6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OAR-2014-0738 and EPA-HQ-OAR-2010-0682; FRL-9976-29-OAR]

Notice of Requests for Approval of Alternative Means of Emission Limitation

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) requests from ExxonMobil Corporation; Marathon Petroleum Company, LP (for itself and on behalf of its subsidiary, Blanchard Refining, LLC); and Chalmette Refining, LLC, under the Clean Air Act (CAA), to operate flares at several refineries in Texas and Louisiana, as well as the AMEL request from LACC, LLC to operate flares at a chemical plant in Louisiana.

DATES: *Comments*. Comments must be received on or before [INSERT DATE 45 DAYS AFTER 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], then we will hold a public hearing on [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER] at the location described in the ADDRESSES section. The last day to pre-register in advance to speak at the public hearing will be [INSERT DATE 13 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,

Regulations.gov is our preferred method of receiving comments. However, other submission methods are accepted. To ship or send mail via the United States Postal Service, use the following address: U.S. Environmental Protection Agency, EPA Docket Center, Docket ID No. EPA-HQ-OAR-2014-0738, Mail Code 28221T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460. Use the following Docket Center address if you are using express mail, commercial delivery, hand delivery, or courier: EPA Docket Center, EPA WJC West Building, Room 3334, 1301 Constitution Avenue, NW, Washington, DC 20004. Delivery verification signatures will be available only during regular business hours.

Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statue. See the **SUPPLEMENTARY INFORMATION** section of this preamble for instructions on submitting CBI.

The EPA may publish any comment received to its public docket. 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*.

Public Hearing. If a public hearing is requested, it will be held at EPA Headquarters, EPA WJC East Building, 1201 Constitution Avenue, NW, Washington, DC 20004. If a public hearing is requested, then we will provide details about the public hearing on our website at:

https://www3.epa.gov/ttn/atw/groundflares/groundflarespg.html. The EPA does not intend to publish another document in the **Federal Register** announcing any updates on the request for a public hearing. Please contact Ms. Virginia Hunt of the Sector Policies and Programs Division (E143-01), Office of Air Quality Planning and Standards, 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 or not a public hearing will be held.

The EPA will make every effort to accommodate all speakers who arrive and register. If a hearing is held at a U.S. government facility, individuals planning to attend should be prepared to show a current, valid state- or federal-approved picture identification to the security staff in order to gain access to the meeting room. An expired form of identification will not be permitted. Please note that the Real ID Act, passed by Congress in 2005, established new requirements for entering federal facilities. If your driver's license is issued by a noncompliant state, you must present an additional form of identification to enter a federal facility. Acceptable alternative forms of identification include: Federal employee badge, passports, enhanced driver's licenses, and military identification cards. Additional information on the Real ID Act is available at *https://www.dhs.gov/real-id-frequently-asked-questions*. In addition, you will need to obtain a property pass for any personal belongings you bring with you. Upon leaving the building, you will be required to return this property pass to the security desk. No large signs will be allowed in the building, cameras may only be used outside of the building, and demonstrations will not be allowed on federal property for security reasons.

FOR FURTHER INFORMATION CONTACT: For questions about this action, contact Ms. Angie Carey, 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) 541-2187; fax number: (919) 541-0516; and email address: *carey.angela@epa.gov*.

SUPPLEMENTARY INFORMATION:

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.

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. This type of information should be submitted by mail as discussed below. The *http://www.regulations.gov* website 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*.

Submitting CBI. Do not submit information containing CBI to the EPA through *http://www.regulations.gov* or email. Clearly mark the part or all of the information that you claim to be CBI. For CBI information on a disk or CD-ROM that you mail to the EPA, mark the outside of the disk or CD-ROM as CBI and then identify electronically within the disk or CD-ROM the specific information that is claimed as CBI. In addition to one complete version of the comments that includes information claimed as CBI, you must submit a copy of the comments that does not contain the information claimed as CBI for inclusion in the public docket. If you submit a CD-ROM or disk that does not contain CBI, mark the outside of the disk or CD-ROM clearly that it does not contain CBI. Information not marked as CBI will be included in the public docket and the EPA's electronic public docket without prior notice. Information marked as CBI will not be disclosed except in accordance with procedures set forth in 40 CFR part 2. Send or deliver information identified as CBI only to the following address: OAQPS Document Control

Officer (C404-02), OAQPS, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attention Docket ID No. EPA-HQ-OAR-2014-0738.

