

MARSSIM Review Comments

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3850	ED-1	2-11	7/13/98	PUB	PUB	Yes

The reference EPA 1997 is not in the list of references. This reference appears numerous times in the MARSSIM.

Resolution:

Resolved Date: **4/28/00**

The correct reference is EPA 1997a. A search of the entire document was performed. Twelve pages of the MARSSIM were modified to include the correct reference: 1-3, 2-6, 2-12, 6-4, 9-3, 9-4, 9-7, N-2, N-6, N-8, N-11, and N-13.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3852	ED-1	2-12	4/15/99	GOV	EPA	Yes

In Figure 2.3 the word "requirements" should be added to the second bullet in the Data Validation and Verification box so it reads "Verify Measurement Procedures and Reporting Requirements." This also affects Figure E.1 on page E-2.

Resolution:

Resolved Date: **4/28/00**

The original figure appeared in the EPA QA/G-9 document, Reference EPA 1996a. Figure 2-3 and Figure E-1 were modified to be consistent with Figure 0.2-1 of EPA QA/G-9, which included adding the word "requirements" as suggested. Pages 2-12 and E-2 were modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3851	TEC-1	4-33	7/13/98	PUB	PUB	Yes

Section 4.9.1, first paragraph, twelfth line.
The words precision and bias are reversed. Spikes are used to assess bias and repeated measurements are used to assess precision, not the other way around.

Resolution:

Resolved Date: **4/28/00**

The words bias and precision were correctly positioned to make the MARSSIM technically accurate. Page 4-33 was modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3849	TEC-1	4-36	7/13/98	GOV	DOD	Yes

Section 4.9.2, Table 4.3.

MARSSIM does not explain how the numbers in Table 4.3 were calculated. I have been able to deduce how the numbers were calculated, but I think there may be a mistake in the MARSSIM method used to calculate the values. It appears that the values were calculated using a confidence interval for the true variance based on the chi-squared statistic. However, I can only reproduce the numbers in the table by using values for n samples instead of n-1 degrees of freedom. Furthermore, by using a table of "Factors for Computing One-Sided Confidence Limits for Sigma" from Experimental Statistics, NBS Handbook 91, I can only reproduce the numbers in MARSSIM by using n and not the degrees of freedom as the Handbook requires.

Resolution:

Resolved Date: **4/28/00**

Table 4.3 was revised to provide the correct information. The first column was retitled "Degrees of Freedom" and the incorrect value for 5 degrees of freedom at the 95th level of confidence was corrected to be 4.34. A reference for the source of the information in the table (EPA 1990) was added. An explanation of how degrees of freedom are used to determine the number of measurements from the table was added. Text on pages 4-35, 4-36, 4-37 and 4-38 was modified to reflect the changes to Table 4.3.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3865	ED-1	5-30	4/15/99	GOV	EPA	Yes

Change title of Table 5.3 to indicate this table is used with the Wilcoxon Rank Sum test.

Resolution:

Resolved Date: **4/28/00**

The title of Table 5.3 was changed to "Values of N/2 for Use with the Wilcoxon Rank Sum Test." Page 5-30 and xiii in the table of contents were modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3845	ED-1	5-33	7/13/98	PUB	PUB	Yes

Equation 5-2. Sign P in the denominator should be listed as Sign p.

Resolution:

Resolved Date: **4/28/00**

The typographical error in the equation was corrected. Page 5-33 was modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3866	ED-1	5-34	4/15/99	GOV	EPA	Yes

Change title of Table 5.5 to indicate this table is used with the Sign test.

Resolution:

Resolved Date: **4/28/00**

The title of Table 5.5 was changed to "Values of N for Use with the Sign Test." Page 5-34 and xiii in the table of contents were modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3853	ED-1	6-10	4/15/99	GOV	EPA	Yes

The citation in the last line of the first paragraph in Section 6.4.1 is incorrect. A section should not reference itself.

Resolution:

Resolved Date: **4/28/00**

The correct citation is Section 6.7.1. Page 6-10 was modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3868	ED-1	6-23	4/15/99	GOV	EPA	Yes

Third full paragraph, the reference ANSI 1978 is not in the reference list. It appears to be referring to ANSI 1996b.

