



DEFENSE LOGISTICS AGENCY  
DEFENSE NATIONAL STOCKPILE CENTER  
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FORT BELVOIR, VIRGINIA 22060-6223

IN REPLY DNSC-ME  
REFER TO

MS16  
J-6  
APR 08 2010

U.S. Nuclear Regulatory Commission  
Region 1, Nuclear Materials Safety Branch  
Division of Nuclear Materials Safety  
ATTN: Mr. Dennis Lawyer  
475 Allendale Road  
King of Prussia, PA 19406-1415

RECEIVED  
REGION 1  
2010 APR 13 AM 10:50

04000341

Re: License STC-133

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION CONCERNING  
APPLICATION FOR AMENDMENT TO LICENSE STC-133, Dated March  
3,2010, CONTROL NO. 143447

Dear Mr. Lawyer:

In response to the subject request for additional information, the Defense Logistics Agency will perform follow-up radiation surveys and sampling to investigate and resolve the areas of concern identified in the *Final Report – Confirmatory Survey of the Defense Logistics Agency, Defense National Stockpile Center New Haven Depot, New Haven, Indiana*, dated February 19, 2010.

Investigation radiation surveys and sampling will be performed to verify the radiological conditions presented in the Confirmatory Survey Report for the areas of concern, provide additional survey data following re-classification of areas, as necessary, and provide supplemental data to demonstrate each of the areas meet the radiological criteria for release. The general approach, applicable requirements and release criteria will be consistent the *Final Status Survey Plan, New Haven Depot*, dated January 2008. The areas in question and the follow-up surveys and sampling are detailed in the attachment to this letter.

Following completion of actions necessary to provide the requested information, a supplement to the *Final Status Survey Report, Defense National Stockpile Center, New Haven Depot, New Haven, Indiana*, dated January 9, 2009, will be prepared and submitted for your review and acceptance.

143447



Should you have any questions or need additional information, please do not hesitate to contact myself, or Mr. Mike Lambert of Cabrera Services at (724) 980-2762.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael J. Pecullan". The signature is fluid and cursive, with a large initial "M" and "P".

Michael J. Pecullan  
Radiation Safety Officer

Attachment

**ATTACHMENT**

**FOLLOW-UP INVESTIGATION RADIATION SURVEYS AND  
SAMPLING IN RESPONSE TO NRC REQUEST FOR ADDITIONAL  
INFORMATION**

**NEW HAVEN DEPOT, NEW HAVEN, INDIANA**

## **Follow-Up Investigation of Areas of Concern Identified in the Confirmatory Survey Report for the New Haven Depot**

### *A. Areas of Concern Identified in the Confirmatory Survey Report*

The Confirmatory Survey Report for the New Haven Depot, dated February 19, 2010 identifies five areas of concern. These include:

1. Survey Unit (SU) 9
2. SU 210-2-3
3. SU 210-2-F
4. SU 145-F
5. SU 8

A summary of the Confirmatory Survey results for each of the five areas is provided below.

#### 1. SU 9

SU 9 is the Class 1 soil area surrounding the rail scale, with an area of 241 square meters ( $m^2$ ). The Confirmatory Survey Report indicates elevated U-238 concentration in soil was discovered in a biased (Judgmental) sample in excess of the area adjusted Derived Concentration Guideline Level ( $DCGL_{EMC}$ ) when evaluated over 4 square meters ( $m^2$ ). This Judgmental sample was collected on the north side of the rail scale.

#### 2. SU 210-2-3

SU 210-2-3 is the Class 1 floor surface north of the location where the concrete slab was removed in Warehouse 210, Section 2 (SU 210-2-6). This Survey Unit has a surface area of 111  $m^2$ . Although all but two of the six alpha surface activity measurements performed during the Confirmatory Survey were less than the Derived Concentration Guideline Level (DCGL) of 38 disintegrations per minute per 100 square centimeters ( $dpm/100\text{ cm}^2$ ), and the two elevated surface activity results were less than the applied  $DCGL_{EMC}$ , the Report indicates that elevated beta radioactivity was found at the location of a borehole in this Survey Unit. This is identified as Location 7 on the survey map in the Confirmatory Survey Report which is an additional Judgmental measurement location.

#### 3. SU 210-2-F

SU 210-2-F in the Confirmatory Survey Report is the remaining Class 3 floor surface in Building 210, Section 2 outside the area of concrete remediation and the bounding Class 1 Survey Units (SU 210-2-1, 210-2-2 and 210-2-3). The Confirmatory Survey Report states the floor area associated with SU 210-2-F was incorrectly designated Class 3 based on one of six surface alpha radioactivity measurement results with a reported activity of 39  $dpm/100\text{ cm}^2$  when compared to the DCGL of 38  $dpm/100\text{ cm}^2$ .