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
EPA	Environmental Protection Agency
Eqn	equation
HAP	hazardous air pollutants
LFL	lower flammability limit
LFL_{cz}	lower flammability limit of combustion zone gas
LFL_{vg}	lower flammability limit of flare vent gas
LRGO	linear relief gas oxidizer
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
SKEC	steam-assisted kinetic energy combustor
VOC	volatile organic compounds

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

I. Background

A. Regulatory Flare Requirements and AMEL Requests

In this action, the U.S. Environmental Protection Agency (EPA) is soliciting comment on all aspects of these AMEL requests and the corresponding operating conditions that would demonstrate that the requested AMEL would 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 Code of Federal Regulations (CFR) parts 60, 61, and 63 that apply to emission sources controlled by these flares. These standards incorporate the flare design and operating requirements in the parts 60 and 63 General Provisions (*i.e.*, 40 CFR 60.18(b) and 63.11(b)) into the individual new source performance standards (NSPS) and maximum achievable control technology (MACT) subparts, except for the Petroleum Refinery MACT, 40 CFR part 63, subpart CC, which specifies its flare requirements within the subpart (*i.e.*, 40 CFR 63.670). Four of the requests are for flares located at petroleum refineries, while the request from LACC, LLC is for a flare design at a chemical manufacturing facility. None of the flares located at petroleum refineries can meet the flare tip velocity limits in the Petroleum Refinery MACT, 40 CFR part 63, subpart CC. In addition, flares at these refineries and at LACC's chemical plant that are subject to other part 60 and 63 standards cannot meet the flare tip velocity limits contained in the applicable General Provisions to part 60 and 63. Based on our review of these requests and their supporting information, we conclude that, by following the conditions specified in this notice, the proposed flares will achieve at least equivalent emissions

reductions as flares complying with the requirements of 40 CFR 60.18(b), 63.11(b) and/or 63.670(d), whichever is applicable.[1]

Alternative Means of Emission Limitation requests were submitted to the EPA for flares that cannot comply with the applicable flare tip velocity requirements in the Petroleum Refinery MACT, 40 CFR part 63, subpart CC and General Provisions to parts 60 and 63. These maximum flare tip velocity requirements ensure that the flame does not "lift off" or separate from the flare tip, which could cause flame instability and/or potentially result in a portion of the flare gas being released without proper combustion. Proper combustion for flares is considered to be 98-percent destruction efficiency or greater for organic HAP and VOC. The flares in these requests are designed to operate with tip exit velocities greater than those allowed in 40 CFR 60.18, 63.11, and 63.670 while achieving ≥ 96.5-percent combustion efficiency and 98-percent destruction efficiency. Requests from ExxonMobil Corporation, Marathon Petroleum Company, LP, Blanchard Refining, LLC, and Chalmette Refining, LLC were submitted to the EPA on November 7, 2017; October 7, 2016; September 20, 2017; and August 10, 2017, respectively. These requests, which seek AMEL for flares to be used at certain refineries subject to the Petroleum Refinery MACT, 40 CFR part 63, subpart CC, followed the AMEL framework specified in 40 CFR part 63, subpart CC at 40 CFR 63.670(r).[2] On May 7, 2017, LACC, LLC submitted an AMEL request for flares to be used at a chemical plant in Louisiana according to the framework for pressure assisted multi-point ground flares (MPGFs) that was published in the **Federal Register** on April 21, 2016 (*see* 81 FR 23486). The flare designs in these requests vary

[1] Per 40 CFR 63.640(s), flares that are subject to the provisions of 40 CFR 63.670 are required only to comply with 40 CFR 63.670 and not the General Provisions at 40 CFR 60.18 and 63.11.

