6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR PARTS 60, 61 and 63

[EPA-HQ-OAR-2014-0738; FRL-9933-16-OAR]

Notice of Final Approval for the Operation of Pressure-Assisted Multi-Point Ground Flares at The Dow Chemical Company and ExxonMobil Chemical Company and Notice of Receipt of Approval Request for the Operation of a Pressure-Assisted Multi-Point Ground Flare at Occidental Chemical Corporation

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice; approval and request for comments.

SUMMARY: This notice announces our approval of the Alternative Means of Emission Limitation (AMEL) requests for the operation of multi-point ground flares (MPGF) at The Dow Chemical Company's (Dow) Propane Dehydrogenation Plant and Light Hydrocarbons Plant located at its Texas Operations site in Freeport, Texas, and the ExxonMobil Chemical Company (ExxonMobil) Olefins Plant in Baytown, Texas, and its Plastics Plant in Mont Belvieu, Texas. This approval notice also specifies the operating conditions and monitoring, recordkeeping, and reporting requirements for demonstrating compliance with the AMEL that these facilities must follow.

In addition, this notice solicits comments on an all aspects of an AMEL request from Occidental Chemical Corporation (OCC) in which long-term MPGF burner stability and destruction efficiency have been demonstrated on different pressure-assisted MPGF burners that OCC has proposed for use in controlling emissions at its Ingleside, Texas, ethylene plant.

Lastly, this notice presents and solicits comments on all aspects of a framework of both MPGF burner testing and rule-specific emissions control equivalency demonstrations that we anticipate, when followed, would afford us the ability to approve future AMEL requests for MPGF in a more efficient and streamlined manner.

DATES: The AMEL for the MPGF at Dow's Propane Dehydrogenation Plant and Light Hydrocarbons Plant located at its Texas Operations site in Freeport, Texas, and ExxonMobil's Olefins Plant in Baytown, Texas, and Plastics Plant in Mont Belvieu, Texas are approved and effective [insert date of publication in the Federal Register].

Comments. Written comments on the AMEL request from OCC for their MPGF in Ingleside, Texas, or on the framework for streamlining future MPGF AMEL requests must be received on or before **[insert date 45 days after publication in the federal register]**.

Public Hearing. Regarding the OCC MPGF in Ingleside, Texas, or the framework for streamlining future MPGF AMEL requests, if requested by **[insert date 5 days after publication in the federal register]**, we will hold a public hearing on **[insert date 15 days after publication in the federal register]**, from 1:00 p.m. [Eastern Standard Time] to 8:00 p.m. [Eastern Standard Time] in Corpus Christi, Texas. We will provide details on the public hearing on our Web site at: *http://www.epa.gov/ttn/atw/groundflares/groundflarespg.html*. To be clear, a public hearing will not be held unless someone specifically requests that the EPA hold a public hearing regarding the OCC MPGF or the framework for streamlining future MPGF AMEL requests. 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 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 publication in the federal register]**.

ADDRESSES: Submit your comments, identified by Docket ID Number EPA-HQ-OAR-2014-0738, to the Federal eRulemaking Portal: http://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or withdrawn. 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 on the OCC MPGF or the framework for streamlining future MPGF AMEL requests to Docket ID Number 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 confidential business information (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. Send or deliver information identified as CBI only to the following address: OAQPS Document Control Officer (C404-02), Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, Attention: Docket ID Number EPA-HQ-OAR-2014-0738. 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 comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2. 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 action under Docket ID Number 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 (EPA/DC), EPA WJC West Building, Room 3334, 1301 Constitution Ave., 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 feet
CAA	Clean Air Act
CFR	Code of Federal Regulations
CPMS	continuous parameter monitoring system

EPA	Environmental Protection Agency
ESL	effects screening level
FR	**Federal Register**
HAP	hazardous air pollutants
LEL	lower explosive limit
LFL	lower flammability limit
LFL_{cz}	combustion zone lower flammability limit
MPGF	multi-point ground flare
NESHAP	national emission standards for hazardous air pollutants
NHV	net heating value
NHV_{cz}	combustion zone net heating value
NSPS	new source performance standards
OAQPS	Office of Air Quality Planning and Standards
OCC	Occidental Chemical Corporation
OSHA	Occupational Safety and Health Administration
PDH	propane dehydrogenation unit
PFTIR	passive Fourier transform infrared spectroscopy
psig	pounds per square inch gauge
QA	quality assurance
QC	quality control
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
VOC	volatile organic compounds

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

I. Background

A. Summary

On February 13, 2015, the EPA published an initial notice in the **Federal Register** (FR) acknowledging receipt of AMEL approval requests for the operation of several MPGF at The Dow Chemical Company's Dow Propane Dehydrogenation Plant and Light Hydrocarbons Plant located at its Texas Operations site located in Freeport, Texas, and ExxonMobil's Olefins Plant in Baytown, Texas, and its Plastics Plant in Mont Belvieu, Texas (see 80 FR 8023, February 13, 2015). This initial notice also solicited comment on all aspects of the AMEL requests and the resulting alternative operating conditions that are necessary to achieve a reduction in emissions of volatile organic compounds (VOC) and

organic 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 that would be controlled by these pressure-assisted MPGF. These standards point to the operating requirements for flares in the General Provisions to parts 60 and 63, respectively, to comply with the emission reduction requirements. Because pressure-assisted MPGF cannot meet the velocity requirements in the General Provisions, Dow and ExxonMobil requested an AMEL. This action provides a summary of comments received as part of the public review process, our responses to those comments, and our approval of the requests received from Dow and ExxonMobil for an AMEL for the MPGF at the specific plants listed above, along with the operating conditions they must follow for demonstrating compliance with the AMEL.

