

January 26, 2011

Mr. Chad Glenn, Project Manager
 U.S. Nuclear Regulatory Commission
 Materials Decommissioning Branch
 Division of Waste Management and Environmental Protection
 TWFN Mail Stop 8F5
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SUBJECT: DOCUMENT REVIEW OF THE FINAL STATUS SURVEY PLAN FOR THE BULK STORAGE WAREHOUSE AT THE WESTERN NEW YORK NUCLEAR SERVICE CENTER, WEST VALLEY, NEW YORK DCN: 2034-DR-01-1

Dear Mr. Glenn:

The Oak Ridge Institute for Science and Education (ORISE) has completed reviews of the following documents associated with the plans for a partial site release of the Bulk Storage Warehouse property at the Western New York Nuclear Service Center:

Final Status Survey Plan for the Bulk Storage Warehouse at the Western New York Nuclear Service Center, West Valley, New York, Final, November 2010.

Nuclear Regulatory Commission Inspection Report No. 70-1156/75-01. March 11, 1975.

Nuclear Regulatory Commission Letter, Close Out of ASDA Plutonium Storage Facility at West Valley, New York Site. April 4, 1975.

Nuclear Regulatory Commission Letter, Comments on Phase 1 Final Status Survey Plan and Phase 1 Characterization Sampling and Analysis Plan for the West Valley Demonstration Project. May 17, 2010.

Department of Energy Letter, Responses to Nuclear Regulatory Commission (NRC) Comments on the Phase 1 Final Status Survey Plan (FSSP) and Phase 1 Characterization Sampling and Analysis Plan (FSSP) for the West Valley Demonstration Project (WVDP). October 21, 2010.

Comments are enclosed for your consideration. Please contact me via my information below or Tim Vitkus at 865.576.5073 should you have any questions.

Sincerely,



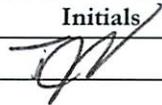
Erika N. Bailey
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ENB/bf

Enclosure

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File/2034

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DOCUMENT REVIEW OF THE FINAL STATUS SURVEY PLAN FOR THE BULK STORAGE WAREHOUSE AT THE WESTERN NEW YORK NUCLEAR SERVICE CENTER, WEST VALLEY, NEW YORK

General Comments

Although Derived Concentration Guideline Levels (DCGLs) have not been developed for the Bulk Storage Warehouse (BSW) site, 10 CFR 50.83 requires the performance of adequate surveys of impacted areas to demonstrate compliance with criteria in 10 CFR 20.1402. Per 10 CFR 20.1402, a site will be considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a total effective dose equivalent (TEDE) to an average member of the critical group that does not exceed 25 mrem per year and the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA). However, the proposal in the final status survey plan (FSSP) is to compare the data collected in the various survey units (SUs) to the “appropriate” release criteria. The “appropriate” criteria listed are combinations of out-of-date guidelines coupled with an attempt to demonstrate that the site conditions are comparable to background conditions (which the reviewer interprets as meaning no impacts to the site from past radiological activities). The approach results in a fairly complex non-integrated matrix that appears to attempt to avoid the necessity to develop site-specific DCGLs. This approach as presented does not satisfy the current license termination rule and resulted in many of the specific comments below. In several cases the approach does not demonstrate that a TEDE of 25 mrem per year is not exceeded and/or the approach/release criteria selected are not being applied as the guidance document intended.

Specific comments to the FSSP as it currently stands are listed below. ORISE recommends that these comments be addressed or that the FSSP be redesigned and that perhaps the redesign could follow the guidance in NUREG-1757, Vol. 2, Section 2.5 *Demonstrating Compliance using Dose Assessment Methods Versus Derived Concentration Guideline Levels and Final Status Surveys*. Section 2.5 describes some of the advantages and disadvantages of the two approaches; however, the licensee would need to determine the best path forward for the specific conditions at the site.

Specific Comments

1) Section 3.3.3:

Comment: ORISE does not agree with the exclusion of the walls and ceilings as survey units with the current limited information provided in the FSSP.

Basis: Although a statement is made in Section 2 claiming there is no known pathway for the walls and ceiling to have been contaminated, the ventilation system (which was previously connected to the radioactive material transfer hood) is a survey unit and potentially contaminated which is a potential pathway for wall and ceiling contamination.

Path Forward: ORISE recommends including the walls and ceiling as survey units or providing additional justification in the FSSP for omitting them. Class 3 survey activities can be focused in the most likely areas of contamination (i.e. in the vicinity of the former hood and near ventilation openings, joints, etc.)

2) Section 3.5:

Comment: The decision rule as stated—“The decision rule relates the radioactivity concentration in a survey unit to the relevant release criteria so that decisions can be made

based on the results of the FSS”— does not provide specific decision actions and as such this is not an appropriate decision rule for a final status survey (FSS).