[2] Although the Marathon, Blanchard, and Chalmette refineries are subject to other national emission standards for hazardous air pollutants (NESHAP) and NSPS (and, therefore, the General Provisions at 40 CFR 60.18 and 63.11) in addition to NESHAP subpart CC, 40 CFR 63.640(s) of subpart CC allows flares that are subject to flare requirements in both subpart CC and General Provisions to elect to comply only with the subpart CC flare requirements at 40 CFR 63.670.

from a single tip design that is gas-assisted to multi-point tip designs which employ large numbers of tips at varying heights from close to ground level (these are termed multi-point ground flares [MPGF]) to an elevated multi-point design. The EPA has reviewed these requests and deemed them to be complete.

The ExxonMobil Corporation Baytown Refinery in Baytown, Texas, is seeking an AMEL to operate a gas-assisted flare during periods of startup, shutdown, upsets, and emergency events, as well as during fuel gas imbalance events. Marathon Petroleum Company, LP's Garyville, Louisiana Refinery, and Blanchard Refining, LLC's Galveston Bay Refinery (GBR) in Texas City, Texas, are seeking AMELs to operate their flares only during periods of startup, shutdown, upsets, and emergency events. Chalmette Refining, LLC in Chalmette, Louisiana, is seeking an AMEL to operate its flare during periods of upset and emergency events. LACC, LLC is seeking an AMEL to operate flares at its chemical plant in Lake Charles, Louisiana, during startups, shutdowns, upsets, and emergency events. See Table 1 for a list of regulations, by subparts, that each refinery and chemical plant has identified as applicable to the flares described above.

Table 1 — Summary of Applicable Rules that May Apply to Streams Controlled by Flares

Applicable rules with vent streams going to control device(s)	Exxon Mobil Baytown, Texas Flare 26	Marathon Garyville, LA MPGF	Blanchard Refining GBR MPGF	Chalmette No. 1 Flare	LACC	Rule citation from Title 40 CFR that allow for use of a flare	Provisions for Alternative Means of Emission Limitation
NSPS Subpart VV		x	x			60.482-10(d)	60.484(a)-(f)
NSPS Subpart VVa		x	x		x	60.482-10a(d)	60.484a(a)-(f)
NSPS Subpart NNN		x	x	x	x	60.662(b)	CAA section 111(h)(3)
NSPS Subpart QQQ		x	x			60.692-5(c)	42 U.S.C. 7411(h)(3)
NSPS Subpart RRR		x	x		x	60.702(b)	CAA section 111(h)(3)
NSPS Subpart Kb		x	x		x	60.112b(a)(3)(ii)	60.114b

NESHAP Subpart V		x	x		x	61.242-11(d)	40 CFR 63.6(g); 42 U.S.C. 7412(h)(3)
NESHAP Subpart J					x	61.242-11(d)	40 CFR 63.6(g); 42 U.S.C. 7412(h)(3)
NESHAP Subpart Y		x	x			61.271-(c)(2)	40 CFR 63.6(g); 40 CFR 61.273; 42 U.S.C. 7412(h)(3)
NESHAP Subpart BB		x	x			61.302(c)	40 CFR 63.6(g); 42 U.S.C. 7412(h)(3)
NESHAP Subpart FF		x	x		x	61.349(a)(2)	61.353(a); also see 61.12(d)
NESHAP Subpart F		x	x		x	63.103(a)	63.6(g); 42 U.S.C. 7412(h)(3)
NESHAP Subpart G		x	x		x	63.113(a)(1)(i), 63.116(a)(2), 63.116(a)(3), 63.119(e), 63.120(e)(1) through (4), 63.126(b)(2)(i), 63.128(b), 63.139(c)(3), 63.139(d)(3), 63.145(j)	63.6(g); 42 U.S.C. 7412(h)(3)
NESHAP Subpart H		x	x		x	63.172(d), 63.180(e)	63.177; 42 U.S.C. 7412(h)(3)
NESHAP Subpart SS		x	x		x	63.982(b)	CAA section 112(h)(3)
NESHAP Subpart CC	x	x	x	x		63.643(a)(1)	63.670(r)
NESHAP Subpart UU					x	63.1034	63.1021(a)-(d)
NESHAP Subpart YY					x	Table 7 to 63.1103(e) cross-references to NESHAP subpart SS above.	63.1113
NESHAP Subpart EEEE		x	x			63.2378(a), 63.2382, 63.2398	63.6(g); 42 U.S.C. 7412(h)(3)

The provisions in each NSPS and NESHAP cited above, which ensure that flares meet certain specific operating 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,[3] 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 applicable CAA section 111(h)(1) or 112(h)(1) standards. As noted in Table 1, many of the identified NSPS and NESHAP also include specific regulatory provisions allowing sources to request an AMEL.

