Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) Workgroup Meeting Minutes

Tuesday, April 2, 2013

Attendees (Day 1):

- Kathryn Snead (EPA)
- Colleen Petullo (EPA) by phone
- Nidal Azzam (EPA)
- Derek Favret (DOE)
- Alexander Williams (DOE)
- Dave Alberth (DoD – Army) by phone
- MAJ Alan Hale (DoD – Air Force) by phone
- Mark Fuhrmann (NRC)
- Duane Schmidt (NRC)
- John Clements (NRC)
- Boby Abu-Eid (NRC) by phone

Members of the Public (Day 1):

- Jana Dawson (Techlaw)
- Robert Meck (Science and Technology Systems, LLC)
- David Stuenkel (Trinity Engineering Associates, Inc. – EPA Support Contractor)
- Robert Thielke (Trinity Engineering Associates, Inc. – EPA Support Contractor)

DISCUSSION:

K. Snead welcomed the Workgroup members and members of the public. The agenda for the three day meeting was discussed. After agency updates, the Workgroup will discuss the revised Chapters 1-8 of MARSSIM and make edits to Chapters 1-2 on Monday, April 2, 2013. On day 2, the following potential discussion topics will be discussed by the Workgroup:

- Measurement quantifiability,
- Measurement uncertainty, and
- Retrospective power analysis (Under Scenario B the retrospective power analysis will be strongly recommended to ensure that the survey quality is evaluated).

The agency updates are as follows:

<u>EPA</u>

N. Azzam stated that the EPA Regional Offices are undertaking an effort to standardize methods for sampling and field activities in all regions. He also announced that he has moved to the RCRA Program in Region II.

K. Snead discussed that the sequestration has resulted in furlough days for EPA employees and that on days that employees are furloughed they cannot work on Agency activities. K. Snead announced that all figure revisions and new figures in MARSSIM will be provided by in-house EPA staff. K. Snead also indicated that the Office of Management and Budget (OMB) has been holding onto documents, including the proposed Federal Guidance Report (FGR) No. 14, that provides federal facilities that use diagnostic and interventional x-ray equipment with recommendations for keeping patient doses as low as reasonably achievable without compromising the quality of patient care. It is an update of FGR No. 9, which was issued in 1976. FGR 14 has recently been released by OMB.

DOE

A. Williams discussed the issuance of DOE Order 458.1 which addresses Administrative Changes regarding conforming type changes and clarification of DOE order intent. A. Williams also indicated that sequestration cuts to DOE budgets are being applied to activities on a line-item specific basis.

D. Favret indicated that DOE is undertaking a new effort to update Support Document 173T to DOE Order 458.1. Support Document 173T is a document that covers many of the same topic areas as MARSSIM such as sample selection and statistical analysis of sampling efforts. D. Favret indicated that the document is being revised to make it consistent with MARSSIM.

DOD-Army

D. Alberth indicated that the Army has issued a Depleted Uranium document for release to Federal Employees and their contractors. The Army has also issued a version of the document that is available to the general public. He also indicated that sequestration has resulted in several furlough days that will be taken before the end of the fiscal year.

DOE-Air Force

Air Force representative, A. Hale, provided no updates.

NRC

M. Fuhrmann indicated that the two reactor closings have been announced. However, because of the 60 year cooling down period, full decommissioning of these facilities will not occur for a significant amount of time. This cooling down period, referred to as SAFSTOR, allows several of the short lived radionuclides associated with nuclear power generation to decay sufficiently. He indicated that the NRC is still assessing the Fukishima consequences and how those consequences may impact NRC policies and procedures (for example NRC is considering if aqueous release pathways should be considered). M. Fuhrmann indicated that due to the organizational structure of NRC, the sequestration has not had a significant impact on the agency to date.

BREAK

MARSSIM Revision Discussion

K. Snead informed the Workgroup that they have been sent Chapters 1-8, Appendices A-D, and Appendices F-K. Additionally, Sections 6.6.2 and 6.8 of Chapter 6 will be distributed on April 2, 2013. These Chapters cover radon issues and have developed with considerable interest from the Workgroup. Finally, revised versions of the References, Glossary, and Table of Contents will be provided prior to the end of the meeting.

