyethylene plant that will be located adjacent to their Sweeny Chemical and Natural Gas Liquids (NGL) Fractionation Plant in Old Ocean, Texas. The

polyethylene plant consists of two polyethylene units, each capable of producing 500,000 metric tons per year of polyethylene products. CP Chem is also proposing to use a staged flare design scheme to control emissions of VOC and HAP from various process vents during normal operations, as well as during maintenance, startup, shutdown, and upset operating conditions; however, the design, burner type and configuration of this flare differ from that of the MPGF at the ethylene plant in a few key ways. First, the low pressure stage of the flare will have four steam-assisted Callidus LP-Expert tip burners. Similar to the design of CP Chem's ethylene plant MPGF, this low pressure stage is not specifically part of the AMEL request as it can comply with the flare General Provisions requirements of 40 CFR 60.18(b) and 40 CFR 63.11(b). Second, the MPGF will consist of 10 HP stages (*i.e.*, nine stages plus one spare stage), with each stage using Callidus MP4U burners. Lastly, unlike CP Chem's ethylene plant MPGF, the first two stages of the HP side of this MPGF will operate pressure-assisted burners that will also be steam-assisted and control emissions during certain routine operations, as well as during periods of startup, shutdown, maintenance, and upset conditions. CP Chem indicates in their AMEL request that this particular control scheme was chosen due to insufficient area in the plot plan to add additional flare burners on the low pressure side that could comply with the maximum permitted velocity requirements of 40 CFR 60.18(b) and 40 CFR 63.11(b). Thus, in order to account for all potential routine flaring operation scenarios, CP Chem will operate the first two stages of the HP side of the MPGF as flexible, or "swing" stages that can operate in both a low pressure capacity as well as high pressure capacity. These first two stages will have a total of 18 burners, which account for approximately 10 percent of the total number of flare burners on the HP side of the MPGF being proposed for use by CP Chem (see supporting materials from CP Chem at Docket ID No. EPA-HQ-OAR-2014-0738 for more details).

C. Information Supporting CP Chem's MPGF AMEL Requests

CP Chem provided all the information specified in the MPGF AMEL framework finalized on April 21, 2016 (see 81 FR 23480), to support their AMEL request. This information includes, but is not limited to: (1) details on the project scope and background; (2) information on regulatory applicability; (3) MPGF test data on destruction efficiency/combustion efficiency; (4) MPGF stability testing data, (5) MPGF cross-light testing data; (6) information on flare reduction considerations; and (7) information on appropriate MPGF monitoring and operating conditions. In addition, because the MPGF AMEL framework did not specifically address an MPGF design that would utilize pressure-assisted burners and that would also be steam-assisted (*i.e.*, HP stages 1 and 2 of CP Chem's polyethylene plant MPGF), CP Chem conducted additional performance testing on an n-butane/nitrogen vent gas mixture over a range of combustion zone net heating values (NHV_{cz}), vent gas exit velocity regimes, and steam flow rate regimes in order to establish where the burners can achieve a destruction efficiency of n-butane of 98 percent or greater.[3] An n-butane vent gas mixture was tested because CP Chem indicated in their AMEL request that a cooling water failure would be their worst case upset design scenario from an MPGF perspective and that the vent gas sent to the flare would be predominantly isobutane. However, given that n-butane was more readily available than isobutane and given that they both have the same molecular formula (C_4H_{10}), the same lower flammability limits, and have almost identical net heating values, n-butane was tested in lieu of isobutane (see Table 2 in section III. below for more details). In addition, each of the valid destruction efficiency test runs conducted lasted for a minimum of 10 minutes and none of these runs displayed any

[3] The EPA has previously concluded that flares operating in accordance with the General Provisions flare requirements of part 60 and 63 destroy VOC and HAP with a destruction efficiency of 98 percent or greater. *Standard of Performance for New Stationary Sources: General Provisions; National Emission Standards for Hazardous Air Pollutants for Source Categories: General Provisions*, 63 FR 24436, 24437 (May 4, 1998).

characteristics of flame instability (for further information on the supporting materials provided by CP Chem, see the docket at Docket ID No. EPA-HQ-OAR-2014-0738).