This action also solicits comments on all aspects of an AMEL request from OCC in which MPGF burner stability and destruction efficiency have been demonstrated on different pressure-assisted MPGF burners that OCC has proposed for use in controlling emissions at its Ingleside, Texas, ethylene plant.

Lastly, because we are aware that facilities plan to build or are considering use of MPGF as an emissions control technology, this action presents and solicits comments on all

aspects of a framework for streamlining future MPGF AMEL requests that we anticipate, when followed, would afford the agency the ability to review and approve future AMEL requests for MPGF in a more efficient and expeditious manner. We note here though that all aspects of future AMEL requests would still be subject to a notice and comment proceeding.

B. Flare Operating Requirements

In their requests, Dow and ExxonMobil cited various regulatory requirements in 40 CFR parts 60, 61 and 63 that will apply to the different flare vent gas streams that will be collected and routed to their pressure-assisted MPGF at each plant. These requirements were tabulated in the initial notice for this action (80 FR 8023, February 13, 2015). The applicable rules require that control devices achieve destruction efficiencies of either 95 percent or 98 percent either directly, or by reference, or allow control by flares meeting the flare operating requirements in 40 CFR 60.18 or 40 CFR 63.11. The flare operating requirements in 40 CFR 60.18 and 40 CFR 63.11 specify that flares shall be: (1) steam-assisted, air-assisted or non-assisted[1]; (2) operated at all times when emissions may be vented to them; (3) designed for and operated with no visible

[1] While Dow and ExxonMobil describe their flares as "pressure-assisted," these flares qualify as "non-assisted" flares under 40 CFR 60.18(b) or 63.11(b) because they do not employ assist gas.

emissions (except for periods not to exceed a total of 5 minutes during any 2 consecutive hours); and (4) operated with the presence of a pilot flame at all times. The flare operating requirements in 40 CFR 60.18 and 40 CFR 63.11 also specify requirements for both the minimum heat content of gas combusted in the flare and the maximum exit velocity at the flare tip.[2] These provisions specify maximum flare tip velocities based on flare type (non-assisted, steam-assisted or air-assisted) and the net heating value of the flare vent gas (see 40 CFR 60.18(c)(3) and 40 CFR 63.11(b)(6)). These maximum flare tip velocities are required to 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, as discussed in our recent proposal titled "Petroleum Refinery Sector Risk and Technology Review and New Source Performance Standards," 79 FR 36880, 36904–36912 (June 30, 2014).

The MPGF proposed by both Dow and ExxonMobil are different in both flare head design and operation than the more

[2] These requirements are not all inclusive. There are other requirements in 40 CFR 60.18 and 63.11 relating to monitoring and testing that are not described here.

traditional steam-assisted, air-assisted and non-assisted flare types currently able to comply with the flare operating requirements in 40 CFR 60.18 or 63.11. The MPGF technology operates by using the pressure upstream of each individual flare tip burner to enhance mixing with air at the flare tip due to high exit velocity, which in turn allows the MPGF to operate in a smokeless capacity. The MPGF are constructed differently than normal elevated flares in that they consist of many rows of individual flare tips which are approximately eight feet above ground level. The ground flare staging system opens and closes staging valves according to gas pressure such that stages containing multiple burners are activated as the flow and pressure increase or decrease in the header. While information supplied by Dow, and relied on by both Dow and ExxonMobil, indicates that the flare tips operate in a smokeless capacity and achieve high destruction efficiencies, the MPGF cannot meet the exit velocity requirements in 40 CFR 60.18 and 40 CFR 63.11, which limit the exit velocity at the flare tip to a maximum of 400 feet per second. The exit velocities from MPGF typically range from 600 feet per second up to sonic velocity (which ranges from 700 to 1,400 feet per second for common hydrocarbon gases), or Mach = 1 conditions. As a result, Dow and ExxonMobil are seeking an alternative means of complying with the flare

operating requirements in 40 CFR 60.18 and 63.11; specifically, the exit velocity requirements in 40 CFR 60.18(c)(3), (c)(4) and (c)(5) and in 40 CFR 63.11(b)(6),(b)(7) and (b)(8).

C. Alternative Means of Emission Limitation

As noted above, the specific rules in 40 CFR parts 60, 61 and 63, or the General Provisions for parts 60, 61 and 63 of the Clean Air Act (CAA)[3] allow a facility to request an AMEL. These provisions allow the Administrator to permit the use of an alternative means of complying with an applicable standard, if the requestor demonstrates that the alternative achieves at least an equivalent reduction in emissions. The EPA provided notice of the requests and an opportunity for both a public hearing and opportunity for comment on the requests in the FR (see 80 FR 8023, February 13, 2015). After considering the comments received during the public comment period, the EPA is approving the AMEL requests and the use of the MPGF at Dow's two plants at its Texas Operations site in Freeport, Texas, and at ExxonMobil's two plants in Mont Belvieu, Texas, and Baytown, Texas.

[3] CAA section 111(h)(3) states: "If after notice and opportunity for public hearing, any person establishes to the satisfaction of the Administrator that an alternative means of emission limitation will achieve a reduction in emissions of any air pollutant at least equivalent to the reduction in emissions of such air pollutant achieved under the requirements of paragraph (1), the Administrator shall permit the use of such alternative by the source for purposes of compliance with this section with respect to such pollutant." Section 112(h)(3) contains almost identical language.

II. Summary of Significant Public Comments on the AMEL Requests for Pressure-Assisted MPGF

This section contains a summary of the major comments and responses, and rationale for the approved MPGF operating conditions and monitoring, recordkeeping and reporting requirements necessary to ensure the MPGF will achieve a reduction in emissions of HAP and VOC at least equivalent to the reduction in emissions of other traditional flare systems complying with the requirements in 40 CFR 60.18(b) and 40 CFR 63.11(b).