Discussion of Method of MARSSIM Release

Prior to discussing Chapters 1 and 2, the mechanism for releasing the Internal Agency Draft of MARSSIM was discussed. Specifically, the topic of whether to release bound hard copies or electronic copies of the document was discussed. The preference was to publish some bound hard copies to present to management, but it was not a hard and fast requirement. A. Williams and D. Favret indicated a preference for electronic copies with a minimum number of hard copies. The following electronic delivery options were considered: PDF's distributed through e-mail, posting the document on a website, and distribution of CD's. E-mailing was problematic for some because the expected file size of MARSSIM was greater than e-mail systems would permit. Websites were thought to have security issues because passwords to the site would be distributed beyond the appropriate reviewers. Therefore, the proposed tentative plan forward was to print a total of 50 bound hard copies and distribute CDs to each member of the Workgroup for further reproduction and dissemination.

Public Comment Period

Jana Dawson of TechLaw had no comments.

Discussion of Chapter 1

At the beginning of Chapter 1, the following global edits were identified:

- Titles of Chapters are all uppercase and Appendices are not. Correct the titles of all Appendices to reflect the Chapter titles,
- Replace "radioactivity" with "radioactive material",
- The word "process" should not be uppercase when used in conjunction with a named process. For example, RSSI process or DQO process.
- The word "hostile" should be changed to "difficult" when discussing sampling environments.
- The use of "criteria" is not clearly defined when used in the document.
- There are extra spaces throughout the document. Perform a grammar check to make sure that all extra spaces are removed.
- The formatting for bullet lists are not consistent in the document. Use semi-colons when the bullets are part of a list and there are commas used within bullets. Use periods when the bullets are well developed concepts that are bulleted to make the concepts stand out

within the text. Use commas when the bullet list is a simple list where bulleted items do not contain commas.

- Define acronyms on first use within each chapter and capitalize each word that comprises the acronym. Do not repeat the definition of the acronym with in the chapter. If the acronym is not used more than once in a chapter, do not use the acronym in that chapter.

The remainder of the edits in Chapter 1 were of the editorial variety and no substantive issues or changes were discussed.

LUNCH

Chapter 2 Discussion

The following edits requiring action or regarding technical changes were discussed:

Chapter 2.2

- Lines 70-74: TEA will verify the definition of Investigation Level in the glossary to determine if it is consistent with the use of the term in Lines 70-74.
- Line 114: B. Abu-Eid will look up the NRC definition for "decommissioning" and will e-mail the definition from the NRC regulations to K. Snead.
- Line 162: TEA will add a sentence to indicate that all survey areas are Class I areas by default. The sentence will also indicate the criteria for reducing the classification for a survey area.

BREAK

Public Comment

R. Meck commented that Investigation Levels come into play for areas of elevated measurement comparison. He also indicated that the word "must" in the manual should be changed to "should" and that according to the NRC style guide, the word "in situ" is not italicized when used. R. Meck also introduced a Swedish Radiation Safety Authority report entitled: "Approaches Used for Clearance of Lands from Nuclear Facilities Among Several Countries". The report documents 10 different attributes of the radioactive material cleanup approaches in France, Spain, Germany, the United Kingdom, and the United States. The document is available at www.stralsakehetsmyndigheten.se.

Chapter 2 Discussion (Continued)

Chapter 2.4.2

- Line 616: TEA will add a header note indicating that steps for the Data Life Cycle are found in Table 2-1.

Chapter 2.5.1.1

- Line 793: Language was removed indicating statistical tests are only applied at sites subject to HSA. The HSA can potentially include survey data that may be subject to statistical testing.
- Line 811: TEA will add a sentence to stress that Scenario A should be used to plan the survey unless there is sufficient justification for using Scenario B.

Section 2.5.1.2

- Concerns about the EMC process were voiced by A. Williams. The Workgroup agreed to table this discussion until Chapter 5.
- Line 944: TEA will add a sentence referencing Appendix E.

Section 2.6.2.2

- K. Snead and N. Azzam of EPA will revise the last paragraph of this section regarding the EPA Coalition.

