



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

November 21, 2013

Docket No. 07000371

License No. SNM-368

Robert F. Bonito
General Manager UNC
GE Engine Services/UNC
20 Research Parkway, Unit E
Old Saybrook, CT 06475

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION CONCERNING THE
CHARACTERIZATION SURVEY PLAN FOR THE FORMER UNITED NUCLEAR
CORPORATION NAVAL PRODUCTS SITE IN NEW HAVEN, CONNECTICUT

Dear Mr. Bonito:

This letter is in reference to your letter dated August 14, 2013 that transmitted your Characterization Survey Plan, dated July 2013. This letter also is to acknowledge the receipt of your characterization survey plan and to inform you that we have conducted the acceptance review. In order to continue our review, we need the following additional information:

- 1) In Section 1.0 of your characterization survey plan, you mentioned that Final Status Surveys will be completed in accordance with your Decommissioning Plan (DP), dated August 17, 1998 and Final Status Survey Plan (FSSP), dated September 6, 2006. However, you did not mention your DP Addendum, dated July 5, 2012. Please consider including the DP Addendum as a reference in your characterization survey plan.
- 2) We understand you intend to conduct surveys in accordance with your established DP, FSSP, and contractor procedures however, during our review of the characterization survey plan, we noted that it appears to double as a Final Status Survey Plan. As such, Final Status Survey Plans depend on sufficient characterization and remediation that has been completed. Please confirm that this is a Characterization Plan and not also a Final Status Survey Plan. Please note that you may need to update your FSSP to include the area(s) described in this Characterization Survey Plan.
- 3) In Section 2.0, you mentioned that final status survey operations of impacted land areas, exterior surfaces, and structures have been completed in accordance with the requirements specified in the FSSP and that all survey units were properly classified, surveyed and sampled. As part of the decommissioning process, described in NUREG 1757, Vol. 1, Rev. 2, Consolidated Decommissioning Guidance: Decommissioning Process for Materials Licensee, dated September 2006, the NRC makes the final determination of adequacy of final status survey operations. Please consider re-phrasing the statements to better reflect the decommissioning process.

- 4) In Section 2.0, last paragraph, please clarify the number of samples locations around the drainage hole.
- 5) In Section 3.0, you provided discussed the project data quality objectives (DQOs) related to soil sampling, but the DQOs did not appear to consider sampling/analyzing concrete cores from the trenches. Please expand your DQO process.
- 6) In Section 4.2 and 4.3, you mention pre-remediation field activities and remediation field activities. Because characterization and remediation are two separate processes, do you intend to mean preliminary survey considerations such as those mentioned in MARSSIM, Section 4.8.4.2? Also, do you plan to remove the debris from the building and check for underground utilities prior to implementing the characterization survey plan?
- 7) In Section 5.1, second paragraph, you mention that the *Derived Concentration Guideline Levels for the Decommissioning of the former UNC Manufacturing Facility* (IEM, 2008) was submitted to the NRC for approval on July 11, 2012 and was approved for use on June 5, 2013. In fact, in June 2008, the *Derived Concentration Guideline Levels for the Decommissioning of the former UNC Manufacturing Facility, Revision 1*, dated June 23, 2008, was submitted to the NRC for an acceptance review. The NRC issued a letter dated July 7, 2008 that stated the NRC completed our acceptance review and had no further questions. In addition, the document you submitted on July 11, 2012 to the NRC, for a separate acceptance review, was your *Decommissioning Plan Addendum*, dated July 5, 2012. This document included the *Derived Concentration Guideline Levels for the Decommissioning of the former UNC Manufacturing Facility, Revision 1*, dated June 23, 2008 as an attachment to compare the Derived Concentration Guideline Levels (DCGLs) generated in 2008 with DCGLs generated in 2012, using the most recent revision of the RESRAD computer program. The NRC issued a letter on May 5, 2013, that stated the NRC completed our acceptance review and had no further questions. Please consider the above clarifications and revise the second paragraph of Section 5.1, accordingly.
- 8) In Section 5.3, you indicated that the size of the trench soils survey unit (SU) is approximately 494 square meters (m²). How did you arrive at this estimate? Please explain, either in this section or in the DQO section.
- 9) In Section 5.3.1, you mentioned that the gross soil sample data will be directly compared to the soil DCGL_w for conservatism. If all samples are below the DCGL_w then a direct comparison is acceptable. However, we noted conflicting statements in Section 5.4.2. In Section 5.4.2, you mentioned that the Wilcoxon Rank Sum (WRS) test will be used to determine when soils will be suitable for release. If the WRS test is in fact being used, then a sufficient number of samples must also come from a background reference area for comparison. Please clarify which test you plan to use.

