OC LTP Audit Response to Additional Questions

HP Audit questions from 9/16 at Oyster Creek

1) Survey Units vs Survey Areas.

   The LTP maintains its classification of survey areas vs survey units (see Section 5.X). Staff note that some flexibility is allowed in that survey units do not have to be well defined preliminarily. However, staff would maintain that designating an area(s) a specific classification means that all survey units eventually specified within that area will be of the same classification.

   HDI should clarify the areas that specifically should be Class 1, 2, or 3 based on HSA and characterization information available to date. It would likely be acceptable in areas where significant uncertainty exists to be non-conservative initially. Once additional information is received, it is relatively easy to increase conservancy while lowering the conservancy requires NRC approval and documented justification.

   Response:

   HDI will revise LTP Subsection 2.1.6, Initial Survey Areas and Classification, to specify a classification that is not overly conservative for applicable portions of open land and structure survey areas.

2) The LTP discusses, in Section 5.2.6.3, a process for reviewing ROCs and insignificant contributors when performing additional site characterization efforts (continuing characterization). It similarly states that 5% of samples will be taken to verify the ROCs and insignificant contributors throughout the decommissioning process. However, it is unclear what will occur if the sample does not verify the ROCs and insignificant contributors.

   HDI should clarify the actions that will be taken if the QC sampling for ROCs and Insignificant Contributors and surrogate ratios are not verified during the 5% sampling efforts. Note that it could state that the same process anticipated to apply for continuing characterization could also apply in the instance throughout the decommissioning process by survey unit or survey area.

   Response:

   The LTP will describe parallel volumetric QC sampling to be performed for all media undergoing FSS. These samples will be analyzed for the full suite of radionuclides and used to confirm the initial *a priori* assumptions about which nuclides are Insignificant Contributors (ICs) per the Relative Dose Fraction (RDF) methodology contained in TSD 25-032.

   If the QC samples indicate that IC dose fractions are at or below the *a priori* assumed values, no additional actions will be taken. However, if the IC dose fraction is found to exceed the *a priori* values in TSD 25-032, then five additional randomly selected investigation samples will be taken in the affected survey unit for full suite analysis.

   The complete series of volumetric sampling data (both QC and investigation) will then be used to determine which nuclides caused the *a priori* IC dose fraction to be exceeded. These nuclides will then be added as ROCs for the survey unit and will be documented in the FSS record. LTP 5 Section 5.2.7.3 will be revised to incorporate this approach.

QC samples will also be analyzed for the ratio of ETD to HTD nuclides that are being utilized for surrogate relationships. Only positive detections above MDC will be used in this analysis. If the ratio of ETD to HTD is at or above the expected *a priori* value, no further action will be taken. However, if the ratio of ETD to HTD is below the expected *a priori* value, then 5 additional investigation samples will be randomly taken, and the average values (both QC and investigation) will be utilized to determine a new surrogate relationship for the survey unit. LTP 5 Section 5.2.7.4 will be revised to incorporate this approach.

LTP chapter 5 will be revised to increase the percentage of QC samples being analyzed for the full suite of radionuclides from the original 5% to 10%. Please see the response previously provided by HDI to the NRC audit Health Physics question #14.

3) Really more of a typo issue than anything. However, in Section 6.13, the LTP refers to a preliminary dose breakdown by media that is documented in Section 5.2.6.7. This section does not exist although the relevant information does exist in a Table in Chapter 6.

   HDI should fix Section 6.13 to point to the relevant information and remove references to sections of the LTP that do not exist.

   Response:

   LTP Section 6.13 will be revised to reference Section 5.2.6.6, Operational DCGLs. Additionally, the definition of the F_m term in equation 5-7 will be revised to point to Chapter 6, Table 6-39, *A Priori* Fraction and IC Adjustment Factors by Media, for clarity.

4) In Table 5-11 of the LTP, it notes that the scan MDC for the 44-10 detector is 904 ccpm. This is not presented in units comparable to the DCGL and staff are uncertain exactly what the licensee is communicating. However, staff reviewed Table 6.7 in MARSSIM and noted that a 2” x 2” NaI detector has sufficient sensitivity for scanning to see below the DCGLs for Co-60 and Cs-137 as noted in Table 5-3 of the LTP. Also, the MARSSIM table assumes a background of 10,000 cpm while HDI assumed a background of 4,000 cpm.

   HDI should revise table 5-11 to better reflect the sensitivity of the detectors in units most likely to apply when determining the residual radioactivity levels for clearance (i.e., the same units as DCGLs). The background of 4,000 cpm should be justified by on-site measurements using a 2” x 2” NaI. Or, the site could simply reference Table 6.7 in MARSSIM to justify that the scanning sensitivity should be acceptable as being 10-50% of the proposed DCGLs for the primary site contaminants (Co-60 and Cs-137).