Basis: A FSS decision rule should be very clear and state the statistical method for describing the residual activity population parameters (e.g. the mean, median for the survey unit, etc.) and the specific actions that will be based on the resultant data. The decision rules are typically if/then statements.

Path Forward: It is understood that DCGLs have not been developed for the site; however, the current approach for demonstrating compliance is fairly complex with multiple acceptance criteria pathways. These pathways do not clearly demonstrate compliance with 10 CFR 20.1402 requirements. Further recommendations as to the path forward are provided in subsequent comments. It is the reviewer’s interpretation that the plan is currently written for radiological data to follow a non-defensible path of:

1. If the survey unit is different from the background reference area, then
2. compare to Reg Guide 1.86 value.

The entire process has multiple flaws as discussed throughout the comments. The NRC does not consider Regulatory Guide 1.86 surface contamination levels to be appropriate for FSS purposes. There is some discussion of this in a Federal Register Notice from November 18, 1998, Volume 63, No. 222, pg. 64132. A dose based approach should be used rather than the activity based approach provided in Regulatory Guide 1.86.

3) **Section 3.5.1, 2nd paragraph:**

Comment: ORISE does not believe this is an appropriate use of “Scenario B” for the BSW floor SU.

Basis: Scenario B is used when the assumption is made that the mean concentrations of contaminants in the survey unit are indistinguishable from those found in background. However, it is important to note the possible contaminants of concern (COCs) listed for the site are not found in background (or in significant amounts) so the proposal for the floor survey unit is essentially to compare contributions from natural radioactivity in the building materials. Furthermore, NUREG 1505 states “Demonstrating indistinguishability from background using Scenario B will be a useful option **when** the residual radioactivity consists of radionuclides that appear in background, **and the variability of the background is relatively high**. Background variability may be considered high when differences in estimated mean concentration measured in potential reference areas are comparable to screening level DCGLs.” There is no mention in the FSSP of the expectation of background variability being high and it would not be expected in the building that has been selected for background comparison.

Path Forward: It is ORISE’s opinion that the proposed application of Scenario B has not been adequately justified and therefore suggests providing a better justification for proposing the use of Scenario B. The application of Scenario B includes performing the Kruskal-Wallis test to substantiate significant background variability. If Scenario B is justified, the Quantile test is performed in tandem with the WRS test. The goal is to fail to reject the null hypothesis in both tests. There are more appropriate statistical tests for evaluating the base condition of the BSW relative to a background reference area. MARSSIM Table 2.3 provides alternative statistical tests to consider.

- 4) **Section 3.5.1, 3rd paragraph:** Regarding the statement “Using those limits [Regulatory Guide 1.86] would be expected to result in doses well below the 25 mrem/y criterion.”
Comment: ORISE does not consider this determination appropriate.
Basis: What is the technical basis for claiming the 1.86 guidelines meet 25 mrem/y, specifically for the alpha emitters?
Path Forward: ORISE suggests providing a technical basis for this claim or deleting the language. This is a major point of contention with using Regulatory Guide 1.86 as the primary release criteria for any of the survey units. The introduction of the FSSP states the NRC is requiring that surveys demonstrate compliance with 10 CFR 20.1402; however, simply using Regulatory Guide 1.86 without a technical basis does not adequately demonstrate the 25 mrem/y compliance.
- 5) **Section 3.5.1, 4th paragraph:**
Comment: Specific documentation should be provided in the FSSP to demonstrate the use of the screening values is appropriate for the site based on the requirements in NUREG-1757.
Basis: Guidance in NUREG-1757, Volume 2, Appendix H.2 provides details on site conditions necessary in order to use the proposed screening values. Generally, these values are only intended for use in simplified situations where no complex or special surveys are required (i.e., not for surveys of volumetric residual radioactivity, duct work, embedded piping, ground water residual radioactivity, subsurface soil residual activity, buried conduit, sewer pipes, or prior onsite disposals).
Path Forward: Ensure that the usage of generic screening values is consistent with NUREG-1757 guidance, and provide adequate justification for their usage. If the generic screening values are not feasible then site specific DCGLs or another appropriate dose assessment methodology may need to be developed.
- 6) **Section 3.5.2, Floor Survey Unit:**
Comment: Will the scans and direct measurements be independent alpha and beta measurements or just totals? This same comment applies for every structural survey unit.
Basis: With the current wording “gross alpha/beta activity”, ORISE is interpreting measurements as totals (alpha plus beta). This can become problematic when attempting to compare data to separate alpha and beta guidelines.
Path Forward: ORISE suggests independent alpha and beta scans and direct measurements for both the background area and survey unit.
- 7) **Section 3.5.2, Floor Survey Unit:**
Comment: The proposed plan is to collect one volumetric sample of the concrete BSW floor from an area representing the highest potential for surface contamination and it will be analyzed for the COCs. Then, the analytical results will be compared to NUREG-1757 soil screening values. ORISE has two comments regarding this method. First, why not base the one intrusive sample location on actual elevated radiation readings instead of selecting the location based on the “highest potential”. Secondly, this is not a proper use of applying soil screening values. Refer to Comment # 2 regarding decision rules. Again, the reviewer interprets the primary basis of the survey trends more towards demonstrating that the BSW does not have DOE-added radioactive materials and that the radiological conditions are comparable to background. This is an issue throughout the plan.

