

**Radiochemistry Expert Committee (REC)  
Meeting Summary**

**October 16, 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 8 members present. Associate members present: Terry Romanko and Ariana Mankerian.

The minutes from the San Antonio meeting were rby e-mail. Dave made a motion to approve the minutes. The motion was seconded by Tom and it was approved (Dave (10/2), Vas (10/3), Tom (10/4), Larry (10/7), Todd (10/7), Carolyn (10/7), Bob (10/7), Marty (10/7), Nile (10/7).

The September 25, 2013 minutes were reviewed. Marty motioned to accept the minutes. The motion was seconded by Tom and unanimously approved (8 for,0 abstentions / negatives).

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. Webinar – Notification of Intent to Revise Standard

The committee is planning a 1 hour Webinar as a means to reach out to interest groups (particularly ABs) before the Radiochemistry Working Draft Standard gets too far along.

The committee decided on November 14, 2013 at 1pm EST for the Webinar.

Bob and Tom are taking a lead to prepare the PPT for this webinar. Bob will send Ilona an outline.

3. Standard

V1M6 - Section 1.7.1 (Tom/Bob/Vas):

Committee input was looked for on the 5 concerns Tom emailed after the last meeting. He only received 3 comments (Attachment D).

1. - **allowing alternate performance checks for gamma spectrometry (semiweekly).**

The group decided to use twice weekly.

**2. - adding new requirement of checking crosstalk per day of use on gas proportional detectors.**

The group decided not add this requirement.

**3. - allowing a composite background.**

Keith's statement was included.

**4. - frequency of subtractive background in gas proportional counting.**

No solution could be found.

**5. - should short-term background check be required?**

No solution could be found.

The group concluded that sections 1.7.1 e) and f) need to be rewritten to emphasize that either subtraction background or short term background check has to be sensitive and frequent enough to identify contaminations or background issues. Tom will work on this by the November meeting. People are encouraged to send more feedback on any of the issues above.

V1M6 - Section 1.7.2 (Marty/Carolyn) – Quality Controls for Radiochemistry:

There was a lot of work done to this section, so they decided not to leave the changes feature on. The group will review the new section and Bob will document changes and comments into the new document.

The following sentence was added to start the third paragraph: The laboratory shall document the frequency for quality control samples. In the last sentence, change “the” to “this”.

There was discussion about making it clear whether a lab can go below what TNI requires when a program requires something different. Larry noted that a lab would follow TNI and if they are following a program that is different, the lab should state it followed the program requirements and not TNI.

In the fourth paragraph the last sentence was removed and the following was added to start the paragraph: The laboratory shall document the acceptance criteria for batch QC sample, sample-specific quality controls, and for evaluation of long-term trends, and the method used to establish these criteria.

In the fifth paragraph, the following text was removed: The laboratory shall initiate batch quality control samples as early in the processing of samples as practicable. Tom, Vas and Terry felt this sentence was not necessary and there was agreement. It is redundant or not in

the right place. The sentence remaining emphasizes that the QC is run the same as samples. Terry thought the sentence was applicable to tracers or carriers.

In the sixth paragraph, Tom suggested changing the wording from “deviate significantly” to “does not meet acceptance criteria”. Using the other language would require more details in the paragraph. This paragraph needs a little more work or it can be combined with another paragraph. There has to be criteria for the analyst to determine what is passing and what is not. This should be determined by the lab. Tom pointed to the paragraph below and Carolyn looked at the paragraph above and they thought the paragraphs provide for the concerns expressed. Carolyn and Marty will work on changes to the language for the next meeting.

In the seventh paragraph, the results should just be reported with the appropriate data qualifiers and remove the language about establishing whether the method is not applicable to a sample.

### **1.7.2.1 Negative Control – Method Performance – Method Blank**

Some general grammatical corrections were made.

Reagents blanks were addressed in another section.

a), b) c) – OK

d) Change “similar” volume to “same volume”. Add “ ... method blank for each preparation batch in the same ...”.

e) f) g) The text was split into e), f) and g). Tom suggested using the term “interference” – the result of an average of the method blanks can be considered when determining if there is interference. It was also highlighted that there is a difference between the method and reagent blank. Method blanks are being discussed in this section. Reagents blanks are not method QC. Note that the word “may” is used regarding a correction for a long term average of method blank results.

h) Change paragraph to: The size of the method blank aliquot used for calculation of the blank result shall be similar to that of routine samples for analyses.

It was asked if samples come in and 1 has less than a liter of volume, would that one sample need to be run in its own batch? The response was that that could be done, or the volume might be able to be made up with DI water. All the samples in a gamma batch have to have the same geometry. A calculation correction would need to be done if DI water were added. It was pointed out that if this is the only sample received, sample aliquots for other tests would need to be taken before the sample is diluted.

