

February 1, 2018

Call with Hematite

Bridge Number: 866 707 7088

Passcode: 9181670

Introductory Remarks

This is a Category 1 meeting. The public is invited to observe the meeting consistent with past practice, and the public will have the opportunity to communicate with the NRC after the business portion of the meeting, but before the meeting is adjourned. There is nothing which requires the licensee to respond to any comments or questions from members of the public. However, while there is no requirement to respond, there is also nothing which precludes the licensee from responding to questions, if they choose to do so.

Purpose of call:

To discuss NRC Review of Westinghouse Hematite Final Status Survey Issues

Meeting attendees

Jim Smith NRC HQ

Mike Kunowski NRC RIII

Jason Lee ORAU

Lifeng Guo NRC HQ

Greg Chapman NRC HQ

Ken Pallagi HDP Westinghouse

Clark Evers HDP Westinghouse

Tiffany Drake Missouri Department of Natural Resources

Val Kelmeckis, Westinghouse February 1, 2018

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Westinghouse Response for Discussion:

Proposed Path Forward

A record search of Westinghouse actions and also interactions with and submittals to the NRC regarding this topic was completed. The following summarizes the results of the search.

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This prompted Westinghouse to utilize the scan MDC equations provided in the DP to document the Ra-226, and Th-232 scan MDCs based on actual field conditions, which were more conservative than the assumed field conditions provided in NUREG-1507. Therefore HDP-TBD-FSS-002 was developed to document these updated calculations. Revision 0 of HDP-TBD-FSS-002 was approved and issued on Feb, 2015. The document was then revised to Revision 1 on March 13, 2015 based on comments received from NRC Region III to include Appendix C, which specified scan MDCs for various background levels that could be utilized in areas of the site where general area background count rates differed from the assumed 10,000 cpm.

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Subsequently HDP-TBD-FSS-002 was revised (Revision 3) on August 19, 2015 based on comments received from NRC HQ that the assumed surveyor efficiency should be lowered from 1.0 to 0.75 when GPS data logging is used.

As stated above it is noted that the U-238 scan MDC provided in DP Rev 0 is in error, and should have been listed as 62.8 pCi/g. DP Chapter 14, page 14-71, last paragraph under 14.4.4.2.9 b, lists a U-238 MDER of $3.09\text{E-}1 \mu\text{R/hr}$ which is a typographical error. The correct U-238 MDER to use for Scan MDC calculations is $3.39\text{E-}2 \mu\text{R/hr}$. The typographical error in the DP does not affect FSS reports as the corrected U-238 scan MDC provided in HDP-TBD-FSS-002 was used for the purposes of FSS.

Westinghouse will forward to the NRC Revision 3 of HDP-TBD-FSS-002 which contains the MicroShield Output and the MDER Calculations.

2. Staff initially could not locate any write up about the background/reference area in the submitted documents (e.g., LSA 08-12 FSSP write up, draft Ch 3 vol 1 of the FSSR, and draft Ch 1 vol 1 of the FSSR). Staff extended their search to the Westinghouse DP, NRC's SER for the DP, and the HRCR. It has since come to staff's awareness that the data set being used for the WRS test is contained in HEM-15-MEMO-44. This change from the DP should be documented in the FSSFR. Westinghouse may wish to also consider supplementing the FSSFR to include the appropriate reference data/backgrounds for other media. Regarding reference area data, the licensee should either: 1) submit HEM-15 MEMO-042 and HEM-15 MEMO -044 formally and cite them in the FSSR, or 2) incorporate the discussion from these memos into the FSSR.

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A record search of Westinghouse actions and also submittals to the NRC regarding this topic was completed. The records search identified that the new background reference area data set was established and documented in HDP-RPT-FSS-301, which was submitted to NRC for review in letter HEM-14-89, dated November 19, 2014. The internal memos (HEM-15-MEMO-042 and HEM-15-MEMO-044) were used as a contractual mechanism to document communications between Westinghouse and the FSS subcontractor, thereby creating a written formal record of programmatic directives to the subcontractor. Both HEM-15-MEMO-042 and HEM-15-MEMO-044 provide the direction for the FSS subcontractor to use the newly established background reference area data set for the purposes of implementing the FSS program.

Subsequent discussions with the NRC regarding this topic resulted in Westinghouse submitting Revision 2 to FSSFR Volume 1 Chapter 1. Section 5.1.3 of Volume 1, Chapter 1, Revision 2, was revised and submitted in part to address the contents of HEM-15-MEMO-042 and the establishment of the new background reference area data set.

Westinghouse proposes to further incorporate specific discussion of these memos (option 2 above) into Section 5.1.3 of Volume 1, Chapter 1 via a revision with subsequent submittal to the NRC Document Control.

3. Staff noted some errors in the spreadsheet being used to perform the WRS test of the LSA 08-12 data. Specifically, the cell ranges in some formulas appear to be off such that the rankings are incorrect and the number of data points for the survey unit are miscounted...leading to incorrect determination of the Test Statistic and sum of ranks. While this does not impact the outcome for this survey unit, it is recommended that Westinghouse review all of its spreadsheets to see if this type of error is commonplace.

Westinghouse Response for Discussion

Proposed Path Forward

For LSA 08-12 a review of the associated spreadsheet indicates that the error occurred when Line 51 in the excel spreadsheet was inserted. Several changes to the WRS test were requested by NRC HQ after the initial FSS reports were submitted, to accommodate some of these changes the spreadsheet used to perform the WRS test was adjusted to include the requested additional changes to the WRS Test Evaluation. In the case of LSA 08-12, additional lines of information were inserted into the spreadsheet, and one of those lines was errantly not included in the updated excel calculations.

