

ARMY EVALUATION OF PROPOSED ACTION RELATIVE TO COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

ISSUANCE OF A SOURCE MATERIAL POSSESSION ONLY LICENSE TO THE U.S. ARMY FOR POSSESSION OF DEPLETED URANIUM FROM SPENT SPOTTING ROUNDS

1. In accordance with the guidance in NUREG-1748 “Environmental Review Guidance for Licensing Actions Associated with Nuclear Materials Safety and Safeguards Programs,” Appendix B (August 2003), the U.S. Army believes that the proposed action, to issue a license to the U.S. Army for possession of depleted uranium from spent spotting rounds from the Davy Crockett weapon, qualifies for the categorical exclusion (CATX) at 10 CFR 51.22(c)(14)(xv), “[p]ossession, manufacturing, processing, shipment, testing, or other use of depleted uranium military munitions,” and provides the following information in support of that conclusion. The Army believes that there are no special circumstances precluding the application of a CATX, including the circumstance where the proposed action involves unresolved conflicts concerning alternative uses of available resources within the meaning of section 102(2)(E) of NEPA [10 CFR 51.22(b)].

2. NUREG-1748, Appendix B, provides a checklist and series of basic questions for documenting qualification of a CATX. The Army staff’s responses to the checklist and basic questions in NUREG-1748 for this proposed action are summarized below. The Army’s responses were adopted, in part, from the NRC’s finding on October 8, 2013, that the issuance of a license to the U.S. Army for possession of depleted uranium from spent spotting rounds at Schofield Barracks, Hawaii, qualified for application of the CATX at 10 CFR 51.22(c)(14)(xv) [Memorandum entitled “STAFF COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT FOR ISSUING A LICENSE TO THE U.S. ARMY FOR POSSESSION OF DEPLETED URANIUM FROM SPENT SPOTTING ROUNDS – DETERMINATION OF CATEGORICAL EXCLUSION (Docket 040-09083), dated October 8, 2013]. In adopting the responses, the Army included additional information to support the assertion that the CATX is similarly applicable to the proposed action to license the Army’s depleted uranium possession at the locations listed below.

(a) Initial checklist items:

(i) Action Name: License application for U.S. Army possession of depleted uranium.

(ii) Action Locations: U.S. Army installations at which depleted uranium exists as a result of firing the Davy Crockett weapon; specifically: Forts Benning and Gordon (Georgia), Forts Campbell and Knox (Kentucky), Fort Carson (Colorado), Fort Hood (Texas), Joint Base Lewis-McChord and Yakima Training Center (Washington), Fort Bragg (North Carolina), Fort Polk (Louisiana), Fort Sill (Oklahoma), Fort Jackson (South Carolina), Fort Hunter-Liggett (California), Fort Greeley (Alaska), Fort Dix (New Jersey), Fort Riley (Kansas), and Schofield Barracks and the Pohakuloa Training Area (Hawaii).

The Army notes that two of these sites, Fort Greeley and a portion of Fort Dix, were never apparently used for Davy Crockett weapon system training; rather, these were test sites for the system. Analysis of records reveals that the Army fired no more than a small number of M-101 rounds at Fort Dix and fired no M101 rounds at Fort Greeley. It is our understanding that, as a part of this testing, the DU rounds

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were generally retrieved after firing. The Army is currently trying to have Fort Dix and Fort Greely exempted from the licensing requirement.

(iii) Action Description: Issuance of a source material possession only license to the U.S. Army for possession of depleted uranium from spent spotting rounds.

(iv) CATX Category: 10 CFR 51.22(c)(14)(xv), "Possession, manufacturing, processing, shipment, testing, or other use of depleted uranium military munitions."

(b) Basic questions A-E, and Army responses:

A. Is the action consistent with the Statements of Consideration for the categorical exclusion chosen?

Army response: Yes, the Army believes the action is consistent with the Statements of Consideration (SOCs) for the CATX at 10 CFR 51.22(c)(14)(xv). The SOC includes "possession.... of depleted uranium munitions including e.g., bullets and other projectiles." The Army has requested authorization to "possess" the spent spotting rounds and fragments from the Davy Crockett weapon system. The Davy Crockett spotting round is a military munition and is a projectile. The DU portion of the Davy Crockett projectile is about 190 grams of DU per spotting round. Thus, the "possession" of a "projectile" discussed in the SOC is consistent with the Army's request to possess the DU portion of the spotting round.

