Westinghouse Electric Company LLC
Hematite Decommissioning Project
3300 State Road P
Festus, MO 63028
USA

ATTN: Document Control Desk
Director, Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Direct tel: 314-810-3355
E-mail: fusselgm@westinghouse.com
Our ref: HEM-15-85
Date: July 31, 2015

Subject: Hematite Decommissioning Project – Regional Response to U.S. Nuclear Regulatory Commission Review of Westinghouse Hematite Final Status Survey Issues and Associated Technical and Regulatory Bases and Paths Moving Forward (License No. SNM-00033, Docket No. 070-00036)

Reference: 1) NRC (Persinko) letter to Westinghouse (Fussell), dated July 17, 2015, "U.S. Nuclear Regulatory Commission Review of Westinghouse Hematite Final Status Survey Issues and Associated Technical and Regulatory Bases and Paths Moving Forward" (ML15196A601)

Dear Sirs,

The purpose of this letter is to provide a response to Enclosure 2 of the NRC letter dated July 17, 2015, (Reference 1) regarding information needed by the NRC Region III office to resolve the Regional Position, Information Follow-up Items from IR070-00036/2015001 and IR070-00036/2015002, presented in the letter. The Westinghouse response is contained in Attachment 1 of this letter.

Please contact Kenneth Pallagi at 314-810-3353, should you have questions or need additional information.

Sincerely,

W. ChEn

For
Gay M. Fussell
Deputy Director,
Hematite Decommissioning Project

Attachment: 1) Westinghouse Hematite Decommissioning Project, Response to NRC attachment to letter "Regional Position, Information Follow-up Items from IR070-00036/2015001 and IR070-00036/2015002" dated July 17, 2015

cc: J. W. Smetanka, Westinghouse
A. Persinko, NRC/NMSS/DUWP
M. A. Norato, NRC/DUWP/MDB
J. J. Hayes, NRC/DUWP/MDB
P. Louden, NRC Region III/DNMS/MCID
R. J. Orlikowski, NRC Region III/DNMS/MCID
M. M. LaFranzo, NRC Region III/DNMS/MCID

Attachment 1

Westinghouse Hematite Decommissioning Project
Response to NRC attachment to letter "Regional Position, Information Follow-up Items from IR070-00036/2015001 and IR070-00036/2015002" dated July 17, 2015

Westinghouse Electric Company LLC, Hematite Decommissioning Project

Docket No. 070-00036

Westinghouse Hematite Decommissioning Project
Response to NRC attachment to letter "Regional Position, Information Follow-up Items from IR070-00036/2015001 and IR070-00036/2015002"
dated July 17, 2015

1.0 Burial Pit Identification

Discussion Format

The attachment provided by NRC Region III is formatted such that there are three sections for each topic; 1) Licensee Position; 2) NRC Position based upon Referenced Documents; and, 3) NRC Position based upon release criteria/regulation. As such, this section will discuss each point within the topic separately.

Section i. Core Bores

NRC Region III asserts that the licensee believes that all burial pits have been identified because core bores were performed at 20 foot intervals.

As stated in the SER, and has been consistently communicated to NRC Region III, the methodology for determining that all burial pits have been identified is by **excavation and removal of soils and debris** within documented and undocumented burial pit areas. This methodology is further described in DP 8.5.2.1, "*Excavation will continue in areas of suspected fissile materials to a depth where historical knowledge, and/or visible and radiological evidence indicate that suspect materials have been removed. Once fissile material screening has determined that fissile materials are not present in the remediation area in excess of the NCS Exempt Material Limit, NCS controls are then curtailed.*"

Also, Westinghouse communicated during the February 12, 2015, on-site meeting with NRC Headquarters and NRC Region III personnel, and other occasions, that core boring is not a criterion for determination that all debris has been removed in the area of a burial pit or all burial pits have been identified. Westinghouse has consistently stated that in regards to a *determination that all debris has been removed in the area of a burial pit or all burial pits have been identified,* the methodology is to remove overburden material to a sufficient depth from 100% of the surface of the documented and undocumented burial pit area to ensure that "*visible and radiological evidence indicate that suspect materials have been removed.*" The DP does not state that visual inspection of core bores is a determining factor in assessing if burial pits have been identified. Westinghouse does utilize the results of the visual inspection of core bores to supplement information in regards to debris remaining in an area, as would be practical and prudent.

