RULE 359. FLARES AND THERMAL OXIDIZERS
(Adopted 6/28/1994, revised xx/xx/xxxx)

A. Applicability

The provisions of this rule shall apply to the use of flares and thermal oxidizers at oil and gas production sources (SIC code 13), petroleum refinery and related sources (SIC code 29), natural gas services and transportation sources (SIC code 49) and wholesale trade in petroleum/petroleum products (SIC code 51). This rule shall~~, on the date of its adoption,~~ supersede the fuel combustion provisions of Rule 311 only insofar as these fuel combustion provisions apply to flares and thermal oxidizers.

B. Exemptions

1. The provisions of this rule shall not apply to the burning of sulfur, hydrogen sulfide, acid sludge or other sulfur compounds in the manufacturing of sulfur or sulfur compounds. For oil and gas sources (SIC Code 13) that recover sulfur as a by-product of gas treating/sweetening processes, the exemption for manufacturing shall apply only to those specific processes~~,~~ (e.g.~~,~~ sulfur recovery plant).

2. The provisions of this rule, with the exception of Section D.2 (Technology Standards), shall not apply to the burning of any gas with a net heating value of less than 300 British Thermal Unit (Btu) per standard cubic foot (scf) provided the fuel used to incinerate such gas does not contain sulfur compounds in excess of the following:

    a. 15 grains/100 cu.ft. (calculated as H_2S at standard conditions) in the Southern Zone, and

    b. 50 grains/100 cu.ft. (calculated as H_2S at standard conditions) in the Northern Zone of Santa Barbara County.

3. The provisions of this rule, with the exception of Sections D.1 (Sulfur Content in Gaseous Fuels), D.2 (Technology Standards), G (Monitoring and Recordkeeping) and H (Reporting), shall not apply to flares or thermal oxidizer units rated, per their operating permits, at 1.7 MMBtu/hour or less. However, if the total cumulative rating of all such rated units at a source exceeds 5 MMBtu/hr, then this~~e~~ exemption shall not apply.

4. The following are exempt only from Section D.3 (Flare Minimization Plan) of this rule:

    a. Flare and thermal oxidizer units rated, per their operating permits, at less than 15 MMBtu/hour. However, if the total cumulative rating of all such rated units at a source exceeds 50 MMBtu/hr, then this exemption shall not apply.

    b. Flares and thermal oxidizers whose flaring operations solely consist of planned, continuous flaring due to the non-availability of a produced gas pipeline outlet.

C. Definitions

See Rule 102, Definitions, for definitions not limited to this rule. For purposes of this rule, the following definitions shall apply:~~. See Rule 102 (Definitions) for definitions that are not restricted to interpretation of this Rule only.~~

"**Burn**" means combustion of any fuel including a gaseous fuel, whether for useful heat or by incineration without heat recovery.

"**Day**" or "**days**" means calendar day(s) unless otherwise stated.

"**Emergency**" means any situation arising from sudden and reasonably unforeseeable events beyond the control of the permittee, including acts of God. An emergency situation requires immediate corrective action to restore normal, safe operation. It also causes an exceedance of an emission standard or a limit stipulated in this rule, due to unavoidable increases in emissions attributable to the emergency situation only. Events which have been deemed as planned events (for definition, see later in this section) by a federal regulatory agency shall be precluded from being considered as emergency events.

"Emergency Flare Event" means the combustion (flaring) of gaseous fuels caused by an emergency event.

"**Flare**" means a direct combustion device in which air and all combustible gases react at the burner with the objective of complete and instantaneous oxidation of the combustible gases. Flares are used either continuously or intermittently and are not equipped with devices for fuel-air mix control or for temperature control.

"**Flare Gas**" means produced gas or natural gas burned in a flare or thermal oxidizer.

"**Gaseous fuel**" means gases used as combustion fuel which include, but are not limited to, any natural, process, synthetic, landfill, sewage digester, or waste gases. Gaseous fuel includes produced gas, pilot gas and, when burned, purge gas.

"**Month**" or "**monthly**" means calendar month or refers to calendar month.

"**Net Heating Value**" means the heating value of the flare gas being combusted, as specified under 40 CFR 60.18(f)(3) [1992 Edition].

