



January 14, 2013

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REC RG 1 01 17 13 AM 07:17

Docket No. 030-03754
License No. 06-00217-06
Mail Control No. 577155

Mr. John Nicholson
U.S. Nuclear Regulatory Commission, Region I
2100 Renaissance Boulevard, Suite 100
King of Prussia, PA 19406-2713

Subject: NRC Request for Additional Information – November 27, 2012

References: (A) Letter, J. Nicholson (NRC) to J. Conant (ABB), dated
November 27, 2012

Dear Mr. Nicholson:

ABB Inc. ("ABB") is providing additional information to facilitate NRC's review of Final Status Survey Report Submittal Number 5 for the CE Windsor Site at 2000 Day Hill Road in Windsor, Connecticut. NRC requested additional information in your letter of November 27, 2012 (Reference A). This submittal provides the requested information.

If there are any questions or comments regarding this submittal, please contact Mr. Heath Downey, ABB's Radiation Safety Officer at (207) 939-5560 or me at (860) 418-0370 or by e-mail at john.conant@us.abb.com.

Sincerely,

ABB INC.



John F. Conant

Director, Nuclear Engineering and Compliance

Enclosure

xc: Heath Downey (RSO)
Charles Petrillo (Town of Windsor)
Edward Wilds (CTDEEP)

ABB Inc.

577155
NMS3/RGN1 MATERIALS-002

**Response to NRC Request for Additional Information
Dated November 27, 2012**

**CE Windsor Site
Windsor, Connecticut**

**NRC License Number 06-00217-06
Docket Number 030-03754
Control Number 577155**

January 14, 2013

Request for Additional Information Question 1:

Final Status Survey Report Submittal (FSSRS) No.5, volume I, section 3.2.10, references survey unit CE-FSS-33-09. This Class 1 survey unit is associated with the Site Brook. Inspectors from the Nuclear Regulatory Commission (NRC) and the Connecticut Department of Energy and Environmental Protection (CTDEEP) were on site on October 7, 2011, and collected biased confirmatory soil samples from this survey unit. Samples were split with ABB, NRC, and CTDEEP. The NRC samples were sent to Oak Ridge Institute for Science and Education (ORISE) for analysis. A report from ORISE, dated November 1, 2011, with the results for the soil samples collected from this survey unit, sample ABB-11-26-1 indicated a result for total uranium of 652 pCi/g. This exceeds the site specific DCGL for total uranium of 557 pCi/g. The CTDEEP sample number for this is FSS-33-09-DEP-1. A copy of this ORISE report was forwarded to ABB, Inc. and CTDEEP via an email dated November 2, 2011. There is no mention of this sample in section 3.2.10 of FSSRS No.5. Please describe what follow-up action was taken as a result of the site specific DCGL for total uranium being exceeded for sample ABB-11-26-1.

Response:

Survey unit CE-FSS-33-09, a Class 1 survey unit, was created to address elevated measurements identified during FSS of survey unit CE-FSS-33-05. Survey unit CE-FSS-33-05 is Class 2 and was designed for an area that was adjacent to a Class 1 survey unit in Site Brook. During gamma walkover surveys of CE-FSS-33-05 an elevated area was identified and samples were collected. These samples identified and bounded the elevated area, which exceeded the $DCGL_W$ and were utilized to calculate an elevated measurements comparison (EMC) following MARSSIM. The results of this investigation were included in FSSRS No. 5 as part of CE-FSS-33-05 (Section 3.2.6 and Appendix F) since this was the survey unit that the area was originally identified. The independent verification sample identified as ABB-11-26-1 (or FSS-33-09-DEP-1) was located within the EMC area identified as part of survey unit CE-FSS-33-05. The FSS was evaluated with this EMC and the release criteria were met.