Also, Westinghouse communicated during the February 12, 2015, on-site meeting with NRC Headquarters and NRC Region III personnel, and other occasions, that the core borings are part of the screening process to release an area under remediation from Nuclear Criticality Safety Controls. This is stated in DP 8.5.2.1 as follows; "*Once fissile material screening has determined that fissile materials are not present in the remediation area in excess of the NCS Exempt Material Limit, NCS controls are then curtailed.* Subsequent to the release from NCS controls the methodology as previously described continues.

A required activity for exiting NCS controls is to inspect the core bores for debris and to perform radiological measurements. The results from the visual inspection and radiological measurement of the core boring provides the Nuclear Criticality Safety Specialist with data to make the determination whether or not it is appropriate to exit NCS control. Westinghouse has never proposed that the visual inspection of the core bores for debris is the definitive assessment that a burial pit has been identified.

In regards to topic b.i. of this section, DP Section 2.5.1 does provide a description of the documented burial pit dimensions as follows; "*These Burial Pits were used to dispose of waste materials generated by the fuel fabrication processes. These onsite burials were created under the governance of AEC regulations contained in 10 CFR 20.304 (1964, Reference 2-27). These regulations described the spacing of the pits, the thickness of the cover and the quantity of radioactive material that could be buried in each pit (Reference 2-28). The nominal dimensions of each Burial Pit are 20 ft wide by 40 ft long by 12 ft deep and the regulations provided that these were supposed to include an approximate cover depth of 4 ft.*"

DP Section 2.5.2 provides a description of the undocumented burials as follows; "*Interviews with former employees indicate that on-site burials (in addition to the burial practices under 10 CFR 20.304 [1964]) may have occurred as early as 1958 or 1959. Available employee interview records indicate that three or four burials may have been performed each year, prior to 1965, for disposal of general trash and items that may have been slightly contaminated relative to the current radiological free release standards of that period (Reference 2-31). Accordingly it is estimated that 20-25 burials may exist for which there are no records. Burials prior to 1965 were not documented (logged), as they were not considered to contain significant quantities of SNM, and were not known to contain radioactive wastes (Reference 2-32). No information has been located to indicate the specific nature of the waste material buried in these undocumented pits. Additionally, no evidence has been found to indicate that burial of known Uranium-bearing materials (i.e., above free release criteria) occurred during this time period. These burials are believed to be in the area between the documented Burial Pits and the site buildings, under roadways in the eastern portion of the Central Tract area (see Figure 2-5).*"

Based upon the information provided in DP 2.5.1 and 2.5.2 there was no certainty relative to the number, size or dimensions of the documented burial pits and undocumented burials. For that reason HDP applied a more conservative approach than approved in the DP to identify burials. Rather than attempting to locate documented burial pits and undocumented burials individually HDP implemented a conservative approach in that it removed overburden from 100% of the burial pit area and additional areas to allow for visual inspection and radiological measurement of those areas.

In the NRC Region III Position on this topic NRC Region III provided the directive that "The licensee shall acknowledge burial pits being smaller than 20' x 40' and address how they implemented the intent of the DP with smaller burial pits." The DP acknowledges that there are no records of the undocumented burials. Therefore it is implicit in the description provided in the DP that the burial pits could be larger or could be smaller in size.

Section ii. Core Bore Samples and DCGLs

NRC Region III's premise that core bore samples used for exiting NCS control are relatable to the DCGLs for Final Status Survey is incorrect. The approach of relating core bore survey scans to DCGLs and subsequently relating that measurement in some fashion to demonstration of the release criteria is not stated or implied in the DP or the FSS program.

As demonstrated to the NRC during the February 12, 2015, on-site meeting, attempting to correlate NCS core bores to FSS release criteria is ineffectual. HDP demonstrated to the NRC the fact that often a downward progression of remediation would be sufficient to perform a criticality assessment allowing removal of NCS controls prior to soil contamination measurements indicating levels less than DCGLs had been reached. In this instance core borings would be conducted, evaluated, and as determined appropriate by the NCS Specialist, the area would be released from NCS controls. With the NCS controls removed from the remediation process in that area excavation could proceed at a much faster pace. In some instances the remediation of an area would then continue to depths far below the location of the core bores. That is to say, the surrounding soil (soil below NCS control criteria and above the DCGLs) was removed and sent for disposal. Once sufficient soil containing residual contamination was removed and the visual inspection and radiological measurements indicated the area was acceptable for FSS (below DCGLs), remediation would cease and the area would transition to FSS.