~~"**Northern Zone of the Santa Barbara County**" means that portion of Santa Barbara County described in Section 60103(b) of Title 17 of the California Administrative Code as written on December 21, 1968 (Register 68, No.48). The Northern Zone also includes (a) State waters and, (b) those areas of the OCS waters for which the District has been designated the corresponding onshore area by the USEPA -- which are located offshore of that portion of Santa Barbara County lying north of the latitude of the mouth of Jalama Creek.~~

"**Pilot Gas**" means gas that is used to ignite or continually ignite flare gas. Pilot gas may be PUC- quality gas, liquefied petroleum gas (LPG), or produced gas.

"**Planned Flaring**" means a flaring operation that constitutes a designed and planned process at a source, and which would have been reasonably foreseen ahead of its actual occurrence, or is scheduled to occur. Planned flaring includes, but is not limited to, the following activities:

1. Flaring during well tests, well-related work, or tests ordered by applicable regulatory agencies;

2. Flaring due to equipment depressurization for preventive maintenance that includes: (a) routine engine overhauls; (b) turbine start-ups; (c) compressor start-ups; (d) engine exchange/removal; (e) platform modification/construction; (f) hot-jobs (welding, etc.);~~,~~ (g) new platform/well start-up~~,~~; (h) well work-over~~,~~; (i) maintenance at onshore sources supporting offshore production;~~,~~ (j) Installation of Sulferox etc., system;~~,~~ (k) planned plant shut-downs~~,~~; (l) unloading from new wells~~,~~; (m) rupture disc maintenance~~,~~; (n) acid jobs~~,~~; (o) source testing~~,~~; or~~and~~ (p) any pipeline depressurization not due to breakdown conditions (e.g., pigging);

3. Flaring of produced gas at production sources for which no gas handling, gas injection, or gas transmission facilities currently exist;

4. Flaring of "off-specification" gas (e.g.~~,~~ non-PUC quality gas), unless the permittee can demonstrate that the gas must be flared for engineering or safety reasons~~,~~ (e.g.~~,~~ under an emergency).

"**Planned continuous flaring**" shall include flare purge and flare pilot operations, and continuous flaring of produced gas which is not otherwise processed at the source.

"**Planned intermittent flaring**" shall include all other planned flaring of limited duration in time and volume of gaseous fuel~~,~~ (e.g.~~,~~ pigging or equipment depressurization for maintenance).

"**Preventive Maintenance**" means a regularly scheduled course of procedure designed to prevent equipment failure or decline of equipment function.

"**Produced gas**" means organic compounds that are both: (a) gaseous at standard pressure and temperature (1 atmosphere and 60°F), and (b) associated with the production, gathering, separation, or processing of crude oil and/or natural gas.

"**Public Utilities Commission (PUC) Quality Gas**" means, in the context of sulfur content of the gaseous fuel, gas containing no more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet and no more than five grains of total sulfur per one hundred (100) standard cubic feet. PUC quality gas shall also mean high methane (at least 80 % by volume) gas as specified in PUC's General Order 58-A.

"**Purge Gas**" means an inert gas mixture, LPG, PUC quality gas, or produced gas, any of which can be used to maintain a non-explosive mixture of gases in the flare header or provide sufficient exit velocity to prevent any regressive flame travel back into the flare header.

"**Smokeless**" means, in the context of flare or thermal oxidizer combustion, operation with visible emissions not exceeding an opacity level, for a period or periods aggreg~~r~~ating more than three minutes in any one hour, as dark or darker in shade as that designated as No. 1 on the Ringelmann Chart as published by the U.S. Bureau of Mines.

~~"**Southern Zone of the Santa Barbara County**" means that portion of Santa Barbara County so described in Section 60104 of Title 17 of the California Administrative Code as written on December 21, 1968 (Register 68, No.48). The Southern Zone also includes (a) State waters and, (b) those areas of the OCS waters for which the District has been designated the corresponding onshore area by the USEPA -- which are located offshore of that portion of Santa Barbara County lying south of the latitude of the mouth of Jalama Creek.~~

"**Thermal Oxidizer**" means a combustion device that includes enclosed, ground-level flares and in which the gases to be flared pass through one or more staged burners which may be steam quenched or assisted to control smoke. The products of combustion are funneled through a naturally drafted stack to above ground elevations. Thermal oxidizers come equipped with controls for combustion chamber temperature and often with combustion fuel-air mix controls.

