

From: [Lawyer, Dennis](#)
To: [Ramsey, Amy J CIV USARMY FUTURES COMMAND \(USA\)](#)
Subject: Department of the Army, Request for Additional Information Concerning Application for a License Amendment, Control 611433
Date: Monday, March 04, 2019 6:22:00 AM

Dear Ms. Ramsey,

This is in reference to your letter dated November 21, 2018, requesting for amendment to Nuclear Regulatory Commission License No. 19-10306-01, Docket No. 03004552. In order to continue our review, we need the following additional information:

1. In class 2 survey rooms, you have not surveyed the walls. In accordance with NUREG-1575, Rev. 1, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), based on Historical Site Assessment, the licensee should determine the proper classification of each area for release survey. Based on your Historical Site Assessment, you designated Building E3300, Rooms 203, 206, 207, and 212 as class 2 areas. In accordance with MARSSIM Table 2.2, this would require a systematic direct measurements of the building surfaces which includes the wall surfaces and 10 to 20% systematic scanning. Please perform and provide the results of systematic direct measurements and scanning of these four rooms.
2. The probe efficiency determination for Eu-155 does not appear to be presented. Please provide the efficiency determination for Eu-155.
3. The source efficiency for Eu-152 was based from Cl-36. However, it appears that it only decays to Gd-152, 27.9% of the time by beta minus emission. Since Cl-36 decays by beta minus, this appears to be the only evaluation of the efficiency and thus the branching factor of Eu-152 needs to be calculated into the efficiency determination for Eu-152. Please recalculate the efficiency and determine the effect on the other calculated factors. The branching factor needs to be reviewed for Sb-125 also.
4. It states in the letter dated July 27, 2018, that the measurements taken with the 44-10 probe were performed at 10 to 12 inches from the surface. The efficiency information provided appears to be a totally immersed 44-10 probe efficiency in a field of that isotope. It is not clear that the efficiency taken at the lab can correlates with how the material was measured in the field. Please describe the efficiency determinations for the 44-10 probe and how it correlates with the measurements in the field.
5. For Table 1, please provide the certification for efficiency of the meter.
6. For Table 1, the alpha efficiency for the Th-nat was listed as 150% because of the six decays of alpha. However, since the DCGL was based on thorium and its progeny instead of thorium 212 by itself, the additional alphas are already accounted for in the DCGL number. Th-232 by itself DCGL is 7.31 dpm per 100 square centimeters, per NUREG/CR-5512, Table 5.19. For interior building surfaces, a DCGL of 495 alphas per 100 centimeter square can be used. Please reevaluate Table 1.

7. For Table 2, please provide the basis of the detector efficiency for Uranium and Thorium. Please state the background for Table 1 and 2 in terms of counts per minute for the detector.
8. In Table 2, the probability of a single count was given. During the measurements, confirm if the surveyor stopped after a single count was received to determine if it was just a background count or activity being detected.
9. In Table 2, the value of a probability of single count could not be reproduced and in addition a probability of less than 0.9 shows that the scan may not detect at the DCGL level. Please review your calculations, efficiencies, method of survey, Thorium DCGL, and calculation, and resubmit the table. If the table does not change please submit a detailed calculation of the probability of detection including the variables.
10. For scans in Class 2 areas that cannot meet DCGL detection levels, please present the area factors for the isotopes and demonstrate the area is releasable with the given survey.
11. On Table 3 of the November 21, 2018, letter, it shows all 44-10 probe measurements to be 100 square centimeters. Please discuss how this correlates to 100 square centimeters.
12. Table 3 of November 21, 2018, letter shows a surveyor efficiency of 1. MARSSIM recommends a value of 0.5. Please justify the perfect surveyor efficiency or adjust the table and recalculate.
13. Table 3 of November 21, 2018, letter shows most of the efficiencies listed as 2 pi efficiency. Based on the data presented, all of these listed were 4 pi efficiency except for Na-22. Please adjust and recalculate.

We will continue our review upon receipt of this information. Please reply to my attention at the Region 1 Office (Address below) and refer to Mail Control No. 611433. If you have technical questions regarding this letter, please call me at (610) 337-5366.

Your reply must be an originally signed and dated letter. The letter may be scanned and submitted as a pdf document attached to an email; or it may be transmitted by facsimile to (610) 337-5269; or it may be sent by regular mail. If we do not receive a reply from you within 30 calendar days from the date of this e-mail, we will assume that you do not wish to pursue your application OR amendment request.

[optional] Please respond by e-mail to acknowledge that you have received the e-mail request for additional information.

Region 1 Office Mailing Address: Licensing Assistance Team, US Nuclear Regulatory Commission Region I, 2100 Renaissance Boulevard, Suite 100, King of Prussia, PA 19406-2713.

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