Norman, Yolande

From: Vitkus, Tim [Tim.Vitkus@orau.org]
Sent: Wednesday, January 05, 2011 1:26 PM
To: Norman, Yolande
Cc: Watson, Bruce
Subject: SLDA review

Yolande,

I have reviewed the context of the USACE's response to comments and the applicable revisions to their FSSP.

The results of my review indicate that Response 1 is not appropriate. During the October 21, 2010 conference call, it was explained that the investigation level for a composite sample was to be based on the number of increments forming the composite sample and the DCGLemc for the area represented by the composite. In the case of the SLDA, the number of increments is 5 and the area of concern is 100 m2. The USACE's response to comments and FSSP revisions did not satisfy this commitment. Rather, the response was that the action level would be 1/5 of the DCGLemc for a 20 m2 area and that if this action level were met, then the DCGLemc for a 100 m2 area would also be met.

The text states: **The table also provides derived investigation levels for Class 1 100 m^2 5-increment systematic composites sample that guarantees that each of the increments could not have exceeded its corresponding $DCGL_{emc}$ (in other words, if activity concentrations were zero in four of the increments while the fifth carried all of the activity). It is important to note that the resulting investigation levels exceed the 100 m^2 $DCGL_{emc}$ requirement. Consequently, a systematic composite result below its 100 m^2 $DCGL_{emc}$ requirement also guarantees that none of the contributing increments will exceed their 20 m^2 $DCGL_{emc}$ requirement.**

and the Table footnote states:

[2] **ROC investigations levels are 1/5 of the 20-m^2 $DCGL_{emc}$ activity concentrations.**

My evaluation of this approach, using 1/5 of the 20 m2 DCGLemc, will not consistently provide a guarantee that the 100 m2 DCGLemc will also be met for all radionuclides. Again, the recommendation during the conference call, guidance in NUREG 1505, and other sources clearly state the investigation level would be based on DCGLemc (100 m2)/5.

I examined the case for both Am-241 and Th-232. The ROCs were selected based on DCGL levels and the predominance of these ROCs as reported in the FSSP. For the case of Am-241, the USACE approach held, but for Th-232 the approach did not. I took the liberty of interpolating area factors for both ROCs to enable a closer inspection of the approach. For Am-241, I modeled calculated composite sample activity concentrations for 20, 40, 60, and 80 m2 hot spots at the respective DCGLemc. In each case, the concentration would be greater than the 420 pCi/g 100 m2 DCGLemc. However, for Th-232, this did hold. For example a 40 m2 Th-232 area factor would be 5.6. Their DCGL is 1.4 or a 40 m2 DCGLemc of 7.87. This level represented within a composite (2 increments containing 7.87 pCi/g and the remaining 3 increments with added Th-232) would be reported as 3.14 pCi/g. A value less than the 100 m2 DCGLemc of 5.3 pCi/g. If this were the case, the USACE would conclude the area was acceptable when in reality it may not be. Furthermore, the application of the SOR requirement, will further complicate this matter.

I suspect the USACE will respond not to worry, that their scans will find this. In reviewing the brief discussion of the scanning and sampling results given on page 9 of the FSSP, I interpret that they did not see much over twice background while scanning, yet had correspondingly high results. In fact, the results given had an SOR of 1.38,

based on the 100 m2 DCGLemc. How many more large areas like this, between an SOR of 1 and 1.38 exist, but were not detectable via scans?

Please let me know if the NRC would be better served if I were to formalize this comment.

Regards,

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