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Department of Energy

Ohio Field Office
Fernald Closure Project
175 Tri-County Parkway
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DEC 20 2006

Mr. James A. Saric, Remedial Project Manager
United States Environmental Protection Agency
Region V-SRF-5J
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

DOE-0100-07

Mr. Thomas Schneider, Project Manager
Ohio Environmental Protection Agency
Southwest District Office
401 East Fifth Street
Dayton, Ohio 45402-2911

Dear Mr. Saric and Mr. Schneider:

TRANSMITTAL OF RESPONSES TO OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS AND THE FINAL CERTIFICATION REPORT FOR SELECTED AREA 6 AND AREA 7 CONCRETE STRUCTURES AND CONCRETE IN THE RADON CONTROL SYSTEM AND THE SILO 3 PROJECT AREA

References:

1) Letter DOE-0047-07, J. Reising to J. Saric/T. Schneider, "Transmittal of the Draft Certification Report for Selected Area 6 and Area 7 Concrete Structures and Concrete in the Radon Control System and Silo 3 Project Area," dated November 3, 2006

2) Letter, J. Saric to J. Reising, "Concrete Structures in Area 6 and 7 Certification Report," dated November 29, 2006

3) Letter DOE-0086-07, J. Reising to J. Saric/T. Schneider, "Transmittal of the Response to the U.S. Environmental Protection Agency Comment on the Draft Certification Report for Selected Area 6 and Area 7 Concrete Structures and Concrete in the Radon Control System and Silo 3 Project Area," dated December 7, 2006

4) Letter, T. Schneider to J. Reising, "Comments - Certification Report for Selected Area 6 and Area 7 Concrete Structures and Concrete in the Radon Control System and Silo 3 Project Area," dated December 12, 2006

Enclosed for your review and approval are responses to Ohio Environmental Protection Agency comments and the final Certification Report for Selected Area 6 and Area 7 Concrete Structures and Concrete in the Radon Control System and Silo 3 Project Area. The U.S. Environmental

Protection Agency comment responses were previously sent as noted in References 2 and 3. All comment responses have been included in this final report.

If you have any questions or require additional information, please contact me at (513) 648-3139.

Sincerely,

Johnny W. Reising
Director

Enclosures

cc w/enclosures:
J. Desormeau, DOE-OH/FCP
T. Schneider, OEPA-Dayton (three copies of enclosures)
G. Jablonowski, USEPA-V, SRF-5J
M. Cullerton, Tetra Tech
M. Shupe, HSI GeoTrans
S. Helmer, ODH
AR Coordinator, Fluor Fernald, Inc./MS12

cc w/o enclosures:
J. Chiou, Fluor Fernald, Inc./MS1
F. Johnston, Stoller
P. Mohr, Fluor Fernald, Inc./MS1
T. Terry, Fluor Fernald, Inc./MS1

RESPONSES TO OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE DRAFT CERTIFICATION REPORT FOR SELECTED AREA 6 AND AREA 7 CONCRETE STRUCTURES AND CONCRETE IN THE RADON CONTROL SYSTEM AND SILO 3 PROJECT AREA

FERNALD CLOSURE PROJECT
FERNALD, OHIO

DECEMBER 2006

U.S. DEPARTMENT OF ENERGY

RESPONSES TO OHIO ENVIRONMENTAL PROTECTION AGENCY COMMENTS ON THE DRAFT CERTIFICATION REPORT FOR SELECTED AREA 6 AND AREA 7 CONCRETE STRUCTURES AND CONCRETE IN THE RADON CONTROL SYSTEM AND SILO 3 PROJECT AREA (20500-RP-0003, Revision A)

COMMENTS

Commenting Organization: OEPA Commenter: OFFO
Section #: Appendix C Pg #: General Comment Line #: NA Code: C
Original Comment #: 1

Comment: This appendix reports the precertification radiological scan results. Each CU lists the highest three readings for biased sampling, and shows a color-coded image of the scan, as well as, a cumulative frequency distribution graph. Regardless of the results of the scan, each and every description states, "The random distribution of survey results and the normal distribution of all data represented in Figure X of each survey report are indicative of natural radioactivity within the concrete..."

A closer look at the data indicates 50 percentile readings ranging from 1,000 - 3,000 dpm/ 100 cm^2 for various CUs in the report. If the data are indicative of natural radioactivity in the concrete, then why the discrepancy in the 50 percentile measurements? Of added curiosity is the range of maximum readings for each 100 cm^2, which range from 4,000 to 23,000 dpm/ 100 cm^2. Explain how these ranges of activities are indicative of natural radioactivity in the concrete. Might they also be indicative of widespread low-level contamination?

Response: The 50 percentile readings vary from approximately 1,000 to 3,000 dpm/100 cm^2 due to the fact that some measurements were performed with an instrument configuration that allowed for the subtraction of ambient background gamma radiation from the concrete measurements while other areas were measured and reported with instrumentation that does not subtract background gamma radiation. The background subtraction configuration was used in areas that had a varying gamma field due to the presence of nearby silos waste processing operations or staging of silos waste containers. If these two data groups are viewed independently, the individual 50 percentile ranges are smaller. The data group representing the gamma background subtracted results has a 50 percentile range of 1,000 - 1,500 dpm/ 100 cm^2 (11 separate scans). The data group having no background subtraction ranges from approximately 2,000 - 3,400 dpm/100 cm^2 (20 separate scans) at the 50 percentile. These ranges are within reason given the variation in day-to-day individual instrument performance, environmental influence and the variability in concrete surface conditions (e.g., distance to detector window when scanning over a surface that is not smooth).