A. Regulatory Compliance Language and Calculation Methodology

Comment: Several commenters suggested that the EPA clarify the relationship between the AMEL and the requirements at 40 CFR 63.11 and 40 CFR 60.18. Specifically, the commenters suggested that the EPA add the following or similar language: "Compliance with applicable portions of 40 CFR 60.18 and 40 CFR 63.11, together with the AMEL, satisfy the new source performance standards (NSPS) and/or national emission standards for hazardous air pollutants (NESHAP) requirements that refer to 40 CFR 60.18 and 40 CFR 63.11." The commenters further state that adoption of this language would allow deletion of requirements #2 and #3 related to pilot flames, visible flames, and visible emissions standards in the initial AMEL notice.

Response: First, we clarify here for both of Dow's plants and both of ExxonMobil's plants that will use MPGF as a control device that compliance with the requirements in Section III of this AMEL notice satisfies the flare NSPS and NESHAP requirements referenced in 40 CFR 60.18 and 40 CFR 63.11. However, we disagree with commenters that deletion of the language related to pilot flames and visible flames is appropriate given the unique design of MPGF installations and their various rows of hundreds of burners. The language currently in 40 CFR 60.18 and 40 CFR 63.11 was intended to ensure that more traditional, individual flare tips had a flame present at all times by requiring that a pilot flame is always present. While having at least a single pilot flame is appropriate for a single flare tip, it in no way assures that each of the hundreds of flare tips that are arranged in multiple stages in a MPGF installation will ignite and have a flare flame when vent gas is sent to the system. Thus, we are not requiring Dow and ExxonMobil to comply with these requirements precisely as outlined currently in the General Provisions and are instead finalizing, based on information provided by these companies with respect to staging design and number of pilots per stage, a requirement in the AMEL that each stage of burners in the MPGF installation have at least two pilots with a continuously lit

pilot flame. This requirement will provide the agency with a high level of assurance that a flare flame is present at all times when the other applicable requirements are also being met.

Commenters also suggested that the language in the initial AMEL notice related to pilot flame presence at Section III, #2 (see 80 FR 8030, February 13, 2015) had slightly different wording elements compared to the flare General Provisions requirements. We agree with the commenters that some of the language is different, but note that requiring at least two pilot flames on each stage of burners to be continuously lit and monitored as opposed to only a single pilot flame as prescribed in the General Provisions is a necessary change. However, we have incorporated language in this final action to be more consistent with the requirements in the General Provisions to allow pilot flames to be monitored by thermocouples "or any other equivalent device used to detect the presence of a flame."

Lastly, we agree with the commenters that the language in the initial AMEL notice related to visible emissions at Section III, #3 is somewhat redundant with the requirements in the General Provisions, but given that we are requiring facilities to use a video camera to conduct visible emissions observations we must address the visible emissions requirements specifically.

Comment: Several commenters recommended that the EPA include in the final AMEL notice the equations and references to physical data needed to calculate NHV_{cz} and LFL_{cz}.

Response: We agree with the commenters and are incorporating these changes in this final action.

B. NHV_{cz} and LFL_{cz} Operating Limits and Averaging Time

Comment: Several commenters suggested that the EPA should not set a precedent for potential future flare standards with respect to a 15-minute averaging period for the combustion parameters (i.e., NHV_{cz} and LFL_{cz}) or on-line monitoring technology. Commenters also suggested that the operating requirements of NHV_{cz} of 800 British thermal units per standard cubic foot (Btu/scf) or greater or LFL_{cz} of 6.5 percent by volume or less are based on the single worst-case data point, that this is not consistent with the Marathon Petroleum test report data, and that establishing a limit based on the single worst test run could set bad precedent for future potential flare and/or AMEL standards.

Response: First, we note that flares by their very nature are designed to handle and combust highly variable waste gas flows and compositions. Given that both Dow and ExxonMobil have requested use of MPGF for applications in controlling emissions related to periods of upset, maintenance, startup and shutdown,

the question for the Agency becomes how do these facilities demonstrate to the satisfaction of the Administrator that this AMEL will achieve a reduction in emissions of VOC and HAP at least equivalent to the reduction in emissions required by the various standards in 40 CFR parts 60, 61 and 63 for highly variable flow and vent gas composition control scenarios.

An assessment of the data we used to evaluate these AMEL requests suggests that at least an equivalent reduction in emissions control for MPGF has been demonstrated and can be maintained provided there is a stable, lit flame. In reviewing the supporting data, long-term stability was demonstrated by 20-minute test runs with fairly consistent flow and composition; however, there were also five test runs which showed instability in as little as 1 to 2 minutes. Considering that Dow and ExxonMobil will be producing and using olefins in their process, the Dow test is more appropriate and representative of the types of waste gas compositions and flows their MPGF will expect to handle compared to the natural gas and nitrogen mixtures burned in the Marathon test. Thus, the operating requirements of an NHV_{cz} of 800 Btu/scf or greater or LFL_{cz} of 6.5 percent by volume or less which come from the Dow test, while conservative, provides reasonable assurance that these particular sources will maintain a stable flame for consistent flows and waste gas

compositions expected to be burned by these particular sources as opposed to a refiner like Marathon whose waste gas originates from a different source category.