ExxonMobil, Marathon, Blanchard, Chalmette, and LACC submitted AMEL requests to operate above the applicable maximum permitted velocity requirements for flares in the General Provisions in 40 CFR parts 60 and 63 and/or in 40 CFR 63.670. ExxonMobil, Marathon, Blanchard, Chalmette, and LACC provided information that the flare designs achieve a reduction in emissions at least equivalent to the reduction in emissions for flares complying with the applicable General Provisions and/or MACT subpart CC requirements. For further information on ExxonMobil's, Marathon's, Blanchard's, Chalmette's, and LACC's AMEL requests, see supporting materials from ExxonMobil, Marathon, Blanchard, Chalmette, and LACC at Docket ID No. EPA-HQ-OAR-2010-0682 and EPA-HQ-OAR-2014-0738.

II. Requests for AMEL

A. ExxonMobil Corporation Baytown Refinery Flexicoker Flare

ExxonMobil submitted an AMEL for Flare 26 at the ExxonMobil Baytown Refinery. Flare 26 is an elevated flare, with an approximate height of 284 feet. Flare 26 will be modified to install a 52-inch gas-assisted flare tip. Gas-assisted means that natural gas is discharged near or at the flare tip exit and is used to improve the combustion efficiency in the combustion zone, but it is not part of the vent gas, and, as such, does not contribute to the vent gas volume that determines the exit tip velocity. Still, this flare cannot meet the exit velocity limitation in 40 CFR

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

63.670 (d). Flare 26 receives low BTU gas (LBG) from episodic and maintenance events from the Flexicoking LBG system during startup, shutdown, and other non-routine operations. Flare 26 will also accept flow from the Flexicoking LBG system during normal operations where there is a fuel gas imbalance.

B. Marathon Petroleum Company Garyville, Louisiana, and Blanchard Refining's Galveston Bay Refinery MPGFs

Marathon submitted an AMEL for their two MPGFs at their Garyville refinery and also for one MPGF at their subsidiary, Blanchard Refining's GBR. These three MPGFs were included in a single AMEL request because the principle is the same for each MPGF. All three MPGFs are designed to operate with tip exit velocities greater than those allowed in 40 CFR 60.18, 63.11, and 63.670, while achieving > 96.5-percent combustion efficiency and 98-percent destruction efficiency. The scope of the AMELs include steam-assisted steam kinetic energy combustors (SKEC burners) at Garyville, pressure-assisted linear relief gas oxidizers (LRGO burners) at Garyville and GBR, and an air-assisted burner (LH burner) at GBR. All three of the MPGFs covered in this AMEL request were manufactured by John Zink Company, LLC (John Zink). Marathon is seeking AMELs to operate these flares during periods of startup, shutdown, upsets, and emergency events.

C. Chalmette Refinery Request

Chalmette Refining, LLC submitted an AMEL for their No. 1 Flare. The No. 1 Flare was designed by John Zink and constructed in 1982. The flare is an 8-stage candelabra style raised pressure-assisted flare with multiple flare tips comprised of two designs. The flare is elevated 171.92 feet above ground. Stage one is equipped with John Zink LRGO-Spider model burners.

All other stages have John Zink model LRGO-FF burners. The gases being flared can range in composition and flow, but the flare only operates during upset and emergency conditions.

D. LACC, LLC Request

LACC, LLC submitted an AMEL for two MPGF operating in series. This system consists of an enclosed ground flare and a high- pressure ground flare that operates as a cascading system whereby the enclosed ground flare serves as the primary relief control device and the high- pressure ground flare serves as the secondary relief control device should the enclosed ground flare approach burner utilization capacity. The high- pressure header portion of these ground flares are MPGF and utilize two different types of pressure assisted burners; LRGO- HC (both flares) and INDAIR (enclosed ground flare only). Both are designed and produced by John Zink. The high- pressure header MPGFs will be used for destruction of vent streams during startups, shutdowns, upsets, and emergency events.