Section iii. Determining if a Burial Pit was Extracted by Depth of excavation

In this section, NRC Region III is inferring that the documented and undocumented burial pit areas must be excavated to a minimum depth of 10 feet to adequately demonstrate that the burials were "extracted". NRC Region III then states a path forward is to conduct core bores in areas where excavation was less than 10 feet.

Westinghouse does not agree with NRC Region III that excavating to a depth of 10 feet or performing additional core borings in the areas that were not excavated to 10 feet is required to demonstrate that the burials were "extracted." The premise of a mandatory excavation depth or additional core boring to a depth with no defined and confirmed basis is predicated on an assertion that the visual inspections and radiological measurement methodology approved in the DP is inadequate. The assertion that visual inspection and radiological measurement from original grade to 10 feet is inadequate but the visual inspections and radiological measurement below a 10 foot depth is adequate does not appear to have a technical basis.

Westinghouse does not agree that utilizing visual inspection and radiological measurement as approved in the DP to demonstrate burial pits have been excavated or do not exist in a specific location in the burial pit area is a potential violation of 10 CFR 20.1501. Health Physics Position Based on 10 CFR Part 20 HPPOS-010 PDR-9111210101 in regards to 10 CFR 20.1501 (10 CFR 20.201 (b)) states "The revised rule on surveys is based on the assumption that such failure to perform adequate surveys has the potential to cause a violation or a violation could have occurred. In the context of the rule, the principal role of performing surveys or making evaluations necessary to comply with regulations is preventive, rather than to determine if a licensee has satisfied other 10 CFR Part 20 requirements." Westinghouse disagrees that not taking additional core bores in areas excavated less than 10 feet is a violation of 10 CFR

20.1501. Westinghouse's position is that the approved methodology of the DP is indeed an adequate survey and therefore demonstrates compliance with 10 CFR 20.1501.

Section iv. Statistical Approach for the Identification of Burial Pits

NRC Region III asserts that Westinghouse is utilizing a statistical strength methodology to demonstrate that all burial pits were identified.

During discussions with the Region III Inspector regarding the issue of burial pit identification it was stated it would be helpful to the Inspector if the licensee could provide additional evaluations and then proposed a statistical analysis be completed. Westinghouse honored the request and completed HDP-TBD-NC-205, *Assessment of the adequacy of Lateral Subsurface Soil Sampling in the Burial Pit Area.* Westinghouse was keenly aware that this would be a supporting document but not a document to definitively demonstrate that all burial pits had been identified. As such, the technical basis document states the following purpose; "*The purpose of the Technical Basis Document (TBD) is to provide a statistical analysis for the lateral subsurface sampling criteria that accompanied full remediation of the Hematite Decommissioning Project (HDP) Burial Pits.* ***The statistical analysis provides confidence levels associated with the positive lateral identification of all buried debris present at HDP*** *using the subsurface sampling techniques employed over the prior burial pit remediation operations.*"

Section v. NRC's SER Did Not Approve Acceptability of Visual Inspection

NRC Region III asserts that the NRC SER approving the DP did not confirm the acceptability of a visual inspection to identify burial pits. NRC Region III also asserts that the use of visual inspection was confined to items containing fissile material. NRC Region III also asserts that the DP does not acknowledge that the discoloration in the soils or the like is an acceptable means to identify burial pits. NRC Region III also asserts the licensee is outside the bounds of its DP as the DP does not include criteria for identification of burial pits.

In regards to visual inspection NRC Region III provided a reference to section 10.0 of the SER. Section 10.0 of the SER primarily discusses Nuclear Criticality Safety and not identification of burial pits. Westinghouse's position is that a more appropriate reference in regards to discussing visual inspection is contained in Section 8.0 of the SER. Section 8.0 discusses *Planned Decommissioning Activities* and references "visual inspection" several times in regards to the methodology used to remediate the site, which includes identification and remediation of burial pits. For example, in SER Section 8.3 the NRC states "*Methodologies for the excavation of specific soil areas were provided in DP Sections 8.5.3.1 – 8.5.3.5. These areas include* ***the burial pits****, evaporation ponds, former leach field, soils in and around site ponds and creeks, as well as the soil beneath on-site buildings.*" This statement is contrary to NRC Region III's position in that the NRC did confirm the acceptability of visual and radiological measurement to identify burial pits.