ADJOURN

Wednesday, April 3, 2013

Attendees (Day 2):

- Kathryn Snead (EPA)
- Colleen Petullo (EPA) by phone
- Nidal Azzam (EPA)
- John Griggs (EPA) by phone
- Keith McCroan (EPA) by phone
- Derek Favret (DOE)
- Alexander Williams (DOE)
- Dave Alberth (DoD – Army) by phone
- MAJ Alan Hale (DoD – Air Force) by phone
- Mark Fuhrmann (NRC)
- Duane Schmidt (NRC)
- John Clements (NRC)
- Boby Abu-Eid (NRC) by phone

Members of the Public (Day 2):

- Jana Dawson (Techlaw)
- Robert Meck (Science and Technology Systems, LLC)
- David Stuenkel (Trinity Engineering Associates, Inc. – EPA Support Contractor)
- Robert Thielke (Trinity Engineering Associates, Inc. – EPA Support Contractor)

A request for comments was made by K. Snead. No comments were made.

DISCUSSION of CHAPTER 3

Chapter 3 review and editing was started and the following changes were made by the Workgroup.

Chapter 3.1

- The Workgroup corrected capitalization of acronyms in the first paragraph.

Chapter 3.2

- Line 33: The Workgroup added state licensee to NRC licensee.
- Line 36: The Workgroup removed RCRA sites as a type of site where record initiation may occur. RCRA sites have comprehensive records as part of their permit according to N. Azzam.

Chapter 3.3

- Line 78: TEA will verify that the first bullet regarding the individuals named to a project is in Step 1 of the DQO process.

Chapter 3.5

- Line 142: The Workgroup removed a bullet regarding the ERAMS system as a source for identifying sites.
- Item 15, Table 3.1: The Workgroup added TENORM to NORM as types of materials used in manufacturing, research, or testing at a site.
- Item 16, Table 3.1: The Workgroup added TENORM to NORM as types of materials used in mining and milling activities.

Chapter 3.5.1

- Line 236: The Workgroup added language that out of date blue prints and other records may be useful in identifying areas where activities may have occurred.

Chapter 3.7

- Line 307 and 345: The term “site disposition” was changed to “site release.” This was added to the global changes list.
- Line 316: The Workgroup changed final disposition to final release.

Chapter 3.7.3.1

- Evaluate the terms “Suspected residual radioactive material” and “no suspected radioactive material”. TEA will review the glossary to evaluate if these terms are appropriate.

Chapter 3.7.3.2

- Line 446: The Workgroup replaced the phrase: “solid materials not considered to be subsurface soil” with “solid materials below the surface soil layer”.
- Line 449: The Workgroup highlighted the last sentence of the first paragraph regarding removal of sub-surface areas from consideration. N. Azzam will provide a revised sentence on this topic.
- Line 462: The Workgroup revised the text regarding enhanced mobility substances to include other chemicals in addition to volatile chemicals, and changed ion-exchange capacity to sorption capacity.
- N. Azzam will add a bullet on changes in surface soil features.

Chapter 3.7.3.3

- Line 498: The Workgroup added the term “time performance period” to the definition of “nearby” for surface waters.
- Line 502: The Workgroup removed the last sentence regarding the rule of thumb for distance to a surface water pathway.
- Line 517: K. Snead will look up the terms rainfall and precipitation to determine the appropriate terminology.

Chapter 3.7.3.4

- Line 604: The Workgroup revised the text to indicate that the enhanced mobility of substances includes other chemicals in addition to volatile chemicals.

Chapter 3.7.3.5

- Line 628: The sentence regarding radon gas being retained in soil until it has decayed is not correct. The language in this sentence will be reviewed and revised by TEA.
- Line 613: The workgroup removed the sentence: "Air is rarely the source of residual radioactive material."
- Line 671: The Workgroup added partitions and addition of flooring layers (e.g., tiles, carpet) to methods for immobilizing removable radioactive materials.
- Chapter 3.7.5: B. Abu-Eid will provide a sentence on expert elicitation.