   Response:

   The information in Table 5-11 is taken directly from the manufacturer's website for illustrative purposes only. The actual scan MDC will be determined for each survey unit based on actual background and instrument efficiencies in TSD 24-108, Instrument Efficiency Determination for Use in Minimum Detectable Concentration Calculations for Final Status Surveys at OCNGS and documented in the survey unit-specific FSS plan. LTP Section 5.7.7.5, Open Land Area Gamma Scan MDCs, will be revised for clarity.

5) NRC staff noticed that the d’ value used for determining scan MDCs is being set at 1.38. While some justification for this was discussed for structural scanning, no justification

was made for open land scanning. Staff note that the value of 1.38 is rather non-conservative relative to what NRC's contractor, ORISE, uses which is a value of 2.32. If HDI desires to apply the value of 1.38, it will require assurance that the methods and training that technicians performing scanning receive will justify its use. Otherwise, it is likely of little to no consequence to use a more conservative value such as 2.32 to determine the scan MDC for scanning.

Response:

Based on a review of guidance in MARSSIM and NUREG-1507, the *a priori* determination of scanning sensitivity using a sensitivity index (d ') factor of 1.38 described in LTP Section 5.7.7.5, Open Land Area Gamma Scan MDCs, is appropriate. The use of 1.38 for the sensitivity index is consistent with HDI's FSS technician training, which includes field scanning using simulation technology stressing that scanning should be reversed and slowed for areas where an elevated response is perceived, consistent with the two stage surface scanning process for land areas described in NUREG-1507. It is understood that the d' value of 1.38 results a conservative 60 percent false positive detection rate.

6) Staff recognized during the site tour and presentations that the licensed area that will be released encompasses the intake and discharge canals. It was noted that the FSSP in the LTP did not discuss collection of sediment samples. HDI should add a section to the FSSP that discusses how it will collect sediment samples, if needed, during the FSS. Random samples in the Class 3 areas are likely to include at least one location within the canals. Note that it may also be beneficial to incorporate more specificity if a sample location is considered inaccessible due to exposed bedrock or other field conditions than what was noted in Section 5.2.3.9 of the LTP. One way this could be addressed is to state that an alternative sampling location within 10' radius of the specified location will be selected, if practical, or an alternative random location within the survey unit will be identified and sampled, if necessary.

   Response:

   A new section (Section 5.4.7) will be added to the LTP describing the methods for sediment sample collection (e.g., clam shell, divers, torpedo, etc.) and how sediment samples will be evaluated and assessed. Additionally, this section will address moving sample locations in the event that a randomly determined sample location is not accessible.

7) Clarity is requested as to whether release records on a survey unit by survey unit basis will be provided that encompass almost all of the FSSR contents as noted in Section 5.9.8.1 of the LTP. It may be noted that many complex licensees do this and provide the release records in phases due to the quantity of survey units and organization of the site work. A final status site report is then generated at the completion of remediation that summarizes all the survey units results, as well as dose from groundwater or other media which is typically finalized at completion of the site remediation. The summary demonstrates final compliance using all survey data without any assumptions based on incomplete groundwater monitoring, etc. The summary final status site report is typically submitted along with statements that all licensed material and waste have been removed (or will soon be removed) from the site and a request to terminate the license.

Response:

Section 5.9.8 of the LTP will be revised to include additional details and clarification about the Final Status Survey (FSS) reporting structure. HDI will create individual Survey Unit Release Records (SURRs) for each survey unit in a survey area. These SURRs will be amalgamated in Survey Release Records (SARR) and submitted as a complete packet containing the individual SURRs once the FSS for the Survey Area is completed.

All SARRs will be summarized in a Final Site Release Report (FSRR) and submitted at the completion of all FSS activities. The FSRR will include a declaration that all site areas meet unrestricted release requirements. Section 5.9.8.2 will address general information that may be contained in each report type.

Environmental

1) In Chapter 8 Supplemental Environmental Report submitted to the NRC in 2024 (ML24214A037), Section 8.7.4 stated that as of October 2023, 884 waste shipments had been sent to a licensed disposal facility. In Chapter 8 of Revision 1 (ML25119A269), Section 8.7.4 stated that as of the end of 2024, 570 waste shipments had been sent to a licensed disposal facility. The number of waste shipments in Revision 1 is 314 fewer than the number of waste shipments in the original ER, even though it covers an additional 14 months (from November 2023 to December 2024). Please clarify the total number of waste shipments that have been sent from Oyster Creek to a licensed disposal facility.

   Response: The initial estimate of 884 “shipments” was initially calculated using the number of waste packages and/or manifests rather than the actual number of truck shipments. In some cases, multiple waste packages or manifests were consolidated into a single shipment (i.e., one truck departing the site). The revised estimate of 570 reflects the number of trucks leaving the site.