III. AMEL for the Proposed MPGFs

We are seeking the public's input on CP Chem's request that the EPA approve an AMEL for the two MPGFs proposed to be used at CP Chem's ethylene plant in Baytown, Texas, and CP Chem's polyethylene plant in Old Ocean, Texas. Specifically, the EPA seeks the public's input on the requirements that will ensure that the AMEL will achieve emission reductions at least equivalent to the emission reductions achieved under the applicable NESHAP and NSPS identified in Table 1, all of which require compliance with 40 CFR 63.11(b) or 40 CFR 60.18(b), respectively, when using a flare.[3] Based upon our review of the completed AMEL request and the available emissions test data submitted by CP Chem,[4] we believe that, by complying with the following list of requirements, the two proposed MPGFs will achieve emission reductions at least equivalent to emission reductions achieved under 40 CFR 63.11(b) and 40 CFR 60.18(b), as required by the applicable NESHAP and NSPS identified in Table 1:

(1) The MPGF system for all HP stages at CP Chem's ethylene plant and for all HP stages excluding stage 1 and 2 for CP Chem's polyethylene plant must be designed and operated such that the net heating value of the combustion zone gas (NHV_{cz}) is greater than or equal to 800 British thermal units per standard cubic foot (Btu/scf) or lower flammability limit of the combustion zone gas (LFL_{cz}) is less than or equal to 6.5 percent by volume. The MPGF system for HP stages 1 and 2 of CP Chem's polyethlene plant must be designed and operated such that the NHV_{cz} is greater than or equal to 600 Btu/scf or the LFL_{cz} is less than or equal to 8.0 percent

[4] For further information on the test data submitted by CP Chem to support their AMEL request, see "CP Chemical AMEL Request for Multi-Point Ground Flares September 2015" at Docket ID No. EPA-HQ-OAR-2014-0738-0048, as well as "CP Chemical Response to EPA November 2016" at Docket ID No. EPA-HQ-OAR-2014-0738-0052.

by volume. Owners or operators must demonstrate compliance with the NHV_{cz} or LFL_{cz} metric by continuously complying with a 15-minute block average. Owners or operators must calculate and monitor for the NHV_{cz} or LFL_{cz} according to the following:

(a) Calculation of NHV_{cz}

(i) The owner or operator shall determine the net heating value of flare vent gas (NHV_{vg}) by following the requirements of (1)(d)-(1)(e) below. If an owner or operator elects to use a monitoring system capable of continuously measuring (*i.e.*, at least once every 15 minutes), calculating, and recording the individual component concentrations present in the flare vent gas, NHV_{vg} shall be calculated using the following equation:

$$NHV_{vg} = \sum_{i=1}^{n} x_i NHV_i \quad \text{(Eqn. 1)}$$

where:

NHV_{vg} = Net heating value of flare vent gas, Btu/scf. *Flare vent gas* means all gas found just prior to the MPGF. This gas includes all flare waste gas (*i.e.*, gas from facility operations that is directed to a flare for the purpose of disposing of the gas), flare sweep gas, flare purge gas and flare supplemental gas, but does not include pilot gas.

i = Individual component in flare vent gas.

n = Number of components in flare vent gas.

x_i = Concentration of component i in flare vent gas, volume fraction.

NHV_i = Net heating value of component i determined as the heat of combustion where the net enthalpy per mole of offgas is based on combustion at 25 degrees Celsius (°C) and 1 atmosphere (or constant pressure) with water in the gaseous state from values published in the literature, and then the values converted to a

volumetric basis using 20 °C for "standard temperature." Table 2 summarizes component properties including net heating values.

(ii) For all MPGF HP stages at CP Chem's ethylene plant and for all MPGF HP stages, excluding stage 1 and 2 for CP Chem's polyethylene plant, $NHV_{vg} = NHV_{cz}$.

(iii) For HP stages 1 and 2 of CP Chem's polyethlene plant MPGF, NHV_{cz} shall be calculated using the following equation:

$$NHV_{cz} = \frac{Q_{vg} \times NHV_{vg}}{\left(Q_{vg} + Q_s\right)} \qquad \text{(Eqn. 2)}$$

where:

NHV_{cz} = Net heating value of combustion zone gas, Btu/scf.

NHV_{vg} = Net heating value of flare vent gas for the 15-minute block period as determined according to (1)(a)(i) above, Btu/scf.

Q_{vg} = Cumulative volumetric flow of flare vent gas during the 15-minute block period, standard cubic feet (scf).

Q_s = Cumulative volumetric flow of total assist steam during the 15-minute block period, scf.

(b) Calculation of LFL_{cz}

(i) The owner or operator shall determine LFL_{cz} from compositional analysis data by using the following equation:

$$LFL_{vg} = \frac{1}{\sum_{i=1}^{n}\left(\frac{\chi_i}{LFL_i}\right)} \times 100\% \qquad \text{(Eqn. 3)}$$

where:

LFL_{vg} = Lower flammability limit of flare vent gas, volume percent (vol %).

n = Number of components in the vent gas.

i = Individual component in the vent gas.