BREAK

Chapter 4 Comments and Edits Discussion

Major Issues

DOE's, A. Williams raised a concern that there is a contradiction with the language in chapter 2 regarding elevated radioactive material that will need to be reconciled. He is concerned about the technical efficacy of the concept. A. Williams wants to add text that says: "Hot spots and elevated measurement comparisons are a regulatory matter." However, K. Snead indicated that although some of the aggressive conservatism of the approach is unlikely to occur, the EMC is scientifically defensible and is necessary to get Superfund concurrence. Without this approach, EPA concurrence is in jeopardy. D. Schmidt of NRC indicated that NRC is somewhere between these two approaches. B. Abu-Eid of NRC indicated that NRC's concern is whether or not the increased risk of the hot spots is relevant. He believes that if there is there increased risk with the elevated measurements, that they should be addressed and that they should be included in MARSSIM. D. Favret indicated that making EMC evaluation a requirement is not something DOE agrees with, but that considering the EMCs would be a good health physics practice. DOE is concerned that if states construe MARSSIM language to require hot spot evaluation as a requirement it would be problematic and add unneccesary sampling to projects. B. Abu-Eid emphasized that MARSSIM is a guidance document to demonstrate compliance and not a regulatory requirement. N. Azzad indicated that in real world applications, that hot spots are encountered as part of Class I surveys and addressed as part of the remediation process.

D. Favret asked how difficult-to-detect radioactive materials are addressed under the Class 1 scanning scenario. D. Schmidt proposed flexibility in MARSSIM to do a risk assessment/dose assessment that could lead to ultimately large area factors. K. Snead indicated that these concerns are addressed in the bullets starting on lines 96-123 of Chapter 4 and asked that each member of the Workgroup evaluate the bullets to determine if they address their concerns. Several workgroup members indicated concerns about the term "Requirement" in lines 96-123.

D. Favret was concerned that the third bullet needs to be phrased better to clarify that evaluating the EMCs would be a regulatory option and not required in all circumstances. ^{99}Tc is an example of a difficult-to-detect isotope that creates issues for the DOE and is causing concern. D. Schmidt agreed that the third bullet should be made to read as not being a requirement, but that the scenario of who should determine if hot spot analysis should be performed is an issue that should be established.

LUNCH

C. Petrullo and B. Abu-Eid did not attend the afternoon session.

D. Favret and A. Williams worked on language to address the EMC issue over lunch. The marked up revisions were distributed to the Workgroup present in the conference room. Additionally, MAJ A. Hale of DoD-Air Force e-mailed K. Snead suggested comments on the EMC topic. On Page 4-5, D. Favret proposed language that would be highlighted in a box or that the language would replace the first sentence of Chapter 4.2.2. A. Williams suggested modifications on Page 4-6 to clarify the conditions under which the EMC would be applied. MAJ Hale proposed to delete the third bullet in Chapter 4.2.2. Some disagreement existed on whether the hot spot evaluation should be justified or if the decision to not do a hot spot evaluation should be justified. The Workgroup agreed to add a new first paragraph to Chapter 4.2.2 clarify that the treatment of elevated areas of radioactive material is determined through requirements of regulatory agencies and is beyond the scope of MARSSIM. However, the derivation of $DCGL_{EMC}$ values should also be technically sound. Additionally, bullet number four was modified to indicate that an approach to assess hot spots may be helpful as opposed to implying that the approach is mandatory. Bullet number 3 was modified to indicate that the source of requirements for the $DCGL_{EMC}$(s) may be that from MARSSIM, those in other regulatory documents, or where properly justified to the appropriate agency, none at all. The third bullet was moved to the introductory paragraph of Chapter 4.2.2.

Chapter 4.2

- Line 51: The term “approach” was changed to “methodology.”

Chapter 4.2.2

- Line 80: The reference NRC 1974 was actually an AEC reference that is maintained by NRC. No change was made however.
- Line 90: The reference to Tables 5.6 and 5.7 was changed to Section 5.5.2.4.
- Line 95: The Workgroup added language that clarified Tables 5.6 and 5.7 are just examples of area factors.
- Line 109: A. Williams will provide language regarding the measurement of areas of elevated radioactive material.

Chapter 4.2.3

- N. Azzam will attempt to find the source for Equation 4-2. The equation was modified by the Workgroup to replace the term *n* with *L,* in order to not be confused with n as the number of samples. The text was revised by the Workgroup to reflect that Equation 4-2 is acceptable to use when the distance to the detector is three times greater than the longest dimension of the area of elevated radioactive material concentration.

Chapter 4.3

- Line 184: The Workgroup removed "and conditions" from the second sentence of the first paragraph.

Chapter 4.3.2

- Line 236 Example 1: The Workgroup added mean and standard deviation equations in Example 1.

BREAK

Public Comment

Bob Meck offered a comment on line 307 to suggest rearranging the sentence regarding radionuclides of a decay series.

