

**From:** [geomike5@att.net](mailto:geomike5@att.net)  
**To:** [Snyder, Amy](#)  
**Subject:** [External\_Sender] comments on NRC-Army possession license exclusion  
**Date:** Thursday, July 09, 2015 2:18:55 PM

---

July 9, 2015

To: Ms. Amy M. Snyder  
NRC  
Senior Project Manager  
Materials Decommissioning Branch  
Office of Nuclear Material Safety and Safeguards  
[Amy.Snyder@nrc.gov](mailto:Amy.Snyder@nrc.gov)

From: G. Michael Reimer, Ph.D.  
Geologist, retired  
[GeoMike5@att.net](mailto:GeoMike5@att.net)

Re: Comments on the June 1, 2015 CATX request by the US Army for license SUC-1593.

I have read the document of June 1, 2015 submitted by the US Army requesting a categorical exclusion (CATX) to National Environmental Protection Act (NEPA) requirements for license SUC-1593. Please share my comments with any committee that will review the Army's request.

The Army apparently was given the suggestion by the Nuclear Regulatory Commission (NRC) in an October 8, 2013 response that Schofield Barracks, Hawaii, may qualify for a categorical exclusion (regarding NEPA requirements) of the possession-only license. Following this suggestion, the Army now seeks to apply this exclusion request to all military bases identified to date where Davy Crockett spotting rounds of depleted uranium (DU) were used or stored for training.

I do not believe that the Army has been very persuasive in documenting points why it should be granted an exclusion. Contrary to the Army claim, there are numerous special circumstances precluding the application of a CATX, particularly 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)].

The request is, however, consistent with the Army approach to this issue over many years. Its actions give the full appearance of wanting to minimize their responsibility for having used or stored DU on various military bases. This presents an apparent conflict with the NRC statement that "protection of public health and safety and the environment are the NRC's chief priorities."

That the NRC made this suggestion of categorical exclusion should not be surprising. The legal leaning of the NRC appears to give exceptional latitude to requests for exclusion. This inference is derived from the legal opinion of some of its attorneys who favor a broad interpretation of the 2009 American Recovery and Reinvestment Act's effort to reduce paperwork previously required by NEPA regarding alternatives analysis in Environmental Assessments and Environmental Impact Statements (1).

A general concern is that if the Army is granted a CATX by the NRC, nothing will be done related to previously required monitoring and efforts at containment or preventing mitigation of DU at various areas where it was used. Schofield Barracks and Pohakuloa Training Area (PTA), Hawaii, are the specific focus of the comments here.

In its request, the Army makes mention that the NRC staff will require the Army to demonstrate plant DU uptake will not occur and DU will not migrate via air during high explosive (HE) firing. I would like to see a reference to the specific requirements for these conditions. Certainly experiments can be conceived to determine those conditions but special review must be made to determine that they are relevant experiments capable of determining DU.

There are overriding issues that must receive consideration. First, DU, the subject material of the license, is distinct from natural uranium. Second, ambient conditions on Hawaii are so unique and distinct from other bases that a programmatic approach is not applicable. Third, the Army has no idea where DU is located on the Big Island. Fourth, and of significant importance, possession responsibility must include complete containment.

In the course of events leading to granting a license to the Army for possession of DU in Hawaii, the Army has prepared various documents including a plan for radiation monitoring. That plan provided for monitoring the air, soil, plants, and waters for DU. There is no indication that any monitoring has been done to this date, after granting of the license.

NRC has made numerous concessions to the Army's radiation safety and monitoring plans and now it is time to demonstrate seriousness about protecting the public and environmental health and safety. The Army initially prepared a monitoring program and NRC asked for it to be improved. The Army asked for some exemptions (plants and waters) and NRC agreed. NRC even accepted limited time for monitoring such that if the initial monitoring over a few years showed nothing, the Army could ask for additional relief. Now the Army takes another step seeking a CATX to eliminate all monitoring and the RCAs would be used for unlimited firing range operations, including the use of high explosive munitions (HE).

