

February 14, 2014

Mr. Greg Mayeur  
Manager, Offset Program Implementation, Compliance Obligations  
California Air Resources Board  
1001 "I" Street  
Sacramento, CA 95814

Dear Mr. Mayeur:

On behalf of Mr. Thomas J. Vessels, President of Vessels Coal Gas, I am submitting comments on the California Air Resources Board (ARB), Discussion Draft Mine Methane Capture Protocol of 31 January 2014. (<http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm>).

We appreciate the opportunity to submit comments for this important protocol. This will be the first protocol written entirely by ARB and you and Jessica Bede are to be commended for outstanding efforts during this process. We especially appreciate the opportunities to provide input and comments in the Working Group and during these comment periods.

If you have any questions, please feel free to contact Mr. Vessels at 303-534-4254 or via email at [tvesels@vesselscoalgas.com](mailto:tvesels@vesselscoalgas.com) or me at 650-296-9960 or via email at [btooleoneil@gmail.com](mailto:btooleoneil@gmail.com) .

Again, thank you for opportunity to provide comments.

Sincerely,



Barbara Toole O'Neil  
Principal Consultant

Attachment: Comments

## *Comments on Draft CARB MMC Protocol*

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<b>General Comments</b>			
1	§ 1.1. Purpose (b) and Chapter 6 Monitoring	AB 32 exempts quantification methodologies from the Administrative Procedure Act (APA); <sup>1</sup> however those elements of the protocol are still regulatory. The exemption allows future updates to the quantification methodologies to be made through a public review and Board adoption process but without the need for rulemaking documents.	Why isn't Chapter 6 included as Quantification Methodology? If I understand correctly, if the monitoring requirements were changed they would require full regulatory review. Technology is constantly improving so new monitors are likely to be available every year. Would new monitors be prohibited from use until the regulatory process is completed? For instance infrared cameras measure temperature already and could replace a thermocouple. Would that change require full regulatory review? Or are there standards that could be included for any technology, new or old?
1	§ 1.2 Definitions (a)(1)	The definition includes ' A mine must be classified by the Mine Safety and Health Administration (MSHA) as abandoned or temporarily idle in order to be eligible for an abandoned mine methane recovery activity'	Abandoned and temporarily idle have two different meanings. What if you have registered a project with an active mine, and the mine stops mining. Does the developer have the option to just maintain the active mine protocol. Or do they have to change to the AMM protocol? Moving from one type of protocol to another (active to AMM) would be a hardship. And then would the reverse happen if the mine becomes active and starts mining operations again? Please clarify the language.  For example a mine is considered "idle" with the fan

<sup>1</sup> Health and Safety Code section 38571

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			running, power on, 20 employees on hand (there used to be >300). The mine could maintain this condition for a few years, could decide to either close permanently or resume mining this year or any time in the next several years. It would be helpful to have the option to leave it in "Active" protocol or move it to "abandoned." Switching from AMM to Active before completing that protocol registration would be very difficult and costly..
7	§ 1.2 Definitions (a)(43)	"Sealed," in reference to an abandoned mine, means any entrance into the mine (e.g., portals, ventilation shafts, methane drainage wells) has been sealed. The volume of methane trapped in the mine and the rate at which mine gas is emitted from the mine is dependent on the effectiveness of the sealing. <u>If mine entrances are sealed at any time prior to the project commencement date, the mine is deemed sealed for the purpose of determining baseline emissions</u>	Please provide a reference for the definition. Mines should be sealed in accordance with approved regulations at the time of sealing or if there were no regulations at that time then whatever method of sealing was used.
8	§ 1.2 Definitions (a)(51)	"Uncertainty" means the degree to which data or a data system is deemed to be indefinite or unreliable	To clarify, in this definition, uncertainty can be defined by statistical variation and random errors and does not include inherent randomness, approximation or subjective judgment. Is that the intent of the definition?
8	§ 1.2 Definitions (a)(52)	"Uncertainty Deduction" means an adjustment applied to the emission reductions achieved by an abandoned mine methane recovery activity to account for uncertainty related to the use of emission rate decline curves. The purpose of an uncertainty deduction is to ensure that credited	In this definition, 'uncertainty deduction' is an adjustment factor and 'uncertainty' is misused. The purpose of the factor is to further reduce the total emissions reductions not reduce the uncertainty in the calculations.