χ_i = Concentration of component i in the vent gas, vol %.

LFL_i = Lower flammability limit of component i as determined using values published by the U.S. Bureau of Mines (Zabetakis, 1965), vol %. All inerts, including nitrogen, are assumed to have an infinite LFL (*e.g.*, $LFL_{N2} = \infty$, so that $\chi_{N2}/ LFL_{N2} = 0$). LFL values for common flare vent gas components are provided in Table 2.

(ii) For all MPGF HP stages at CP Chem's ethylene plant and for all MPGF HP stages excluding stages 1 and 2 for CP Chem's polyethylene plant, $LFL_{vg} = LFL_{cz}$.

(iii) For HP stages 1 and 2 of CP Chem's polyethlene plant MPGF, LFL_{cz} shall be calculated using the following equation:

$$LFL_{cz} = \frac{LFL_{vg} \times (Q_{vg} + Q_s)}{Q_{vg}} \quad \text{(Eqn. 4)}$$

where:

LFL_{cz} = lower flammability limit of combustion zone gas, vol %.

LFL_{vg} = Lower flammability limit of flare vent gas, vol %.

Q_{vg} = Cumulative volumetric flow of flare vent gas during the 15-minute block period, scf.

Q_s = Cumulative volumetric flow of total assist steam during the 15-minute block period, scf.

(c) The operator of an MPGF system shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring the volumetric flow rate of flare vent gas (Q_{vg}) and the volumetric flow rate of total assist steam (Q_s).

(i) The flow rate monitoring systems must be able to correct for the temperature and pressure of the system and output parameters in standard conditions (*i.e.*, a temperature of 20 °C (68 °F) and a pressure of 1 atmosphere).

(ii) Mass flow monitors may be used for determining volumetric flow rate of flare vent gas provided the molecular weight of the flare vent gas is determined using compositional analysis so that the mass flow rate can be converted to volumetric flow at standard conditions using the following equation:

$$Q_{vol} = \frac{Q_{mass} \times 385.3}{MW_t} \quad \text{(Eqn. 5)}$$

where:

Q_{vol} = Volumetric flow rate, scf per second.

Q_{mass} = Mass flow rate, pounds per second.

385.3 = Conversion factor, scf per pound-mole.

MW_t = Molecular weight of the gas at the flow monitoring location, pounds per pound-mole.

(iii) Mass flow monitors may be used for determining volumetric flow rate of total assist steam. Use Equation 5 to convert mass flow rates to volumetric flow rates. Use a molecular weight of 18 pounds per pound-mole for total assist steam.

(d) The operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring (*i.e.*, at least once every 15 minutes), calculating, and recording the individual component concentrations present in the flare vent gas or the owner or operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring, calculating, and recording NHV_{vg} (in BTU/scf).

(e) For each measurement produced by the monitoring system used to comply with (1)(d) above, the operator shall determine the 15-minute block average as the arithmetic average of all measurements made by the monitoring system within the 15-minute period.

(f) The operator must follow the calibration and maintenance procedures according to Table 3. Maintenance periods, instrument adjustments, or checks to maintain precision and accuracy and zero and span adjustments may not exceed 5 percent of the time the flare is receiving regulated material.

Table 2 — Individual Component Properties

Component	Molecular Formula	MW_i (pounds per pound-mole)	NHV_i (British thermal units per standard cubic foot)	LFL_i (volume %)
Acetylene	C_2H_2	26.04	1,404	2.5
Benzene	C_6H_6	78.11	3,591	1.3
1,2-Butadiene	C_4H_6	54.09	2,794	2.0
1,3-Butadiene	C_4H_6	54.09	2,690	2.0
iso-Butane	C_4H_{10}	58.12	2,957	1.8
n-Butane	C_4H_{10}	58.12	2,968	1.8
cis-Butene	C_4H_8	56.11	2,830	1.6
iso-Butene	C_4H_8	56.11	2,928	1.8
trans-Butene	C_4H_8	56.11	2,826	1.7
Carbon Dioxide	CO_2	44.01	0	∞
Carbon Monoxide	CO	28.01	316	12.5
Cyclopropane	C_3H_6	42.08	2,185	2.4
Ethane	C_2H_6	30.07	1,595	3.0
Ethylene	C_2H_4	28.05	1,477	2.7
Hydrogen	H_2	2.02	274	4.0
Hydrogen Sulfide	H_2S	34.08	587	4.0
Methane	CH_4	16.04	896	5.0
Methyl-Acetylene	C_3H_4	40.06	2,088	1.7
Nitrogen	N_2	28.01	0	∞
Oxygen	O_2	32.00	0	∞
Pentane+ (C5+)	C_5H_{12}	72.15	3,655	1.4
Propadiene	C_3H_4	40.06	2,066	2.16
Propane	C_3H_8	44.10	2,281	2.1
Propylene	C_3H_6	42.08	2,150	2.4