Finally, the available data we are using to assess what the appropriate averaging time should be for these unique MPGF installations indicate that there could exist a gap between the MPGF system response (e.g., the sampling of the waste gas stream and the introduction of supplemental fuel to counteract a low heat content waste gas stream) and flame stability for situations of highly variable flow and/or highly variable waste gas composition. In light of this, we considered reasonable options that provide assurance that these MPGF installations will control emissions at a high level of efficiency with a stable, lit flame during these particular events. In evaluating these options, we concluded that a short averaging time is necessary to ensure that the MPGF installations will work as intended. Given the fact that we are allowing use of on-line gas chromatographs to perform compositional analysis to determine compliance with the NHV_{cz} and LFL_{cz} operating parameters, we cannot require shorter averaging times than the monitoring technology will allow, which is 15 minutes, and which we are finalizing in this action. In addition, we are also finalizing an alternative to allow the use of a calorimeter to monitor

directly for NHV_{cz}, which Dow or ExxonMobil may choose to use if they have similar concerns about variable flow/waste gas composition impacting flame stability, as these types of monitoring systems have significantly faster response times (e.g., 1-minute) than those of gas chromatographs. Lastly, we acknowledge the concerns presented with respect to setting precedent for potential future flare standards on averaging time and online monitoring technology. However, we note that this comment is beyond the scope of this action and not relevant to the site-specific action of the AMEL requests for the use of MPGF at these specific Dow or ExxonMobil facilities.

C. Monitoring Systems

Comment: A number of commenters suggested that pressure and flow monitors on each stage of the MPGF are unnecessary, as the MPGF are not designed with pressure and flow monitors on each individual stage, but, rather, rely on the monitoring system on the main flare header that is used by the process control system to open and close various stages of the flare system. Commenters instead suggested that flow and pressure should be monitored on the main flare header, as well as valve position indicators showing whether the valves are open or closed for each staging valve. Another commenter agreed that flare header pressure was important, but questioned why the initial AMEL notice did not

require a minimum flare header pressure set at 15 pounds per square inch gauge (psig), since EPA stated that MPGF typically required 15 psig at the main flare header to properly operate. The commenter also suggested that the AMEL require monitoring of pressure at each stage and also set minimum flare header pressure requirements.

Response: We agree that monitoring of flow and pressure on each individual stage is not needed as long as the flare header pressure and flow are adequately monitored. Given that the header pressure will be the maximum pressure at any point in the MPGF, the pressure of each stage will be at or lower than the main flare header pressure. As the commenters noted, the process control logic system opens and closes the staging valves based on the MPGF header pressure. Therefore, flare header pressure and information on which stages are open or closed will provide enough information to determine whether the MPGF is operating as designed. For example, if the pressure is low in the main flare header and below the minimum operating pressure of the burners in stage 2, the valve position indicator for stage 2 as well any valve position indicators for stages after stage 2 should show that those stages are all closed. Both AMEL requests referenced the range of operating pressures of the burners/stages, and, therefore, this final AMEL requires that the MPGF burners be

operated within the range of tested conditions or within the range of the manufacturer's specifications, as demonstrated using header pressure and valve position indicators. We note that, while we discussed a typical flare header operating pressure in the technical memorandum supporting the initial AMEL notice and discussions (see memorandum "Review of Available Test Data on Multipoint Ground Flares" at Docket ID Number EPA-HQ-OAR-2014-0738-0002), we are providing the sites with a specific range of operating pressures to comply, as presented in their AMEL requests and supporting test data.

Comment: One commenter suggested that the EPA should require each facility to install real-time fenceline monitoring to protect and inform communities if there is an increase in HAP crossing the fenceline during flaring events. The commenter stated that the proposed AMEL would allow operators to shift emissions from elevated flares to ground level, thus increasing ground-level pollution because emissions released at ground level, as compared to an elevated stack, do not disperse as far and remain in higher concentrations around the emitting source. The commenter stated that, as a result, the AMEL would increase exposure and risk and likely disproportionately impact minority and low income populations. Another commenter stated that based on dispersion modeling calculations conducted for the propane

dehydrogenation unit (PDH) plant flare system, they project that the off-site concentrations of any air contaminant will be < 1 percent of the TCEQ's effects screening level (ESL) for both the short-term one hour average concentrations and the annual averages.[4] The commenter stated that these projected off-site impacts are similar to what is expected from an elevated flare. Given the low off-site concentrations predicted, it is the commenter's opinion that additional ambient air monitoring is not warranted for this AMEL request. Other commenters suggested that flow and composition monitoring, in concert with monitoring for flame presence, would provide substantially more valuable information for evaluating the downwind effect of a flameout as compared to ambient monitoring. Another commenter suggested lower explosive limit (LEL) monitors around a ground flare could provide an indication of a malfunction or slow, unburned leaks from staging valves that the direct waste gases and flare monitors might miss.

Response: Comments on additional monitoring of the ambient concentrations of pollutants in the atmosphere surrounding the ground flare address a range of concerns. Some comments relate to the efficiency of the flare and the emission potential of the

[4] See "Multi-Point Ground Level Flare Modeling Discussion" at Docket ID Number EPA-HQ-OAR-2014-0738 for further information on modeling results.

flare when the ground flare is working as expected, and other comments relate to when the ground flare experiences flameout or some other event where uncombusted materials have the potential to be emitted. We agree that the combination of pilot flame monitoring in concert with flow and composition monitoring (and pressure/staging valve monitoring) or use of LEL monitors in the immediate area of the ground flare are several methods the operator can use to identify an improperly-operating flare. However, if the suite of operating conditions being finalized in Section III below are met, we feel that the MPGF should operate properly and with a high level of destruction efficiency. Although we understand that the MPGF are equipped with safety interlocks and in some cases LEL monitors, we are not requiring they operate these systems under our final AMEL requirements for Dow and ExxonMobil. Rather, additional safety analyses should be addressed under the Occupational Safety and Health Administration's (OSHA) Process Safety Management[5] and the EPA's Risk Management Program.[6] Regarding comments pertaining to the need for some type of monitoring for communities that may be impacted by these MPGF installations, we are not mandating any type of fenceline or community monitoring in the AMEL approval

[5] See https://www.osha.gov/SLTC/processsafetymanagement/ for more details.
[6] See http://www2.epa.gov/rmp for more details.

because the approval is on the basis that the facilities have adequately demonstrated that the MPGF are capable of achieving or exceeding the emissions reductions mandated by the underlying NSPS and/or NESHAP. However, through a separate effort, we are helping to facilitate discussions between the communities near these Dow and ExxonMobil facilities and the companies involved to explore possible monitoring that will address specific concerns of the communities (see "Community Open Forum Discussions" at Docket ID Number EPA-HQ-OAR-2014-0738).