Resolution:

Resolved Date: **4/28/00**

The correct reference is ANSI 1996b. A comprehensive search of the MARSSIM was conducted to identify other locations citing this reference, but the reference only appears once in the manual. Page 6-23 was modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3861	TEC-1	6-33	4/15/99	GOV	EPA	Yes

Figure 6.2 shows the background curve with center (mean) 0 and with a sigma squared = B at a spot marked by two lines which appear to be at +/- one sigma of a normal curve. B is the mean of the background counts. HPSR-1 page 6-25 shows the background curve also with mean 0 but it shows a sigma only and does not show sigma squared = B. I think HPSR-1 shows μ sub 0 as the mean background. It shows μ sub 0 at the top of the background distribution where center is 0 on the x-axis. Is this depiction and the labels in Figure 6.2 correct? I do understand the mean at 0, but I do not understand the sigma-squared = B. For a Poisson distribution, does sigma squared equal 2 sigma (meaning sigma equals 2 always) equal the mean background or something?

Resolution:

Resolved Date: **4/28/00**

No modifications were made in response to this comment. Figure 6.2 is correct as it is shown in the December 1997 MARSSIM. It is possible that 0 could be relabelled as B, L_c relabelled as L_c + B, and L_d relabelled as L_d + B to show gross counts instead of net counts, but this relabelling would not make the figure more correct or easier to interpret.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3854	TEC-1	7-8	4/15/99	GOV	EPA	Yes

Section 7.3.1 should include the recommendation that the action level be communicated to the laboratory.

Resolution:

Resolved Date: **4/28/00**

A recommendation was added to Section 7.3.1 that the information provided to the laboratory specifically include the action level. Page 7-8 was modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3848	TEC-1	7-11	7/13/98	PUB	PUB	Yes

Section 7.5.

EPA has published a guidance document describing sampling techniques and strategies that could be included in this section (or possibly Appendix M). "Preparation of Soil Sampling Protocols: Sampling techniques and Strategies." EPA/600/R-92/128, Office of Research and Development, July 1992.

Resolution:

Resolved Date: **4/28/00**

A summary of the document was prepared and added to Appendix M. Page M-10 was modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3869	ED-1	C-21	4/24/00	GOV	EPA	Yes

The list of agreement states needs to be updated. Massachusetts and Ohio have become agreement states and Pennsylvania, Oklahoma, Minnesota, and Wisconsin are developing agreements with the NRC.

Resolution:

Resolved Date: **4/28/00**

The list of agreement states in Table C.2 was updated to include Massachusetts and Ohio. The text on page C-20 was modified to include a reference to the NRC website for checking on the current list of agreement states and update the date Table C.2 was updated. Pages C-20 and C-21 were modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3859	TEC-1	D-24	4/15/99	PUB	PUB	Yes

I don't think Figure D.7 is correct. First, on page 5-36 the figure is cited as being the risk of not sampling a circular area. It looks like 1 minus the risk. Second, the x-axis is labelled as pi times L squared. On page 3-21 of NUREG-1505 there is a figure with the x-axis given as the radius of a circular area. If I were to square this axis and multiply by pi I should get Figure D.7. Figure D.7 makes no sense to me.

Resolution:

Resolved Date: **4/28/00**

Figure D.7 is correct. Figure D.7 shows the probability of locating a small area of elevated activity. Page 3-21 in NUREG-1505 shows the risk of missing a small area of elevated activity. The text on page D-23 describing Figure D.7 was modified to "The probability of sampling a circular area of size A with either a square or triangular sampling pattern is shown in Figure D.7."

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3855	TEC-1	I-5	4/15/99	GOV	EPA	Yes

At the end of Table I.3 include guidance on what to do if there are more than 50 measurement results in the data set.

Resolution:

Resolved Date: **4/28/00**

An equation for calculating the test statistic for sample sizes greater than 50 was added at the end of Table I.3. Page I-5 was modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3847	ED-1	I-30	7/13/98	PUB	PUB	Yes

Table I.11 Column 'E'.
The equation in Cell E2 should be =IF(B2="R",D2,0), with similar changes in Cells E3 thru E23. This equation needs to be modified for lines 2 through 23 in the table.

Resolution: Resolved Date: **4/28/00**

The column references in the formula for Column E were modified to refer to Column D. Page I-30 was modified to respond to this comments and comment 3846.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3846	ED-1	I-30	7/13/98	PUB	PUB	Yes

Third line and Title of I-11.
There is no Table 8.7 in the final MARSSIM. This section should refer to Table 8.6.