"**Unplanned Flaring**" means a flaring event that is not planned or scheduled to occur. An emergency event is an example of an unplanned event (emergency event is a subset of unplanned event).

D. Requirements

1. Sulfur Content in Gaseous Fuels

   a. ~~Effective June 28, 1994, a~~Any planned flaring shall not burn gaseous fuel which contains sulfur compounds in excess of 15 grains per 100 cubic feet (239 ppmv) in the Southern Zone of Santa Barbara County or 50 grains per 100 cubic feet (796 ppmv) in the Northern Zone of Santa Barbara County -- calculated as hydrogen sulfide at standard conditions (i.e., 1 atmosphere and 60°F).

   b. An owner or operator of a source may apply for an exemption from Section D.1.a, by doing the following:

1) Demonstrate to the Control Officer that it is infeasible to comply with Section D.1.a. The demonstration shall provide a detailed explanation analyzing all engineering, safety or cost constraints. This demonstration shall be submitted within 90 days of June 28, 1994; and,

2) Submit an offset plan as a compliance plan, mitigating the SO_2 emissions from the source associated with planned flaring which are in excess of the limits in section D.1.a at an offset ratio of 1:1. The offset plan shall meet all federal and District criteria and guidelines for emission reductions; and may include an inter-pollutant offset scheme, if allowed under the USEPA and the State of California air quality regulations and guidelines. This plan shall be submitted with the demonstration required under Section D.1.b.1). If the exemption is granted by the Control Officer, the owner or operator shall implement the offset plan.

c. All costs associated with the District's review and approval of the exemption determination and offset plan shall be reimbursable by the owner or operator, in accordance with the cost reimbursement provisions~~requirements~~ of District Rule 210, Fees.~~I.C (Cost Reimbursements).~~

d. Emergency flare events are exempt from the provisions of Section D.1.a~~ of this Rule~~.

2. Technology-based Standard

The owner or operator of any source subject to this rule shall comply with the following technology standards:

a. All flares and thermal oxidizers installed or operating after June 28, 1994 shall be smokeless~~ (cf: Definition in Section C)~~.

b. All new and existing flares and thermal oxidizers shall comply with the following:

1) The outlet shall be equipped with an automatic ignition system including a pilot-light gas source or equivalent system, or, shall operate with a pilot flame present at all times -- with the exception of purge periods for automatic-ignition equipped flares or thermal oxidizers.

2) The presence of the flame in the pilot of the flare or the thermal oxidizer shall be continuously monitored using a thermocouple or an equivalent device that detects the presence of a flame, unless such device(s) can be demonstrated by the permittee to be infeasible, based on engineering, safety or costs constraints, and to the satisfaction of the Control Officer; and,

3) The flame shall be operating at all times when combustible gases are vented through the flare or thermal oxidizer.

c. The following provisions shall apply to low-pressure, open pipe flare operations where the flare gas pressure at the flare tip inlet is less than 5 psig:

1) Steam-assisted or air-assisted flares shall be operated only if the gaseous fuel burned in such flares has a net heating value of 300 Btu/scf or greater. Non-assisted flares shall be operated only if the gaseous fuel burned in such flares has a net heating value of 200 Btu/scf or greater.

2) Steam-assisted, air-assisted and non-assisted flares burning gaseous fuel with a net heating value between 300 (200 for non-assisted flares) and 1,000 Btu/scf shall be operated with an actual exit velocity not exceeding a design maximum velocity V_{max}, defined in Appendix B to this rule. The "actual exit velocity" of a flare shall be determined by dividing the volumetric flow rate (in units of standard temperature and pressure) by the unobstructed (free) cross-sectional area of the flare tip.

3) Steam-assisted, air-assisted and non-assisted flares burning gaseous fuel with net heating value exceeding 1,000 Btu/scf shall be operated with an actual exit velocity not exceeding 400 ft/sec.