In regards to NRC Region III's assertion that the DP does not acknowledge that discoloration in the soils or the like as an acceptable means to identify burial pits, Westinghouse agrees that the DP does not specifically make a statement concerning soil discoloration. Rather, in the course of

remediation Westinghouse noted that the burial pits evidence significant discoloration to the point that it was a very good indicator of the presence of a burial pit. Westinghouse has used the identification of "discoloration" to assist in identifying a burial pit during excavation in the context of performing a visual inspection. As applied at HDP, visual inspection is the use of any or all raw human senses such as vision, hearing, touch, and smell. To discount the use of visual color gradients as a tool when performing a visual inspection does not appear to be appropriate.

In regards to NRC Region III's statement that the licensee is outside the bounds of its DP as the DP does not include criteria for identification of burial pits, Westinghouse's position is that there is more than sufficient documentation that the NRC reviewed and approved the methodology contained in the DP for identification of burial pits.

Path Forward

Westinghouse believes it has that more than sufficiently justified that all Burial Pit identification and excavation was performed within the bounds of the approved DP, and was more than adequate to identify the presence of a known or unknown Burial Pit. And as such, Westinghouse believes that following this process, all potential known and unknown Burial Pits within the site "Burial Pit Area" have been adequately identified and remediated. Westinghouse does not believe that any additional core boring or other kind of investigation is necessary to further prove this point.

Westinghouse recognizes that the potential remains to identify additional buried debris or potential unknown Burial Pits in areas of the site that have yet to be remediated (e.g., the Waste Handling Area and under existing haul roads), and for that reason Westinghouse will continue to follow the process described in the DP and site procedures to identify areas requiring remediation, and to determine when an area has been adequately remediated.

2.0 Sidewall Sampling

Summary of Westinghouse Response

Westinghouse does agree with NRC Region III's assertion that Westinghouse believes that sidewall of excavated areas have been adequately surveyed to comply with NRC Regulations. Westinghouse disagrees with the assertion that the licensee's basis for that conclusion has changed numerous time over the last 6-9 months. Although remediation has been ongoing since April 2012, and FSS was performed as early as January 2015, it is only within the last 6-9 months that current NRC Region III Inspectors have endeavored to understand the conceptual model (novel approach as stated by NRC Headquarters) approved in the DP. Westinghouse has not changed its original basis, as that basis is derived from the technical discussions found in the DP. Westinghouse believes that as NRC Region III gained further understanding of the approaches as documented in the DP and utilized at HDP through discussion with site technical staff and review of documentation provided to NRC Region III, it has perceived the basis has changed when in fact it has not.

Section i. Sidewall Survey Requirements

NRC Region III asserts that the DP does not require any sampling of sidewalls or considers sidewalls to not be part of the survey unit.

DP 14.4.4.1.6.2, titled "Sub-surface Soil" states the following in regards to the final evaluation of residual radioactivity in soil prior to backfill; "*A RASS consisting of a gamma walkover survey (GWS) of 100 percent of the surfaces, and the collection of soil samples at biased locations, will be performed of the excavated surfaces (i.e., floor,* ***including sidewalls*** *that will not be subsequently excavated)* ***to provide a basis that the survey unit****, or portion of a survey unit, meets the remedial goal.*" Furthermore Section 14.4.4.1.6.2 states "*The FSS will also include the collection of soil samples at systematic grid locations, and the collection of additional samples at biased locations from the floor* ***and as applicable, the sidewalls of the excavation****, focusing on locations that appear to contain potentially elevated levels of residual radioactivity that were identified during the scan survey.*" This unambiguous statement refutes the NRC Region III's assertion that the DP does not require any sampling of sidewalls or that the DP does not consider the sidewalls as part of a Class 1 Survey Unit.

Section ii. Sidewalls as Part of a Class 1 Survey Unit

NRC Region III asserts that Westinghouse does not consider that sidewalls as part of the Class 1 Survey Unit. Westinghouse has never stated that sidewall surfaces are not part of the survey unit.

Westinghouse provided in the DP a conceptual three stratum model. In essence the three stratum model acknowledges the fact that the configuration at the time of FSS for the majority of Class 1 survey units would be an excavation rather than the flat surface that MARSSIM is based upon. Westinghouse did so, based upon the acknowledgement of the issue as evidenced by the NRC presentation titled "Implementation of MARSSIM – Lessons Learned" by Rich Clement NRC, in which it was stated that MARSSIM is limited in that it does not address non-flat surfaces and equipment. The use of the three stratum conceptual model endeavored to address the weaknesses of MARSSIM by addressing the survey and sampling requirements that MARSSIM did not address for excavation scenarios. The methodology was provided in DP Chapter 14 and upon completion of the RAI process approved by the NRC.