Measurement Detectability Discussion

Keith McCroan and John Griggs from EPA have joined the conversation regarding MQOs and measurement detectability.

K. Snead introduced the concept of measurement detectability and indicated that past participants in training did not have a strong grasp on the term of measurement detectability as opposed to measurement sensitivity. J. Griggs indicated that MARLAP preferred to use the term detection capability although the term sensitivity is equivalent but not consistent with international terminology (ISO Standard for Capability of Detection)

K. Snead indicated that original MARSSIM guidance had general guidance that MDC should be less than the DCGL or in some places between 10-50% of the DCGL. She asked if the current approach is to indicate that the MDC is less than 50% of the DCGL. K. McCroan indicates that there are two scenarios, individual measurements and method quantitation limits. K. Snead asked how quantitation limit is different than detection limit. J. Griggs indicated that the quantitation limit is a fraction of the detection limit (i.e. 30%) designed to approximate the standard deviation of the measurements of the detection limit. MARLAP gives users options to use a rule of thumb or to establish a more precise quantitation limit. This concept does provide a challenge in their experience during their training sessions for MARLAP. The term detection capability will be used in place of sensitivity or measurement detectability in future chapters (Added to Global List of changes). Chapters 5 and 7 and Appendix D of MARSSIM will contain the majority of the changes associated with the topic.

Appendix C and Chapter 20 (first 11 pages) of MARLAP provides a good conversation on the topic of the method quantitation limit.

Chapter 4 Discussion (Continued)

Chapter 4.3.3

- Line 374: The Workgroup replaced the term "significant radionuclide" was replaced with "radionuclides of concern". Additionally, the term "sensitivity" was replaced with "detection capability."
- Example 4: A note was made to look into modifying the example to provide realistic specific radionuclides instead of generically referring to radionuclides. D. Stuenkel of Trinity will research Reg. Guide 1.86 to determine if a realistic isotope profile can be found.

Chapter 4.5

- Line 541: The temporal variability of background based on the time of the year or time of day can be significant. TEA will add a sentence to note that if temporal variability is expected that the background reference should be established in accordance with NUREG 1501.

Chapter 4.6

- Table 4-1: The Workgroup modified Table 4-1 to change the suggested sizes of Class 2 areas to be up to 1,000 or 10,000 meters for soil and building surfaces respectively instead of having lower bounds on the Class 2 area size.

Chapter 4.7

- Line 674: Although no change was immediately made, references to minimum quantifiable concentrations (MQCs) may be removed at a later date.

Chapter 4.7.1-

- First paragraph: TEA will review and address the issue of an MDC being less than 50% of the DCGL.
- Table 4.2: The Workgroup changed the title of Table 4.2 to "Examples of Direct Measurement Instruments"
- Table 4.2: The Workgroup removed footnote 7 to denote preferred instruments by bolding the entry in Table 4.2.

Chapter 4.7.3

- Line 871: The Workgroup concluded that the next to last bullet in the example (Example 6) regarding not separating or homogenizing the sample is written in a confusing manner. TEA will clarify the introduction to the example and clarify the recommendations to indicate that the recommendations in the sample are clearly based on the given scenario.

Chapter 4.8.4

- Line 1072: The Workgroup added cultural resources to the list of resources that should not be impacted by excessive survey activities.

Discussion ended for the day at Chapter 4.9

ADJOURN

Thursday, April 4, 2013

Attendees (Day 3):

- Kathryn Snead (EPA)
- Lorraine Kohler (EPA Region II) by phone
- Colleen Petullo (EPA) by phone
- David Pawel (EPA)
- Nidal Azzam (EPA)
- Derek Favret (DOE) by phone
- Alexander Williams (DOE)
- Dave Alberth (DoD – Army) by phone
- MAJ Alan Hale (DoD – Air Force) by phone
- Mark Fuhrmann (NRC)
- Duane Schmidt (NRC)
- John Clements (NRC)
- Boby Abu-Eid (NRC) by phone

Members of the Public (Day 3):

- Robert Meck (Science and Technology Systems, LLC)
- David Stuenkel (Trinity Engineering Associates, Inc. – EPA Support Contractor)
- Robert Thielke (Trinity Engineering Associates, Inc. – EPA Support Contractor)

Radon Discussion

Section 6.8 regarding radon was discussed with L. Kohler. L. Kohler indicated that the first item added was language for State certification programs in the introduction and two websites where state radon program requirements could be found. There is no overall document for sampling protocols for specific sampling devices.