E. Information Supporting Flare AMEL Requests

As mentioned above, ExxonMobil, Marathon, Blanchard, and Chalmette provided the information specified in the flare AMEL framework at 40 CFR 63.670(r) to support their AMEL requests. LACC provided the information specified in the flare AMEL framework finalized on April 21, 2016 (81 FR 23486), to support its AMEL request. The information specified in both frameworks includes, but is not limited to: (1) details on the project scope and background; (2) information on regulatory applicability; (3) flare test data on destruction efficiency/combustion efficiency; (4) flare stability testing data; (5) flare cross-light testing data; (6) information on flare reduction considerations; and (7) information on appropriate flare monitoring and operating conditions. (For further information on the supporting materials provided, see Docket ID No. EPA-HQ-OAR-2010-0682 and EPA-HQ-OAR-2014-0738.)

Information supplied by these companies indicates that the flares can achieve adequate combustion efficiency if operated under certain conditions. Generally, testing of burners for the vent gas mixture determined to be representative of the flare operation was used to set the appropriate combustion zone net heating value (NHV_{cz}) minimum limit. Exxon Mobil conducted a series of combustion efficiency tests over a range of operating conditions and vent gas velocities to establish limits on a representative gas-assisted burner. Marathon and Blanchard submitted combustion efficiency test data for all three different types of burners to establish their minimum NHV_{cz}. Burners in these flares include steam assisted (SKEC) and non-assisted (LRGO) burners at Garyville and an air-assisted (LH) and non-assisted (LRGO) at the Blanchard GBR. At the Garyville Refinery, the MPGFs are operated in series such that the flare gas is directed to the SKEC burners in stages 1 through 4, and then to the LRGO burners in stages 5 through 11. Therefore, we selected an operating limit of the higher of 600 BTU/standard cubic feet (scf) NHV_{cz} or the NHV_{cz} value resulting from the equation of the line presented in Table 2 appropriate for the SKEC burner. At the Blanchard GBR, we selected a value of 600 BTU/scf NHV_{cz} based on the successful combustion efficiency test at 600 BTU/scf for the representative waste gas. The LRGO operating limit is limiting because the LRGO burners follow the air-assisted LH burner at the GBR.

Chalmette Refining submitted required information and requested a minimum NHV_{cz} of 1000 BTU/scf or a maximum lower flammability limit (LFL) of less than or equal to 6.5 percent, based on the conditions that were demonstrated to cross light flare stage 8A from adjacent stages 5 and 7 and stage 8B from stages 6 and 7. Stages 8A and B are not equipped with pilots, and, therefore, lighting of these stages relies on lighting from adjacent stages. Chalmette also requested that video records be used to show that cross lighting is successful, even if the NHV_{cz}

or LFL conditions are not met. However, we do not intend to allow an alternate compliance method based on visual indication and have not included this in the proposed alternatives.

Finally, LACC requested two separate limits to account for the two sets of burners on their MPGF, LRGO, and INDAIR burners operating on waste gas from ethylene and downstream chemical manufacturing (ethylene oxide and monoethylene glycol) processes. LACC cited previous combustion efficiency information for the LRGO burners and successful cross light and stability at 800 BTU/scf for the representative waste gas composition. The combustion efficiencies for the INDAIR burners testing showed that a minimum of 1,067 BTU/scf for NHV_{cz} was necessary to achieve the desired combustion efficiency. For process control, LACC requested a minimum limit of 1,075 BTU/scf for these burners. It is also important to note that LACC has the ability to lock out the stages containing the four INDAIR burners so that they can meet the 800 BTU/scf minimum for the LRGO burners only.