3. Flare Minimization Plan

a. Any source subject to this rule and operating a flare or thermal oxidizer ~~units~~ rated at 15 MMBtu/hour or greater ~~(ref: Section B.4 of this Rule)~~ as listed in the source's operating permits, or in the source's ATC if no operating permit has been issued, shall submit a flare minimization plan to the Control Officer. The plan shall meet the requirements set forth in Appendix A to this rule.

b. For planned flaring, the minimization plan for all sources subject to this rule shall list a targeted maximum monthly flared gas volume. The target volume shall not exceed five (5) percent of the average monthly gas handled/produced/treated at the source, calculated per Section D.3.c below. This targeted volume limit will be placed in the source permit at the next operating permit issuance/renewal/reevaluation for the source owner or operator.

However, a higher limit may be granted by the Control Officer, if the ~~following condition is met: The~~ owner or operator can demonstrate such a maximum volume limit to be infeasible based on safety, engineering or cost constraints and proposes a different percentage as volume limit, based on the same considerations. The proposed limit shall be included in the flare minimization plan for approval by the Control Officer. After approval, the new throughput limit will be placed on the Permit to Operate at the next permit renewal/reevaluation.

c. For sources which have operated for more than three years as of June 28, 1994, the average monthly gas volume referred to in Section D.3.b. shall be based on the last three calendar years of historical data for such volume. However, any three consecutive calendar years of data may be used for such purpose if the permittee ~~so~~ requests and demonstrates to the satisfaction of the Control Officer that such period is more representative of the permitted operations at the source. For new or modified sources or sources operating for less than three years, five (5) percent of the source design capacity for gas handled/produced/treated shall be the target monthly volume for the first three years of operation. Following three years of operation, the data history obtained shall establish a new, planned flaring volume limit, which limit shall be incorporated in the next operating permit for the source.

For existing sources, an increase in the monthly flared gas volume limit due to produced/handled/treated gas volume increases shall not be considered a part of the source's net emission increase, provided neither the permitted emission limits nor the permitted volumes for gas produced/handled/treated are exceeded, and the Control Officer has been notified, in writing, of such increases within 30 days of the end of the month on which the increase occurs and the basis thereof.

d. Where limits have been established for sources pursuant to Section D.3.b above, the owner or operator shall develop and submit an emissions mitigation plan, if both of the following apply to the source's operations:

1) The permitted or proposed volume limit exceeds ten (10) percent of the average monthly volume of handled/produced/treated gas (~~this average shall be~~ calculated per Section D.3.c above); and,

2) The sulfur content of the flared gas exceeds the fuel sulfur limits stipulated in Section D.1.a~~. of this rule~~.

e. The emissions mitigation plan shall achieve the following:

Reduction by 50 percent, of either the actual average monthly flare gas volume (calculated per Section D.3.c above) or the proposed volume limit, not later than five (5) years after June 28, 1994, whichever reduction volume is greater. Such reduction shall also follow the volume reduction schedule listed in the flare mitigation plan.

After the plan is approved, the plan listed limit(s) will be placed in the source permit at the next operating permit issuance/renewal/reevaluation.

f. All costs associated with the District's review and approval of plans submitted pursuant to Section D.3 shall be reimbursable by the owner or operator, in accordance with the requirements of District Rule 210~~.I.C (Cost Reimbursements)~~.

4. Emergency Events

Any flaring which causes an exceedance of the emission limits or standards of this rule shall not be a violation of this rule if the owner or operator of the source demonstrates that the exceedance resulted from an emergency event. To demonstrate that an emergency event occurred, the owner or operator shall do the following:

a. Inform the Control Officer (Attn: Compliance Manager), via e-mail or phone ~~or facsimile equipment~~, of the commencement of any emergency event not later than four (4) hours after the start of the next regular business day;

b. Contemporaneously document that an emergency event has occurred and the causes have been identified in an operating log, and properly sign in each entry. Such logs shall be available to the Control Officer on request;

c. Submit to the Control Officer within seven (7) days of the end of the emergency event:

1) a complete description of the event and all mitigating and corrective actions implemented at the source per Appendix A ~~(cf: flare minimization plan)~~; and,

2) a demonstration that all reasonable steps were taken to minimize emissions in excess of permit conditions or other permit requirements; and,

3) a demonstration that the emergency was not caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, operator error or willful misconduct.