You can't put a complete list of variances in this section and the committee needs to determine if it would be appropriate to give a variance to a gamma batch. The committee determined the following language for h) was acceptable: The size of the method blank aliquot used for calculation of the blank result shall be similar to that of routine samples for

analyses. If the size of samples in a preparation batch vary (e.g., due to restrictions on the activity or mass residue that may be processed), the laboratory shall use acceptance criteria for samples that compensate for differing aliquot sizes (e.g., z-score per MARLAP 18.4.1).

i) Comments made include:

- Is this possibly something that comes out of identifying bias/contamination?
- Add definitions for absolute bias and relative bias?
- Add definition for CSU.
- Need to make sure the language is not getting too prescriptive.
- Consider this might be the place to identify excessively negative blanks.

In i) i) – Change “exceeds” to “is less than”. Confirm that logic is correct in this section with this change.

i) – Change “reprocess data” to “evaluate data against the following acceptance criteria.”.

### **1.7.2.2 – Positive Control – Method Performance - LCS**

Changes were made to paragraphs, so lettering needed to be changed. The references below are for the corrected lettering.

a) OK

b) The term “shall” added. The following additional language was added: The laboratory shall prepare the method blank using surrogate material of the same quality system matrix as samples in the batch. The material used for the method blank shall be free of analytes of interest at levels that will interfere with the evaluation of the results. If an analyte-free surrogate matrix is not available, the laboratory shall process a substitute matrix that simulates the sample matrix.

c) The language from above can be taken.

General note: Ariana noted that the order of items listed is different from that in 1.7.2.1. This will be corrected.

d) The following changes were made:

The laboratory shall prepare the LCS with a similar aliquot size to that of the routine samples for analyses. The size of the LCS aliquot used for calculation of the LCS result shall be similar to that of routine samples for analyses. If the size of samples in a preparation batch vary (e.g., due to restrictions on the activity or mass residue that may be processed), the laboratory shall use acceptance criteria for samples that compensate for differing aliquot sizes (e.g., z-score per MARLAP 18.4.1).

e) The following changes were made:

The laboratory shall spike the LCS at a level such that the CSU of the analytical result is less than one-third of the acceptance criteria. For example if the acceptance criterion is +/- 30%, the laboratory shall spike the LCS at a level such that the CSU of the analytical result is less than 10%. When practical, the LCS should be spiked at a level comparable to that of routine samples if the activities are expected to exceed ten (10) times the Decision Level (Critical Value).

f) The reference needs to be confirmed. Note "LCS" instead of "Laboratory Control Sample".

g) The following changes were made to the standard. Note the addition of "spectrometry", "analyte/isotope" and a few grammatical updates.

Where a radiochemical method, other than gamma-ray spectrometry, has more than one reportable analyte/isotope (e.g. plutonium,  $^{238}\text{Pu}$  and  $^{239}\text{Pu}$ , using alpha-particle spectrometry), only one of the analytes/isotopes needs to be included in the LCS at the indicated activity level. However, where more than one analyte is detectable, at a levels described in e) above, each shall be assessed against the specified acceptance criteria.

There was some discussion as to whether to keep the examples. This discussion will continue at the next meeting.

Points h) and i) will be reviewed at the November meeting. A discussion was started about the rationale for 2 or 3 energy ranges for gamma LCS (Section 1.7.2.2.g or h). TCarolyn and Marty were requested to make the changes that have been discussed and send an update before the next meeting.

#### 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, November 20, 2013 at 1pm EST. This is a change due to the holidays.

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**

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

Attachment B  
**Action Items – REC**

	<b>Action Item</b>	<b>Who</b>	<b>Target Completion</b>	<b>Actual Completion</b>
3	Richard will prepare language update for 1.5.3 and submit to committee.	Richard	2-26-13	8/6/2013
10	Prepare definition for “activity” based on today’s conversation.	Bob	5/22/13	8/6/2013
11	Complete and distribute language proposed for 1.7.1.	Bob Tom Vas	Next Meeting	In Progress
20	Bob will update Standard/Base Document. All should review and comment to Bob.	Bob All	8/28/13	Complete
21	Work on presentation of blanks in the module.	Carolyn Marty	8/28/13	
22	Update Base Document and distribute.	Bob	9/24/13	Complete
23	Propose final language to define Test Source.	Bob, Tom, Vas	11/19/13	
24	Capture background averaging of counts discussion and attempt to add to standard. Send draft language before next meeting.	Keith	11/19/13	
25	Give thought to discussion on section e) and see if language can be added to give the labs more flexibility. Bob will send more direction.	Bob Keith	10/15/13	Complete
26	Prepare a summary of any open issues in Section 1.7.1 and distribute to the committee for comments by e-mail between meetings.	Tom All	10/15/13	Complete
27	Update section 1.7.2 as per comments from 10/16/13 meeting.	Carolyn Marty	11/19/13	
28	Update 1.7.1 e) and f) before the next meeting.	Tom	11/19/13	

**Attachment C – Back Burner / Reminders**

	<b>Item</b>	<b>Meeting Reference</b>	<b>Comments</b>
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	

### Section 1.7.1 Questionnaire

#### **- allowing alternate performance checks for gamma spectrometry (semiweekly).**

For: it satisfies ANSI and recognizes stability of semiconductor detectors. It does not replace "daily" but merely adds a new alternative method. Some labs do energy calibration biweekly, not merely verifications. This method ensures continuous validity of energy calibration within 0.1-0.2 keV. Even if there is a small drift, say 2 channels per year, it is not important, because the energy calibration is always on target within 3 to 4 days between calibrations.