Comment: A few commenters suggested that our provisions should allow for at least a 5 percent downtime limit for continuous monitoring data outside of maintenance periods, instrument adjustments and calibration checks, similar to the requirements in Texas VOC Sampling Rule protocol found at 30 TAC 115.725(d)(3).

Response: First, we note that the Texas VOC sampling protocol only excludes time for "normal calibration checks" and does not exclude time for "maintenance periods" or "instrument adjustments." Our initial AMEL notice required operation of the continuous parameter monitoring system (CPMS) at all times except during "maintenance periods, instrument adjustments or checks to maintain precision and accuracy, calibration checks,

and zero and span adjustments." Except for the time periods we excluded, we consider that the monitor should be continuously operated. However, we agree with the commenters that it is reasonable to set an upper limit on the time period for maintenance periods and instrument adjustments, so we are adding an additional sentence to the AMEL provisions as follows: "Additionally, 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."

Comment: One commenter noted that, because operating personnel cannot enter the fenced area while the MPGF is operating, visual observation in accordance with the monitoring requirements of the General Provisions is impractical and cannot assure compliance. The commenter also stated that visible emissions from ground flares are a known problem and that community members in Port Arthur have submitted several complaints about smoke releases from the ground flare at the BASF Olefins Plant. Therefore, the commenter stated that it is imperative for the EPA to assure that the AMEL requires video monitoring that is adequate to assure compliance. Also, the EPA must require each facility to submit the video monitoring data

to the appropriate authorities as part of any periodic compliance reports required by the CAA.

Response: We agree that the MPGF systems should be operated with no visible emissions and we included a requirement in the initial AMEL notice to use video surveillance cameras to demonstrate compliance with this requirement. We did not, however, in the initial AMEL notice indicate how else the operators would demonstrate compliance with the visible emissions limit. We agree that because operating personnel cannot enter the fenced area while the MPGF is operating, it is difficult to understand how any daily EPA Method 22 visible emissions monitoring for only 5 minutes during the day when operators could enter (when the flare was not operating) would be an effective method of ensuring compliance with this requirement. Therefore, we are requiring that the MPGF operators employ the use of a surveillance camera for visible emissions monitoring and record and maintain footage of this video for all periods when the MPGF is "operating," meaning burning gas other than pilots. While we are only requiring the video surveillance footage to be maintained as a record, we are requiring that Dow and ExxonMobil report in their periodic compliance reports any deviations of the visible emissions standard.

D. AMEL Mechanism and Process

Comment: One commenter suggested that a successful demonstration of equivalent emissions control was provided for the proposed MPGF burners to be used at both ExxonMobil's Mont Belvieu Plastics Plant and Baytown Olefins Plant. In support of this suggestion, the commenter suggests that the two test reports submitted during the comment period, combined with the ExxonMobil AMEL application, provide the technical support and justification to demonstrate such equivalency for both of ExxonMobil's plants.

Response: We agree with the commenter that the information submitted by ExxonMobil successfully demonstrates an equivalent level of emissions control for the MPGF burners that will be used at ExxonMobil's Mont Belvieu Plastics Plant and Baytown Olefins Plant, provided that the requirements specified in Section III below are met. Therefore, we are approving ExxonMobil's AMEL request to use a MPGF at both of its plants.

Comment: Several commenters generally supported the AMEL process as an appropriate mechanism to authorize use of MPGF as an equivalent emissions control technology and also provided recommendations for using the AMEL process for future projects or updates. These recommendations included providing flexibility

to facilities to accommodate burner equivalency, providing facilities with a simple mechanism that allows information or alternate combustion parameters to be updated without requiring re-approval where additional data are provided and providing facilities who elect to apply for an AMEL a process for providing the EPA with information that demonstrates a MPGF burner is stable over the expected design range in lieu of requiring additional emissions (i.e., combustion/destruction efficiency) testing.

Response: In light of the comments received on providing flexibility for use of other, future MPGF burner designs and emissions testing, we are providing in this notice a framework for sources to consider and use to streamline potential future approvals of AMEL requests for MPGF installations. We note that facilities requesting any such alternative limit will still have to go through a public notice and comment review process.

Comment: A few commenters provided additional test information for pressure-assisted flares for the EPA to consider as having equivalent performance to the other burner types addressed in the AMEL. Additionally, these commenters also suggested that flare manufacturers, instead of owners or operators of a particular source, be allowed to test and pre-certify a particular pressure-assisted flare type.