The soil conceptual models specified in the DP are volumetric (three dimensional) models and are not surface (two dimensional) models such as flat land or a structure surface. For this reason, Westinghouse stated in DP 14.4.4.1.6.2 that "*A RASS consisting of a gamma walkover survey (GWS) of 100 percent of the surfaces, and the collection of soil samples at biased locations, will be performed of the excavated surfaces (i.e., floor,* ***including sidewalls that will not be subsequently excavated****) to provide a basis that the survey unit, or portion of a survey unit, meets the remedial goal.*"

From a three dimensional perspective the DP has addressed the sidewall issue by including it within the survey unit by indicating the requirement of a 100% gamma scan of the sidewalls with the subsequent actions dependent on the results of the gamma scan. Because the three stratum conceptual model is volumetric, to ensure vertical sampling throughout the stratums as dictated by the configuration of the excavation, the selection of the systematic grid sample locations is

based upon the two dimension model employed by MARSSIM. It is self-evident that if the DP employed utilizing the entire surficial area of an excavation as a basis for systematic grid sample location selection a sample point could fall upon a location that dictated horizontal sampling. This would result in negating the three stratum model and not properly sampling the required stratums.

To support NRC Region III's assertion that Westinghouse does not consider the sidewalls as part of the Class 1 Survey Unit, NRC Region III stated that "The licensee points to Section 14.4.3.3 of the DP titled 'Reference Grid and Sampling and Measurement Locations'. This section states the survey sampling locations and measurement locations are a function of the sample size and the survey unit size." Westinghouse presumes NRC Region III is attempting to state that the DP provides that the unit size determines systematic grid sample locations and that Westinghouse is not considering the sidewalls. Westinghouse again points to the necessity to differentiate and appropriately apply the various requirements to a survey unit based upon the model presented in the DP and the applicable scenario.

In the discussion of NRC Region III's position on the issue, NRC Region III referenced Mallinckrodt and Breckenridge as past sites the NRC staff approved. Westinghouse was aware of the Mallinckrodt site as it is near the locale of HDP. Westinghouse had reviewed publicly available FSS documents from Mallinckrodt in the context of discussion of the sidewall issue that the NRC Region III presented. The review indicated that there were many similarities to the Hematite DP and therefore Westinghouse does not understand how the approach reflected in those documents supports NRC Region III's position with respect to the Westinghouse DP.

Several of the Mallinckrodt final status survey reports referenced by the NRC in the Regional Position letter were reviewed for the methodology of surveying sidewalls and the following items of interest were noted:

- Based upon a review of the survey unit overview map and the associated scaling factor compared to the reported survey unit size it appears that wall surfaces were not included in overall survey unit size (e.g., survey unit size is two dimensional area).
- Statistical systematic grid samples for statistically evaluating the survey unit appear to only cover floor surfaces of the excavation.
- Samples that were collected on sidewall surfaces were not part of the overall statistical evaluation of the survey unit and were not included in the statistical testing (i.e., WRS Test) nor were separate sidewall survey units identified.
- There was soil benching and small vertical surfaces 1 or 2 feet in height within survey units similar to what is typical at HDP. These vertical surfaces had no special sampling and in some cases vertical surfaces of greater heights that did not indicate additional sampling.
- Various types of samples were collected on sidewall surfaces in which samples were collected. Biased samples were collected in the west sidewall of SU-01. In SU-10 characterization samples were collected on the west sidewall and appear to be biased towards higher readings. In SU-20 it appears Characterization samples were collected on a systematic grid. Various survey units did not appear to have samples for vertical surfaces within the excavation; examples are Figure 13-2 of SU-07, Figure 20-2 of SU-14,

and Figure 15-2 from SU-09. As noted above none of these samples appeared to be part of the statistical systematic data set for the survey unit.

These sample approaches in the Mallinckrodt documentation for sidewalls appear to be more supportive of the DP and not supportive of NRC Region III's position that sidewall samples must be part of the statistical population.