The SOC refers to the testing of the DU munition and describes the locations of the testing as remote areas such as deserts on military reservations, oceans and enclosures. In the Army's license application, the intended "use" by the Army of the DU from the Davy Crockett is not for testing. Rather, it is authorization to possess material that is already in the environment, and has been in the environment for many years. Therefore, the discussion of testing of the round is not germane to the proposed action by the staff; i.e. authorization to possess the DU. However, it is important to note that the areas that will contain the spent spotting rounds and fragments are controlled by the Army for unexploded ordnance and other materials and are not occupied without specific authorization from the Army (i.e., they are not open to the public). Thus, while the discussion of the locations of testing is not germane to the intended use by the Army, it is relevant to the concept that the material is not readily accessible to unauthorized individuals or the public and therefore radioactive releases to the environment which could affect human life are negligible.

The SOC discusses the chemical/physical form of the DU and states that the radioactive content is low, highly dispersed (i.e., the locations of the rounds are widely separated) and the DU is not readily incorporated into flora or fauna. This is the rationale for concluding that releases to the environment are negligible and that possible exposures to the DU are so low that personnel monitoring is not necessary.

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In that the DU from the spent spotting rounds is of a small quantity (less than ½ a pound) and will be widely dispersed on the ranges, it is consistent with the SOCs.

Finally, the spotting round did not explode on contact and was not fired into a hard target. Rather, the round was fired at a distant target and, while the spotting round did contain a small marking charge in the projectile nose, which could fracture the DU portion of the round, cratering or defacing of the environment of the environment was minimal and the dispersal of the round in the environment was not be as extensive as one fired into an armored target.

B. Is the action likely to significantly affect any aspect of the natural environment?

Army response: No, the Army does not anticipate any significant impact to the natural environment. The action being undertaken by the staff is to authorize the possession of the DU. It does not include using the DU for any purpose, nor will it authorize the decommissioning of the ranges in which the DU has been deposited without further NRC authorization (removal of incidentally identified fragments will be allowed). Authorizing possession (by the issuance of the license) will not change or affect the current environmental situation because the DU is already present and was deposited in the environment almost five decades ago. Thus, the Army anticipates that the proposed action will have no effect on the environment.

The Army took a hard look at three particular issues: (1) the potential migration of DU through soil, air, or water; (2) the potential for incorporation into flora and fauna, including any pathway that could result in impact to human health and safety; and (3) the potential for increased opportunities for migration of DU and plant, animal, and human uptake as a result of the use of high explosive (HE) on Army ranges and training areas.

The Army anticipates the potential for significant migration of DU through soil, air, and water to be very low. The Army has conducted extensive testing of DU oxidation and its potential to spread to the surrounding environment, and has collected substantial data regarding the dispersion of DU penetrators and fragments, the circumstances that may cause DU penetrators to oxidize to powder, and both experimental and monitoring data of DU particle transport in air, surface waters, and through soil. In general, the studies conclude that site-specific conditions such as soil PH, humidity, and carbonate content may predict environmental corrosion of DU, and that atmospheric, hydrologic, and geochemical factors significantly influence the fate of DU in the environment. [See, e.g., *Review of Depleted Uranium Soil Contamination and Environmental Migration: Oxide Generation, Characteristics, and Dispersion*, U.S. Army Institute of Public Health, July 2012.]

Fort Benning, Georgia, is illustrative of an installation at which the environmental conditions may be most conducive to potential migration of DU. Fort Benning is a relatively wet environment, with soils