Component	Molecular Formula	MW_i (pounds per pound-mole)	NHV_i (British thermal units per standard cubic foot)	LFL_i (volume %)
Water	H_2O	18.02	0	∞

Table 3 — Accuracy and Calibration Requirements

Parameter	Accuracy Requirements	Calibration Requirements
Flare Vent Gas Flow Rate	±20 percent of flow rate at velocities ranging from 0.1 to 1 foot per second. ±5 percent of flow rate at velocities greater than 1 foot per second.	Performance evaluation biennially (every 2 years) and following any period of more than 24 hours throughout which the flow rate exceeded the maximum rated flow rate of the sensor, or the data recorder was off scale. Checks of all mechanical connections for leakage monthly. Visual inspections and checks of system operation every 3 months, unless the system has a redundant flow sensor. Select a representative measurement location where swirling flow or abnormal velocity distributions due to upstream and downstream disturbances at the point of measurement are minimized.
Flow Rate for All Flows Other Than Flare Vent Gas	±5 percent over the normal range of flow measured or 1.9 liters per minute (0.5 gallons per minute), whichever is greater, for liquid flow.	Conduct a flow sensor calibration check at least biennially (every two years); conduct a calibration check following any period of more than 24 hours throughout which the flow rate exceeded the manufacturer's specified maximum rated flow rate or install a new flow sensor.
	±5 percent over the normal range of flow measured or 280 liters per minute (10 cubic feet per minute), whichever is greater, for gas flow.	At least quarterly, inspect all components for leakage, unless the continuous parameter monitoring system has a redundant flow sensor.
	±5 percent over the normal range measured for mass flow.	Record the results of each calibration check and inspection. Locate the flow sensor(s) and other necessary equipment (such as

		straightening vanes) in a position that provides representative flow; reduce swirling flow or abnormal velocity distributions due to upstream and downstream disturbances.
Pressure	±5 percent over the normal range measured or 0.12 kilopascals (0.5 inches of water column), whichever is greater.	Review pressure sensor readings at least once a week for straight-line (unchanging) pressure and perform corrective action to ensure proper pressure sensor operation if blockage is indicated. Performance evaluation annually and following any period of more than 24 hours throughout which the pressure exceeded the maximum rated pressure of the sensor, or the data recorder was off scale. Checks of all mechanical connections for leakage monthly. Visual inspection of all components for integrity, oxidation and galvanic corrosion every 3 months, unless the system has a redundant pressure sensor. Select a representative measurement location that minimizes or eliminates pulsating pressure, vibration, and internal and external corrosion.
Net Heating Value by Calorimeter	±2 percent of span	Calibration requirements should follow manufacturer's recommendations at a minimum. Temperature control (heated and/or cooled as necessary) the sampling system to ensure proper year-round operation. Where feasible, select a sampling location at least 2 equivalent diameters downstream from and 0.5 equivalent diameters upstream from the nearest disturbance. Select the sampling location at least 2 equivalent duct diameters from the nearest control device, point of pollutant generation, air in-leakages, or other point at which a change in

		the pollutant concentration or emission rate occurs.
Net Heating Value by Gas Chromatograph	As specified in Performance Specification (PS) 9 of 40 CFR part 60, appendix B.	Follow the procedure in PS 9 of 40 CFR part 60, appendix B, 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).

(2) The MPGF system shall be operated with a flame present at all times when in use. Each burner on HP stages 1 and 2 of CP Chem's polyethylene plant MPGF must have a pilot with a continuously lit pilot flame. Additionally, each HP stage of CP Chem's ethylene plant MPGF and all HP stages excluding stages 1 and 2 for CP Chem's polyethylene plant MPGF must have at least two pilots with a continuously lit pilot flame. Each pilot flame must be continuously monitored by a thermocouple or any other equivalent device used to detect the presence of a flame. The time, date, and duration of any complete loss of pilot flame on any of the individual MPGF burners on HP stages 1 and 2 of CP Chem's polyethylene plant MPGF, on any of the HP stages of CP Chem's ethylene plant MPGF and on any of the HP stages excluding stages 1 and 2 of CP Chem's polyethylene plant MPGF must be recorded. Each monitoring device must be maintained or replaced at a frequency in accordance with the manufacturer's specifications.