III. AMEL for the Flares

Based upon our review of the AMEL requests, we have concluded that, by complying with the proposed AMEL specified in Table 2 and accompanying paragraphs, the flares will achieve emission reductions at least equivalent to reduction in emissions being controlled by flares complying with the flare requirements under the applicable NESHAP and NSPS identified in Table 1. We are seeking the public's input on the requests that the EPA approve AMELs for these flares. Specifically, the EPA seeks the public's input on the conditions specified in this document in the following paragraphs. The EPA's proposed AMEL for Chalmette Refining does not include the requested provision to allow a source not to meet the limits in Table 2 as long as evidence of cross light and combustion exists.

Table 2 – Proposed Alternative Operating Conditions

AMEL Submitted	Company	Affected Facilities	Flare Type(s)	Proposed Alternative Operating Conditions
11/7/17	ExxonMobil	Baytown, TX Flexicoker Flare 26	Elevated gas-assist flare	≥270 BTU/scf NHV_{cz} and velocity < 361 feet per second (ft/sec)
10/7/17	Marathon	Garyville, LA	2 MPGFs	When both SKEC and LRGO burners are being used, the higher of ≥600 BTU/scf NHVcz or ≥127.27 ln(v_{vg})– 110.87 NHVcz. When only the SKEC burner is being used ≥127.27 ln(v_{vg})– 110.87 NHVcz.
10/7/17	Marathon/ Blanchard Refining	GBR (Texas City, TX)	MPGF	≥600 BTU/scf NHV_{cz}
9/19/17	Chalmette Refining	Chalmette, LA	Elevated multi-point flare	≥1000 BTU/scf NHV_{cz} or LFL_{cz}≤6.5 vol%
5/1/17	LACC	Lake Charles, LA	2 MPGFs	≥1075 BTU/scf NHV_{cz} for INDAIR Burners; ≥800 BTU/scf NHV_{cz} for LRGO only

(1) All flares must be operated such that the combustion zone gas net heating value (NHV_{cz}) or the lower flammability in the combustion zone (LFL_{cz}) as specified in Table 2 is met. Owners or operators must demonstrate compliance with the applicable NHV_{cz} or LFL_{cz} specified in Table 2 on 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) 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:

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

where:

NHV_{vg} = Net heating value of flare vent gas, BTU/scf. *Flare vent gas* means all gas found just prior to the tip. This gas includes all flare waste gas (*i.e.*, gas from facility operations that is directed to a flare for the purpose of disposing 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 3 summarizes component properties including net heating values.

(ii) If the owner or operator uses a continuous net heating value monitor, the owner or operator may, at their discretion, install, operate, calibrate, and maintain a monitoring

system capable of continuously measuring, calculating, and recording the hydrogen concentration in the flare vent gas. The owner or operator shall use the following equation to determine NHV_{vg} for each sample measured via the net heating value monitoring system.

$$NHV_{vg} = NHV_{measured} + 938x_{H2} \quad \text{(Eqn. 2)}$$

where:

NHV_{vg} = Net heating value of flare vent gas, BTU/scf.

$NHV_{measured}$ = Net heating value of flare vent gas stream as measured by the continuous net heating value monitoring system, BTU/scf.

x_{H2} = Concentration of hydrogen in flare vent gas at the time the sample was input into the net heating value monitoring system, volume fraction.

938 = Net correction for the measured heating value of hydrogen (1,212 -274), BTU/scf.

(iii) For non-assisted flare burners, $NHV_{vg} = NHV_{cz}$. For assisted burners, such as the Marathon Garyville MPGF SKEC burners, the Blanchard Refining MPGF LH burner, and the ExxonMobil gas-assisted burner, NHV_{cz} should be calculated using Equation 3.

$$NHV_{cz} = \frac{Q_{vg} \times NHV_{vg} + Q_{ag} \times NHV_{ag}}{(Q_{vg} + Q_{ag})} \quad \text{(Eqn. 3)}$$

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), BTU/scf.

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

Q_{ag} = Cumulative volumetric flow of assist gas during the 15-minute block period, standard cubic feet flow rate, scf.

NHV_{ag} = Net heating value of assist gas, BTU/scf; this is zero for air or for steam.

(b) Calculation of LFL_{cz}

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

$$LFL_{vg} = \frac{1}{\sum_{i=1}^{n} \left(\frac{\chi_i}{LFL_i}\right)} \times 100\% \qquad \text{(Eqn. 4)}$$

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 3.