There are numerous reasons for not granting a categorical exclusion and requiring an Environmental Impact Statement with full discussion of alternative uses of available resources. Brief discussions linked to some of the Statements of Concern (SOC) in the Army request are presented. The review committee of the Army request can

surely identify others.

Remoteness of a site containing radioactive material is one element when considering granting a CATX (SOC-A). The islands of Hawaii are not an isolated, remote, uninhabited Pacific atoll. It consists of 7 populated islands with a land area ranking it 47 among U.S. States (2). Its population is about 1.4 million and ranks 41 among U.S. States. The County of Hawaii has a population of over 180,000 and over a million annual visitors and is bigger than Delaware and Rhode Island.

There are a significant number of the residents of the Big Island of Hawaii that are very concerned about the health risk from DU (SOC-D). This concern was reinforced when initially the Army denied that DU was ever present in Hawaii and then, from various citizen requests for release of documents, it was revealed that shipments of the Davy Crockett weaponry were made to Hawaii. The interest is not only from individuals but from several organizations, national and local, including native Hawaiian groups, as well as the Hawaii County Council, and County representatives and senators.

To illustrate the seriousness of the public concern, several individuals privately purchased radiation detectors and made measurements in proximity to PTA. It is part of the NRC testimony for the license that elevated radiation readings were obtained around PTA by the citizens. While it may be a point of argument what caused the elevated readings, the sincerity and concern of the residents cannot be downplayed or dismissed.

The Army never admits it was the citizen discovery of DU use in Hawaii but it subsequently conducted a surficial inspection of Schofield and PTA that showed some fragments of the spotting rounds. The fragments indicate there was at least enough energy to break apart the original projectile.

In its CATX request, the Army infers that Fort Benning, Georgia, can serve as a model of worst case scenario in the migration of DU (SOC-B). For PTA, at least, such a grouping is severely flawed. Hawaii is an island with major weather influences differing from Fort Benning. Climate, wind, temperature, topography, soil, and air are significantly different. In the references to Fort Benning given by the Army, only transport of DU by water mechanisms are discussed in measuring Munition Constituents of Concern (MCOC). Even then, only uranium is measured, not depleted uranium. No inference can be drawn from a comparison of Fort Benning and PTA and Schofield.

Of great importance, at PTA, the Army does not know where the DU is located. The Army looked in what it thought were probable areas for testing the DU munitions and found only a few fragments and perhaps one nearly intact spotting round of the 700 to 2000 possible rounds used. The actual number is in controversy. The areas now labeled as RCAs were most probable but likely not all inclusive. As such, it does not know the form in which it may exist today nor how much dispersal might have occurred. It is seemingly impossible to grant a categorical exemption when you do not know where the material under your possession license is located.

The Army has contended that because uranium is a heavy element, it does not migrate very far. Frankly, that is a grossly misleading statement. Either the Army has a very poor understanding of aerosol physics and transport or it hopes the reader has the poor understanding. Aerosols are known to persist in the atmosphere for very long times and can be transported great distances. There are instances where DU has been found to migrate tens of miles from its source (Colonie, N.Y.) and dust and aerosols from the African and China deserts are known to migrate thousands of miles (3, 4).

Aerosolization can occur from many interactions. Release of oxidized products in the wind is one mechanism. Explosions, grinding, abrasion, and burning, are others. The energy released by a high explosive (HE) artillery shell detonation forms a concussion wave that is capable of killing humans within a 100 meter radius. That is more than sufficient energy to create resuspension of precipitated aerosols. It also can create new suspension of dust and aerosols. A reasonable question would be, is such aerosol transport possible on the Big Island? One need only look at the satellite photos of the aerosol-dominated volcanic plume being transported by the directional winds to the Kona side of the Island and occasionally to Hilo, and even to neighboring islands of Maui and Oahu ([earthobservatory.nasa.gov/OTD/view.php?id=8706](http://earthobservatory.nasa.gov/OTD/view.php?id=8706)).