4) a document that the source was being properly operated at the time the emergency event occurred;

In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency event has the burden of proof. A list of typical causes for emergency flare events is provided in Appendix C of this rule as guidance to the permittees.

5. Emission and Operational Limits

The following emission and operating limits shall apply to any source subject to this rule:

a. Flares and thermal oxidizers which use flow-sensing automatic ignition systems and which do not use a continuous flame pilot shall use inert gas or PUC quality gas for purging.

b. Flares or thermal oxidizers rated at fifteen (15) million Btu/hour or greater shall not exceed, for planned flaring, the targeted (cumulative) monthly volume limit of flare gas (expressed as scf/month), established pursuant to Section D.3 (Flare Minimization Plan).

c. Pollutant emissions from all thermal oxidizers and ground-level enclosed flares with planned continuous flaring (per definition in Section C) exceeding 120,000 scf/day (daily maximum basis) shall meet the following emission standards:

FLARE TYPE	**Heat Release Rate (MMBtu/hr)**	**Emissions Standards (in lbs/MMBtu)**	
		NO_x	**ROC**
w/o Steam-assist	<10 MMBtu/hr	0.0952	0.0051
	10-100 MMBtu/hr	0.1330	0.0027
	>100 MMBtu/hr	0.5240	0.0013
with Steam Assist	All	0.068	0.14--as TOG

E. Test Methods

The standard test methods listed below shall be used during required tests, as applicable, by the source owner or operator to demonstrate compliance with this rule. Test methods not listed may be used if the owner or operator demonstrates to the Control Officer that the method is an equivalent test method, and obtains the USEPA or ARB approval of this method prior to its use.

1. Visible emissions shall be determined using the USEPA Reference Method 9.

2. For an open pipe flare, the volumetric flow rate for actual velocity shall be determined by the USEPA Reference Methods 2, 2A, 2C or 2D as appropriate.

3. The net heating value of gaseous fuel shall be determined by ASTM D4891-89, or ASTM D1945-81, or ASTM D1946-90.

4. For total gas sulfur content measurement:

a. Total reduced sulfur in the gaseous fuel shall be measured using the USEPA Reference Method 16 (Gas Chromatography-Flame Photometric Detector analysis) or 16A or BAAQMD ST-21.

b. Gas sampling using the USEPA Method 18 and laboratory gas analysis using ASTM D1072-90 or ASTM D4468-85 may be used in limited circumstances when pre-approved by the Control Officer to determine the total reduced sulfur in gaseous fuels. Strict controls on sampling materials and analysis turnaround time shall be required.

c. For field determination of H_2S level during emergency flaring events, color detection tube methods (e.g., Draeger, Sensidyne or other methods) may be used if the H_2S level in the gas stream is within the acceptable limits for the method.

5. NO_x and ROC levels in the exhaust of thermal oxidizers or ground-level enclosed flares shall be measured following procedures outlined in the applicable reference test methods listed in 40 CFR 60.17. The reference test methods include, but are not limited to the following:

   a. NO_x -- USEPA Method 7 or CARB 100

   b. ROC -- USEPA Method 18 or USEPA Method 25.

   c. Flow rate and mass emission rate -- USEPA Method 19

   d. CO_2 and O_2 concentrations -- USEPA Method 3 or CARB 100.

6. Hydrogen sulfide in the gaseous fuel shall be measured using the USEPA Reference Method 11, modified as applicable for concentrations greater than 500 ppmv H_2S.

F. Source Testing

Any owner or operator of a source subject to this rule shall perform the following:

1. Measure triennially the NO_x and ROC emissions through the stack of any thermal oxidizer or ground-level enclosed flare operated for planned continuous flaring of 120,000 scf/day of gases or more (daily maximum basis), by source testing (annually for sources subject to federal Part 70 operating permits, or more frequently if required by applicable rules). A source test plan/schedule shall be submitted to the Control Officer as part of the required permit application for the source.

2. Measure (a) the purge gas fuel sulfur content, if such gas is not a PUC quality gas or an inert gas, and (b) the gaseous fuel sulfur content and the net heating value for all gaseous fuel which constitute planned flaring. Measurement shall be performed triennially, except for sources which require federal Part 70 operating permits, in which case annual or more frequent testing shall be performed as required by applicable Part 64 Rules.