As stated by the NRC (above), the technical errors contained in the spreadsheet do not affect the final outcome of the WRS Evaluation; the SU still passes the WRS Test with sufficient power.

Westinghouse proposes to revise FSSFR Volume 3, Chapter 21 with subsequent submittal to the NRC with the following corrections to the report for LSA 08-12:

Original # of survey area measurements used 16 -> Corrected # of survey area measurements used 17

Original reported Rank Sum 1186 -> Corrected rank sum 1225

Original reported Wr value 1036 -> Corrected Wr value 1068

Original reported WRS Critical Value 860 -> Corrected WRS Critical Value 879

As a first step to determine an extent of this condition, all of the FSS excel spreadsheets used for Land Survey Area 08 (LSA 08-01 through LSA 08-17) have been reviewed, and no similar errors in the excel spreadsheets were identified. Nevertheless, Westinghouse will perform a review of all spreadsheets previously submitted to the NRC. Upon completion of the review Westinghouse will provide the results of the review during a regularly scheduled conference call.

4. The ventilation dose contribution is assigned to be 0.09 mrem for BSA-02-20 and 0.05 mrem for BSA 01-05. The total uranium activity from air sampling for BSA 02-20 is listed as 7.36E-7 uCi. I am able to find the isotopic uranium lab results in Appendix F, but not the total uranium value. Am I missing something in the lab report? Or, was there a calculation to determine the 7.36E-7uCi total uranium? I need to be able to trace the data from the original source (lab report), and verify they compared the total uranium value to the ALI appropriately.

Westinghouse Response for Discussion

Discussion

The TestAmerica analytical laboratory report only contains the alpha spec results for U-234, U-235, and U-238 separately. The laboratory report does not report Total Uranium as a separate value. Therefore the Total Uranium activity of the air filters was determined by summing the positive alpha spec results for U-234, and U-238, and using the reported MDA for U-235.

Results from TestAmerica ISO_U analysis:

U-234 = 4.91E-7 µCi

U-235 (MDA) = 5.15E-8 µCi

U-238 = 1.93E-7 µCi

Sum of results = 7.36E-7 µCi Total Uranium activity

Volume 4, Chapter 16, Section 18.1 stated:

As Ra-226, Th-232, and Tc-99 were non-detects (reported values significantly less than the MDC), the evaluation was only necessary for Total Uranium. Both U-234, and U-238 were reported as positive values above MDC, and the U-235 MDC was used in lieu of the reported U-235 activity of 0 uCi. The Total Uranium activity was summed and compared to the ALI for Total Uranium to determine dose using the following equation:

$$\frac{\text{Total U sample result}}{\text{ALI for Total U}} \times 5,000 \frac{\text{mrem}}{\text{ALI}} = \text{Residual dose impact from ventillation}$$

The ALI for Total Uranium was obtained from 10 CFR 20, Appendix B, Table 1, Column 2. The inhalation ALI provide for U-234, U-235, and U-238 is 0.04 µCi for each isotope. Therefore 0.04 uCi is used as the Total Uranium ALI, and for calculation of dose from the Total Uranium activity determined from the collected air sample results.

The same process was used for the ventilation air sample results collected from Building 110.

5. In looking at BSA 04-07 it appears the licensee used a different ambient background cpm for three samples (148 cpm vs 221 cpm). The ambient measurement of 148 cpm was taken with the same instrument but 10 days after (6/17) the one that resulted in 221 cpm (6/07). However, it seems like the licensee used the 221 cpm for the measurements that were taken on 6/17 and 148 cpm for the measurements taken on 6/07. (According to the yellow box on the excel sheet, the 221 cpm should be associated with 6/07 and 148 cpm associated with 6/17.)

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This information and data presented in the report, and used for calculations in the FSSDE spreadsheet is correct. The yellow box on the excel sheet contains a typographical error; the dates for the background measurements were errantly switched. The typographical error does not have an effect on the data presented in the report, as the correct instrument background was used for each measurement location. The radiological surveys presented in Appendix E (Vol 4, Chap 12) also contain the correct date and background information for each instrument used, and are unaffected by the error.

6. Specifically, in the LSA-08-01 FSSFR. Section 6.7, they state how the size of the elevated area was determined:

“The size of the associated elevated area surrounding this biased location was determined by using the nearest “clean” systematic and biased locations and the boundary edges of the SU itself to define a polygonal area of 40 m² as calculated by GIS software.”

The boundary of the survey unit is an organizational construct for analysis and staff do not feel that evaluating the area of the elevation should be bounded in this way as future site occupants would not likely be similarly constrained...especially if there are indications that the elevation could cross over the survey unit boundary. Artificially constricting the boundary of the elevated area may result in a reduced area of consideration and increased area factor making the evaluation of the elevated area faulty. It likely would be best to consider reimagining the survey unit boundaries to incorporate the entirety of an elevated area within a single survey unit. When staff attempted review of the Tc-99 elevated area sample results for both LSA 08-01 and LSA 08-02, they were unable to locate all of the sample data (only 4 of the 6 Tc-99 investigation samples were reported for LSA 08-01). Could Westinghouse provide all of the sample results for the Tc-99-7 investigation (i.e., Tc-99-7, 7a, 7b, 7c, 7d, and 7e)? Staff would like to consider all the sample results for the sample data as posted in Figure 6-3 of the LSA 08-01 FSSFR.

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