Offshore Norge Guideline
How the VOC emissions handbook can facilitate OGMP 2.0 Level 4 Quantification

1. Purpose

The purpose of this document is to provide guidance on how the Offshore Norge VOC emissions handbook for quantification of direct methane and nmVOC emissions, henceforth referred to as the VOC handbook, can support OGMP 2.0 quantification and reporting at Level 4. It explains how methodologies in the VOC handbook (as well as in Offshore Norge Guideline 044) can be applied to OGMP 2.0 source categories and clarifies the conditions under which they may support reporting at Level 4. The document is intended to promote a consistent interpretation of Level 4 reporting expectations among Norwegian oil and gas operators.

2. Documentation requirements

The OGMP 2.0 implementation guidance states that companies reporting at levels 4 and 5 should describe applied methods of source-level quantification with sufficient detail to assess whether or not the methods conform with Level 4 reporting expectations (in line with the OGMP 2.0 framework and relevant OGMP 2.0 technical guidance documents). Specifically, the description of the method of quantification for deriving Level 4 emissions estimates shall include the following, for each relevant source or source-type:

1. Quantification approach including rationale;
2. Measurement instrument(s), engineering calculation or quantification model used; and
3. Details of the measurement procedure including sampling, measurement, calculation, and estimation methodologies (including relevant technology limitations, such as detection limit), as relevant to the assessment of whether companies have attained this level of reporting.

These expectations are addressed in the OGMP2.0 reporting both in the reporting template itself (point 2), as well as via a company's implementation plan (point 1 and 3).

- Point 1 can be addressed by including a qualitative description of the quantification approach in the implementation plan.
- Point 2 can largely be addressed via the dropdown list in the reporting template.
- To address Point 3, it is recommended to reference the VOC handbook and include a copy of it as documentation. Experience with OGMP 2.0 reporting thus far suggests that detailed activity data does not need to be included in the reporting itself.

3. Mapping sources for OGMP 2.0 reporting

Table 1 in the VOC emissions handbook provides an overview of the emissions sources included in the handbook. Each of these sources is associated with a unique corresponding source in the OGMP 2.0 reporting template for upstream emissions. Table A below identifies, for each emission source in the VOC emissions handbook, the corresponding source in the OGMP 2.0 reporting template for upstream emissions.

4. Level 4 alignment using VOC handbook depends on implementation

Table A shows that the VOC handbook generally defines emissions sources at a more granular level than OGMP 2.0. While the methodologies in the VOC handbook are inherently compatible with the principles of OGMP 2.0 Level 4 quantification, use of the handbook alone does not automatically guarantee that the expectations for Level 4 reporting are demonstrated. Rather, Level 4 can be demonstrated when these methodologies are applied in a manner that is fit-for-purpose, reflecting the specific configuration, operation, and emission characteristics of each source at each asset.

For a source to be reported at Level 4, the emissions must be quantified based on how individual sources are configured and operate, rather than relying on generalized or aggregated assumptions. This requires the use of source-specific input data.

For example, fugitive emissions quantified using a leak/no-leak approach may be considered Level 3 if the representativeness at source-level is not demonstrated. To support Level 4 quantification, the factors must reflect the relevant component types, asset context and inspection frequencies, and be underpinned by applicable measurement data, which may be obtained from the same or comparable assets, components or operations.

For other emission sources, Level 4 reporting may require the following calculations:

- For venting sources (e.g. compressor, glycol dehydrators, and storage tanks): calculations based on, e.g., measured flowrates, gas composition, and operating conditions specific to the asset.
- For compressor seals: calculations based on measured or inferred seal gas flow, gas composition, and operating hours, producing not just equipment-level estimates, but estimates at the seal (i.e. primary and secondary) level.
- For produced water: calculations using actual process conditions such as volume, pressure drop, and operating time.
- For tanks and gas freeing events: To overly generalize - calculations based on event-specific conditions rather than averaged factors.