Section iii. Use of a Tc-99 Surrogate

NRC Region III asserts that Westinghouse's position is that Westinghouse performs biased soil sampling of the sidewalls and infers Tc-99 through gamma scans for uranium identification and that Westinghouse believes that a MARSSIM soil sample grid pattern is not necessary.

NRC Region III stated that the licensees' surrogate position in the DP was rejected and provided the following information "WEC's request for additional information (RAI) response 14.3a provided in attachment 10 of HEM-11-96 dated July 5, 2011, (ML111880290), states "The Tc-99 surrogate relationship is prohibited from use in the evaluation of analytical results to determine compliance with final status survey dose criteria".

Westinghouse believes it is appropriate for NRC Region III to review the response to RAI 14.3a in its entirety to better understand Westinghouse's position on a surrogate for Tc-99, which is the language of the DP.

"Westinghouse will add the following to the end of DP Section 14.1.4.3.1:

Surrogate relationships have been developed for Tc-99 and U-234 and are presented in Sections 14.1.4.3.2 and 14.1.4.3.3, respectively. However, the Tc-99 surrogate relationship is prohibited from use in the evaluation of analytical results to determine compliance with the final status survey dose criteria instead of a surrogate relationship, laboratory analysis for Tc-99 will be performed for all FSS samples.

Westinghouse will add the following to the beginning of DP Section 14.1.4.3.5:

The application of the modified U-235 values (and associated total uranium values) from Table 4-19 is restricted to survey design (evaluation of scan sensitivity) and excavation control (remedial action support surveys). Laboratory analysis for Tc-99 will be performed on all final status survey samples and as such, the adjusted U-235 DCGL values shown in Tables 14-4, 14-9, and 14-10 are prohibited from use to demonstrate compliance with the final status survey dose criteria.

Westinghouse will delete DP Section 14.1.5.1.3.

Westinghouse will revise the third paragraph of Section 14.4.3.1.10 as follows:

First, a modification to the shift (Δ) is required (Equation 14-20). In all cases the DCGLW will simply be equal to unity (1) due to measuring multiple ROCs. When it is desired to set the value of the LBGR to the mean concentration in the survey unit, Equation 14-22 will be used to calculate the $LBGR_{SOF}$*, normalized to unity, by using the average concentration for each ROC. It is unlikely that the areas of the survey unit at Root stratum and Deep stratum conditions will be equal and therefore the average concentration level in each area will need to be weighted. Also, if actual Tc-99*

concentrations are not included in the data set that will be used to determine sample size, then the modified U-235 soil $DCGL_W$ values (Table 14-9), which account for the presence of Tc-99, will be used. The following equation defines this calculation of $LBGR^{SOF}$."

Westinghouse would also refer to the response to RAI 14.3b to provide a comprehensive position on TC-99 surrogate. The RAI 14.3b response is as follows:

"With respect to sampling for Tc-99, Westinghouse provides the following table in lieu of a flowchart since the information being requested is better suited to a table format.

Minimum Laboratory Analysis Methods for Tc-99		
Work Activity	***Sample Purpose***	***Analysis Method***
Remediation Phase	*NCS Samples*	*Gamma Spec*
	Remedial Action Support Survey	*Gamma Spec*
	Reuse Material Sample	*Gamma Spec and Tc-99*
	USEI Waste Sample	*Gamma Spec and Tc-99*
	Waste Sample (other disposal facility)	*Gamma Spec*
Supplemental Characterization (as needed)	*Characterization Sample*	*Gamma Spec Or Gamma Spec and Tc-99*
Final Status Survey Phase	*FSS Sample*	*Gamma Spec and Tc-99*

With respect to scans to identify the presence of Tc-99, Westinghouse will use the approach outlined in Westinghouse letter HEM-10-80, dated July 30, 2010. The surrogate relationship between U-235 and Tc-99 allows conventional radiological instrumentation to perform scan surveys during Final Status Survey. These scans will rely on the use of a conservative U-235: Tc-99 ratio from DO-08-008 to adjust the U-235 $DCGL_{EMC}$ to account for Tc-99. Where the scan sensitivity based on the ratio is insufficient (e.g., the TSA SEA), adjustments to the sample size will be made in accordance with MARSSIM protocol (as described in Section 14.4.3.1.11)."

Westinghouse believes that it has consistently applied the statements in the DP and RAIs in regards to Tc-99 and surrogates.

Section iv. Type I Criteria

NRC Region III asserts that Westinghouse is changing its Type I criteria without approval.

