CHAIRMAN Resource

From: Michael Reimer <geomike5@att.net>
Sent: Friday, July 19, 2019 11:32 AM
To: CHAIRMAN Resource
Subject: [External_Sender] communication breakdown

Kristine L. Svinicki, Chairman
Nuclear Regulatory Commission
Mail Stop O-16 B37
Washington, D.C. 20555-0001
Chairman@nrc.gov
301-415-1750

Dear Chariman Svinicki,

On May 31, 2019, there was a webinar on the NRC's depleted uranium program in which I participated. Participants were told that if they had comments they could e-mail them to Robert.nelson@nrc.gov.

I have attempted to email my comments recommending program improvements, particularly as they relate to License SUC-1593, on three occasions to Mr. Nelson (June 4, July 1, and July 18) and have not received any reply that they have been received. On all three occasions I have received an automated email that Mr. Nelson would be out of the office, each one giving a different return date.

I therefore include my comments in this email to you and hope that you might be able to send them down the line so they can be included in the proceedings. I also hope that you might be able to suggest some improvements in communication responses from the NRC.

Thanking you for your help, I am

Sincerely yours,

/s/

Michael Reimer, Ph.D.
Retired Geologist
GeoMike5@att.net
7/19/2019

Comments and Questions on the NRC May 31, 2019 webinar on Depleted Uranium.

From:

Michael Reimer, Ph.D.
Retired Geologist
GeoMike5@att.net
June 4, 2019

While I thought the 5/31/2019 webinar of depleted uranium (DU) was a nice communication gesture for outreach, I felt it was a bit awkward. The availability of a more detailed preliminary outline (agenda) would have been helpful to focus on the concept of the plan the NRC seeks for implementation. I had some problems with the on-line webinar question panel as it kept disappearing and

only a partial question seemed to be submitted, as if there were a time-out limit. I preferred the phone-in commentaries and thought they were superior for eliciting response from the NRC panel.

I do not think the NRC panel was really prepared in this case to address the issues that were presented. Overwhelmingly, there were dodges and generalities and even a situation that implied concern over a point was non-existent because it was not under NRC purview. I disagree with that position. The primary objective as it appears in the NRC mission statement is public health and safety regarding mostly man-made radiation.

The U.S. Nuclear Regulatory Commission regulates the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of the public health and safety, to promote the common defense and security, and to protect the environment.

All issues impacting and affecting that mission must be considered. This is not a court of law where jurisdiction or standing have a place in litigation. This is for public health and safety and all residents of our planet deserve consideration and protection. This was exemplified at the Friday meeting where a question was asked 'Why does the NRC not seek enforcement of the Army's regulations concerning radioactive material' and an answer was given that it is beyond the scope of the NRC oversight. While the NRC need not enforce the Army's regulation for the Army, it must not ignore its existence and at the very least minimally require the same standards for the license as those regulations. In this case, it would be easily addressed in the Radiation Safety Plan. To the extent that it applies to NRC oversight, it can then be properly applied and followed.

Military use of depleted uranium in weapons and armor has occurred at numerous bases and Davy Crockett weapon sections were located in Germany, Hawaii, Okinawa, South Korea and Guam. Guam is a territory of the United States but is it excluded from NRC purview? Should it be investigated for the presence of DU and if present should it also be included in the license? It was, after all, a reported destination for a Davy Crockett section.

Sampling at installations is an important part of determining if DU is present and in what quantity and form, and what the risk from its presence might be. The sampling program at Pohakuloa Training Area (PTA) in Hawaii is specifically designed to not find DU. Collecting a sediment sample more than 6 miles from the declared radiation controlled areas with no obvious connection between the two sites for sediment transport is certain to not find DU. Sediment transport requires more than a downhill gradient. I had proposed an experiment to Mr. Koenick. Take a water tanker truck to the eastern-most RCA and release the water at a controlled rate over hours to simulate a downpour, something like 3 inches of rain per hour over a 25 square meter area, and then trace and document that water flowing to the sample collection site. This is something an on-site inspector can observe. I have confidence that no water will make it to the sample collection site.

Similarly, with the sample analytical methodology, an unrealistic definition of DU presence is guaranteed not to find any DU at PTA. An alpha spectrometric method is used to analyze for the activity of isotopes U-238 and U-234. A ratio of 3 for those isotopes is used to define the presence of DU. How much DU must be present in the 200 gram sample collected to achieve a ratio of 3? The dilution factor from naturally occurring uranium is enormous. Look at a graph provided by the Army (Appendix A) in ML19115A040 where it shows about 40 percent of the uranium in the sample would have to be DU. Why not choose a more realistic activity ratio of 1.3:1 instead of 3:1? Even that is a difficult standard as it requires around 10 percent of the uranium to be DU but it is approaching a more realistic standard. With the current definition and methodologies, the finding of no DU is virtually guaranteed. This of course fits into what appears to be a predetermined outcome so that after a few years of using an inadequate monitoring program, it can be claimed that no DU has migrated and the monitoring can be discontinued. The basis for this prognostication can be summed in a direct question. As it is known that DU munitions were used at various military facilities and all have a monitoring program under license SUC-1593, why has no DU been found (ML19115A040) at any of these facilities using the sampling and analytical plan proposed by the Army and accepted by the NRC? The sub-marginal utility of the methods used can be seen in the extraordinarily high number of data entries that show non-compliant results.