The Army states that once NRC grants a possession-only license CATX, they will begin HE firing into the RCAs (SOC-B), a process surely capable of releasing DU aerosols. The risk is claimed to be miniscule but the mechanism of aerosol inhalation could introduce a particle of nearly pure uranium that can reside in the lung for month or years. Overall, there could be 300 to 600 pounds of DU present at PTA. Smaller caliber explosives also release sufficient energy to create aerosols. This action is not only clearly irresponsible but initiates a reason for not granting a CATX.

The CATX request is in part based on that fact that DU was used over 50 years ago and has remained unused in the environment for that interval. However, the future proposed action of the Army will create a significant environmental impact with a surface disturbing activity. In addition to HE firing, another proposed action by the Army is to construct battle action areas that may infringe on or be adjacent to the currently designated RCAs. Thus, future actions play a dominant role in consideration of whether to grant a CATX, not some condition of a half century ago. The conditions of possession at the bases do not remain static. The issuance of an exclusion will trigger actions that will have a significant and potentially harmful impact on the environment at PTA and render the CATX unjustifiable (5).

Monitoring of personnel and material egressing from an RCA, not that it was adequate in the original monitoring plan, must be put in place. A better way for the egress monitoring had been suggested previously in that air-pump filter collectors be emplaced on personnel and vehicles (including helicopters), and the filters will be analyzed for DU.

The Army makes reference to quantitative measurement they made of air particulates

on the Big Island. Most measurements were for total uranium; no DU-seeking isotopic clarifications were made. Past monitoring at Pohakuloa referenced by the Army can in no way be used to infer what is fate and transport of DU. If a monitoring program is designed to avoid finding DU, it certainly will not be found! There was one measurement in the vicinity specifically to seek DU and that was by the Waikīʻi Ranch homeowners association through a private laboratory in England. The result was marginal in that DU was found but at the limit of detection. An enhanced monitor program must be emplaced to confirm any “anticipated” prediction by the Army.

Neither the County nor the State has any DU monitoring programs in place. Therefore, a proper monitoring plan with rigorous oversight must be funded and emplaced. This should include air, soils and now water monitoring should be reinstated. Limited plant monitoring should occur especially at the nearby Mauna Kea Park and the Girl Scout camp. If lichens and mosses are located, they should be sampled.

Modeling can only be as good as the data entered. The Army uses RESRAD and the mythical farmer to demonstrate the increase in risk from exposure to DU. There is a lot that can be addressed about the model boundary conditions but there is one thing that is inarguable. The model as calculated does show that there is an increase in exposure to radiation. This amount is downplayed, 5 mrem increase out of 600 mrem background (6). But it is an increase nonetheless. Given the intractable approach by the US EPA where they adopt a linear, no-threshold model to radiation exposure and health risk, this calculable risk is significant. The whole island becomes a surface danger zone.

The SOC on cultural impacts provided by the Army is very brief (SOC-C). There will be major cultural impacts but the extent remains unknown because at PTA, many cultural sites are within zones of UXO. How many might be preserved from destruction will remain unknown.

Alternatives to the status quo are numerous but were not discussed by the Army. The RCAs could be decommissioned, a suggestion that will be repulsed by the Army. There is plenty of land available at PTA so that removal of the RCAs would not significantly impact the overall training missions. The Army recently purchased 24,000 acres to expand PTA to 108,863 acres.

Fort Carson, Colorado, is a good alternative installation. It has similar rainfall, altitude, and proximity to 13,000+ foot mountains. In the Pacific region, Guam is a partial alternative but in reality is limited by the size and civilian population for complete substitution of PTA activities. Governments in the Philippines and Japan would like to see the US Military presence downsized.