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		emission reductions remain conservative.	
18	§ 3.4.1. Legal Requirement Test (a)	Emission reductions achieved by an MMC project must exceed those required by any law, regulation, or legally binding mandate <del>at the time of offset project commencement</del> .	Why was the date deleted and another not provided? Please add clarifying language. This is not clear and would make it very difficult to proceed with a project.
22	§ 3.8. Regulatory Compliance.(a)	An Offset Project Operator or Authorized Project Designee must fulfill all applicable local, regional, and national requirements on environmental impact assessments that apply based on the offset project location.	Please clarify the requirements. For instance, these projects are usually so small that EIAs are not required under US or state laws. However a mining operation usually does require an EIA. The project operator is only responsible for the project even though they operate within a mine boundary some times.
22	§ 3.8. Regulatory Compliance.(c)(d)	<p>(c) The project is in regulatory compliance if the project activities were not subject to enforcement action by a regulatory oversight body during the Reporting Period.</p> <p>(d) Offset projects are not eligible to receive ARB or registry offset credits for GHG reductions or GHG removal enhancements for the entire Reporting Period if the offset project is not in compliance with regulatory requirements directly applicable to the offset project during the Reporting Period.</p>	<p>Please clarify whether this means any enforcement action? There are a range of enforcement. For example the site staff may be using an outdated hard hat, not compliant with the newest MSHA or OSHA requirements. MSHA would typically list the non-compliance in their report and follow-up with the site to ensure compliance. Would that constitute non-compliance and make the project non-eligible?</p> <p>§ 3.8.(d) is too broad. MacDonald's restaurants have fewer violations than large 5 star restaurants due to size. A large mine gets more citations including not having toilet paper in the bath room for example that are not serious. In addition some citations are challenged. If this is in force then a</p>

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			<p>project may be inclined to surrender and give up a defensible positions because it is losing eligibility. I do not believe any significant mining operation makes it through a year without citations. Another example is if you build a new house, the building and code inspector will find something that has to be fixed. Serious non-compliance issues have to be addressed through enforcement actions no doubt. But that is different than the mere receipt of a citation. There must be maintained legal protection for developer and mine against arbitrary and capricious behavior on the part of legal and regulatory and political authorities.</p>
79	§ 5.4. Abandoned Underground Mine Methane Recovery Activities	<p><math>UD</math> = Uncertainty deduction; <math>UD = 0.8</math> if using default hyperbolic <u>emission rate</u> decline curve coefficients and the mine did not utilize a methane drainage system when active, <math>UD = 1</math> if using default hyperbolic <u>emission rate</u> decline curve coefficients and the abandoned mine utilized a methane drainage system when active, <math>UD = 1</math> if using hyperbolic <u>emission rate</u> decline curve coefficients derived from measured data from pre-existing wells or boreholes open to the atmosphere</p>	<p>For mines without historical methane drainage systems the development of this adjustment factor is not provided, especially for <math>UD=0.8</math>. The default hyperbolic emission rate decline curve as developed by Ruby Canyon Engineering uses conservative assumptions to reduce uncertainty about the estimates. The intent is to reduce any overestimate of emissions from the abandoned mine. This additional adjustment factor may be reducing the emissions reductions unnecessarily. Further analysis to confirm the 0.8 value or determine an appropriate adjustment factor would be helpful.</p>
94	§ 6.2. Instrument QA/QC (a)(2)	<p>...field checked by a trained professional for calibration accuracy with the percent drift documented, using either a portable instrument (such as a pitot tube) or manufacturer</p>	<p>For projects that might be inaccessible because of weather, two months plus one day may not be reasonable to achieve the last calibration check. Will there be flexibility by ARB to allow for a</p>