#### 4. SU 145-F

SU 145-F is the Class 3 outdoor concrete slab where a structure once stood, with an area of 323 m<sup>2</sup>. The Confirmatory Survey Report indicates that four of the six surface activity measurement results were greater than the DCGL of 100 dpm/100 cm<sup>2</sup>, with the conclusion that this Survey Unit was incorrectly designated as Class 3.

#### 5. SU 8

SU 8 is the concrete rail scale, a Class 2 Survey Unit, with an area of 276 m<sup>2</sup>. Although five of the six surface activity measurements obtained during the Confirmatory Survey were below the DCGL of 100 dpm/100 cm<sup>2</sup>, the Report states that elevated alpha surface activity in excess of the DCGL was found on a crack in the concrete, resulting in incorrect designation of the Survey Unit as Class 2.

### *B. Follow-Up Surveys and Sampling to Address the Confirmatory Survey Report Areas of Concern*

#### 1. General Requirements

- a. The general approach, applicable requirements, survey and sampling protocols, and release criteria (DCGL's) for follow-up investigation radiological surveys and sampling will be consistent the *Final Status Survey Plan, New Haven Depot*.
- b. Soil samples will be analyzed for U-238 and Th-232, with laboratory required minimum detectable concentration of approximately 50 percent of the site-specific soil DCGL's.
- c. Background concentrations of radiological contaminants of concern (RCOC's) in soil will be consistent with the values presented in Table 3-11 of the *Final Status Survey Plan, New Haven Depot*.
- d. Alpha surface scans will be performed using a Ludlum Model 43-37 or Model 43-68 detector coupled to a ratemeter following the scan protocol specified in the *Final Status Survey Plan, New Haven Depot*.
- e. Systematic, random and biased direct alpha surface activity measurements will be performed using a Ludlum Model 43-68 detector coupled to a ratemeter.
- f. Instrument efficiencies for all direct alpha surface activity measurements will be in accordance with ISO-7503-1, *Evaluation of surface contamination - Part 1: Beta-emitters (maximum beta energy greater than 0.15 MeV) and alpha-emitters*. Specifically, for alpha surface activity measurements, the total efficiency will be determined by multiplying the 2 pi instrument efficiency by a surface efficiency factor of 0.25.

- g. Prior to performing alpha surface activity scans and direct measurements, the surfaces to be surveyed shall be verified to be free of material that would interfere with the measurement (dirt, debris, etc.) and shall be dry. Alpha surface activity measurements shall not be performed on wet or damp surfaces.
- h. Material specific background values shall be obtained for each material type associated with alpha surface activity measurements. If the material is present as an outdoor and indoor surface, such as concrete, separate material backgrounds shall be obtained. Each material background to be applied to the direct alpha surface activity measurements shall be the average of a minimum of 5 material background measurements performed at different locations in lieu of 5 measurements performed at the same location. Material specific background measurements shall be 10 minutes each using a Ludlum Model 43-68 coupled to a rate meter. Material specific backgrounds shall be established for each instrument/detector combination to be used for performance of follow-up investigation direct alpha surface activity measurements.
- i. If direct alpha surface activity measurements are not performed on the same day the material specific background values are obtained, 1 background measurement shall be performed on the background material prior to performance of investigation surveys. If the result of this background verification measurement deviates from the material specific background average by more or less than the average plus 1 standard deviation, a new set of material specific backgrounds will be collected and applied to the investigation measurements performed during the same day.
- j. Quality control measurements shall be performed daily prior to use of each instrument. An additional quality control measurement shall be performed following daily use of each instrument. Only instruments that successfully pass the quality control criteria shall be used for daily survey measurements. Should an instrument not satisfy the quality control criteria following daily use for performance of investigation measurements, all measurement results collected with that instrument since last successful quality control measurement shall be discarded and the surveys performed with the instrument repeated.

## 2. Follow-Up Investigation Surveys and Sampling

- a. SU 9
  - 1) Identify location of Confirmatory Survey Judgmental S026.
  - 2) Perform a gamma walkover survey (GWS) at the S026 location to define potential boundaries of elevated soil concentration.
  - 3) Collect 1 surface soil sample at the location exhibiting the highest GWS result.
  - 4) Collect 4 surface soil samples at the GWS identified elevated area periphery; 1 sample in each of 4 compass directions (north, south, east and west).