Regarding monitoring, an activity the Army abhors at PTA, some concerned people volunteered to conduct monitoring for the Army if it provided adequate funding. No reply was given. Other sources could be private contractors, the University of Hawaii or the State Department of Health. Monitoring should now include ground water and

mechanisms for DU transport to that ground water. The initial request by the Army to exclude water from monitoring because the water table is at thousands of feet depth was not an unreasonable request for consideration. Now that water has been found at 500 feet and is being considered as potable water for the PTA, the Army still contends that these reservoirs are still too deep to be reinstated for monitoring. That is an arguable issue for which there is no steadfast determination. If the water is to be used, it should be monitored for DU.

Another alternative action is, of course, to do nothing and let the previous conditions of the license stand, including proper monitoring.

The Army response is “no” to SOC-E regarding the level of uncertainty about environmental effects. Yet its request is replete with anticipations, not certainties. What is present in this commentary confirms the uncertainty and points out misstatements behind the claims..

Part of Schofield was cleaned up because the Army wanted to construct a battle training complex where DU had been located. A similar remediation effort at PTA could be undertaken even considering the UXO in the RCAs. Some of the land is leased by the Army and it is probable that at the termination of the lease the land must be cleared of UXO. This is just an acceleration of that process.

One thing is certain. If NRC holds its ground with monitoring and limited the use of the RCAs, it will aid in protecting hundreds of thousands of people from harm’s way by reducing increased risk of exposure to DU by the soldiers, the contract staff, the nearby users of the Girl Scout Camp and Mauna Kea County Park, and the County residents and visitors. The military has alternatives, not only in training facilities around the world but on their own at PTA, vast enough to accomplish anything the Army needs for training without blasting the RCAs and mobilizing DU. The NRC has an opportunity to meet its stated objective of protecting public health and the environment and should do so here.

In summary, the Army has not provided convincing or persuasive commentary for a categorical exclusion. Although it may apply to some bases, a one-size programmatic application does not fit all. A categorical exclusion should not be granted for PTA. PTA stands as a special circumstance where for all actions pertaining to the possession license, including the use of the RCA for training and continuous monitoring, an Environmental Assessment or Environmental Impact Statement must be generated. As an interested person, I go on record as always requesting the Environmental assessments or impact statements. Special circumstances include 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.

## Notes and References

---

(1) NRC attorneys J. Suttenger, L. London, and T Campbell wrote a legal

discussion in 2009 entitled “Unresolved Conflicts: How revisiting NEPA §102(2)(E) could increase efficiency, simplify government and save taxpayers money.” It must be noted that the attorneys stated although they were employees of NRC, this discussion was their own opinion and not necessarily that of the NRC.

(2) The 8<sup>th</sup> major island is Kaho`olawe. It was used by the military as a target by naval ships and airplanes. Its area is about 115 km<sup>2</sup> and not inhabited. A UXO cleanup was attempted but only about 25 percent of the land was recovered. PTA on the Big Island is 2.5 times larger than Kaho`olawe.

(3) Dietz, L. 1980, Investigation of excess alpha activity observed in recent air filter collections and other environmental samples: Report CHEM-434-LAD, Knolls Atomic Power Lab, General Electric, January 24, 1980.

(4) Yun He and Fan Yi, 2015, Dust aerosol detected using a ground based polarization LIDAR and CALIPSO over Wuhan (30.5N, 114.4 E), China: *Advances in Meteorology*, v. 2015, 18 p.

(5) See (1) Suttenger et al. *Bob Marshall Alliance v. Hodel*, 852 F2d 1223,1239 (9<sup>th</sup> Cir. 1988).

(6) The 600 mrem number is a recent estimation of background and includes several hundred mrem from medical imaging procedures (NRC factsheet, 2014). This number increased in the last 30 years, the previous significant increase being the addition of radon exposure. This is a whole-body yearly exposure, not organ specific as would occur with inhalation of DU.