Table A1: OGMP 2.0 categories and corresponding categories in VOC handbook

OGMP2.0 Category		OGMP2.0 TGD (Technical Guidance Document)	044 Source ID	044 Main source	044 Sub-source
Stationary Combustion		TGD - Incomplete Combustion	NA	*Turbine*	NA
			NA	*Boiler*	NA
			NA	*Motor*	NA
Flaring sources - Flaring (Incomplete Combustion)		TGD - Flaring Updated. Approved; Steering Group 25.06.2026. Link to be updated	NA	*Flare*	NA
Flaring sources - Unlit Flaring		OLD - TGD - Flare Efficiency	80.1	Unburnt flare gas	Extinguished flare and flare ignition
			80.2		Non-combustible flare gas
			80.3		Inert gas-purged open flare
Fugitive Component and Equipment Leaks		TGD - Unintended equipment leaks	90.2	Process leaks	Minor gas leaks
		TGD - Incidents, emergency stops and malfunctions	90.1		Major gas leaks
Venting Sources	**Natural gas driven pneumatic equipment**	TGD - Pneumatic controllers, pumps, shutoff valves and control instruments	NA	NA	NA
	Centrifugal compressor shaft seals	TGD - Centrifugal compressors	50.1	Centrifugal compressor seal oil	Degassing pots
			50.2		Seal oil retention tank
			50.3		Seal oil storage tank
			70.1	Dry compressor seals	Primary seal gas
			70.2		Secondary seal gas
			70.3		Leakage of primary seal gas to secondary vent
	Reciprocating compressor rod packing	TGD - Reciprocating compressors	60.1	Reciprocating compressor	Separator chamber
			60.2		Crankcase
	Glycol dehydrators	TGD - Glycol dehydrators	10.1	Triethylene glycol (TEG) regeneration	TEG flash tank
			10.2		TEG regenerator
			10.3		Stripping gas
			20.1	Monoethylene glycol (MEG) regeneration	MEG flash tank
			20.2		MEG regenerator
			20.3		Stripping gas
	Tanks	TGD - Unstabilized liquids storage tanks		*Storage*	
			130.1	Crude oil storage tanks on FPSO	Gas-freeing in connection with tank inspection
			130.2		Abnormal operating situation
	Well liquids unloading	TGD - Liquids unloading from gas wells	NA	NA	NA
	Well casinghead venting	TGD - Oil well casinghead	NA	NA	NA
	Hydraulic fracture completions	TGD - Gas Well hydraulic fracturing	NA	NA	NA
	Crude Oil Loading/Offloading (Tankers)	Ongoing: Develop Guidance on Acceptable L4 & L5 for Crude Oil Tanker Loading Emissions	NA	*Loading*	NA
	Venting - Other	TGD - Purging and venting, starts and stops and other process and maintenance vents	1.1	Measured emission	Measured common vent
			30.1	Amine regeneration	Amine flash tank
			30.1	Amine regeneration	Amine regenerator
			100.1	Purge and blanket gas	Purge and blanket gas
			110.1	Gas analysers and sampling stations	Gas analysers and sampling stations
			140.1	Gas-freeing of process systems	Gas-freeing of process systems
			160.1	Cold venting from turbines	Cold venting during start-up, operation and shutdown of turbines
		TGD – Well Operations (Testing and Workover) TGD – Well Completions TGD – Well Drilling	40.1	Produced water handling	Produced water flash tank
			40.2		Flotation tank / CFU
			40.3		Flotation gas
			40.4		Discharge caisson
			120.1	Drilling	Drilling
Other Sources			900.1	General supplement	FPSO
			910.1	General supplement	Fixed facilities

5. Complementary methods

In addition to the VOC handbook, methodologies in Offshore Norge Guideline 044 can be used for flares and turbines. The 044 approach for flares and turbines utilizes measured activity data, such as gas volumes, combined with updated (and in the case of turbines, equipment-specific) emission factors derived from measurement and modelling. These approaches are therefore consistent with Level 4 reporting principles, as they replace generic emission factors with measurement-informed methodologies applied at source level. When it comes to flares, it is important to underline that the 044 factors are only relevant in the context of properly functioning flares – non- or poorly-functioning flares shall be quantified using the methodologies described in the VOC handbook.

Similarly, loading and storage related emissions quantified through VOCIC can also be considered to be aligned with OGMP 2.0 Level 4 principles. VOCIC methodologies are based on direct measurement campaigns, including ship- and loading-point-specific data, gas chromatography measurements, as well as measurement-informed emission factors that vary across ships and operational conditions. Emissions are calculated using actual transferred volumes and measured or derived gas composition, ensuring that emissions reflect the specific operational context at each loading or storage event. VOCIC-based methodologies therefore avoid the use of generic emission factors and instead provide a source-specific representation of emissions that is consistent with Level 4 requirements.