Coal Mine Methane Project Protocol
Version 1.1
ERRATA AND CLARIFICATIONS

The Climate Action Reserve (Reserve) published its Coal Mine Methane (CMM) Project Protocol Version 1.1 in October 2011. While the Reserve intends for the CMM Project Protocol V1.1 to be a complete, transparent document, it recognizes that correction of errors and clarifications will be necessary as the protocol is implemented and issues are identified. This document is an official record of all errata and clarifications applicable to the CMM Project Protocol V1.1.[1]

Per the Reserve's Program Manual, both errata and clarifications are considered effective on the date they are first posted on the Reserve website. The effective date of each erratum or clarification is clearly designated below. All listed and registered coal mine methane projects must incorporate and adhere to these errata and clarifications when they undergo verification. The Reserve will incorporate both errata and clarifications into future versions of the protocol.

All project developers and verification bodies must refer to this document to ensure that the most current guidance is adhered to in project design and verification. Verification bodies shall refer to this document immediately prior to uploading any Verification Statement to assure all issues are properly addressed and incorporated into verification activities.

If you have any questions about the updates or clarifications in this document, please contact Policy at policy@climateactionreserve.org or (213) 891-1444 x3.

[1] See Section 4.3.4 of the Climate Action Reserve Program Manual for an explanation of the Reserve's policies on protocol errata and clarifications. "Errata" are issued to correct typographical errors. "Clarifications" are issued to ensure consistent interpretation and application of the protocol. For document management and program implementation purposes, both errata and clarifications are contained in this single document.

Errata and Clarifications (arranged by protocol section)

Section 5

1. Accounting for Additional Non-Methane Cooling Air Volume in VAM Oxidation Projects (CLARIFICATION – October 22, 2013)

Section: 5.2.2, Equation 5.10

Context: Due to the high temperatures which may result from high methane concentrations of VAM entering destruction devices at a project, additional non-methane fresh air (either occasionally or continuous) may be added to the system to prevent overheating of the destruction device. The protocol assumes a closed system, in which the flow rate of the input and exhaust are the same. However, in the case of destruction devices in which additional non-methane fresh air is added after the point at which VAM input flow is metered, the flow of the exhaust would be greater than the metered flow of the input. Without accounting for this additional flow, the methane destruction will be overestimated due to the dilution of methane in the exhaust gas. It is not clear how projects should account for this situation in the quantification methodology.

Clarification: Destruction devices requiring an additional cooling air intake component are permissible under this protocol. To account for the additional non-methane air, Equation 5.10 shall be replaced with the revised Equation 5.10 below. If destruction devices include a cooling air intake, the flow of additional non-methane air entering the destruction device should be metered and the actual flow data shall be used in the equation. However, if the cooling air intake is not metered, the project developer must instead use the maximum flow rate (e.g. the full capacity) of the cooling air intake system for the full duration of time when it is operating. If the operational status of the cooling air system is not monitored, the project developer shall assume that the system is always operational.

Revised Equation 5.10. CH_4 Destroyed by VAM Oxidation

$$MD_{OX} = MM_{OX} - PE_{OX}$$

Where,

			Units
MD_{OX}	=	Methane destroyed through oxidation during the reporting period	tCH_4
MM_{OX}	=	Methane measured sent to oxidizer during the reporting period	tCH_4
PE_{OX}	=	Project emissions of non-oxidized CH_4 from oxidation of the VAM stream during the reporting period	tCH_4

And,

$$MM_{OX} = VAM_{flow\,rate,y} \times time_y \times PC_{CH_4\,VAM} \times D_{CH_4}$$

Where,

			Units
$VAM_{flow\ rate,y}$	=	Average flow rate of ventilation air entering the oxidation unit during period y corrected if needed for inlet flow gas pressure and temperature ($P_{VAM\ inflow}$ and $T_{VAM\ inflow}$ respectively) per Equation 5.12	scfm
$time_y$	=	Time during which VAM unit is operational during period y	m
$PC_{CH4\ VAM}$	=	Concentration of methane in the ventilation air entering the oxidation unit, corrected if needed for pressure and temperature in the vicinity of the methane analyzer	scf/scf
D_{CH4}	=	Density of methane under standard conditions	tCH_4/scf

And,

$$PE_{OX} = VAM_{exhaust\ volume,y} \times PC_{CH_4\ exhaust} \times D_{CH_4}$$

Where,			Units
$VAM_{exhaust\ volume,y}$	=	Total volume of methane leaving the oxidation unit during period y	scf
$PC_{CH4\ exhaust}$	=	Concentration of methane in the ventilation air exhaust, corrected if needed for pressure and temperature in the vicinity of the methane analyzer ($P_{VAM\ analyzer\ inflow}$, $T_{VAM\ analyzer\ inflow}$, $P_{VAM\ analyzer\ exhaust}$, and $T_{VAM\ analyzer\ exhaust}$)	scf/scf
D_{CH4}	=	Density of methane under standard conditions	tCH_4/scf

And either,

$$VAM_{exhaust\ volume,y} = VAM_{exhaust\ flow\ rate,y} \times time_y$$

Or,

$$VAM_{exhaust\ volume,y} = (VAM_{flow\ rate,y} \times time_y) + (CA_{flow\ rate,z} \times time_z)$$

Where,			Units
$VAM_{exhaust\ flow\ rate,y}$	=	Average metered flow rate of the ventilation air exhaust leaving the oxidation unit during period y, corrected if needed for inlet flow gas pressure and temperature ($P_{VAM\ inflow}$ and $T_{VAM\ inflow}$ respectively) per Equation 5.12	scfm
$CA_{flow\ rate,z}$	=	Flow rate[a] of additional cooling air added to VAM destruction system after metering point for $VAM_{flow\ rate}$ (equal to zero, if the project is a closed system in which VAM intake flow is equal to exhaust gas flow)	scfm
$time_z$	=	Subset of time, z, during which the air intake system is operational within the time period y[b]	m

[a] If the project is metering the cooling air intake flow volume, then the average metered data flow rate shall be used. If the flow is not metered, then the maximum capacity of the air intake system shall be used for the flow rate.

[b] If the operational status of the air intake system is not monitored, then the system shall be assumed to be operational at all times (i.e. $time_y = time_z$).

Section 6

2. NMHC Sampling Requirements (CLARIFICATION – March 10, 2014)

Section: 6.1

Context: The protocol requires the non-methane hydrocarbon (NMHC) content of coal mine gas (CMG) to be determined on an annual basis by a full gas analysis using a gas chromatograph for both VAM projects and drainage projects. The protocol goes on to state that these gas samples shall be collected "prior to each destruction device." While the protocol's intent is that the NMHC gas sample be taken upstream of each destruction device, it is not necessary to take multiple NMHC samples of CMG from a single drainage system or ventilation shaft if multiple destruction devices are being used. Rather, the protocol's intent is to require that a separate NMHC sample be taken upstream of the destruction device for each CMG source within the project definition.

Clarification: The last sentence in the relevant paragraph shall be replaced with:

"Separate gas samples shall be collected from each drainage system or ventilation shaft within the project definition by a third-party technician. The sample shall be taken upstream of the destruction device(s)."