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Gas Flaring Definitions

DRAFT

Objective

The definitions currently used by companies and countries to describe the various reasons for gas flaring are tightly related to their operational conditions and challenges. The objective of this document is to capture the essence of whether the flaring is avoidable and can be mitigated either through improved facility design and/or operational procedures or commercial solutions; or, with current technology, is unavoidable to ensure safe oil and gas production and/or processing.

This document proposes classifying flaring in just three categories that identify where, and what sort of, action should be considered for its reduction or elimination: routine flaring, non-routine flaring and safety flaring. The existing diverse definitions are all captured in one (or in some cases, several) of these three categories as illustrated in the table below.

The definitions are limited to application in upstream activities. For this purpose, upstream activities are oil and gas production facilities, gas processing plants and LNG liquefaction plants.

Methodology

Definitions were obtained from a number of sources, including GGFR's Voluntary Standard, GGFR Partners (the Alberta Energy Regulator, BP, Chevron, Eni, ExxonMobil, Shell, Statoil and TOTAL) and the industry association, IPIECA.

Categories in collected definitions	**GGFR proposed definitions**		
	Routine	**Non-routine**	**Safety**
Stranded gas flaring	✓		
Production flaring	✓	✓	
Production flaring continuous	✓		
Process flaring	✓	✓	
Planned flaring	✓	✓	
Waste flaring gas	✓	✓	
Discretionary flaring	✓		
Production flaring non continuous	✓	✓	
Maintenance and shutdown flaring		✓	
Start-up flaring		✓	
Drilling flaring		✓	
Reliability flaring	✓	✓	✓
Operational flaring	✓	✓	✓
Unplanned flaring		✓	✓
Process trips and transient conditions flaring		✓	✓
Design flaring	✓	✓	✓
Safety flaring			✓
Emergency flaring			✓
Upset flaring		✓	✓
Acid gas flaring			✓
Fuel gas flaring			✓
Purge flaring			✓

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Proposed definitions

Routine flaring

Definition	Examples of Routine Flaring
Routine flaring of gas at oil and gas production facilities, gas processing plants or LNG liquefaction plants is flaring during normal production operations in the absence of sufficient facilities to re-inject the produced gas, utilize it on-site, or dispatch it to a market. Routine flaring does not include safety flaring, even when it is continuous.	Includes flaring of gas from: • Oil/gas separators • Process units, such as heaters; boilers; cogeneration units; tail gas treating units; incinerators; waste heat recovery units; glycol treatment facilities; produced water treatment facilities • Gas routinely collected from storage tanks (or other facilities) and sent to flare • Redevelopment activities; plant modifications; facility debottlenecking resulting in incremental gas production beyond existing gas infrastructures' capacity For LNG plants, boil-off gas generated during loading of LNG carriers

Safety flaring

Definition	Examples of Safety Flaring
Safety flaring of gas is flaring to ensure safe operation of the facility.	Includes flaring of: • Blow-down gas following emergency shutdown to prevent over pressurization of all or part of the process system • Gas to maintain the flare system in a safe and ready condition (purge or fuel gas) • Gas required for a flare's pilot flame • Gas produced as a result of specific safety related operations, such as safety testing, leak testing, or emergency shutdown testing • Flaring of sour gas required for the safe disposal of H_2S-rich gas, including the volume of gas added to ensure good dispersion and combustion

Non-routine flaring

Definition	Examples of Non-Routine Flaring

Non-routine flaring of gas is all flaring other than routine and safety flaring.	Typically intermittent, high rate, and of short duration. Either planned or unplanned.
	
	Includes flaring during:
	• Temporary (partial) failure of the facilities (e.g. compressors, pipeline), until their repair or replacement, that utilize the gas during normal operations. Includes:
	  ○ Failure of equipment or instrumentation; and
	  ○ Failure of a customer's facilities that prevents receipt of the gas.
	• Initial plant/field startup before the process reaches steady operating conditions and/or before gas compressors are commissioned
	• Startup following facility shutdowns
	• Scheduled preventive maintenance and inspections
	• Construction activities, such as tie-ins, change of operating conditions, plant design modifications
	• Process upsets; when process parameters fall outside the allowable operating or design limits and flaring is required to stabilize the process again
	• Reservoir or well maintenance activities, such as acidification, wire line interventions
	• Well testing or clean up following drilling or well workover