(3) The MPGF system shall be operated with no visible emissions except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. A video camera that is capable of continuously recording (*i.e.*, at least one frame every 15 seconds with time and date stamps) images of the flare flame and a reasonable distance above the flare flame at an angle suitable for visible emissions observations must be used to demonstrate compliance with this requirement.

The owner or operator must provide real-time video surveillance camera output to the control room or other continuously manned location where the video camera images may be viewed at any time.

(4) The operator of an MPGF system shall install and operate pressure monitor(s) on the main flare header, as well as a valve position indicator monitoring system capable of monitoring and recording the position for each staging valve to ensure that the MPGF operates within the range of tested conditions or within the range of the manufacturer's specifications. The pressure monitor shall meet the requirements in Table 3. Maintenance periods, instrument adjustments or checks to maintain precision and accuracy, and zero and span adjustments may not exceed 5 percent of the time the flare is receiving regulated material.

(5) Recordkeeping Requirements

(a) All data must be recorded and maintained for a minimum of 3 years or for as long as required under applicable rule subpart(s), whichever is longer.

(6) Reporting Requirements

(a) The information specified in section III (6)(b) and (c) below must be reported in the timeline specified by the applicable rule subpart(s) for which the MPGF will control emissions.

(b) Owners or operators shall include the following information in their initial Notification of Compliance status report:

(i) Specify flare design as a pressure-assisted MPGF. CP Chem's polyethylene plant shall also clearly note that HP stages 1 and 2 are also steam-assisted.

(ii) All visible emission readings, NHV_{cz} and/or LFL_{cz} determinations, and flow rate measurements. For MPGF, exit velocity determinations do not need to be reported as the

maximum permitted velocity requirements in the General Provisions at 40 CFR 60.18(b) and 40 CFR 63.11(b) are not applicable.

(iii) All periods during the compliance determination when a complete loss of pilot flame on any stage of MPGF burners occurs, and, for HP stages 1 and 2 of CP Chem's polyethylene plant MPGF, all periods during the compliance determination when a complete loss of pilot flame on an individual burner occurs.

(iv) All periods during the compliance determination when the pressure monitor(s) on the main flare header show the MPGF burners operating outside the range of tested conditions or outside the range of the manufacturer's specifications.

(v) All periods during the compliance determination when the staging valve position indicator monitoring system indicates a stage of the MPGF should not be in operation and is or when a stage of the MPGF should be in operation and is not.

(c) The owner or operator shall notify the Administrator of periods of excess emissions in their Periodic Reports. These periods of excess emissions shall include:

(i) Records of each 15-minute block for all HP stages of CP Chem's ethylene plant MPGF and for all HP stages excluding stages 1 and 2 of CP Chem's polyethylene plant MPGF during which there was at least 1 minute when regulated material was routed to the MPGF and a complete loss of pilot flame on a stage of burners occurred, and, for HP stages 1 and 2 of CP Chem's polyethylene plant MPGF, records of each 15-minute block during which there was at least 1 minute when regulated material was routed to the MPGF and a complete loss of pilot flame on an individual burner occurred.

(ii) Records of visible emissions events (including the time and date stamp) that exceed more than 5 minutes in any 2-hour consecutive period.

(iii) Records of each 15-minute block period for which an applicable combustion zone operating limit (*i.e.*, NHV_{cz} or LFL_{cz}) is not met for the MPGF when regulated material is being combusted in the flare. Indicate the date and time for each period, the NHV_{cz} and/or LFL_{cz} operating parameter for the period and the type of monitoring system used to determine compliance with the operating parameters (*e.g.*, gas chromatograph or calorimeter). For CP Chem's polyethylene plant MPGF, also indicate which HP stages were in use.

(iv) Records of when the pressure monitor(s) on the main flare header show the MPGF burners are operating outside the range of tested conditions or outside the range of the manufacturer's specifications. Indicate the date and time for each period, the pressure measurement, the stage(s) and number of MPGF burners affected, and the range of tested conditions or manufacturer's specifications.

(v) Records of when the staging valve position indicator monitoring system indicates a stage of the MPGF should not be in operation and is or when a stage of the MPGF should be in operation and is not. Indicate the date and time for each period, whether the stage was supposed to be open, but was closed or vice versa, and the stage(s) and number of MPGF burners affected.

IV. Request for Comments

We solicit comments on all aspects of CP Chem's request for approval of an AMEL for the standards specified in Table 1. We specifically seek comment regarding whether or not the alternative operating requirements listed in section III above will achieve emission reductions at least equivalent to the provisions in the NSPS and NESHAP presented in Table 1 that require flares to meet the requirements in 40 CFR 63.11(b) and 40 CFR 60.18(b).

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Stephen Page, Director,
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