Mud degassing emissions factor info
Dave Newsad
to:
Doug Hardesty
09/15/2011 12:24 PM
Cc:
"Thomas, Brad C"
Hide Details
From: Dave Newsad <dnewsad@slrconsulting.com>

To: Doug Hardesty/R10/USEPA/US@EPA

Cc: "Thomas, Brad C" <Brad.C.Thomas@conocophillips.com>

History: This message has been forwarded.

2 Attachments

image6afc46.JPG API- Table 5-17.pdf

Doug, following up on our call this morning, attached is the page from the 2009 API Compendium of Greenhouse Gas emissions methodologies for the oil and Gas Industry.

This is the reference we used for the emissions factors for the VOC and methane emissions from mud degassing for the CPAI Chukchi inventory.

From this reference, we applied the 11% VOC factor (100- see footnote for methane (83%) and ethane (6%) contents) for quantifying VOC emissions and the 83% methane factor to derive the GHG emissions (with the CO@ equivalent adjustment).

Any other question please advise.

Dave Newsad

Principal Scientist
SLR International Corp

Email: dnewsad@slrconsulting.com
Cell: 425-283-2031
Office: 425-402-8800
Fax: 425-402-8488
22118 20th Ave SE, Suite G202, Bothell, WA, 98021, United States

www.slrconsulting.com

atmosphere. This venting results in emissions of CH_4 contained in the gas, and possibly CO_2 emissions. Site-specific CH_4 (and CO_2 if present) concentration data should be used to estimate these emissions. However, in the absence of site-specific data, the simplified mud degassing emission factors presented in Table 5-17 can be used.

Table 5-17 provides mud degassing THC vented emission factors on a drilling day basis. The base THC factors are taken from U.S. Department of the Interior, Minerals Management Service guidance (Wilson et al., 2007). The CH_4 factors are derived from the THC factors based on an assumed CH_4 concentration. However, the factors can be adjusted using actual site-specific concentrations if they are available and different from the defaults shown in the table.

Table 5-17. Mud Degassing Vented CH_4 Emission Factors

Mud Type	THC Emission Factor [a], Original Units (lb THC/drilling day)	CH4 Emission Factor [b], Converted to Tonnes Basis (tonnes CH_4/drilling day)
Water-based Mud	881.84	0.2605
Oil-based Mud	198.41	0.0586
Synthetic Mud	198.41	0.0586

Footnotes and Sources:
[a] Wilson, Darcy, Richard Billings, Regi Oommen, and Roger Chang, Eastern Research Group, Inc. *Year 2005 Gulfwide Emission Inventory Study*, U.S. Department of the Interior, Minerals Management Services, Gulf of Mexico OCS Region, New Orleans, December 2007, Section 5.2.10.
[b] Based on gas content of 65.13 weight percent CH_4, derived from sample data provided in the original source of the emission factors. Original sample data is as follows, in terms of mole%: 83.85% CH_4, 5.41% C_2H_6, 6.12% C_3H_8, 3.21% C_4H_{10}, and 1.40% C_5H_{12} (Wilson et al., 2007).

An example calculation is given in Exhibit 5.24 to illustrate the use of the mud degassing emission factors.

EXHIBIT 5.24: Sample Calculation for Mud Degassing Vented Emissions

INPUT DATA:
An oil and natural gas production facility performed well drilling activities with water-based mud 85 days during the year. The average CH_4 content of the gas is 70 mole %; there is also 9 mole % CO_2 in the gas. Calculate the CH_4 and CO_2 emissions.