(ii) For non-assisted flare burners, $LFL_{vg} = LFL_{cz}$.

(c) Calculation of V_{tip}

For the ExxonMobil flexicoker flare (F-26), the owner or operator shall calculate the 15-minute block average V_{tip} by using the following equation:

$$V_{tip} = \frac{Qvg}{Area \times 900} \quad \text{(Eqn. 5)}$$

where:

V_{tip} = Flare tip velocity, ft/sec.

Q_{vg} = Cumulative volumetric flow of vent gas over 15-minute block average period, scf.

Area = Unobstructed area of the flare tip, square ft.

900 = Conversion factor, seconds per 15-minute block average.

(d) For all flare systems specified in this document, the operator shall install, operate, calibrate, and maintain a monitoring system capable of continuously measuring the volumetric flow rate of flare vent gas (Q_{vg}), the volumetric flow rate of total assist steam (Q_s), the volumetric flow rate of total assist air (Q_a), and the volumetric flow rate of total assist gas (Q_{ag}).

(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° Fahrenheit) 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:

$$Q_{vol} = \frac{Q_{mass} \times 385.3}{MW_t} \quad \text{(Eqn. 6)}$$

where:

Q_{vol} = Volumetric flow rate, scf/sec.

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

385.3 = Conversion factor, scf per pound-mole.

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

(e) For each measurement produced by the monitoring system used to comply with (1)(a)(ii), 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 4. 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 3 — Individual Component Properties

Component	Molecular Formula	MW_i (pounds per pound-mole)	NHV_i (BTU/scf)	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	1,212*	4.0

Component	Molecular Formula	MW_i (pounds per pound-mole)	NHV_i (BTU/scf)	LFL_i (volume %)
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
Water	H_2O	18.02	0	∞

*The theoretical net heating value for hydrogen is 274 BTU/scf, but for the purposes of the flare requirement in this subpart, a net heating value of 1,212 BTU/scf shall be used.

Table 4 — 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 2 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 (CPMS) 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 Standard (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).
Hydrogen Analyzer	± 2 percent over the concentration measured, or 0.1 volume, percent, whichever is greater.	Specify calibration requirements in your site specific CPMS monitoring plan. Calibration requirements should follow manufacturer's recommendations at a minimum. Specify 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 occurs.

(2) The flare system shall be operated with a flame present at all times when in use. Additionally, each stage that cross-lights must have at least two pilots with a continuously lit pilot flame, except for Chalmette Refining, which has one pilot for each stage, excluding stages 8A and 8B. 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 burners must be recorded. Each monitoring device must be maintained or replaced at a frequency in accordance with the manufacturer's specifications.

(3) Flares at refineries shall comply with the requirements of 40 CFR 63.670(h). For LACC, LLC, the flare 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) For the MPGF and the Chalmette elevated multi-point flare, the operator of a flare 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 flare 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 4. 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 flare will control emissions.

(b) Owners or operators shall include the final AMEL operating requirements for each flare in their initial Notification of Compliance status report.

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

(i) Records of each 15-minute block for all flares during which there was at least 1 minute when regulated material was routed to the flare and a complete loss of pilot flame on a stage of burners occurred, and for all flares, records of each 15-minute block during which there was at least 1 minute when regulated material was routed to the flare 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 flare 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, the type of monitoring system used to determine compliance with the operating parameters (*e.g.*, gas chromatograph or calorimeter), and also indicate which high-pressure stages were in use.

(iv) Records of when the pressure monitor(s) on the main flare header show the flare 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 flare 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 flare should not be in operation and is or when a stage of the flare 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 flare burners affected.

IV. Request for Comments

We solicit comments on all aspects of ExxonMobil's, Marathon's, Blanchard's, Chalmette's, and LACC's requests for approval of an AMEL for flares to be used to comply with 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 emissions being controlled by flares complying with the applicable flare requirements in 40 CFR 60.18(b), 63.11(b), and/or 63.670.

Dated: April 18, 2018.

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[FR Doc. 2018-08575 Filed: 4/24/2018 8:45 am; Publication Date: 4/25/2018]