Radiochemistry Expert Committee (REC) Meeting Summary

August 28, 2013

1 Roll Call and Minutes:

Bob Shannon, Chair, called the meeting to order at 1pm EST. Attendance is recorded in Attachment A – there were 6 members present. Associate members present: Terry Romanko, Bill Ray and Ariana Mankerian.

The minutes from the San Antonio meeting will be distributed by e-mail for review. They will be approved at the next meeting.

Associate members need to let Bob and Ilona know they own a copy of ISO 17025 so they can be included in distributions of the draft working standard updates.

2. Standard

V1M6 - Section 1.7.1 (Tom):

Tom sent out an update with corrected typos to this document earlier today by e-mail (8-28-13). This document was displayed on Webex to share with the committee. He asked if people could e-mail him with any needed changes.

- He changed the title of the section: Insturment Set-up, Calibration, Performance Checks, and Background Measurements.
- The second paragraph now includes the term "requirements". The committee members agreed with this change.
- In a-2): Vas thought the language did work well, but after discussion there were no concerns.
- b) 1) i-vii): Larry commented that more information may be needed in this section. Add something along the lines of: If any of the conditions listed below occur ...
- b) 2) Fine
- b) 3) Fine
- b) 4) Fine
- b) 5) i-iii Larry is OK with the concept of (iii), but would prefer some different language. Bob noted some commercial software packages estimate a nominal uncertainty across the board without regard to whether it is reasonable or reflect real conditions. This is not consistent with requirements for estimating uncertainty. The committee will work on tge language. Once it feels comfortable with it, it will be updated in the base document.
 - b) 6) Fine
- b) 7) Fine

- c) This section was added. Tom reviewed the update. Two options were added for calibration verification (1)i and 1)ii).
- c)3 The example should read: the relative combined uncertainty <u>or</u> the prepared standard recovery.
- d) Instrument Performance Checks:
 - Larry noted that the second paragraph should read: "... continuing validity of initial calibrations". Also no need for the commas in the sentence.
 - O Bob pointed out that his section shows the instrument has remained stable after initial calibration. Section (c) covers calibration verification. He emphasized what is written in the first paragraph under (d). Vas does not agree this has anything to do with traceability. Others are in agreement that running a performance check allows labs to demonstrate the traceability of the initial calibration and show the instrument is still in control when samples are counted. Keith noted that this sample is not really part of the traceability chain typically thought of. It doesn't establish traceability, but it is a necessary aspect of it. Bob made adjustments to the language:

Instrument performance checks measure and track the stability of key detector response related parameters over time. The continuing validity of initial calibrations is established by demonstrating the stability of the detection system from the point of initial calibration to the time of the sample measurement.

- d (1)(v): Committee members felt it may not be necessary to state, but they don't have a problem with keeping it in. Bob does not think this is obvious to all labs and would prefer to keep it in. It will be left in.
- d (2) i): There was substantial discussion regarding whether daily should be changed to "daily to semiweekly". Discussion included the following points:
 - Several possible changes would include: day of use, semiweekly upon use, weekly.
 - o The current standard states daily.
 - We should maintain daily to bolster confidence in the quality of data produced.
 - The wording is from the ANSI standard. Given the stability of solid state detectors, decreased frequency would be in tune with ANSI N42.12 and best science principles.
 - o Most commercial labs (most environmental labs for that matter) do performance checks day of use and are not likely to change due to contractual obligations.
 - Why is monthly/weekly acceptable for an alpha spectrometer but not a gamma spectrometer?
 - The proposed wording would not prevent anybody from doing performance checks more frequently.

A decision on the language to use after we work our way through this section.

- d(2)(iii)(a): Bob proposes adding a specific requirement to monitor and trend crosstalk in the instrument performance checks concurrent with daily performance checks.

 Arguments for and against that are summarized here:
 - o This is a new requirement and is onerous to labs.
 - o Since crosstalk is a correction-class parameter and not a principal-class parameter, it would be sufficient to verify it with a QC sample (Th/Sr) and there is no