The EPA reference for the Citizens Guide to Radon is (EPA 2012).

Radon entry versus Radon emanation was clarified and brought into line with industry conventions. Additional language was added to clarify that in buildings impacted by radon, basements may not be the areas with the highest radon concentrations. The bullets in the section were revised based on the fact that there may need to be certification is some scenarios. Commercial buildings where HVAC is the entry point may need more specific surveys than long term averages because of potential differences in radon levels during the day and night. It's important to clarify that the environmental conditions of the sampling equipment can be sensitive to environmental conditions.

In the last bullet regarding progeny distribution, the 40% progeny distribution value is not shared by NRC, which still prescribes to a 50% progeny distribution. K. Snead asked if instead of

providing a number that they should consult the appropriate regulatory agency and use the EPA and NRC percentages. The Workgroup will flag this sentence and look to revise the language.

Significant text was added to each of the detection sections. D. Favret of DOE noted that the table in this section will need to be cross referenced to the text in Appendix H to ensure consistency and include a reference in Appendix H to the text section in section 6.8. L. Kohler indicated that including certification language in Appendix H would be appropriate.

Calibration constant changes on alpha tracks as a function of altitude was a technical point of information that L. Kohler was not aware of prior to revising this section; and is therefore new information to section 6.8.

Section 6.8 was clarified to indicate that commercial continuous monitoring devices must take a minimum of one reading per hour and that this is important because some sites may try to use home CEMs on a commercial site, which will not be appropriate. Grab samples and sniffer results are not considered appropriate for decision making processes. Use of grab samples was previously in the protocols document because of a large grab sampling equipment purchase by Pennsylvania. However, grab systems are not included in EPA testing protocols.

Radon flux - There are now commercially available systems that do not have saturation problems. This was included in the updated version of MARSSIM. Section 6.8 included a reference for flux readings at mill tailings sites.

J. Clements provided detailed notes to D. Stuenkel for incorporation into Chapter 6.

BREAK

Chapter 4 Discussion

K. Snead extended an invitation to the Workgroup to attend UFP-QAPP training in May. K. Snead will check to see how many spots are available.

Chapter 4.10

- A link to the software program reference needs to be verified to see if it is still valid on newer platforms. This is an action item for Trinity Engineering.

TEA will verify if IDQTF and UFP-QAPP are integrated into the references section.

Public Comment

R. Meck indicated that it may be a good exercise to look at EURSSIM to see how the documents compare and if EURSSIM has any useful language for use on MARSSIM.

Chapter 5 Discussion

K. Snead and D. Schmidt will work to reorganize Chapter 5 to present the survey design portions of Section 5.5 as a separate section within Chapter 5.

Chapter 5.1

- Line 1: TEA will rewrite the first sentence to indicate that the section addresses ALL surveys not just Final Status Surveys and that emphasis can be placed on the FSS.
- MAJ Hale discusses Confirmatory (Independent Verification) Surveys. However, verification surveys are not discussed in Chapter 5 as a separate chapter. TEA will add a sub-chapter in Section 5 as 5.6. Chapter 2 will be revised to include this same language in Chapter 2. ORISE may be a possible source of information on this topic. There is also language in Chapter 5.5.2 that would be applicable.
- N. Azzam indicated that the RI/FS can apply to more than CERCLA and that the language about the NPL should be reviewed or modified. N. Azzam will provide additional text.
- TEA will define acronyms for CERCLA and RCRA.

Chapter 5.2.3

- TEA will spell out QAPP and SOPs on first use in checklist.

Chapter 5.3.1

- Line 181: TEA will reference NUREG 1757 instead of the document that is referenced on this line. TEA will also add a reference for ANSI N 13.49 (2011) and N 13.59 on this line.

Chapter 5.3.2

- Line 239: TEA will revise this line to add a sentence defining judgment sampling, which is in the glossary.
- In Chapter 5.3.2 and in the Final Status Survey section (5.5), TEA will add language about available survey design software such as COMPASS.

Chapter 5.3.3.2

- Line 341: TEA will review the language regarding use of beta scans against the language in Chapter 4. The language in Chapters 4 and 5 are contradictory.
- Example Checklist: TEA will revise the Characterization Survey Design section to reflect those in Scoping Surveys. Revise Checklists for each of the types of surveys to ensure consistency.