- 10) In Section 5.4, you generated the required number of samples based upon the DCGL for average concentrations over a wide area ($DCGL_w$) and the standard deviation (σ). In addition, the lower bound of the gray region (LBGR) was set to the σ . According to your characterization survey plan, the reason for setting the LBGR equal to σ was due to the large variability of uranium concentrations in soils below the utility trenches and the fact that the standard deviation is over half the $DCGL_w$. This may be a good starting point since MARSSIM guidance recommends initially setting the LBGR to 50% of the DCGL. However, the high variability in the data set may indicate that you have not completely characterized the area. In addition, the variability in the data may also indicate that the survey unit is not homogenous. Please explain how you will achieve a lower variability in the data set and the methods you will apply to demonstrate the area has been completely characterized.
- 11) Based our review, we noted you characterized the area to be remediated as a Class 1 SU. NUREG 1575, Rev. 1 Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), dated August 2000, states that a Class 1 SU is to be surface scanned with 100% coverage in order to locate hot spots. Because it appears that all sampling takes place via drilling through concrete, with no mention of soil surface scanning, surface scans would presumably not be possible through the concrete. Please explain how you will attain a 100% surface soil scan for this Class 1 survey unit and adequately detect hot spots that may be underneath concrete. Please explain how the $DCGL_{EMC}$ will be incorporated into the plan in order to deal with small areas of elevated contamination.
- 12) In Section 5.4, Table 5-3, you provide drainage hole characterization data summary statistics. Based on our review, we noted that the table may not be finalized (example: for the Maximum value of Total Uranium you have the phrase "is this correct" in parenthesis; the median is not correct. In addition, the calculation for the relative shift equation does not appear to be correct. Please edit table and equation accordingly.
- 13) In Section 5.4.2, you indicated that the number of required measurement locations, based on the WRS is 48. You also indicated that the number of samples is effectively tripled to 144 because of sampling at 3 depth intervals per location. For the purpose of a MARSSIM statistical analysis, sampling various depths at the same location does not equate to additional random sampling. Please re-evaluate this section and provide an explanation as to how you will meet MARSSIM statistical analysis and random sampling.
- 14) In Section 6.3.1, discusses sampling at multiple depth intervals and states that once samples above 435 pCi/g are remediated, the next lower depth interval sample at each location will serve as the FSS sample for that location. An example is also provided which states, "if at a given location the 1-2' sample has 600 pCi/g and the 2-3' sample has 400 pCi/g, the location will be remediated to a depth of two feet below grade and the 2-3' sample will serve as the FSS sample for that location." This is not an appropriate implementation of a MARSSIM Final Status Survey, and is basically a demonstration that a FSS of the survey unit has failed and requires remediation. This example appears to be more like a Remedial Action Support Survey than a Final Status Survey. Please provide a section to describe the types of Remedial Action Support Surveys that will be

performed and include a DQO of how you will determine an area will be adequately remediated.

15) In Section 10, you mentioned that you will prepare a Remedial Action Completion Report and a FSS Report however there is no mention to submit a Characterization Survey Report to the NRC to review the characterization survey results. Please include a statement that you will prepare and submit a Characterization Survey Report to the NRC.

16) In Attachment 5, Step 6, you stated that the measured background at the site is 10 microRoentgen per hour (uR/hr) and the background gamma radiation generally resembles the 662 keV gamma particle emitted by Cs-137, which will be used as your model for ambient background radiation. Please explain this statement.

Current NRC regulations and guidance are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Med, Ind, & Academic Uses**; then **Licensee Toolkits, see our toolkit index page**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

We will continue our review upon receipt of this information. Please reply to my attention at the Region I Office. If you have any technical questions regarding this deficiency letter, please call me at (610) 337-5323.

In order to continue prompt review of your application, we request that you submit your response to this letter within 30 calendar days from the date of this letter.

The NRC's Safety Culture Policy Statement became effective in June 2011. While a policy statement and not a regulation, it sets forth the agency's *expectations* for individuals and organizations to establish and maintain a positive safety culture. You can access the policy statement and supporting material that may benefit your organization on NRC's safety culture Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/safety-culture.html>. We strongly encourage you to review this material and adapt it to your particular needs in order to develop and maintain a positive safety culture as you engage in NRC-regulated activities.

Sincerely,

Original signed by Laurie A. Kauffman

Laurie A. Kauffman
Health Physicist
Decommissioning Branch
Division of Nuclear Materials Safety

cc:
John Uruskyj, Remedial Project Manager

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