Throughout the FSS process, the independent verification samples have been treated separately from the FSS sample set. In this location, the independent verification sample exceeded the $DCGL_W$ and had a higher result than the FSS samples. Although this independent verification sample was not specifically included in the FSS report or as part of the compliance analysis, an assessment of this independent verification sample in context with the rest of the FSS data for

this area will demonstrate that decision to reject the null hypothesis (residual radioactivity in the survey unit exceeds the DCGLs) is still correct. Several factors need to be considered as part of the assessment for this independent verification sample. These include gamma walkover surveys performed in the area, systematic FSS samples collected nearby and investigation samples collected in this area.

Gamma walkover survey data from survey unit 33-05, an area (Grid 17E44N-5) was identified for further investigation (elevated reading of 35,220 cpm gross) that had been surveyed using an unshielded 5" by 2" NaI detector in a water-tight housing. To prepare the area for investigation (rescan) with a 2" by 2" NaI detector system, the area was sand-bagged and dewatered. Since the 2" by 2" NaI gross gamma scan measurement values for the rescanned grid exceeded the investigation limits, a biased investigation sample (FSS-33-05-018I) was obtained at location 17E44N-5-E2. Pre (4,743 cpm) and post (3,262 cpm) sample static NaI gross gamma results were annotated on the investigation walkover scan survey (Appendix F page 20). Because the investigation sample gamma spectroscopy results exceeded the $DCGL_w$, an EMC investigation survey was performed to determine the extents of the elevated area. The methodology used for performing elevated area bounding investigation sampling is summarized in FSSRS No. 5, Section 2.7. Gamma walkover survey data gathered during the EMC investigation bounding survey with 2" x 2" NaI provided additional confidence that the initial investigation sample captured the source of the elevated measurement, as the maximum measurement of 3,600 cpm was less than the gross scan measurement investigation level of 4,004 cpm as listed in Table 2.7 of the FSSRS No. 5.

Because the elevated area was reclassified as new Class 1 FSS survey unit 33-09, the small EMC area was rescanned during the 100% gamma walkover survey of survey unit 33-09. No elevated measurements were identified during this gamma walkover scan. Again this corroborates the previous gamma walkover during the investigation that elevated readings were due to a small discrete anomaly and not a large area of the survey unit with elevated residual radioactivity. Additional confidence that the uranium anomaly was captured in the original investigation sample was provided by the one-minute post static NaI gamma results obtained after investigation sample acquisition, that indicated less than the gross investigation level, as documented on the investigation walkover scan survey cover sheet on page 22 of Appendix F of the Submittal 5 FSSR.

The systematic FSS samples collected as part of survey units 33-05 (17 samples) and 33-09 (30 samples) provided results that were well below DCGLs. This is further evidence that no large areas of elevated residual radioactivity were missed during remediation or FSS. Moreover, the location of the independent verification sample identified as ABB-11-26-1 (or FSS-33-09-DEP-1) was located within the EMC area. The locations and total uranium concentrations for survey unit 33-09 and the ABB investigation sample plus the independent verification sample are presented in Figure 1. Figure 1 also displays the variability of total uranium across this area and shows that the independent verification sample is within the 1 square meter EMC area around investigation sample 33-05-018I. Note that the EMC area bounding sample 33-05-18-N is next to ABB-11-26-1 and has a total uranium value of 38.5 pCi/g, once more demonstrating that the residual radioactivity in this area is discrete anomalies.