Response: First, while we appreciate the additional pressure-assisted flare test data submitted by commenters, there is significant detail lacking in the submittals to fully evaluate the equivalency of these particular flares at this time, and, given that some of the data submitted are for a flare tip not being proposed for use by Dow or ExxonMobil, we find that information to be outside the scope of the AMEL. With respect to allowing flare manufacturers, instead of owners or operators of sources that would possibly use a MPGF to control emissions, to test and pre-certify a particular type of pressure-assisted flare, the CAA sections 111(h)(3) and 112(h)(3) limit AMEL requests to "the owner or operator of any source." Thus, we cannot allow this particular request. We are, however, as part of this action seeking comment on a proposed framework for streamlining approval of future AMEL requests for MPGF installations which flare manufacturers, working in concert with the owner or operator of a source who wishes to use a pressure-assisted MPGF type installation, will be able to follow and provide to the agency the necessary input, testing and performance demonstration information.

E. Other

Comment: One commenter stated that the AMEL request is based on inadequate data to assure 98 percent destruction

efficiency and stated that the EPA must require facilities that seek permission to comply with the AMEL in lieu of the General Provisions to perform long-term passive Fourier transform infrared spectroscopy (PFTIR) testing to determine the operating limits necessary to assure an equivalent level of control. The commenter further indicated that studies have consistently shown that the mixture and specific chemical composition of the gas discharged to a flare impact combustion efficiency and that the EPA did not verify or investigate whether the facilities seeking approval to operate under an AMEL will discharge gas to the proposed MPGF that is similar in chemical composition to the gas used in the tests used to develop the AMEL. Further, commenters' review of available data suggests that the facilities seeking approval to operate under an AMEL will discharge gas that exhibit hydrogen-olefin interactions.

Response: As we stated in the initial AMEL notice, one general conclusion made from the EPA's 1985 study is that stable flare flames and high (>98-99 percent) combustion and destruction efficiencies are attained when flares are operated within operating envelopes specific to each flare burner and gas mixture tested, and that operation beyond the edge of the operating envelope can result in rapid flame de-stabilization and a decrease in combustion and destruction efficiencies. The

data where flameout of the burners occurred from test runs in both the Marathon 2012 test report and the Dow 2013 test report showed that the flare operating envelope was different for the different gas mixtures tested. Additionally, the data indicate that combustion degradation beyond the edge of the operating envelope for pressure-assisted MPGF burners is so rapid that when a flame is present, the flare will still achieve a high level of combustion efficiency right up until the point of flameout. The results of the available PFTIR testing demonstrated that when a flame was present on the pressure-assisted flare burners tested, an average combustion efficiency of 99 percent or greater was achieved. Since the initial AMEL notice, we received additional combustion efficiency test data that further confirms this observation (see OCC comments in Docket ID Number EPA-HQ-OAR-204-0738-0030). In other words, the critical parameter in ensuring that the MPGF will achieve equivalent efficiency is dependent on a stable MPGF burner flame rather than the actual combustion efficiency, which to date has always been 98 percent or better over the gas composition mixtures tested. Therefore, we do not find that there is a need to operate a continuous PFTIR to demonstrate continuous combustion efficiency for MPGF. Instead, we rely on the continuous measurement of net heating value or lower

flammability limit operating limits to ensure that the MPGF are operating well above the points of flame instability for the gas compositions evaluated. Further, based on our understanding of the PFTIR testing method, it is technically impracticable to operate a continuous PFTIR due to interferences that would be present for a continuous system on the multipoint array of burners in the MPGF (e.g., availability of multiple sight lines and changing ambient conditions such as rain or fog). However, in the event that technology advancements make the continuous demonstration of combustion efficiency feasible, we acknowledge that this may provide another means by which operators can demonstrate equivalence with existing standards. Finally, while it is true that, in the development of operating limits for refinery flares, we noted in the refinery proposal that a higher NHV_{cz} target was appropriate for some mixtures of olefins and hydrogen, the combustion zone operating limits we are finalizing in today's notice are significantly more stringent than combustion zone parameters developed for traditional elevated refinery flares, including those with hydrogen and olefins, which should alleviate any such concerns with respect to combustion efficiency for these types of gas mixtures. In addition, and as discussed elsewhere in this section, an olefinic gas mixture (i.e., propylene mixture) was tested and

used to determine the NHV_{cz} and LFL_{cz} operating limits for the olefins plants applying for an AMEL. This gas mixture is both representative and challenging to the system with respect to the vent gas mixtures the MPGF will burn. In fact, when considering the full array of flare vent gas mixtures tested (e.g., natural gas mixtures in the Marathon test, propylene mixtures in the Dow test and ethylene mixtures in the OCC test) and their corresponding points of flare flame instability on the MPGF burners, no single data point has shown instability above the NHV_{cz} (or below the LFL_{cz}) operating limits being finalized for Dow and ExxonMobil in Section III below.

Comment: One commenter suggested that flare minimization is also another important tool to mitigate the impact that MPGF will have on communities and suggested that the EPA require implementation of a flare management plan that requires facilities to:

1) Identify the sources of the gas routed to a flare;

2) Assess whether the gas routed to a flare can be minimized;

3) Describe each flare covered by the flare management plan;

4) Quantify the baseline flow rate to the flare after minimization techniques are implemented;

5) Establish procedures to minimize or eliminate discharges to the flare during startup and shutdown operations; and

6) If the flare is equipped with flare gas recovery, establish procedures to minimize downtime of the equipment.

Response: We consider the requirement to develop a flare management plan to be outside the scope of this AMEL. The purpose of this AMEL is to set site-specific conditions that an operator of a MPGF can use as an alternative to the existing requirements of 40 CFR 60.18 or 40 CFR 63.11 for flares, which do not include requirements for flare management plans.