For the same reason, the range of maximum readings varies across the concrete pads although all of the pads are considered to have only background levels of contamination based on the scan results, sampling results and the fact that the pads were never used for operations involving loose radiological contamination. The upper range value of 23,000 dpm/100 cm^2 noted in the comment is an anomaly described in the narrative of the "Truck Staging Pad West End" attachment in Appendix C. Although that value was initially detected and is included on the cumulative frequency distribution plot, the spot of elevated readings was not reproduced during a second confirmation scan. Note that a certification sample was collected from the location to verify that it was below FRLs.

With the anomalous value removed, the revised range of maximum readings is approximately 4,000 - 16,400 dpm/100 cm^2. This revised range includes data collected using both detector configurations as explained above, one that generates results with subtraction of the

background gamma radiation and one without. If these two data groups are viewed independently, the individual ranges for the maximums are approximately 4,000 - 11,800 dpm/100 cm^2 and 11,600 - 16,400 dpm/100 cm^2, respectively, for the data set with no background subtraction and the data set with background subtraction. It is intuitive that the background-subtracted range of values should be the lesser of the two ranges. However, the method used to calculate the detector efficiency during the calibration (daily) combined with the randomness of radioactive decay and counting statistics ultimately results in the background-subtracted data set being the higher of the two data sets. The attachment included with this comment response provides a more detailed explanation of the statistical nature of radioactive decay and the process of identifying true outliers in the data. This attachment will also be incorporated into Appendix C of the final certification report.

The most important point to consider is that the overall objective in performing the radiological scans over nearly 100 percent of the surface area of each concrete CU was to identify the three highest activity locations for high-biased physical sampling. Therefore, the three highest activity 100-cm^2 spots were sampled for laboratory analysis to ensure that the particular concrete CU passed the certification criteria. An equally important point for consideration is the fact that the radiological scanning systems employed were proven to be capable of detecting above-FRL conditions for radium-226 (the lowest FRL of all radiological COCs) based on actual scan surveys of the Transfer Tank Building pad and the Silo 1 and 2 Remediation Facility pad (reported separately under Certification Report 20500-PSP-0004) which were found to be contaminated with radium-226. A correlation established based on field scan results and laboratory sample results demonstrated that approximately 40,000 dpm/100 cm^2 had to be present on the surface to result in an exceedance of the FRL for radium-226 (1.7 pCi/g). Hence, the scanning system utilized for the concrete surfaces was clearly capable of detecting any hotspot that would fail the FRL criteria (based on the range of maximum values from 11,600 - 16,400 dpm/100 cm^2 summarized in the third paragraph above). In other words, if an actual above-FRL area existed on any of the Area 6/Area 7/Silo 3 area pads, the scanning system would have detected it and indicated the location as an outlier for physical sampling.

The recurring statement in the Appendix C narratives concluding that the scan results for most of the concrete surfaces were "indicative of natural radioactivity in the concrete and no outliers representative of added contamination are noted" remains true in most cases. The narrative for "Truck Staging Pad West End" identifies a potential outlier (hotspot) and also states that "all *other* areas exhibit a random distribution....." which is accurate as is. A correction will be made to the narrative for the "North Silo Pad" (north of Silo 3) to clarify that "added contamination" was detected on this particular pad following Silo 3 demolition activities. The locations were identified for high-biased sampling as part of the certification approach.

Action: The attachment to this comment response, which further explains the specific scanning approach, the different instrument configurations, the statistical nature of radioactive decay and the process of identifying true outliers in the data, will be incorporated into Appendix C of the final certification report. Additionally, a correction will be made to the "North Silo Pad" survey summary in Appendix C as noted in the response.

Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 2.2.2 Pg #: 2-6 Line #: 9 Code: C
Original Comment #: 2
Comment: Text states 21 random samples were collected for CU A7C-VP-C04 but only 20 random samples are shown on Figure 2-5 and in the statistics table in Appendix A. Either the text or the figure/appendix requires revision consistent to the true situation.

Response: Agree. The text in Section 2.2.2 is incorrect.

Action: The text in Section 2.2.2 will be corrected to state that 20 random samples were collected.

Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 3.2 Pg #: 3-3 Line #: 24-26 Code: C
Original Comment #: 3
Comment: Text states 2 CUs (A7C-S3-C02 and A7C-S3-C04) were eliminated from certification. V/FCN 20500-PSP-0013-04 states CU A7C-S3-C06 (Excavator Building) was also eliminated from certification for a total of 3 CUs. Either the text or the text or the V/FCN requires revision consistent to the true situation.

Response: Agree. The text in Section 3.2, Page 3-3 will be corrected. The V/FCN text is correct.

Action: The text in Section 3.2 will be revised to state that three CUs were eliminated from certification.

Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: 4.1 Pg #: 4-1 Line #: 14 Code: C
Original Comment #: 4
Comment: Incorrect citation. Final certification results are presented in Appendix A not Appendix B as stated.

Response: Agree.

Action: The text will be corrected to state "Appendix A".

Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: Appendix A Pg #: NA Line #: NA Code: C
Original Comment #: 5
Comment: Maximum values shown in Statistics Tables are incorrect for A7C-TP-C02 (Lead-210 Max. = 1.36, table shows 3.39; and Aroclor-1254 Max. = 3.6 U, table shows 3.5 U).

Response: Agree.

Action: The table will be corrected as noted in the comment.

Commenting Organization: OEPA Commenter: GeoTrans, Inc.
Section #: Appendix B Pg #: NA Line #: NA Code: C
Original Comment #: 6
Comment: V/FCN 20500-PSP-0012-01 appears to be incorrectly included in this report; it is not mentioned in Section 3.2 (Changes to Scope of Work). This V/FCN addresses concrete in the Silos 1 and 2 Area, which is not covered in this report.

Response: Agree. This V/FCN was inadvertently included in this report.

Action: Remove this V/FCN from Appendix B.