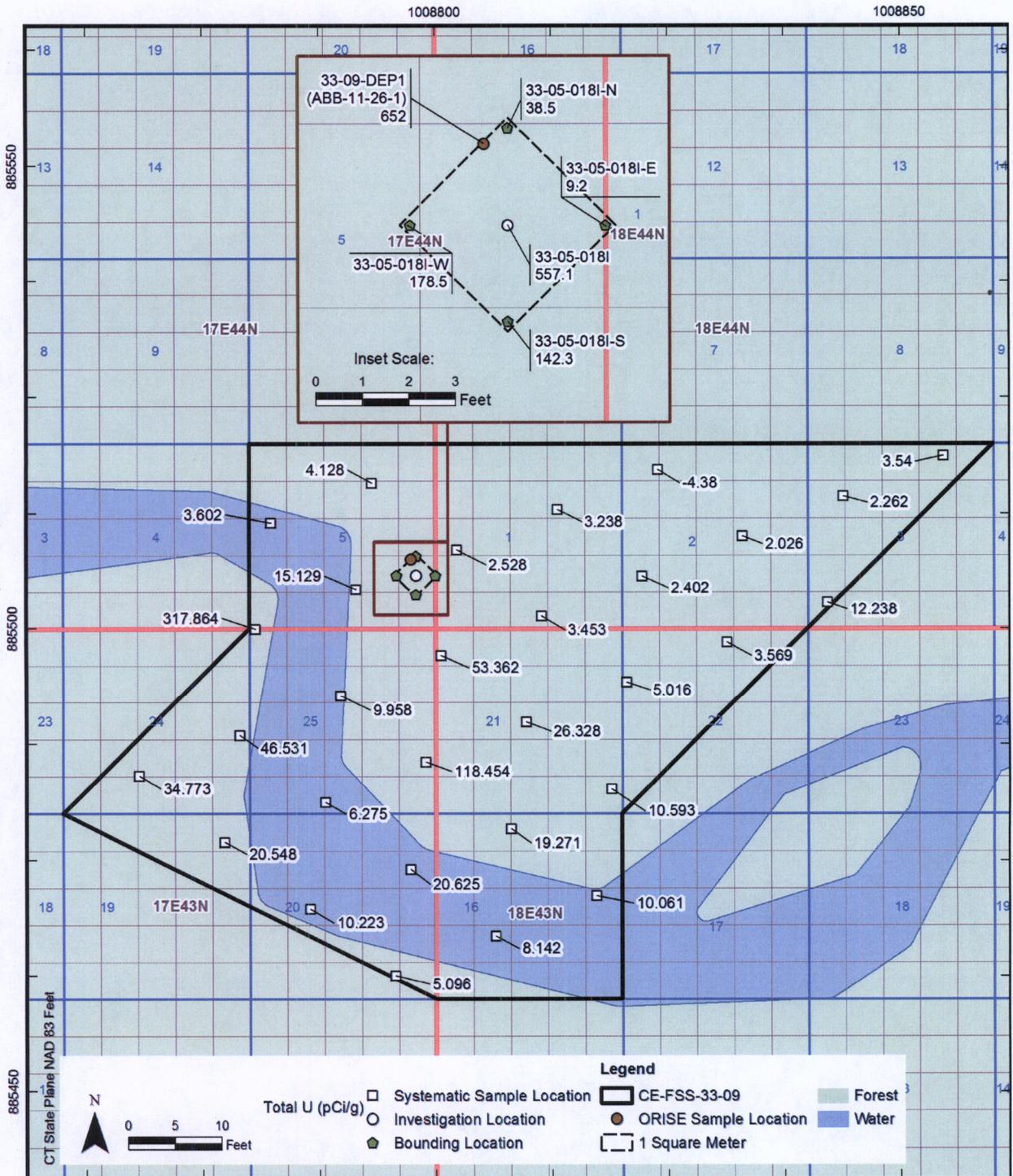


Figure 1 – Systematic and Investigation Samples for CE-FSS-33-09

Samples are collected during independent verification surveys (NRC/CTDEEP and/or ORISE) via three-way splits using a sampling protocol similar to that done during FSS. One of the split samples is analyzed on the ABB onsite gamma spectroscopy system using the same protocol as that performed for FSS soil samples. The ABB split sample results are evaluated to the DCGLs,

and provide data useful for sample shipment / handling to offsite laboratories (NRC/CTDEEP samples). If the ABB split sample results exceed the DCGL_w, the area where the sample was obtained is considered elevated and an EMC bounding investigation is performed for the area in a similar fashion to that performed when an elevated FSS systematic or investigation sample is identified. Since the ABB split sample of FSS-33-09-DEP1 (ABB-11-26-1) indicated a total uranium content of less than the total uranium DCGL_w, and was determined to be within the EMC area for sample 33-05-018I, no further action was necessary as the result was not considered elevated with respect to the DCGL_w. Therefore, no mention of sample ABB-11-26-1 analysis results performed by ABB was provided in FSSRS No. 5.

