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Minutes for Technical Review of Instrument Gas to Instrument Air Conversion Protocol

Date: November 3rd, 2008.

Name	Organization	Title/ Area of Expertise	
Attendees			
Vince Elenko	EnCana Corporation	Energy Analyst	
Omar Hurtado	EnCana Corporation	Engineer-Contract Advisor	
Matt Bonko	EnCana Corporation	Process Engineer	
Olivera Blagojevic	EnCana Corporation	EnCana Corporation	
Lee Wagner	EnCana Corporation	Instrumentation Technologist-Coordinator Energy Efficiency	
Stephanie Trottier	Alberta Research Council (ARC)	Research Scientist, Carbon and Energy Management	
Jeff Seaborne	Spartan Controls	Control Valve Specialist	
Alex de Visscher	University of Calgary-Dept. of Chemical and Petroleum Engineering	Canada Research Chair in Air Quality and Pollution Control Engineering	
Milos Krnjaja	BP Canada	Energy Efficiency Specialist	
Amanda Stuparyk	Climate Change Central	Offsets Coordinator	
Invitees			
Gerald Palanca	Petro-Canada	Energy Analyst	
Jamie Callender	Blue Source Canada	Engineering Project Analyst	
Bill Baxter	EnCana Corporation	Exploration Evaluation Advisor	

1. Introduction: Vince Elenko, EnCana Corporation

2. Why we are here, Alberta Policy Context: Amanda Stuparyk, Climate Change Central

- Alberta Regulatory Framework
- Offsets – Market in AB
- Projects start after Jan 1, 2002
- Real, demonstrable, quantifiable
- Not regulated by law
- Clearly defined ownership (verifier will seek clear ownership)
- Generated in Alberta - investment / project undertaken in Alberta
- Not double counted (only serialize on one system)
- Verified by 3rd party (chartered account/certified engineer)
- Ex-post Verification
- Protocols based on the ISO 14064 Part 2 Standard

Principles to Guide Protocol Decisions/Development - Climate Change Central

- Environmental Integrity
- Usability/Practicability
- Adapting Precedents
- Life Cycle Analysis

3. Introduction to Protocol Omar Hurtado, EnCana Corporation

- Overview of the Protocol
- Opportunity for generating carbon offsets with this protocol arises from the direct and indirect reduction of greenhouse gas emissions resulting from the conversion of natural gas pneumatic to instrument air for control

instruments. Instrument air will be provided by compressed air. Therefore, a complete air compressor system will be needed for this conversion. Eliminate use of methane.

- Approach to quantification - Metered data
- Layout of protocol, process flow diagrams; SS diagrams.

4. Review of Protocol: Followed the questions of the Technical and Policy Issue Summary given to reviewers

• Are the project and methodology scope and definition clear? (p.1)

Metered approach, used in industry, conversion of the metered air to natural gas equivalence

Protocol Scope and Description

• Are the project and baseline configurations sufficiently broad as to capture the full scope of possible air conversion projects? (p.6-7.)

No comment

• Is the protocol applicability adequate for this protocol? Gas equivalency? (p.3)

Applicability criteria:

Applicability of gas equivalency in Appendix A? –

Vince: Q. Omar, what assumptions did you make to develop these equations to make them conservative?

Omar: A. Developed the gas equivalency using Instrumentation Society of America Standard, two equations for gas and air developed in parallel based on flow coefficient. Flow coefficient measures energy loss in pneumatic devices and are assumed to be equal for both gas and air. Assumptions are that the orifice to diameter ratio is equal to 1, and that choked conditions occur as illustrated in Appendix A. Mentioned the graph in Appendix A and showed that the curve under these conditions allows the gas to be underestimated by ~3% so conservative approach is achieved.

Omar walk through the steps and calculations to explain and describe how equations were developed.

Alex: Comment. Yes, based on these assumptions I have checked your equations and calculations and confirmed your results that you would be underestimating your emissions by about 3 percent.

No further comments from reviewers.

Identification of SSs-Lifecycle figures – Soliciting comments by due date

- Project Scenario

- Baseline Scenario

- Selection of Relevant SSRs (no comments received)

Project and Baseline activities relatively the same. Project condition, need to compress the air and therefore added the Electricity usage.

Stephanie: Q. In Baseline Condition Diagram – vented and flared gas but in written Protocol Approach, flared gas is not listed, need to add to written description for baseline conditions

Omar: A. okay will do that

Alex: Q. Are you considering gas mixtures separately; i.e. in the pure methane case

Omar: A. Yes, will discuss a little later but was being consistent.