III. Final Notice of Approval of the AMEL Requests and Required Operating Conditions

Based on information the EPA received from Dow and ExxonMobil and the comments received through the public comment period, operating requirements for the pressure-assisted MPGF at both of Dow's plants and both of ExxonMobil's plants that will achieve a reduction in emissions at least equivalent to the reduction in emissions being controlled by a steam-assisted, air-assisted or non-assisted flare complying with the requirements of either 40 CFR 63.11(b) or 40 CFR 60.18(b) are as follows:

1) The MPGF system must be designed and operated such that the combustion zone gas net heating value (NHV_{cz}) is greater than or equal to 800 Btu/scf or the combustion zone gas lower flammability limit (LFL_{cz}) is less than or equal to 6.5 percent

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 NHV_{cz} from compositional analysis data by 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, British thermal units per standard cubic foot (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 1 summarizes component properties including net heating values.

(ii) FOR MPGF, $NHV_{vg} = NHV_{cz}$.

b) Calculation of LFL_{cz}

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

$$LFL_{vg} = \frac{1}{\sum_{i=1}^{n}\left(\frac{\chi_i}{LFL_i}\right)} \qquad \text{(Eqn. 2)}$$

where:

LFL_{vg} = Lower flammability limit of flare vent gas, volume fraction.

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, volume percent (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 1.

(ii) FOR MPGF, $LFL_{vg} = LFL_{cz}$.

c) The operator of a MPGF system shall install, operate, calibrate and maintain a monitoring system capable of continuously measuring flare vent gas flow rate.

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}.

e) For each measurement produced by the monitoring system, 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 2. 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 1 — 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	H_2S	34.08	587	4.0

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

Table 2 — 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 feet per second. ±5 percent of flow rate at velocities greater than 1 foot per second.	Performance evaluation biennially (every two 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.
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 two equivalent diameters downstream from and 0.5 equivalent diameters upstream from the nearest disturbance. Select the sampling location at least two 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 9 of 40 CFR part 60, Appendix B.	Follow the procedure in Performance Specification 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 stage of MPGF burners must have at least two pilots with a continuously lit pilot flame. The pilot flame(s) 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 stage of MPGF burners 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 a MPGF system shall install and operate pressure monitor(s) on the main flare header, as well as a valve position indicator monitoring system 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 2. 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 three years or for as long as applicable rule subpart(s) specify flare records should be kept, whichever is more stringent.

6) Reporting Requirements

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

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

      (i) Specify flare design as a pressure-assisted MPGF.

(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 and 40 CFR 63.11 are not applicable.

(iii) All periods during the compliance determination when a complete loss of pilot flame on any stage of MPGF burners 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 during which there was at least one minute when regulated material was routed to the MPGF and a complete loss of pilot flame on a stage of burners occurred.

(ii) Records of visible emissions events that are time and date stamped and 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).

(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. Notice of AMEL Request for Occidental Chemical Corporation

On December 16, 2014, OCC submitted an AMEL request indicating plans to construct an ethylene production unit that will be comprised of five ethane cracking furnaces and associated recovery equipment at its plant located in Ingleside, Texas. As part of this request, OCC described plans to control emissions from the ethylene production unit using two thermal oxidizers as both a primary and backup control device for periods of normal operation and low-pressure maintenance, startup, and shutdown events, and that it is seeking an AMEL for a MPGF installation for use during limited high-pressure maintenance, startup, and shutdown events as well emergency situations. As part of its AMEL request, as well as in its comments submitted to Docket ID Number EPA-HQ-OAR-2014-0738-0030 on March 30, 2015, during the Dow and ExxonMobil initial AMEL notice comment period, OCC requested an AMEL for use of

different MPGF burners at its plant located in Ingleside, Texas, than the burners Dow and ExxonMobil plan to use at their plants. Specifically, OCC provided both destruction efficiency/combustion efficiency testing and long-term MPGF flame stability testing for ethylene and ethylene-inert waste gas mixtures on its proposed MPGF burners. These test data show good performance below an NHV_{cz} of 800 Btu/scf or above an LFL_{cz} of 6.5 volume percent, although OCC stated in the AMEL request that it plans to comply with the same compliance requirements laid out for Dow and ExxonMobil in Section III above. Therefore, we are seeking comment on whether these operating requirements would establish an AMEL for OCC that will achieve a reduction in emissions at least equivalent to the reduction in emissions for flares complying with the requirements in 40 CFR 63.11(b) or 40 CFR 60.18(b).

V. Notice of Framework for Streamlining Approval of Future Pressure-Assisted MPGF AMEL Requests

We are seeking comments on a framework sources may use to submit an AMEL request to the EPA to use MPGF as control devices to comply with NSPS and NESHAP under 40 CFR parts 60, 61, and 63. At a minimum, sources considering use of MPGF as an emissions control technology should provide the EPA with the

following information in its AMEL request when demonstrating MPGF equivalency:

1) Project Scope and Background

(a) Size and scope of plant, products produced, location of facility and the MPGF proximity, if less than 2 miles, to the local community and schools.

(b) Details of overall emissions control scheme (e.g., low pressure control scenario and high pressure control scenario), MPGF capacity and operation (including number of rows (stages), number of burners and pilots per stage and staging curve), and MPGF control utilization (e.g., handles routine flows, only flows during periods of startup, shutdown, maintenance, emergencies).

(c) Details of typical and/or anticipated flare waste gas compositions and profiles for which the MPGF will control.

(d) MPGF burner design including type, geometry, and size.

(e) Anticipated date of startup.

2) Regulatory Applicability

(a) Detailed list or table of applicable regulatory subparts, applicable standards that allow use of flares, and authority that allows for use of an AMEL.