- compelling or technical reason to verify it in day of use checks on gas proportional counters.
- The LCS will detect a change in the crosstalk therefore we do not need to check this during performance checks.
- An LCS cannot reliably detect such changes since it contains both alpha and beta activity and the crosstalk effect would be overwhelmed by major channel activity in both minor channels.
- o Some labs use a mixed alpha/beta (e.g., Pu/Sr) source for an efficiency check in a single measurement. Since i) the alpha-to-beta crosstalk is a few % for Pu (but not 20-35%), ii) beta-to-alpha crosstalk is ~0.3%, and ii) the beta counting rate is 4-5 times that of alpha, we are able to check for efficiencies in a single measurement. Thus we cleverly extract two efficiency parameters from a single measurement. The proposal is to perform two measurements and track and trend four parameters. This is a top down QC view. The is no problem with if other labs checking crosstalk but it should not be a requirement.
- The marginal cost is minimal since labs do not need to perform additional counts (they already count alpha and beta sources) they just need to evaluate/trend the minor channel data
- Laboratories routinely run methods (i.e., alpha/beta) where there is signficant
 activity in the minor channel that will spill into the major channel. A change in
 the response of the instrument (due to malfunction or blunder such as accidentally
 changing ROI file) it will impact results and will never be detected.
- As described (and in alpha beta methods) alpha-to-beta crosstalk and beta-to-alpha crosstalk (or amplification factor, spill-down or misclassification) are technically inaccurate terms unless they are measuring a pure alpha emitter without lower energy secondary emissions that show up in the beta channel. True alpha to beta crosstalk, such as could be measured using Po-210, is much lower than the 20-35% values observed with Pu-239, Am-241, or Th-230.
- o If we require crosstalk checks for GPC, then we need to require them for liquid scintillation. This opens a Pandora box of difficulties because i) there are very many protocols with different crosstalks, and ii) because liquid scintillation samples are chemically unstable and have to be prepared frequently.
- Similarly, this raises a number of questions since this concern is not restricted to crosstalk but applies to checks for each configuration used (i.e., voltage / discriminator why wouldn't we require performance checks at the alpha voltage? The question is whether this should be a requirement? People need more time to think about this. The committee will come back to it once we are finished working through this section.
- d (2): There was discussion about whether a Na(Tl)I detector is a gamma ray spectrometry system or a scintillation detector? If it is a scintillation detector, what about energy and shape calibration checks? Should we say solid state gamma spectrometers? This section needs to be adjusted in the base standard.

d (3): Fine d (4): Fine

4. Action Items

A summary of action items can be found in Attachment B.

5. Next Meeting and Close

The next meeting is scheduled for Wednesday, September 25th at 1pm EST.

A summary of action items and backburner/reminder items can be found in Attachment B and C.

The meeting was adjourned and ended at 3:03 pm EST.

Attachment A Participants

Radiochemistry Expert Committee

Manahana	A CCU - C -	'	Contact Information		
Members	Affiliation		Phone	Email	
Bob Shannon (Chair) Present	QRS, LLC Grand Marais, MN	Other	218-387-1100	BobShannon@boreal.org	
Tom Semkow (Vice Chair) Present	Wadsworth Center, NY State DOH Albany, NY	AB	518-474-6071	tms15@health.state.ny.us	
Sreenivas (Vas) Komanduri	State of NJ Department of Environmental Protection	AB	609-984-0855	Sreenivas.Komanduri@dep. state.nj.us	
Marty Johnson Absent	Trenton, NJ US Army Aviation and Missile Command Nuclear Counting Redstone Arsenal, AL	Lab	865-712-0275	Mjohnson@tSC-tn.com	
Dave Fauth Absent	Consultant Aiken, SC	Other	803-649-5268	dj1fauth@bellsouth.net	
Carolyn Wong Absent	Lawrence Livermore National Laboratory Livermore, CA	Lab	925-422-0398	wong65@llnl.gov	
Keith McCroan Present	US EPA ORIA NAREL, Montgomery AL	Lab	334-270-3418	mccroan.keith@epa.gov	
Todd Hardt Present	Pro2Serve, Inc. Oak Ridge, TN	Other	865-241-6780	HardtTL@oro.doe.gov	
Nile Ludtke Absent	Dade-Moeller and Associates Oak Ridge, TN	Other	865-481-6050	nile.luedtke@moellerinc.co m	
Larry Penfold Present	Test America Laboratories, Inc; Arvada, CO	Lab	303-736-0119	larry.penfold@testamericai nc.com	
Richard Sheibley Absent	Sheibley Consulting, LLC	Other (Former AB)	651-485-1875	RHSHEIB111@yahoo.com	
Ilona Taunton (Program Administrator) Present	The NELAC Institute	n/a	828-712-9242	Ilona.taunton@nelac- institute.org	

Attachment B

Action Items - REC

	Action Item	Who	Target Completion	Actual Completion
3	Richard will prepare language update for 1.5.3 and submit to committee.	Richard	2-26-13	
10	Prepare definition for "activity" based on today's conversation.	Bob	5/22/13	
11	Complete and distribute language proposed for 1.7.1.	Bob Tom Vas	5/22/13 To be finished for 6/26/13 meeting. Next Meeting	In Progress
20	Bob will update Standard/Base Document. All should review and comment to Bob.	Bob All	8/28/13	
21	Work on presentation of blanks in the module.	Carolyn Marty	8/28/13	
22	Update Base Document and distribute.	Bob	9/24/13	

Attachment C – Back Burner / Reminders

	Item	Meeting Reference	Comments
1	Update charter in October 2013	n/a	
2	Issue of noting modifications to methods.	1/16/13	
3	Look at batching when QC is looked at.	1/16/13	
4	Look at need to reference year for any standard references— which version is being referenced. Is this necessary?	5/22/13	