3. For emergency flare events, the owner or operator shall estimate the H_2S content of the flare gas using available operation and measurement records, provided that the owner or operator can demonstrate to the satisfaction of the APCO that such records are representative of the gas stream flared.

G. Monitoring and Recordkeeping

Any owner or operator of a source subject to this rule shall perform the following, as applicable:

1. Monitor the volume (in scf/month) of all gaseous fuel flared as part of planned/unplanned flaring, if subject to Section D.3. A flare volume monitoring plan shall be submitted to the Control Officer for approval as part of the flare minimization plan. A record of monitored volumes shall be kept by the owner or operator in a format prescribed and approved by the Control Officer, and shall be available for inspection upon request by the District.

2. Monitor the volume of gaseous fuel flared during each emergency event as part of the required emergency event description report.

H. Reporting

Any owner or operator of a source subject to this rule shall provide the following reports, as applicable:

1. Results of each source test for NO_x and ROC, obtained pursuant to Section F.1, shall be submitted to the Control Officer within 45 days of the completion of source testing.

2. The result of each test report for (a) purge gas S content (if applicable), (b) gaseous fuel S content and (c) gaseous fuel net heating value, obtained pursuant to Section F.2, shall be submitted to the Control Officer by March 1st of the year following the calendar year on which the testing occurred.

3. Data for the monthly volumes (in scf/month) of gas flared per (i) planned continuous and (ii) planned intermittent flaring categories, obtained pursuant to Section G.1, shall be submitted annually to the Control Officer. Each calendar year data report shall be submitted by March 1st of the following calendar year.

4. An annual summary of the total gas volume released during emergencies and the weighted-average H_2S content for the entire volume, obtained pursuant to Sections G.2 and F.3, to be provided to the Control Officer. The annual report for each calendar year shall be submitted by March 1st of the following year.

5. Report on any exceedance of the allowable monthly volume of gases for planned flaring, to be submitted to the Control Officer within sixty (60) days of the end of the exceedance month. The report shall list the exceedance volume (volume in excess of the allowed volume) and the estimated sulfur content of the gaseous fuel flared.

I. Compliance Schedule

1. New sources shall comply with this rule on June 28, 1994.

2. Existing sources shall comply with this rule as follows:

   a. Offsets required pursuant to Section D.1.b. shall be implemented within 180 days after the Control Officer grants the request for exemption. Extensions may be granted by the Control Officer for good cause shown. Notwithstanding any other provision of this rule, an owner or operator of a source who receives an exemption shall have offsets in place no later than 1 year after the date the exemption request has been filed with the Control Officer.

   b. All flares and thermal oxidizers subject to Section D.2 shall comply within one (1) year of June 28, 1994.

   c. The flare minimization plan and emissions mitigation plan required pursuant to Sections D.3.a. and D.3.d shall be submitted within 90 days after June 28, 1994, and approval of the same shall be obtained within 180 days after June 28, 1994. Full compliance with the targeted volume limits required under Sections D.3.b and D.3.e shall be achieved within five (5) years of June 28, 1994.

   d. Flares and thermal oxidizers subject to D.5.a. shall comply within 180 days of June 28, 1994.

   e. If any new equipment is proposed for installation to comply with Section D.2, an authority to construct application with all necessary information shall be submitted to the Control Officer within ninety (90) days of June 28, 1994.

   f. The flare volume monitoring plan required under Section G.1. shall be implemented by the owner or operator within 30 days of the Control Officer approval of the plan.

3. Sources on the OCS which become subject to this rule shall comply with all provisions of this rule by the dates specified in the rule or when the USEPA promulgates this rule as applicable to the OCS sources, whichever is later.

~~**J. Effective Date of Rule**~~

~~This Rule is effective on June 28, 1994.~~

APPENDIX A – Flare Minimization Plan

The flare minimization plan shall include the following, where applicable:

1. Details of measures implemented at each source subject to this rule to decrease the total monthly volume of flare gas being combusted and to reduce the number of planned flaring activities.

2. Descriptions of measures in place to prevent the recurrence of emergency flaring events, and reduce the occurrence of unplanned flaring events. Such measures may include installation of redundant equipment.