Chapter 5.5

- Make Chapter 5.5 a short chapter entitled Introduction to Final Status Surveys and then create a new Section 5.6 for Final Status Survey Design. K. Snead and D. Schmidt will work on rearranging this chapter.

Chapter 5.5.2

- Line 610: The introductory bullet language has changed and TEA will check the subheading titles to make sure that they are consistent with the language in the bullets.

Chapter 5.5.2.1

- Line 643: TEA will ensure that the paragraph on line 643 (entire paragraph) is also reflected in Chapter 2 regarding Scenario B.
- Line 620: Instead of indented, italicized text for the null hypotheses, put the definitions into a table. The Table should be two rows for Scenario A and B and two columns for Null and Alternative Hypotheses. TEA will create this table and update all other tables in Chapter 5

Chapter 5.5.2.3

- Line 787: TEA will make the note into a table note.
- Line 831 Examples 4 and 5: TEA will modify the examples by changing the LBGR to 100 cpm, explain where numbers are derived, and redo the calculation in the example. Additionally TEA will change units from counts to a concentration of SI units (Bq/100 m^2) with dpm/100 cm^2 in parentheses.
- D. Schmidt and K. Snead will consider options to breaking out part of this section to develop a separate section for scanning measurements.

LUNCH

K. Snead announced that the PAG document has been cleared by OMB but is awaiting signature. EPA is trying to get it signed and published on EPA Website. EPA expects the PAGs document to be out for interim use and public comment.

Chapter 5 Discussion (Continued)

Chapter 5.5.2.5

- Place a disclaimer about small elevated areas of residual radioactive material and hot spots in this chapter.
- Tables 5.6 and 5.7 are missing several table notes that need to be added back in. The ^{137}Cs value in Table 5.6 was truncated and the correct value needs to be added.
- Line 1043: TEA will remove the term “Unity Rule” to describe the equation and will instead refer to Chapter 8.5.2.
- Line 1051: TEA will remove the term “Unity Rule” when referring to the equation that sums contributions from multiple areas of elevated residual radioactive material.

Chapter 5.5.2.6

- Table 5.9: TEA will revise Table 5.9 to include scan-only surveys.
- TEA will remove the references to 10-50% scan percentages for upper walls and ceilings and will replace with a scan percentage of 10-100% to give the appropriate flexibility.

Chapter 5.4

- Line 1471: A. Williams will provide a citation for reference 10 CFR 835.

Chapter 5.5

- Example Checklist: TEA will revise all the checklists in Chapter 5 to ensure they are complete and consistent with the other checklists as appropriate. The checklist section entitled "Evaluating Survey Results" will be assessed against the statistical evaluation methods in Chapter 8.

BREAK

D. Favret provided revised text for Chapter 4.2.2 to address release criteria for areas of elevated radioactive material.

Chapter 8 Quantile Test and Retrospective Power Discussion

D. Pawel joined the Workgroup to discuss the statistical tests that are designed to add extra surety with scenario B surveys. K. Snead brought up the concept of how good is good enough with respect to the result of the retrospective power curve. The simplest approach is to decide that the retrospective power curve does not demonstrate the appropriate power even if the results just barely indicatethat the survey was not of sufficient power.

K. Snead will send a copy of the rank set sum sampling language to D. Pawel.

Chapter 6 Discussion

Issues of quantifiability and minimum quantifiable concentration (MQC) are of concern to K. Snead because of worries that users do not understand the concept. The current version of MARSSIM just indicates that MDCs is to be less than the DCGL as opposed to a statistically derived MQC that must be met. The current revision proposes to use less than 50% of the DCGL as the recommended MDC. K. Snead recommended that the approach should be to find a statistical justification for the rule of thumb.

K. Snead will attempt to find the derivation for the minimum MDC as determined through MQC calculations.

Schedule of Conference Calls to Finalize Interim Draft

The Workgroup discussed the need to have an additional face-to-face meeting. The Workgroup tentatively established a June timeframe for another meeting.

Global Changes

The following global changes were requested during the Workgroup meetings:

- Titles of Chapters are all uppercase and Appendices are not. Correct the titles of all Appendices to reflect the Chapter titles.
- Replace "radioactivity" with "radioactive material."
- The word "process" should not be uppercase when used in conjunction with a named process. For example, RSSI process or DQO process.