Westinghouse believes NRC Region III is basing the assertion on its perception of Westinghouse's position in regard to section i. and ii. As stated, Westinghouse does not agree with NRC Region III's on section i. and ii. and therefore disagrees with the assertion.

Section v. Sidewall Sampling is not Sufficiently Conservative

NRC Region III asserts that the licensee's position for sidewall sampling is not conservative nor is it what was discussed with the NRC.

Westinghouse disagrees with the NRC Region III's position that the sidewall sampling methodology must be conservative. Westinghouse is unaware of any regulatory basis that the most conservative approach must be utilized. Rather, Westinghouse continues to comply with the requirements of the DP and the supporting RAIs.

The statistical sample design is based upon requirements of the DP and utilizes a Type I error of 5%. The statistical sample population is collected at the specified frequency determined in the design and at representative locations in the survey unit. Scan surveys are performed to identify any elevated readings on all surfaces, including any vertical surfaces. The approach outlined in above sections (as outlined in the DP and RAIs) for using the surrogate relationship is utilized.

The historical sample results indicate that the hard-to-detect nuclide of Tc-99 has not been present in the Burial Pits at significant levels and indicate that no adjustment (increased sample size) would be needed for the systematic sampling grid. The historical sample results are consistent with the results of both the systematic and biased soil samples taken during FSS in the Burial Pit Area. Additionally, Westinghouse has also reviewed the ORAU analysis of soil samples taken by the NRC in the Burial Pit Area on April 22, 2015, (ML15159A565) and found the results to be consistent with HDP FSS results.

Westinghouse believes there is sufficient empirical data from soil samples taken to date demonstrates that the sampling conducted on sidewalls is adequate.

Path Forward

Westinghouse believes that the FSS process of sidewall sampling described in the Survey Area Release Record for Land Survey Area 10, Units 01 and 02, is adequate to address the potential lateral movement of Tc-99 within excavated areas, and has been executed appropriately and completely in the implementation of FSS. Furthermore Westinghouse believes that approach is consistent with the approved DP, and follows the approach utilized by the St. Louis Mallinckrodt site.

3.0 DCGL vs. Gamma Walkover Surveys

NRC Region III asserts that Westinghouse submitted HEM-15-MEMO-021 as the technical document to show gamma walkover surveys (scans) meet the DCGL's.

Summary of Westinghouse Response

Westinghouse did provide HEM-15-MEMO-021 in regards to inspection discussion related to IALs, count rates during scanning and the DCGLs. Subsequently as a follow-up to the issuance of the HEM-15-MEMO-021, Westinghouse issued Technical Basis Document HDP-TBD-FSS-003, *Modeling and Calculation of Investigative Action Levels for Final Status Survey*. HDP-TBD-FSS-003 was then provided to NRC Region III. Westinghouse believes it has provided sufficient technical information that the IAL used during gamma walkover scans (survey meter readings) is relatable to DCGLs.

Discussion

Westinghouse issued to the FSS contractor, memorandum HEM-15-MEM0-021, *Evaluation of the Scan Investigation Action Level (IAL) for Class I areas at the Westinghouse Hematite Site*, as documentation between Westinghouse and the contractor in regards to scan investigation action levels. Westinghouse issued Technical Basis Document HDP-TBD-FSS-003, *Modeling and Calculation of Investigative Action Levels for Final Status Survey* to further document the basis for the IAL as it relates to DCGLs.

Upon arrival at the HDP site for Inspection activities, Westinghouse provides to the NRC Region III Inspectors a Compact Disc copy of all current HDP procedures and technical basis documents. During inspection activities the week of March 30, 2015, as part of the inspection, the NRC Region III Inspector discussed the issue of survey meter readings being relatable to DCGLs with the HDP Health Physics technical staff. During that discussion the NRC Inspector and the HDP Health Physics technical staff reviewed and discussed HDP-TBD-FSS-003, *Modeling and Calculation of Investigative Action Levels for Final Status Soil Survey Units* that was previously provided on Compact Disc. At the conclusion of the discussion Westinghouse believed that the Inspector understood the approach.

Path Forward

If in fact the approach of HDP-TBD-FSS-003, *Modeling and Calculation of Investigative Action Levels for Final Status Survey* is not understood by the NRC Region III, Westinghouse is prepared to discuss the approach further with the Region, Headquarters, or ORAU at any time either verbally or through written RAI's to reach a mutual understanding on the approach that has been utilized.