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that have higher organic content, higher water holding capacity, and a high potential for erosion. [See, e.g., *Environmental Assessment for Fort Benning Integrated Natural Resource Management Plan*, Fort Benning Directorate of Public Works, June 24, 2014, available here: http://www.benning.army.mil/garrison/DPW/EMD/Content/PDF/3%20-%20FINAL%20INRMP%20EA_24JUN14.pdf; last accessed March 13, 2015.] Accordingly, it is reasonable to anticipate that, when compared to a drier desert environment, the potential for migration of DU may be higher. In fact, the Army has not found significant migration of depleted uranium at Fort Benning from the Davy Crockett weapon impact area. Uranium contamination was studied at Fort Benning along with other “Munition Constituents of Concern” (MCO) [such as copper, lead, and antimony]; because results for total uranium fell below the conservatively defined limits for the study, isotopic analysis was not conducted. Based upon analyses of soil, surface and ground water, sediment, and benthic macroinvertebrate sampling at Fort Benning, the Army has concluded that there is a minimal risk of migration of DU off of the installation. [See, generally, *Final Operational Range Assessment Program Phase II Quantitative Assessment Report, United States Army Garrison Fort Benning, Georgia*, ARCADIS/Malcolm Pirnie, September, 2012, at page ES-3.]

The Army anticipates the potential for incorporation into flora and fauna, including the likelihood of any pathway leading to an impact on human health and safety, to be minimal. In general, this conclusion is based upon both biosphere modeling and actual flora and fauna sampling at Army installations. Biosphere modeling allows for estimated calculations of radionuclide concentrations in plants, as well as the resulting contamination of animals that forage on contaminated plants. [See, e.g., *A Biosphere Sensitivity Analysis Using BDOSE™ Version 2.0*, Center for Nuclear Waste Regulatory Analyses, March 2011, at pages B-6 to B-7.] The Army also relies upon some actual sampling data taken from installations across the Army. These data showed flora and fauna samples to be at or below action levels for DU. [See, e.g., *Review of Depleted Uranium Soil Contamination and Environmental Migration: Oxide Generation, Characteristics, and Dispersion*, U.S. Army Institute of Public Health, July 2012.]

The Army will monitor the potential for increased opportunities for migration of DU and plant, animal, and human uptake as a result of the use of HE on Army ranges and training areas in accordance with NRC guidance.

C. Is the action likely to significantly affect any aspect of the cultural environment including those that might be related to environmental justice?

Army response: No, the Army does not anticipate any significant impact to the cultural environment, including any impact to aspects related to environmental justice. The action being undertaken by the staff is to authorize the possession of the DU. It does not include using the DU for any purpose, nor will it authorize the decommissioning of the ranges in which the DU has been deposited without further NRC

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authorization (removal of incidentally identified fragments will be allowed). Authorizing possession (by the issuance of the license) will not change or affect the current cultural environment because the DU is already present and was deposited in the environment almost five decades ago. Thus, the proposed action will have no effect on the cultural environment. Additionally, because no effects to the environment are expected from DU possession, there are no disproportionately high and adverse impacts to minority or low-income populations.

D. Is the action likely to generate a great deal of public interest about any environmental issue?

Army response: There was public interest in the DU at the Schofield Barracks and Pohakuloa Training Area, based on the public's concern about the human health effects of the DU. It is possible that there could be public interest at the other locations discussed in the Army's license application to possess DU at other Army installations. As discussed in the SOCs, migration of DU in the environment is expected to be minimal; the Army will be required to demonstrate that DU migration in the environment is not occurring. The Army has provided adequate information to demonstrate that the DU will not migrate in the environment under normal circumstances. However, the NRC staff will require that the Army demonstrate that plant uptake will not occur and that the DU will not migrate via the air pathway during HE firing.

E. Is there a high level of uncertainty about the action's environmental effects?

Army response: No, the Army does not believe there is a high level of uncertainty about the action's environmental effects. Authorizing the continued possession by the Army is not expected to have an effect on the cultural or physical environment. Migration of the DU in the environment is expected to be minimal. Additionally, the Army expects that it would be required to demonstrate that plant uptake and airborne migration during high explosive firing will not occur. Consequently, there is not a high level of uncertainty about the action's environmental effects.

3. For the reasons outlined above, the Army believes that the issuance of a license to possess DU in the form of spent spotting rounds for the locations listed above falls within the scope of the activities included in 10 CFR 51.22(c)(14)(xv), and respectfully requests the NRC staff to consider the information offered above when making a final determination of the applicability of that CATX.

4. The Army will coordinate with NRC in the future should we learn of any new information that would impact the conclusions set forth above.

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5. Please do not hesitate to contact us with any further questions or concerns about the sufficiency of the above information, and we sincerely thank the NRC staff for your consideration and efforts.

UNSIGNED (DRAFT)

17 March 2015

Department of the Army NEPA Representative

Date