This issue that uranium does not travel very far so there is no perceived risk from exposure at PTA was brought up at the webinar. The basis of this supposition comes from the often stated comment by the Army that uranium is a heavy element nearly twice as heavy as lead. This is clearly misinformation suggesting that the weight of DU prevents it from moving from its site of original placement. We can ignore the use of "heavy" in place of a more appropriate technical term but it is important to also note that DU oxide is actually a bit less heavy than lead. In addition, the comment that DU does not travel very far is to directly ignore the aerosol mode as a common transport mechanism. Both theoretical and empirical determinations have verified that DU and its oxide particulates can travel for tens of kilometers. Dust aerosols are known to migrate thousands of kilometers. High explosive use at PTA over the years has probably redistributed much of the DU from the Davy Crockett training and oxides can continue to be resuspended not only by blasting and from wind-driven saltation effects, but by merely walking over the small particulates that have been redistributed. The stack effect caused by a high explosive can elevate material hundreds of meters into the air and then wind can distribute that debris over many kilometers. To give you a perspective of the amount of high explosive use at PTA, access Google maps of the compound and see the enormous density of craters left from the high explosives used over the years.

In the webinar it seemed that NRC was accepting a common bottom line that although DU is present, the yearly dose one might receive, including the mythical resident farmer, is so low as to be a negligible risk factor. That would change, of course, with a different mode. Forget whole body dose but use a more realistic model that considers the most organ-specific and probable risk through inhalation.

There is now without doubt more DU at PTA than allowed by the license SUC-1593. Photographs taken by an Army contractor about 10 years ago as part of a scoping mission to locate where DU might exist clearly shows parts of a Davy Crockett main warhead that have a yellow coating characteristic of DU oxides (ML092950352). The contractor report states that some DU pieces were removed to a place of safekeeping and others buried and marked in place. Where are those pieces today? Can they be located? This should be part of an unannounced site visit inspection. The license must be amended, public meetings held, and full environmental impact assessed.

The contractor estimated that, from the number of firing pistons located, 600 main warheads were fired. The warheads used were probably dummy warheads designated as M-390. In any event, the fact that pieces of the main warhead are known to be present and contained an explosive and DU is hardly refutable. When presented with this situation the Army responded that the dummy warheads contained steel to mimic the weight of DU but contained no DU. That is unlikely for a number of reasons. However, it is now known that there were three types of warheads; the fission warhead, the dummy, and a practice warhead. The practice warhead contained removable fins and a replaceable nose cone and did contain steel for ballistic weight simulation purposes but no explosive. The replaceable parts were to allow the warhead to be recovered, repaired, and reused. The photographs show that at least some of the 600 Davy Crockett rounds fired were the dummy warheads containing DU. The Army response appears to have been describing a different warhead, the practice round rather than the dummy round that contained DU and parts of which are known to be at PTA.

The W-54 fission warhead used in the Davy Crockett system weighed about 23 kilograms. For the dummy warhead, some was explosive, about 7 kilograms, and some allowance for design components. That leaves about 13 kg of DU per warhead.

If half of the 600 pistons for warhead firing were dummy rounds containing ballistic-equivalent weight of DU, that would be over 4,000 kg of DU. In short, every dummy round fired would be equivalent to 70 M-101 spotting rounds. The number of M-101 spotting rounds estimated to have been used at PTA, 714, is derived from a shipping invoice. It is highly likely that some spotting rounds were included with the Davy Crockett section when deployed to Hawaii or other times resupplied. It must be noted that in testimony before the Hawaii County Council, an Army commander stated that as many as 2,000 spotting rounds could have been used at PTA, a number consistent with training guidelines. This is not an unreasonable estimate as the NRC had determined that there were over 29,000 rounds unaccounted for of the 75,000 manufactured (the others were decommissioned). That would about triple the amount permitted by the license. In addition, there has been no release of information regarding other caliber DU munition use, such as the 30 mm rounds typically used by the W-10 Thunderbolt "Warthog" aircraft known to have been used in training at PTA. If the NRC wants to maintain its conservative position in regard to DU issues, the higher quantity should be used. There should be records on the numbers and types of warheads that were located in Hawaii. It would, of course, be rather unpopular to announce that any fission warheads were ever located in Hawaii but certainly the dummy warheads were available.

Another issue that was approached during the webinar was clean up of DU. The Army did provide an estimate for cleanup at various bases (ML1507819099; ML16004A369). The most expensive site was Hawaii, for which the Army estimated that it would cost between $60 and $70 million. Of course, some DU cleanup has already taken place on Oahu as part of construction of battle area complexes within the DU ranges. It would be proper for the NRC to require remediation to be part of the license. When partitioned over a few years, the amount is trivial when compared to a $700 billion dollar yearly military budget.

I hope from my comments you will note that the DU program as currently established is rather cavalier and while NRC could do a lot of auditing and mandating useful scenarios, it seems to not want to do so. Rather, it seems to cultivate a symbiotic relationship with the military instead of putting public concerns, health and safety at the forefront. Remember, any health risk from DU at PTA is also suffered by the soldiers and civilian employees.

The Army has a propensity to issue disinformation and then publically claim that it must be factual because it was approved by the NRC (see for example, https://www.westhawaiitoday.com/2016/12/22/hawaii-news/depleted-uranium-plan-under-review/).

You should want to be better than that.