2) Please provide an estimate for the maximum annual occupational total effective dose equivalent for the remaining decommissioning work at OCNGS as described in 10 CFR 20.1201(a)(i). The estimate can be based on models, historic data, or administrative limits, as applicable and available.

   Response: The OCNGS Radiation Protection Program establishes and implements As Low As Reasonably Achievable (ALARA) goals and administrative controls on acceptable dose to ensure that the radiation dose to employees and contractors does not exceed the 10 CFR 20.1201(a)(i) 5 rem limit.

3) The PSDAR and Revised LTP both reference HDI’s commitment to implementing Best Management Practices (BMPs) to mitigate potential ecological impacts. Please identify the specific BMPs HDI plans to implement to address stormwater runoff and pollution, fugitive dust, noise, erosion, sedimentation, land clearing or earthmoving activities, demolition, and lighting, as applicable. Examples of BMPs include spraying or applying suppressants for fugitive dust control, using downward-facing or shielded lighting to minimize light pollution, and establishing buffer zones near water bodies, training of onsite personnel for identification of listed species, erosion control, posted speed limits, etc.

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Response: Activities and Best Management Practices employed (as needed) at OCNGS during decommissioning are summarized below.

Activity	Best Management Practices
Stormwater Runoff and Pollution, Erosion, and Sedimentation	• BMPs implemented as required in the site's Stormwater Pollution Prevention Procedure (SPPP) as well as the site's Spill Prevention and Control & Countermeasures Plan (SPCC). These practices include containment, silt control, grading, and use of buffer areas near surface water features. • Compliance with the site's Ocean County Soil Erosion and Sediment Control Permit Certificate (SESC).
Fugitive Dust	• Vehicle traffic is generally restricted to paved areas. • High powered water mister nozzles are used for dust control during demolition work. • Monitoring and compliance with radiologic dust control procedures.
Noise	• Isolation (work conducted indoors) • Noise buffer consisting of distance from work areas from potential habitat. • Noise generating work is conducted primarily during daylight hours.
Lighting	• Decommissioning work is conducted primarily during daylight hours via downward-facing lamp posts. • Outdoor lighting during non-daylight hours is limited to that required for safety and security.
Land Clearing and Earth Moving	• BMPs required by SPPP, SPCC, and SESC permit, if applicable. • Land clearing if not limited to areas of existing building demolition and removal, requires NJDEP land use permitting (LURP) such as a coastal area facility review act (CAFRA), Fresh Water Wetlands Permit (FWW), and/or a NJ Pine Barrens Commission approval.
Ecologic Protection (Listed Species)	• Work is generally conducted in previously disturbed areas surrounded by paved surfaces or otherwise approved via NJDEP LURP permits to proceed. • On-site personnel are trained in environmental awareness.

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4) Please confirm whether any of the following protected species have been observed at the site since the beginning of decommissioning activities, or if any are known to be present within the OCNGS site boundaries:

    a. American chaffseed

    b. Eastern black rail

    c. Knieskern's beaked-rush

    d. Monarch butterfly

    e. Rufa red knot

    f. Swamp pink

    If any of these species have been observed, please provide details regarding the date, location, and context of observation(s). If they have not been observed, simply state no known observations.

    Response: As documented in Section 8.8.8.3, the species listed above may occur within the vicinity of OCNGS. However, none have been observed within the portions of the site while undergoing decommissioning, with exception of the Monarch Butterfly. The Monarch Butterfly has been historically observed infrequently within the site boundaries, but only in areas outside of active decommissioning activities. Dates, locations, and contextual details of these observations have not been recorded, as they occurred in areas not affected by decommissioning or prior to decommissioning.

5) To conduct S106 consultations and for NRC to be able to reference the architectural inventory report in the EA, provide a complete version of the architectural inventory report, including any necessary historic building/structure forms (that may be part of an appendix)

    a. Do the NJ SHPO guidelines require historic structure/building forms?

    b. In the context of nuclear development, do you feel the report adequately addresses Oyster Creek's status as New Jersey's first nuclear power plant, its status as the first completely commercial nuclear power plant, and how it may have contributed (or not) to the growth and development of Ocean County and the surrounding area?

    Response: The OCNGS architectural survey and historic building/structure report along with the required NJSHPO forms have been made available for NRC review. The survey report documents OCNGS's status as the first commercial nuclear power plant in New Jersey and its role in the growth and development of Ocean County.

6) Are there licensee internal procedures, or those specific to Oyster Creek, regarding historic and cultural resources, which provide for cultural resources awareness, archaeological/human remains discovery procedures, etc. If not, please confirm that applicable local, state, and federal regulations would be followed.

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Response: The Holtec OCNGS protocols regarding the discovery of archaeological materials, human remains, or cultural resource awareness require internal reporting if identified and that applicable local, state, and federal regulations be followed.