Basis: The location that may seem logical to have the “highest potential” may not actually be the location with the highest radiation levels from the COCs. Additionally, comparing the intrusive sample’s analytical results to soil screening values (for the purpose of unrestricted release) would only be appropriate if the concrete floor were going to be rubbleized and disposed of as soil.

Path Forward: While the sample’s results may offer insightful information, this is a case in which the release criteria selected is not being applied correctly as recommended by NUREG-1757.

8) **Section 3.5.2, Ventilation System and Drainage System Survey Units:**

Comment: The selection of ventilation, embedded piping, and other closed system measurement and sample locations is a critical component in demonstrating site release compliance for unrestricted use.

Basis: The real issue here is that the building will be free released without restrictions for future occupants. Direct external gamma measurements only provide information on the radiation levels of the systems when they are undisturbed; however, if contamination exists within, it is necessary to demonstrate the 25 mrem/y criteria is not exceeded under any circumstance such as a building renovation. However, the plan is to compare the scan, direct measurement, and swipe sample results to Regulatory Guide 1.86. This alone does not demonstrate compliance with the 25 mrem/y TEDE (as first mentioned in Comment #4).

Path Forward: NUREG guidance should be followed on the specific selection of measurement and sample locations and more descriptive text should be incorporated into the FSSP. Appendix G of NUREG 1757 states that “NRC staff experience has shown that some DPs have not adequately described the methods the licensee plans to use when surveying the embedded piping planned to be left behind. Often, licensees have not provided a discussion on the methodology for conducting surveys of embedded pipe planned to be left behind, nor have they provided sufficient justification for the assumptions considered in the dose modeling analysis.” The “dose modeling” remains an issue with using Regulatory Guide 1.86 for release. A complete description of survey methodology for embedded piping, ventilation, and other closed systems should be provided. An appropriate dose based analysis should be provided, as Regulatory Guide 1.86 is not acceptable for FSS purposes.

9) **Section 3.5.2, Septic Tank Survey Unit:**

Comment: Refer back to Comment #8 for the **Basis** and **Path Forward**. From the description of the septic tank in the FSSP, it is another example of a largely inaccessible system. Additionally, the same comment applies regarding the use of Regulatory Guide 1.86 for unrestricted release.

10) **Section 3.5.2, Surface Soil Survey Unit:**

Comment: It is unclear what is meant by the text “Gamma walkover surveys (GWSs) (minimum of one measurement per square meter).”

Basis: How is one measurement per square meter a walkover?

Path Forward: It is more appropriate to refer to gamma walkover surveys in terms of a certain scan percentage (for example scans will be performed over 50% of the survey unit) or in terms of low, medium, or high density scans. If the plan is to collect one “measurement” per square meter the walkover language should be removed and more detail provided on the collection method of the measurements (on contact, at one meter, etc.)

11) General Comment: The proposed FSSP has not completely discussed the potential for radiation due to sources external to the partial site release area.

Basis: NUREG-1757, Volume 2, Appendix K and NUREG-1836, Section 2.5 provide guidance on this subject. For example, the following is stated in Appendix K.1.1 of NUREG-1757:

For a partial site release (PSR), dose modeling is not necessarily limited to the dose caused by areas with residual radioactivity on the partial site, but, also, residual radioactivity outside of the partial site. Areas around the PSR may contribute direct radiation or have natural processes that may move residual radioactivity to the partial site release. For purposes of this volume, “offsite sources” means potential sources of exposure that are not on the partial site, but still on impacted areas under (or previously under) the control of the licensee. For example, a licensee may have impacted groundwater under the site. At the present time, the groundwater under the partial site release is not impacted. Possible movement of this impacted groundwater (an “offsite source” of residual radioactivity) from the remaining site to the PSR must be considered.

In addition to compliance analyses for the PSR, there should be evaluations of potential prospective analyses. These analyses should evaluate how the PSR could impact the license termination of the licensed site, including any additional PSRs. For example, releasing an area of the site at higher DCGLs than is likely for the rest of the site could constrain the future decommissioning, forcing the licensee to use DCGLs for the rest of the site that are below what they could have been if the PSR never occurred.

Path Forward: NYSERDA should consider the effects of potential radiation sources external to the proposed partial site release area. These may include ground water or previous burial sites in the vicinity of the partial site release area.