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Submitted electronically

Attention: Mr. James Smith, Senior Project Manager
United States Nuclear Regulatory Commission
Uranium Recovery and Materials Decommissioning Branch
Division of Decommissioning, Uranium Recovery and Waste Programs
Office of Nuclear Material Safety and Safeguards

Dear Mr. Smith,

Reference: Responses to Request for Additional Information (Group 1) on the Application for Amendment of USNRC Source Material License SUA-1475 for the United Nuclear Corporation Mill Site, McKinley County, New Mexico (revised sections)

On behalf of United Nuclear Corporation and the General Electric Company (UNC/GE), this letter transmits revised sections of the *Application for Amendment of USNRC Source Material License SUA-1475 for the United Nuclear Corporation Mill Site* dated September 24, 2018. The revised sections of the application included in this submittal are Section 5.8 of Attachment L-1 (Radiation Protection Plan) and Section Q.4.1.2 of Appendix Q (Dust Control and Air Monitoring Plan). These sections were revised to address a technical comment provided from USNRC to UNC/GE on November 5, 2019 that referenced UNC/GE responses to the USNRC request for additional information (Group 1) and clarification comments on RAI 6.3-3 (Items 2 and 3), 6.3-5, 6.3-7, and 6.3-11. The revised sections of the application have been submitted electronically via the USNRC Electronic Submissions System.

Please contact me with questions on accessing the documents and contact Roy Blickwedel (UNC/GE) with questions on the submittal.

Regards,

Stantec Consulting Services Inc.

A handwritten signature in blue ink that reads "Melanie M. Davis".

Melanie Davis, P.E., PMP
Project Manager
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Attachment: Revised Section 5.8 of Attachment L-1 and Section Q.4.1.2 to Appendix Q to the Application for Amendment of USNRC Source Material License SUA-1475 for the United Nuclear Corporation Mill Site

CC: Roy Blickwedel, GE
Jason Cumbers, Stantec



ATTACHMENT

**Revised Section 5.8 of Attachment L-1 and Section Q.4.1.2 to Appendix Q to the Application for
Amendment of USNRC Source Material License SUA-1475 for the United Nuclear Corporation Mill
Site**

ATTACHMENT L-1, RADIATION PROTECTION PLAN

5.8 COMPLIANCE WITH DOSE LIMITS FOR INDIVIDUAL MEMBERS OF THE PUBLIC

As discussed previously, due to low levels of radionuclides and adequate control measures any significant offsite airborne release of impacted dust is unlikely. Airborne particulate radionuclides will be monitored at the downwind boundary to assess dose for individual members of the public as described in the Dust Control and Air Monitoring Plan (Appendix Q of the 95% Design Report). The airborne concentration of U-nat, Ra-226, Th-230 and Po-210 will be determined from their activity fraction of the gross alpha activity of uranium ore dust, which has the potential for becoming airborne. Since these radionuclides (U-234, U-238, Ra-226, Th-230 and Po-210) are in secular equilibrium in uranium ore dust, their airborne concentrations will be determined by multiplying the airborne gross alpha activity by 0.20. In uranium ore dust, Pb-210 will be present at the same concentration as Po-210. Thus, the Po-210 measurement will be considered as a surrogate measurement for Pb-210. Calculation of the $6.8\text{E-}14$ $\mu\text{Ci/ml}$ gross alpha limit for the unity rule is discussed in Section Q.4.1.2 of Appendix Q. Eberline RAS-2 air samplers or an equivalent air sampler, with 47-mm Type A/E glass fiber filters will be used to evaluate airborne concentrations. Air filters will be counted onsite for gross alpha activity, which will be compared to the limits.

Compliance with dose limits for individual members of the public will be demonstrated. The 10 CFR 20.1101(d) ALARA constraint on air emissions of 10 mrem per year to members of the public likely to receive the highest dose will be demonstrated by comparing the net annual average airborne concentrations at the Mill Downwind air monitoring station or at the Mill Downwind Nearest Residence air monitoring station to 20% of the effluent concentration limits. The following are the applicable effluent concentration limits:

U-nat:	$9.0\text{E-}14$ $\mu\text{Ci/ml}$
Ra-226:	$9.0\text{E-}13$ $\mu\text{Ci/ml}$
Th-230:	$3.0\text{E-}14$ $\mu\text{Ci/ml}$
Pb-210	$6.0\text{E-}13$ $\mu\text{Ci/ml}$
Po-210	$9.0\text{E-}13$ $\mu\text{Ci/ml}$
Rn-222:	$1.0\text{E-}10$ $\mu\text{Ci/ml}$ ("with daughters present")

APPENDIX Q: DUST CONTROL AND AIR MONITORING PLAN

Q.4.1.2 Radiation Criteria

The individual airborne concentrations obtained from the gross alpha activity counts and estimates from the track etch monitors will be reviewed to assess compliance with the following airborne effluent concentration limits for Y lung classification averaged over a year. These airborne effluent concentrations, if inhaled continuously over the course of a year, will produce a total effective dose equivalent of 0.05 rem. This total dose equivalent coincides with the annual internal radiation dose limits for individual members of the public as specified in 10 CFR § 20.1302(b) Appendix B, and New Mexico Administration Code (NMAC) 20.3.4.414.

- U-234, Y: $5.0\text{E-}14$ $\mu\text{Ci/ml}$
- U-238, Y: $6.0\text{E-}14$ $\mu\text{Ci/ml}$
- Ra-226, W: $9.0\text{E-}13$ $\mu\text{Ci/ml}$
- Th-230, Y: $3.0\text{E-}14$ $\mu\text{Ci/ml}$
- Pb-210, D: $6.0\text{E-}13$ $\mu\text{Ci/ml}$
- Po-210, Y: $9.0\text{E-}13$ $\mu\text{Ci/ml}$
- Rn-222 w/decay products $1.0\text{E-}10$ $\mu\text{Ci/ml}$



The airborne gross alpha activity at the Mine Site is expected to be from uranium ore dust. Thorium compounds in the uranium ore dust are likely to be insoluble oxides, which would fall under yearly lung classification as noted for thorium in the radionuclide table of Appendix B of 10 CFR Part 20. Therefore, $3.0\text{E-}14$ $\mu\text{Ci/ml}$ airborne effluent concentration limit for Y Class is appropriate. In order not to exceed the effluent concentration limit of $3.0\text{E-}14$ $\mu\text{Ci/ml}$ and meet the unity rule, the gross alpha activity would have to be less than $6.8\text{E-}14$ $\mu\text{Ci/ml}$, since Th-230 would represent 20 percent of the gross alpha activity. The $6.8\text{E-}14$ $\mu\text{Ci/ml}$ gross alpha activity limit will assure that none of the above radionuclide effluent limits are exceeded and the unity rule is met for a mixture of radionuclides. In uranium ore dust, Pb-210 will be present at the same concentration as Po-210. Thus, the Po-210 measurement will be considered as a surrogate measurement for Pb-210. The $6.8\text{E-}14$ $\mu\text{Ci/ml}$ gross alpha activity limit for the unity rule was calculated using an adjusted limit of $3.6\text{E-}13$ $\mu\text{Ci/ml}$ for Po-210 to include the Pb-210 surrogate contribution.