

Davy Crockett - Depleted Uranium – Possession Only License
Source Materials License No. SUC- 1593
Additional Guidance

Background: The U.S. Army (the Army) requested additional guidance from the U.S. Nuclear Regulatory Commission (NRC) staff to inform its development of its amendment application since the sites are unique (not reactors, fuel cycle facilities, etc.)

The NRC staff reviewed existing NRC guidance and found that no specific guidance for these types of sites has been developed. The NRC staff referred to the guidance in the NRC's Office of Nuclear Material Safety and Safeguards Environmental Management Program's risk-informed decisionmaking (RIDM) framework in Revision 1 of *Risk-Informed Decisionmaking for Nuclear Material and Waste Applications*, dated February 2008, found at <http://www.internal.nrc.gov/NMSS/Risk-Informed-Decisionmaking.pdf> and publicly available in the Agencywide Documents Access and Management System (ADAMS) (ADAMS Accession No. ML080720238). The staff found that this guidance was helpful in its efforts in developing a response to the Army's request.

Response: To inform the Army's development of its License Amendment Application for the licensing of sites that contain depleted uranium (DU) from the Davy Crockett 101M Spotting Rounds using the Programmatic Approach, the staff provides the following guidance that is specific to Source Materials License No. SUC-1593:

- If the Army chooses to perform a bounding analysis to inform environmental monitoring, the staff would expect that site-specific data are considered to identify the bounding scenario and a discussion with supporting analyses is submitted with its application. Site-specific data should be compared against RESRAD defaults to justify the use of default parameters if they are used. The following are likely to be parameters of interest depending on the model the Army uses:
 - site inventory (maximum number of rounds),
 - area of the contaminated zone
 - thickness of the contaminated layer
 - site access control (distance to public and defense in depth controls that limit the public access to each site),
 - the depth to the water table,
 - presence of surface waters,
 - meteorological data,
 - annual precipitation

- If the Army chooses to commit to performing site-specific performance assessments, then the staff will develop a license condition that will require the Army to submit its performance assessment for each site to the NRC for review and approval.

- In either scenario, bounding case or site-specific case, the staff would expect the Army to address modeling the source material in both the resting state and in the event of ground disturbing activities (i.e., High Explosive (HE) fire, vegetation burning events, etc.)
- The staff expects the Army to provide additional information on the modeling analysis (Morrow, 2008¹) that the Army provided on firing the HE munitions firing scenario (September 10, 2012 submittal ML12265A173) with its amendment application. In its September 10, 2012 submittal, the Army provided an evaluation drawing upon another modeling analysis using the U.S. Environmental Protection Agency's (EPA's) Industrial Source Complex – Short Term (ISCT) model using wind data specific to Pohakuloa Training Area, HI that may be sufficient to make its case that the DU on the ranges is insufficient to become airborne and cause an exposure hazard under such conditions. However, the Army provided insufficient information on this analysis for the staff to independently assess the evaluation. If the Army is using a bounding performance assessment (modeling) for the HE munitions firing scenario, the Army will need to submit another analysis that takes into account the bounding inventory and wind conditions. The Army may change the level of conservatism in its model from the one it previously submitted; but it should ensure that the analysis is bounding of the inventory conditions (all Davy Crockett sites) and it should also provide a discussion of how the bounding conditions compare to the specific parameters used in this analysis. Sufficient information (including access to computer software and data) should be provided for the NRC technical staff to review the model.
- The Army should discuss the modeling results for the total pathway summation and each individual pathway in comparison to the regulatory limit (100 mrem/yr for all pathways) and include a discussion of ALARA. An ALARA discussion could include examples such as: Army access controls to the sites (explain the level of access control, etc.), the unique qualities of the sites (they are not a fuel cycle facility, reactor, or a uranium or thorium mill that regularly produces effluents), and they lack complex processing or operational systems that could fail and subsequently result in unplanned releases).
- For the air pathway results, the Army should also compare its modeling result against the 10 mrem/yr dose constraint for gaseous effluents in 10 CFR 20.1101(d).
- If the modeling analysis is accepted and the results meet the regulatory limits plus ALARA, then sampling may not be required except under specific conditions that may be outside the scope of the bounding model or as outlined in the Army's generic environmental surveillance and monitoring program.

¹ Morrow, J. W., 2008. Potential Air Quality Impacts of Aerosolizing M1O1 Spotter Rounds at Pohakuloa Training Area, Honolulu, Hawaii: J. W. Morrow.

The Army's RESRAD model submitted under the current license may be appropriate for assessing the plant (vegetation) pathway

- The staff expects that the Army, in its amendment application will:
 - Provide a discussion of the uncertainty in the vegetation sampling results it obtained at Schofield and what the results may mean in terms of the 100 mrem/yr all pathway limit plus ALARA
 - Resubmit a performance assessment that addresses the vegetation pathway considering the bounding inventory conditions for all sites; and
 - Discuss the specific LC regarding vegetation sampling in the current license with regard to the performance assessment results as discussed above.