Against: many labs including commercial labs use per day checks which gives them assurance of stability to which they are used or obliged by contract.

**RTS – Support going to biweekly requirement – but remove daily requirement – it is redundant. Also – since “biweekly” can (and will) be interpreted ambiguously as twice weekly and once every two weeks, suggest saying “twice weekly when used”. We must realize, that saying twice weekly may allow a lab to go for up to ten days without performing a check. I don’t know that this is a problem beyond that that labs and auditors may not have a tacit understanding of what is twice weekly.**

**Vas: Changing the frequency for calibration verification (or performance check) for gamma spectrometer from daily (day of use) to biweekly is not desirable. First, a calibration check can be done in 15 minutes, and not considered as a burden on the labs. Second, it assures that you are starting out with a clean equipment. Third, it has been an industry standard for ages, why change now? Therefore, I favor retaining the daily performance check (on the day of use basis) as it currently exists.**

**Tom: allow alternate performance check schemes (semiweekly).**

#### **- adding new requirement of checking crosstalk per day of use on gas proportional detectors.**

For: many labs are using individual alpha and beta sources for efficiency performance check. Therefore it is possible to measure and check crosstalks at the same time.

Against: caution is advised against adding a new requirement because it may lead to loss of certification, unless it is essential. Since crosstalk is a correction parameter and not a principal parameter it is not essential monitoring it per day of use.

**RTS – I support requiring checks of the crosstalk performance for instruments on which the lab performs a method that requires crosstalk correction. Please realize that the distinction of correction parameter applies to efficiency and backgrounds as well. We control these. This is somewhere we should perhaps work longer term with the office of water to develop guidance on how to accommodate (or ignore) requirements in gross alpha beta methods for crosstalk correction.**

**Vas: This is a brand new issue that came up for discussion. Cross talk makes little sense at the daily performance check level. If at all, it makes sense at the initial calibration stage or method**

performance level. As someone has already pointed out, LCS failures could be useful and possibly indicate changes in cross talk between alpha and beta channels. I agree on that. As far as I can remember, cross talk has not been a major issue of contention in the past. However, there could be specific instances that I am unaware of where cross talk became a major issue. If anybody has specific information or concern, we can revisit the issue.

Tom: do not require performance check on crosstalk corrections.

**- allowing a composite background.**

For: allows for measuring dispersion and nonstationarity.

Against: new technique not widely practiced.

**RTS – Yes. But only if we include a requirement that the lab monitor dispersion and non-stationarity and reflect excess variance, where identified, in estimates of uncertainty.**

Vas: This issue is contentious. Not all laboratories resort to compositing background. I do not favor such approach because if background compositing is allowed, why not for sample count compositing?

Tom: allow for background compositing.

**- frequency of subtractive background in gas proportional counting.**

Weekly: more frequent background evaluation. However may not be long enough due to lack of time on detector.

or

Monthly: Allows long counting time but may not pick up contamination quickly enough.

**RTS – Would support monthly or quarterly. As long as this requirement is coordinated with background checks, subtraction backgrounds must be done but they can be done at any frequency. The real issue is not the subtraction count frequency but rather ensuring their ongoing integrity. In other words, we need to ensure that we have a check that is sensitive enough to detect issues with the background that could compromise results. We also need to do this so that compromised data are promptly identified and addressed – this cannot be an indeterminate amount of time. For example, Carolyn’s lab frequency for subtraction counts of two year is in fact adequate and effective because their checks will identify in real time those cases that would compromise data.**

Vas: Long background counting for GPC on a monthly basis is acceptable. Weekly will be too burdensome on the labs.

Tom: monthly.

**- should short-term background check be required?**

Yes: caution is advised against adding a new requirement because it may lead to loss of certification, unless it is essential.

No: short-term background check is useful, however there are other "required backgrounds" such as subtraction background and method blank that can reveal contamination or malfunction as well.

Please, kindly think about it and communicate your thoughts by email before next teleconference.

**RTS – Not sure I understand your yes. This is not necessarily a new requirement but a “bye” to get out of doing both a subtraction count and a check count which are close to universal. I strongly support allowing subtraction backgrounds to be evaluated in lieu of background checks. This is requirement that needs to be frequent and adequately restrictive. The check count needs to be coordinated with sample counts to ensure that contamination or other sources of bias that are statistically significant to sample counts are detected in a timely manner. There would be no need for short term checks if the BS count fulfilled this purpose.**

Vas: Short term backgrounds are required to assure that you are starting out with a clean equipment. It doesn't take too much time, and one less things to answer if the results do not look good.

Tom: do not require short term background.