Resolution: Resolved Date: **4/28/00**

The typographical error was corrected. Page I-30 was modified to resolve this comment and comment 3847. Page xv in the Table of Contents was modified to reflect the correct title for Table I.11.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3856	ED-1	L-3	4/15/99	GOV	EPA	Yes

This appendix needs to be updated. Phone numbers for EPA Regions I, III, and VIII need to be changed to reflect the new area codes. The address for EPA Region III has changed. Does NRC still maintain an office in Walnut Creek?

Resolution: Resolved Date: **4/28/00**

Revised telephone numbers and addresses for DOE, EPA, and NRC organizations were located using the Internet. The revised numbers provide general contacts or public relations contacts for each organization rather than an individual's telephone number. The Air Force provided updated telephone numbers and addresses for their contacts. Pages L-2, L-3, L-4, L-5, and L-8 were modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3857	ED-1	GL-1	4/15/99	GOV	EPA	Yes

The word "spike" should be added to the glossary and the index.

Resolution: Resolved Date: **4/28/00**

The MARSSIM Work Group could not identify a consensus definition of the word "spike" to include in the glossary. The interagency work group developing the Multi-Agency Radiation Laboratory Analytical Procedures Manual (MARLAP) is currently working to provide a consensus definition for "spike." To prevent duplication of effort and promote consistency in guidance, the MARLAP definition of "spike" will be included in the MARSSIM glossary after the MARLAP is published.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3862	ED-1	PRE-V	4/15/99	GOV	EPA	Yes

Section 2.5 in the Table of Contents does not match the title of Section 2.5 on page 2-25.

Resolution:

Resolved Date: **4/28/00**

Page v of the Table of Contents was modified to accurately reflect the text on page 2-25.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3863	ED-1	PRE-XXIII	4/15/99	GOV	EPA	Yes

Include DCGL sub W and DCGL sub EMC in the list of abbreviations.

Resolution:

Resolved Date: **4/28/00**

This comment does not identify an error in MARSSIM. The terms were added to the list of abbreviations to provide additional information to the MARSSIM user. Page xxiii was modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3860	TEC-1	PRE-XXVII	4/15/99	GOV	NRC	Yes

In discussing the screening table and unit conversions, it became apparent there are errors in the MARSSIM manual converting from dpm to dps, etc. For example, there is an obvious error that to convert from dpm to dps multiply by 60.

Resolution:

Resolved Date: **4/28/00**

There were five errors in the conversion factors listed on page xxvii; Bq/m² to dpm per 100 cm², dps to dpm, dpm to dps, dpm to pCi, and pCi to dpm. A comprehensive search of the MARSSIM was performed to identify places where the incorrect conversion factors were used. Seventeen pages were modified to resolve this comment: 6-37, 7-20, 8-19, A-2, A-5, A-7, A-11, A-14, A-19, H-7, H-8, H-10, H-12, H-14, H-16, H-32, and xxvii.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3864	ED-1	RDM-4	4/15/99	GOV	EPA	No

In the fourth line above the box at the bottom of the page insert the word "where" so it becomes "Class 2 areas are impacted areas where concentrations..."

Resolution:

Resolved Date: **4/28/00**

The sentence was modified as suggested to make the statement grammatically correct. Page Roadmap-4 was modified to resolve this comment.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3858	ED-1	REF-1	4/15/99	GOV	EPA	No

Several references have been updated since the publication of MARSSIM, for example EPA QA/G-5, EPA QA/G-9, and NUREG-1505.

Resolution:

Resolved Date: 4/28/00

No modifications were made to the manual to resolve this comment. The MARSSIM was prepared using the versions of the reference documents listed in the reference section, and there is no need to update this list. When a revision of MARSSIM is prepared all of the references will be reviewed to determine if more recent versions are available and whether or not the revised references are still consistent with the guidance in MARSSIM.

<u>ID</u>	<u>Category</u>	<u>Chapter-Page</u>	<u>Date</u>	<u>Sector</u>	<u>Org</u>	<u>Resolved</u>
3867	ED-1	REF-3	4/15/99	GOV	EPA	Yes

Reference DOE 1991a and 1991b appear to be the same document. DOE 1991a could not be obtained for the list of MARSSIM references. A brief visual inspection of Chapter 6 could not identify where either of these documents are referenced in MARSSIM.

Resolution:

Resolved Date: 4/28/00

DOE 1991a and 1991b do refer to the same document. The correct reference is shown as DOE 1991a. A comprehensive search of the WordPerfect version of the manual was conducted and no reference to either DOE 1991a or DOE 1991b was located in the final version of the manual. The reference list was modified to indicate that these two references were deleted. Pages Ref-3 and Ref-4 were modified to resolve this comment.