- 5) Collect 4 surface soil samples approximately  $\frac{1}{2}$  the distance between center elevated sample location and each of the 4 periphery sample locations.
  - 6) Provide sufficient physical dimensions, to include distance from the center elevated sample location to each of the  $\frac{1}{2}$  distance sample locations and each of the periphery sample locations.
- b. SU 210-2-3
- 1) Identify the location of the concrete slab borehole (Confirmatory Survey Location 7).
  - 2) Using a hammer and chisel (or other equipment for concrete removal) remove sufficient concrete at the borehole location to expose underlying soil.
  - 3) Collect 1 surface soil sample.
- c. SU 210-2-F
- 1) Identify Confirmatory Survey Location 6
  - 2) Perform a minimum of 4 direct alpha surface activity measurements at and around this location. The count time for direct alpha surface activity measurements shall be 12 minutes each.
  - 3) If any of the direct alpha surface activity measurement results are in excess of the DCGL of 38 dpm/100 cm<sup>2</sup>, establish a Class 1 Survey Unit that encompasses the floor area containing the elevated surface activity, designated 210-2-F-1.
    - i. Perform an alpha scan of accessible floor surfaces.
    - ii. Collect 17 systematic direct alpha surface activity measurements. The count time for all systematic and biased direct alpha surface activity measurements shall be the same as specified in 2) above.
    - iii. Collect additional biased direct alpha surface activity measurements based on results of the alpha scan and judgmental locations, such as cracks in the concrete.
    - iv. If direct alpha surface activity measurements (systematic or biased) are in excess of the DCGL of 38 dpm/100 cm<sup>2</sup>, collect additional direct alpha surface activity measurements to define the area of elevated activity, providing dimensions for each. If elevated activity is limited to a concrete crack, provide sufficient data to delineate the length of the crack associated with the contamination as well as the width.
    - v. Collect a smear sample at each systematic and biased direct alpha measurement location.

d. SU 145-F

- 1) Divide SU 145-F into 3 Class 1 Survey Units, each approximately 108 m<sup>2</sup> in size. Denote these Class 1 Survey Units as SU 145-F-1, 145-F-2 and 145-F-3.
- 2) Perform an alpha scan of accessible surfaces in each Survey Unit.
- 3) Collect 17 systematic direct alpha surface activity measurements in each Survey Unit. The count time for all systematic and biased direct alpha surface activity measurements shall be 5 minutes each.
- 4) Collect additional biased direct alpha surface activity measurements based on results of the alpha scan and judgmental locations, such as cracks in the concrete.
- 5) If direct alpha surface activity measurements (systematic or biased) are in excess of the DCGL of 100 dpm/100 cm<sup>2</sup>, collect additional direct alpha surface activity measurements to define the area of elevated activity, providing dimensions for each. If elevated activity is limited to a concrete crack, provide sufficient data to delineate the length of the crack associated with the contamination as well as the width.
- 6) Collect a smear sample at each systematic and biased direct alpha measurement location.

e. SU 8

- 1) Divide SU 8 into 3 Class 1 Survey Units, each approximately 92 m<sup>2</sup> in size. Denote these Class 1 Survey Units as SU 8-1, 8-2 and 8-3.
- 2) Perform an alpha scan of accessible surfaces in each Survey Unit.
- 3) Collect 17 systematic direct alpha surface activity measurements in each Survey Unit. The count time for all systematic and biased direct alpha surface activity measurements shall be 5 minutes each.
- 4) Collect additional biased direct alpha surface activity measurements based on results of the alpha scan and judgmental locations, such as cracks in the concrete.
- 5) If direct alpha surface activity measurements (systematic or biased) are in excess of the DCGL of 100 dpm/100 cm<sup>2</sup>, collect additional direct alpha surface activity measurements to define the area of elevated activity, providing dimensions for each. If elevated activity is limited to a concrete crack, provide sufficient data to delineate the length of the crack associated with the contamination as well as the width.
- 6) Collect a smear sample at each systematic and biased direct alpha measurement location.

### 3. Reporting of Follow-Up Investigation Surveys and Sampling

Following completion of follow-up investigation surveys and sampling a supplement to the *Final Status Survey Report, Defense National Stockpile Center, New Haven Depot, New Haven, Indiana*, dated January 9, 2009, will be prepared and submitted. Data reduction, evaluation, statistical tests and conclusions will follow the criteria and requirements specified in the *Final Status Survey Plan, New Haven Depot*.