Another part of this assessment is to evaluate the inclusion of the independent verification survey sample result as part of the FSS data set for compliance. The first scenario is the survey unit 33-09 systematic samples and EMC values provided as baseline for comparison. This is how the data was provided in FSSRS No. 5 (page 757 of Appendix F). The Co-60 and total U DCGL_{EMCs} for a 1.0 m² area are 66.9 pCi/g and 10,922 pCi/g respectively.

Scenario 1 ABB FSS data only	Co-60 (pCi/g)	Total U (pCi/g)	Unity_{EMC}	SOF
Elevated 1 m ² Area 18 Average	-8.93E-03	1.85E+02	1.42E-02	
Survey unit FSS-33-09 Average	1.89E-02	2.59E+01		5.03E-02
Combined (Total) Unity Rule Variation (Unity _{EMC} +SOF value)			6.44E-02	

The next scenario is to include ABB-11-26-1 as part of the EMC calculation for the area identified around ABB sample 33-05-018I. Note that the combined unity rule variation does not change significantly with the addition of ABB-11-26-1 to the EMC area.

Scenario 2 ABB FSS and NRC data	Co-60 (pCi/g)	Total U (pCi/g)	Unity_{EMC}	SOF
Elevated 1 m ² Area 18 Average	1.81E-01	2.63E+02	2.77E-02	
Survey unit FSS-33-09 Average	1.89E-02	2.59E+01		5.03E-02
Combined (Total) Unity Rule Variation (Unity _{EMC} +SOF value)			7.80E-02	

The third scenario is to include ABB-11-26-1 as an additional EMC area (1 square meter) as part of survey unit FSS-33-09. The rest of the survey unit data indicates that this is improbable, but provides perspective for a worst case scenario.

Scenario 3 ABB FSS and NRC data	Co-60 (pCi/g)	Total U (pCi/g)	Unity_{EMC}	SOF
Elevated 1 m ² Area 18 Average	-8.93E-03	1.85E+02	1.42E-02	
Elevated 1 m ² ABB-11-26-1	1.13E+00	6.52E+02	7.39E-02	
Survey unit FSS-33-09 Average	1.89E-02	2.59E+01		5.03E-02
Combined (Total) Unity Rule Variation (Unity _{EMC} +SOF value)			1.38E-01	

So inclusion of the independent verification sample ABB-11-26-1 as part of the compliance calculation data set does not have any impact on the decision to accept the areas surveyed as ready for release from further radiological controls.

Final Status Survey of the ABB Windsor Site, which includes the Site Brook, was completed in accordance with the FSSP. As presented in this assessment, the area around the independent verification sample ABB-11-26-1 (FSS-33-09-DEP-1) was thoroughly investigated during the FSS EMC investigation of survey unit 33-05. As a result of the investigation, the small elevated area was segregated with about 316 m² and reclassified as Class 1 survey unit 33-09. During FSS scanning of survey unit 33-09, no areas required additional FSS investigation scanning or sampling as all data reviewed were less than the gross gamma scan investigation trigger level. As it is evident that the area where independent verification sample ABB-11-26-1 was obtained had previously been thoroughly investigated and found to meet the EMC_{unity} criteria as described in the FSSRS No. 5, no additional investigation sampling was warranted by ABB. The scenarios presented above provide additional confidence that the survey unit meets the release criteria and should be released for unrestricted use.