The flare minimization plan shall also incorporate the following:

a. A detailed description of the flare system including process flow diagram(s), flare tip design details and the manufacturer's information on flare operation and maintenance;

b. A detailed description of the flare gas monitoring system that records the gas throughput, (e.g., make and model of the meter, precision and accuracy of the meter, data management, maintenance/calibration or manufacturer's specifications), and of the method to determine the flare gas sulfur content;

c. The design and operation features of the pilot and purge gas system which minimize the volume of gas consumed;

d. A description of the design features that demonstrate the capability of the flare to handle the nominal and peak gas flows and the range of gas composition encountered at the source; all calculations showing anticipated flare exit velocities for maximum flare gas flow rates;

e. Plans for reduction of emissions from planned flaring activities including those which result from planned depressurizing of vessels, compressors, and pipelines;

f. Charts outlining the possibility of coordination of schedules to reduce planned shutdowns;

g. Any proposed study program involving operating set points on controllers and safety devices to determine if a different setting could minimize emissions (for OCS sources, this study may be submitted to the appropriate safety agency for approval prior to the Control Officer submittal);

h. Summary of scheduled/typical planned flaring including frequency and volume; also, summary of each of these parameters after implementation of the proposed plan; data on gas production rates including the current actual and the maximum anticipated production rates.

The flare owner or operator shall review the flare minimization plan every five (5) years, and shall submit to the District any findings of new procedures or technologies for flare minimization that were not addressed in earlier plans. If any such procedures or technologies are identified, the owner or operator shall also submit a schedule for the implementation of such procedures and technologies.

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APPENDIX B – Design Velocity

No flare shall operate with an actual exit velocity exceeding a designed maximum velocity V_{max}. This design velocity V_{max} is computed, as follows:

1. For steam-assisted and non-assisted flares, the design maximum velocity V_{max1} is calculated according to the equation:

   $$Log_{10} (V_{max1}) = (H_T + 1214)/852, \text{ where}$$

   V_{max1} = maximum permitted velocity (in ft/sec); 1214 = a constant; 852 = a constant; and, H_T = net heating value of the gaseous fuel (in Btu/scf), provided $300 < H_T < 1000$ for steam-assist and $200 < H_T < 1000$ for non-assist.

2. For air-assisted flares, the design maximum velocity V_{max2} is calculated by the following equation:

   $$V_{max2} = 28.56 + 0.0867 (H_T), \text{ where}$$

   V_{max2} = maximum permitted velocity (in ft/sec): 28.56 = a constant: 0.0867 = a constant; and, H_T = net heating value of the gaseous fuel (in Btu/scf), provided $300 < H_T < 1000$.

3. If H_T exceeds 1000 Btu/scf, then H_T shall equal 1000 Btu/scf for the purpose of applying these equations to compute the value of V_{max}.

Appendix B shall not apply to high-pressure flares where the flare gas pressure at the flare tip inlet is greater than 5 psig.

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APPENDIX C – Emergency Events

The following events comprise a brief list of events that would qualify as emergency events. Note that these events must also meet the criteria of emergency specified in this rule, before they can be considered as emergency events.

1. Equipment Breakdowns:	Electrical equipment (transformer, motors) and internal combustion engine breakdowns. Major equipment breakdowns (turbine-generator, compressor, compressor stage fall-outs etc.)
2. Relief Valve Events:	All unintentional safety valve releases as caused by emergency shutdown valve(s) and shut-in valve(s) events, temperature control events and high/low fluid temperature and pressure level events.
3. Source/Pipeline Shutdowns:	All offshore and onshore process and source or plant breakdowns and pipeline breakdown events.
4. Other Events:	Fire hazard avoidance events, toxic and flammable gas alarm events, faulty-sensor-caused shutdowns, high/low temperature and pressure indicated shutdowns.

The following shall also be considered as emergency flaring events:
Sudden power failure at onshore source, sudden process problems including foaming within production units, process-computer problems at production and pollution control units, pollution control equipment breakdowns, power supply system breakdowns, pipeline or fuel line breakdowns.

Emergency events continue in duration until the operator gets the emergency situation under control including the emission exceedances, or shuts down the source, or reroutes production to a different source.

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