Protocol Applicability 2:

Amanda: Comment: Questioning usage of the Directive 60, i.e. inspection and correction for leakage (no discount factor) and a discount factor if no leakage assessments are conducted on a yearly basis for dealing with leakage issues; as opposed to mandating leakage assessments as part of the protocol and project, not very clear the 2 specific project conditions: new installation of air system vs. already installed

Omar and Lee: This directive is not mandatory and provides information for implementation of an inspection program for leaks in a fuel gas system; general and subject to interpretation and definitions of size of facilities; does not provide information for smaller facilities or systems; this is an inspection program that can be implemented prior to converting to an air system – it is more difficult to conduct leakage assessment on air conversion systems - if project ongoing might have to use a different system

Comment: Clarify project requirements for new installation versus already installed air conversion systems

Alex: Q. where does 2% per year come from?

Omar: A. EPA Natural Gas Star program – did not find leak rates, but document commonly used, has certain percentages, Omar used criteria and engineering to develop the number

Alex: Comment. Ensure list references

Omar: reference page 40 – was 25 over 10 years (2.5%) so made assumption that 2% is conservative –

But can increase to 2.5% to fall in with program calculations – No Objection

• Is metering the air for ONE month to establish baseline emissions an adequate amount of time to represent the steady state of operations? (p.3)

Creation of a static baseline and project condition through one month metering.

Lee - (Agreed) One month is acceptable and representative of system

Milos - (Agreed) Like the one month, but question on allowing more flexibility for differences in facilities, add another flexibility mechanism

Omar: A. Agreed for another flexibility mechanism

Insert Flexibility Mechanism for quantification of baseline by using metering from a “representative month (one month)” if justification is provided for usage of specific month of data

Maximum cap for the duration of project life (8 years)

No specific comments

• **Are the flexibility mechanisms acceptable? (p.3-4)**

- Flexibility mechanisms

Flexibility Mechanism #1:

Amanda: Clarify the Electricity Displacement Factor (vs. emission factor as listed) from the Offset Project Guidance document from AENV, is currently 0.65 CO₂e/MwH and will be reviewed every 3 years

• **Is the discounting approach for unmetered projects to claim retroactive credits acceptable? (p.43)**

Alex: Q. Equation page 43 top – hypothetical situation - wondering if had small instrument to begin with and then added many instruments later one – might lose a lot of accuracy – approach same but only count instrument added later (will think about equation and send suggestions of how to deal with) could multiply metered number by shorter term instead of working with discount system (only for addition of many instruments at a later period) ??

Not necessarily relevant in practice – but will send email by deadline

• **Is the approach to distinguish between vented and flared emissions acceptable? (p.43)**

No Comments

• **Is the approach for leaks acceptable? (p. 40)**

No Comments

• **Is the approach to discount devices using vendor’s bleed rates a good and conservative approach? (p.46)**

• **What vent rates should we use? Take into account that there are ranges of values as per the appendix.**

Milos: Q. Per auditing criteria – baseline - what are they looking for, for verification

Omar/Lee: A. Need metered (air) amount and equipment listing, data quality/control procedures etc. listed in protocol

Vince: Comment. This is how we intend to simplify the auditing process, which has not been confirmed with auditor.

Jeff: Q. Listing in Appendix B1 – list is not complete, more instruments added in future and thought of – how will the list be updated? There may be some bias in some of the listings.

All: A. As long as the project developer has a listing of instrument with specifications, can be used for project – the listing is a general representation to what information is required for project

Amanda: Can use the premise behind the Appendix and insert them into the document itself (as opposed to the whole list), provide information on Best Practice/Best Management, subject to verification, just mention that manufactures should have this kind of data

• **Are the step by step procedures in the APPENDIX section easy to follow?**

Stephanie: Looks descriptive and clear

Send any additional comments.

Quantification Approaches & Quantification Procedures Table

• **Is the overall approach of the protocol sound and acceptable?**

Comment: Seem conservative and manageable

Stephanie: Q. on Sources listed – P9 Fuel Extraction and Processing - where does this come from? Unclear of where numbers/emission factors come from? Should be referenced if they came from a source

Omar: A. usage of fossil fuels to power air conversion system subject to quantification – use Emission Factors from Environment Canada

Include in references where the references come from (Environment Canada) National Inventory data and include subject to most recent data

Alex: Q. from earlier – p39 Equation 8 – clarify equation, units don’t match – where density of methane come from?

Omar: A. q air = volumetric flow rate (mass or volume basis) - will clarify

• **Is the contingency table adequate? (p.30-34)**

2.5.2 – Table 1.5: Contingency Data Measures / Appendices - Soliciting comments

Stephanie: Q. Re: usage of contingent mechanisms, isn’t it only temporary?

Amanda: A. Contingent data approach is not considered an easy way out; any usage of the mechanisms must be justified and proven by independent verification. It is provided to allow for a generalized mechanism in case actual measurement for some variables is not possible.

5. Main Comments/Discussion Points from Review of Protocol

No comments, but reviewers asked to read when they have time and submit feedback to Omar

6. Next Steps

Vince: Comment. Based on the review today, we will address the concerns and modify the protocol. Deadline for written comments should be sent by Monday November 10th afternoon. Meeting minutes and summary of issues and resolutions will be sent to the group.