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		<u>specifications, with the last check of the reporting period occurring no more than 24 hours after and up to two months before prior to and one day after</u> the end date of the reporting period; ...	different schedule of checks? The manufacturer's recommendations usually require calibration once per year. Does this mean additional checks or that the one calibration two months before the end of the reporting period will suffice.
	<b>Technical and Language Comments</b>		
7	§ 1.2 Definitions (a)(45)	"Standard Conditions" or "Standard Temperature and Pressure" or "STP" means 60 degrees Fahrenheit and 14.7 pounds per square in absolute (1 atm).	<p>Many engineering and scientific societies have defined STP differently (examples below). Is there a particular reason ARB chose 60F?</p> <p><u>STP - Standard Temperature and Pressure</u> - is defined as air at <math>0^{\circ}\text{C}</math> (<math>273.15\text{ K}</math>, <math>32^{\circ}\text{F}</math>) and <math>1\text{ atm}</math> (<math>101.325\text{ kN/m}^2</math>, <math>101.325\text{ kPa}</math>, <math>14.7\text{ psia}</math>, <math>0\text{ psig}</math>, <math>30\text{ in Hg}</math>, <math>760\text{ torr}</math>)</p> <p><u>NTP - Normal Temperature and Pressure</u> - is defined as air at <math>20^{\circ}\text{C}</math> (<math>293.15\text{ K}</math>, <math>68^{\circ}\text{F}</math>) and <math>1\text{ atm}</math> (<math>101.325\text{ kN/m}^2</math>, <math>101.325\text{ kPa}</math>, <math>14.7\text{ psia}</math>, <math>0\text{ psig}</math>, <math>30\text{ in Hg}</math>, <math>760\text{ torr}</math>)</p> <ul style="list-style-type: none"> <li>• <math>1\text{ lb}_m/\text{ft}^3 = 16.018\text{ kg/m}^3</math></li> <li>• <math>1\text{ kg/m}^3 = 0.0624\text{ lb}_m/\text{ft}^3</math></li> </ul> <p>Note that even if pounds per cubic foot (<math>\text{lb}/\text{ft}^3</math>) is often used as a measure of density in the U.S., pounds are really a measure of force, not mass. Slugs per cubic foot (<math>(\text{slugs}/\text{ft}^3)</math>) are the correct measure of mass. You can divide pounds per cubic foot by 32.2 for a rough value in slugs.</p> <p><a href="http://www.engineeringtoolbox.com/gas-density-d_158.htm">http://www.engineeringtoolbox.com/gas-density-d_158.htm</a></p>
82	Equation 5.42: Methane Destroyed in	$0.000454 = t\text{CH}_4/\text{lb CH}_4$	There is inconsistency between the constants in Eq 5.42 and 5.44.

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85	Equation 5.44: Methane Emissions Derived from the Hyperbolic Emission Rate Decline Curve	$0.454 = tCH4/lb CH4$	There is inconsistency between the constants in Eq 5.42 and 5.44.
84	Equation 5.44: Methane Emissions Derived from the Hyperbolic Emission Rate Decline Curve	$AMMDC = ERAMM \times S \times (1 + b \times D_i \times t) \times RPdays \times 0.0423 \times 0.000454$ <p>Where:</p> <p><math>ER_{AMM}</math> = Average methane emission rate over the life of the mine (m<u>M</u>scf/d)</p> <p><math>S</math> = Default effective degree of sealing; <math>S = 1</math> for venting mines and 0.5 for sealed mines</p> <p><math>b</math> = Dimensionless hyperbolic exponent</p> <p><math>D_i</math> = Initial decline rate (1/day)</p> <p><math>t</math> = Time elapsed from the date of mine closure to midpoint of the reporting period (days)</p>	No references were provided for this equation and default factors. No rationale is provided for the differences in S values. In actual projects the S factor has been determined from field data. For instance VCS project 648 Tower Abandoned Mine Methane Utilization Project, the S factor was calculated based on actual mine information. The factor was determined to be 0.9 based on the type of sealing done by the mining company during closure. Is there a possibility to allow for determination of the S factor using actual data?
122	§ 6.7. Abandoned Underground Mine Methane Recovery Activities.(f)	open to the atmosphere must adhere to adhere to the following	Repeated words:
135	§ 7.1. Listing Requirements (c)	Abandoned mine methane recovery activities that are comprised of multiple mines as allowed for by section 2.4 must provide the items marked with an asterisk (*) for each involved mine.	Please clarify that the required information is listed in § 7.1(a) and (b) above.
137	§ 7.2. Offset Project Data Report (c)	Abandoned mine methane recovery activities that are comprised of multiple mines as allowed for by section 2.4 must provide the items marked with an	Please clarify that the required information is listed in § 7.2(a) and (b) above

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		asterisk (*) for each involved mine.	
141	Table A.2, Emissions & Generation Resource Integrated Database (eGRID) Table	The Table A.2 lists 1,280.86 for AKGD, which is not found in the EPA's most current data.	No reference is provided. Please check all entries in the table. Upon checking within the EPA websites the following discrepancy was identified: EPA 2005 data lists <b>AKGD?</b> as 1,232.36 lb CO2/MWh ( <a href="http://cfpub.epa.gov/egridweb/ghg.cfm">http://cfpub.epa.gov/egridweb/ghg.cfm</a> ) and EPA 2009 data lists AKGD as 1,283.82 lb CO2/MWh ( <a href="http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html">http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html</a> ).
142	Table B.1 Default Methane Destruction Efficiencies by Destruction Device		No reference is provided. In addition, the devices are not well defined. For instance the destruction efficiency for a 'boiler' is listed as 0.98 without defining the size or burner arrangement. A utility boiler would have must higher destruction efficiency..