Guidance for Associated Gas Metering

This document identifies methods available to satisfy the metering requirements for associated gas required to be reported pursuant to the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (title 17, California Code of Regulations, section 95100-95158) (reporting regulation or MRR), for 2013 data reported in 2014 and for data reported in future years. The California Air Resources Board (ARB) first approved the mandatory reporting regulation in 2007, with revisions in 2010, 2012, and 2013.[1] The 2013 MRR revisions became effective on January 1, 2014. **No substantive changes were made to this guidance document in 2014.**

Because associated gas is considered a covered product, the measurement accuracy requirements of section 95103(k) apply. It is recommended that each reporting entity use one of the following methods to calculate the amount of associated gas.

Associated Gas is defined in section 95102(a) of the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (title 17, California Code of Regulations, section 95100 et seq.) (MRR) as a "natural gas that is produced in association with the production of crude oil." The reporting requirements for this "covered product data" are outlined in section 95156(a)(11) of the MRR. For purposes of reporting, associated gas includes the amount of associated gas that is burned on site, the amount of associated gas that is sold to outside users, and the amount of associated gas that is reinjected. Associated gas production reporting is required for 2013 data reported in 2014, and in future years.

Method 1

Reporting entities may calculate the associated gas produced, based on the measurement of a gas to oil ratio (GOR) and gas to water ratio (GWR) from a flash liberation test. The crude oil, condensate, and produced water emissions calculation in section 95153(v) requires a pressurized sample of crude oil and produced water, collected before the primary separator tank. Once the sample is flashed in a laboratory, the results of the test will give the GOR and GWR. This approach can be used to accurately determine the associated gas produced from a well or group of wells for which GOR, GWR, produced water volume and oil production volume based on Lease Automatic Custody Transfer meter (LACT, a sales-quality meter) are measured. Under this approach, the associated gas volume for a facility could be determined by multiplying the oil volume from the LACT meter by the GOR and the GWR by the produced water volume and then summing. In this manner, the associated gas volume is accurately calculated because the LACT meter is a financial transaction meter as outlined in section 95103(k)(7) and the GOR, GWR and produced water volume meets the requirements of section 95153(v).

[1] The regulation is available at http://www.arb.ca.gov/cc/reporting/ghg-rep/regulation/mrr_regulation.htm.

The following considerations are necessary for applying the LACT meter, GOR, GWR and produced water volume to the calculation of associated gas:

1) The GOR and GWR must be representative of the LACT meter and produced water volume, respectively. For example, if 5 GOR values are representative for oil flowing through a single LACT meter, the facility must take a weighted average of each GOR before applying it to the LACT meter results.
2) In all cases, the most disaggregated data should be used to calculate the associated gas amounts (at the field or tank farm-level). For example, if a basin has multiple LACT meters for each oil field, the weighted average of each oil field GOR should be used instead of a basin-wide weighted average GOR. This is consistent with current reporting of onshore petroleum and natural gas production data.
3) GOR data from a separate single field cannot be applied to multiple fields with different LACT meters. For example, if a basin facility consists of two fields, A and B (with LACT meter and a single produced water volume for each field), but only has one GOR sample from field A, the GOR sample from field A cannot be applied to field B.

Method 2

In cases where the above approach does not apply, the facility may combine metered associated gas amounts from production, sales, or other gas flow meters as appropriate. If this method is selected, the meters used to measure the associated gas volume must meet the requirements of section 95103(k), to assure accurate product data.