- The word “hostile” should be changed to “difficult” when discussing sampling environments.
- The use of “criteria” is not clearly defined when used in the document.
- There are extra spaces throughout the document. Perform a grammar check to make sure that all extra spaces are removed.
- The formatting for bullet lists is not consistent in the document. Use semi-colons when the bullets are part of a list and there are commas used within bullets. Use periods when the bullets are well developed concepts that are bulleted to make the concepts stand out within the text. Use commas when the bullet list is a simple list where bulleted items do not contain commas.
- Define acronyms on first use within each chapter and capitalize each word that comprises the acronym. Do not repeat the definition of the acronym with in the chapter. If the acronym is not used more than once in a chapter, do not use the acronym in that chapter.
- Capitalize each of the words that make up an acronym when that acronym is first defined. For example: Final Status Survey (FSS).
- Change 10-50% of DCGL to <50% of DCGL.
- Ground water as a noun is not hyphenated and is two words. Ground water is hyphenated as an adjective.
- Change Final Status Survey to FSS as a global change in Chapter 5.
- The term “site disposition” will be changed to “site release.”
- Change sensitivity to detection capability
- Turn notes below tables into table notes.
- Eliminate use of the term “Unity Rule” when referring to the equation that sums contributions from multiple areas of elevated residual radioactive material.
- Change scanning MDC to scan MDC. Also evaluate use of MDC when used with scanning to make sure the term is called scan MDC.
- Replace disposition with release.
- Capitalize Manual when used in conjunction with a manual name such as MARSAME

ADJOURN

Workgroup Action Items

Workgroup

- Chapter 6.8: In the last bullet regarding progeny distribution, the 40% progeny distribution value is not shared by NRC, which still prescribes to a 50% progeny distribution. K. Snead asked if instead of providing a number that they should consult the appropriate regulatory agency and use the EPA and NRC percentages. The Workgroup will flag this sentence and look to revise the language.

EPA

- K. Snead extended an invitation to the Workgroup to attend UFP-QAPP training in May. K. Snead will check to see how many spots are available.
- K. Snead and D. Schmidt will work to reorganize Chapter 5 to present the survey design portions of Section 5.5 as a separate section within Chapter 5.
- Chapter 2.6.2.2: K. Snead and N. Azzam of EPA will revise the last paragraph of this section regarding the EPA Coalition.
- Chapter 3.7.3.2: Line 449: The Workgroup highlighted the last sentence of the first paragraph regarding removal of sub-surface areas from consideration. N. Azzam will provide a revised sentence on this topic.
- Chapter 3.7.3.2: N. Azzam will add a bullet on changes in surface soil features
- Chapter 3.7.3.3, Line 517: K. Snead will look up the terms rainfall and precipitation to determine the appropriate terminology.
- Chapter 4.2.3, Equation 4-2: N. Azzam will attempt to find the source for Equation 4-2.
- Chapter 5.1: N. Azzam indicated that the RI/FS can apply to more than CERCLA and that the language about the NPL should be reviewed or modified. N. Azzam will provide additional text.
- Chapter 5.5.2.3: D. Schmidt and K. Snead will consider options to breaking out part of this section to develop a separate section for scanning measurements.
- K. Snead will send a copy of the rank set sum sampling language to D. Pawel.
- K. Snead will attempt to find the derivation for the minimum MDC as determined through MQC calculations.
- K. Snead will finalize the dates for the next MARSSIM Workgroup Meeting in June of 2013.

DOE

- Chapter 4.2.2, Line 109: A. Williams will provide language regarding the measurement of areas of elevated radioactive material.
- Chapter 5.4, Line 1471: A. Williams will provide a citation for reference 10 CFR 835.

NRC

- Chapter 2.2, Line 114: B. Abu-Eid will look up the NRC definition for "decommissioning" and will e-mail the definition from the NRC regulations to K. Snead.
- Chapter 3.7.5: B. Abu-Eid will provide a sentence on expert elicitation.
- K. Snead and D. Schmidt will work to reorganize Chapter 5 to present the survey design portions of Section 5.5 as a separate section within Chapter 5.
- Chapter 5.5.2.3: D. Schmidt and K. Snead will consider options to breaking out part of this section to develop a separate section for scanning measurements.