3) Destruction Efficiency/Combustion Efficiency Performance Demonstration

(a) Sources must provide a performance demonstration to the agency that the MPGF pressure-assisted burner being proposed for use will achieve a level of control at least equivalent to the most stringent level of control required by the underlying standards (e.g., 98% destruction efficiency or better). Facilities can elect to do a performance test that includes a minimum of three test runs under the most challenging conditions (e.g., highest operating pressure and/or sonic velocity conditions) using PFTIR testing, extractive sampling or rely on an engineering assessment. Sources must test using fuel representative of the type of waste gas the MPGF will typically burn or substitute a waste gas such as an olefin gas or olefinic gas mixture that will challenge the MPGF to perform at a high level of control in a smokeless capacity.

(i) If a performance test is done, a test report must be submitted to the agency which includes at a minimum: A description of the testing, a protocol describing the test methodology used, associated test method quality assurance/quality control (QA/QC) parameters, raw field and laboratory data sheets, summary data report sheets, calibration standards, calibration curves, completed visible emissions observation forms, a calculation of the average destruction efficiency and combustion efficiency over the course of each

test, the date, time and duration of the test, the waste gas composition and NHV_{cz} and/or LFL_{cz} the gas tested, the flowrate (at standard conditions) and velocity of the waste gas, the MPGF burner tip pressure, waste gas temperature, meteorological conditions (e.g., ambient temperature, and barometric pressure, wind speed and direction, relative humidity), and whether there were any observed flare flameouts.

(ii) If an engineering assessment is done, sources must provide to the agency a demonstration that a proper level of destruction/combustion efficiency was obtained, through prior performance testing or the like for a similar equivalent burner type design. To support an equivalent burner assessment of destruction/combustion efficiency, sources must discuss and provide information related to design principles of burner type, burner size, burner geometry, air-fuel mixing, and the combustion principles associated with this burner that will assure smokeless operation under a variety of operating conditions. Similarly, sources must also provide details outlining why all of these factors, in concert with the waste gas that was tested in the supporting reference materials, support the conclusion that the MPGF burners being proposed for use by the source will achieve at least an equivalent level of

destruction efficiency as required by the underlying applicable regulations.

4) Long-Term MPGF Stability Testing

(a) The operation of a MPGF with a stable, lit flame is of paramount importance to continuously ensuring good flare performance; therefore, any source wishing to demonstrate equivalency for purposes of using these types of installations must conduct a long-term stability performance test. Since flare tip design and waste gas composition have significant impact on the range of stable operation, sources should use a representative waste gas the MPGF will typically burn or a waste gas, such as an olefin or olefinic mixture, that will challenge the MPGF to perform at a high level with a stable flame as well as challenge its smokeless capacity.

(b) Sources should first design and carry out a performance test to determine the point of flare flame instability and flameout for the MPGF burner and waste gas composition chosen to be tested. Successful, initial demonstration of stability is achieved when there is a stable, lit flame for a minimum of five minutes at consistent flow and waste gas composition. It is recommended, although not required, that sources determine the point of instability at sonic flow conditions or at the highest operating pressure anticipated. Any data which demonstrates

instability and complete loss of flame prior to the five minute period must be reported along the initial stable flame demonstration. Along with destruction efficiency and combustion efficiency, the data elements laid out in 3(a)(i) should also be reported.

(c) Using the results from (b) above as a starting point, sources must perform a minimum of three replicate tests at both the minimum and maximum operating conditions on at least one MPGF burner at or above the NHV_{cz} or at or below the LFL_{cz} determined in 4(b). If more than one burner is tested, the spacing between the burners must be representative of the projected installation. Each test must be a minimum of 15-minutes in duration with constant flow and composition for the three runs at minimum conditions, and the three runs at the maximum conditions. The data and data elements mentioned in 4(b) must also be reported.

5) MPGF Cross-light Testing

(a) Sources must design and carryout a performance test to successfully demonstrate that cross-lighting of the MPGF burners will occur over the range of operating conditions (e.g., operating pressure and/or velocity (Mach) condition) for which the burners will be used. Sources may use the NHV_{cz} and/or LFL_{cz} established in 4 above and perform a minimum of three replicate

runs at each of the operating conditions. Sources must cross-light a minimum of three burners and the spacing between the burners and location of the pilot flame must be representative of the projected installation. At a minimum, sources must report the following: A description of the testing, a protocol describing the test methodology used, associated test method QA/QC parameters, the waste gas composition and NHV_{cz} and/or LFL_{cz} of the gas tested, the velocity (or Mach speed ratio) of the waste gas tested, the MPGF burner tip pressure, the time, length, and duration of the test, records of whether a successful cross-light was observed over all of the burners and the length of time it took for the burners to cross-light, records of maintaining a stable flame after a successful cross-light and the duration for which this was observed, records of any smoking events during the cross-light, waste gas temperature, meteorological conditions (e.g., ambient temperature, and barometric pressure, wind speed and direction, relative humidity), and whether there were any observed flare flameouts.

6) Flaring Reduction Considerations

(a) Sources must make a demonstration, considering MPGF utilization, on whether additional flare reduction measures,

including flare gas recovery, should be utilized and implemented.

7) MPGF Monitoring and Operating Conditions

(a) Based on the results of the criteria mentioned above in this section, sources must make recommendations to the agency on the type of monitoring and operating conditions necessary for the MPGF to demonstrate equivalent reductions in emissions as compared to flares complying with the requirements at 40 CFR 60.18 and 40 CFR 63.11, taking into consideration a control scheme designed to handle highly variable flows and waste gas compositions.

We solicit comment on all aspects of this framework. We anticipate this framework would enable the agency to review and approve future AMEL requests for MPGF installations in a more expeditious timeframe because we anticipate that the information required by the framework would provide us with sufficient information to evaluate future AMEL requests. We note that all aspects of future AMEL requests would still be subject to a notice and comment proceeding.

Dated: August 20, 2015.

Janet G. McCabe,
Acting Assistant Administrator.
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