From:	Michael Reimer
To:	Koenick, Stephen
Cc:	Yadav, Priya
Subject:	[External_Sender] response to letter of July 27, 2020
Date:	Thursday, August 6, 2020 11:01:49 PM

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August 6, 2020

Mr. Stephen Koenick, Chief
Low-Level Waste and Projects Branch
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Mr. Koenick:

Thank you for your July 27, 2020 letter responding to my concerns about the DU monitoring program at Pohakuloa Training Area in Hawaii. I was pleased that you have acknowledged that the migration of DU from the radiation controlled areas at PTA is occurring.

One of the primary issues is that the sampling and analytical system used at PTA is grossly insufficient to quantify the amount of DU migration. While focusing on the results at hand and my statement that the use of a ratio of activity of U-238 to U-234 of 3 is intentionally selected to not find any DU, I appreciate now that you also acknowledge that my noting the activity ratios found of 1.2 and1.3 is clear indication of the presence of DU. Yet, upon additional consideration, it really does not matter if the sample contains 80 percent DU or 30 percent, representing the activity ratios presented. It is still an indication that it is present. The NRC acceptance of the U.S. Army definition that a sample has to contain over 80 percent DU before it acknowledges DU is present is absurd.

In your letter, you refer to the fact that I had previously mentioned there is typically some natural variation of uranium activities. This is generally true especially when samples interact with water. At PTA, however, no water transport from the radiation controlled areas is shown to be involved. The relatively young age of the base material, that is, the oceanic basalts, and local climatic conditions do not permit any significant separation of the isotopes to measurably affect the activity ratio. You also acknowledge that the analytical method you support does not always give a clear indication of DU presence when a sample containing 30 percent DU as part of the total uranium is analyzed. That is then a woefully inadequate method. Specifically, the material collected is most likely the result of simple mechanical weathering of the parent material and does not involve any soil formation thus further reducing the likelihood of water enhanced isotopic separation. And obviously, there is no surface water flow connection of the sample site, adjacent to a maintained dirt road, to the radiation controlled areas.

You also refer to my mentioning the sampling design based on NUREG-1301. I reiterate what I had said previously. That NUREG discussion refers to shoreline sampling which is so far removed from the environmental and climatic situation at PTA that it has absolutely no relevance for PTA. The flawed sampling methodology currently employed joins the flawed analytical methodology, with its incumbent lack of adequate sensitivity to consistently quantify any DU present. This is a fact that you note in your letter to me, that analytical uncertainty is a problem in discerning the accuracy of the analyses. As I previously stated, if I were tasked to review a monitoring program specifically designed to not find evidence of DU migration, I would certainly agree that what is being done qualifies as a perfect program.

The most likely transport vector of DU to the sample location at PTA is by air. That is how DU is present in the samples. It is consistent with the observation that there is not analytical homogeneity. There are multiple mechanisms at PTA that can suspend DU particulates into the atmosphere, the most prominent one being the use of high explosives in the areas where DU is present from the Davy Crockett program. This is followed closely by mechanical means of resuspension, including weather events or human activity, walking, vehicular traffic, even aircraft overflights.

The issue is no longer whether DU is present, most probably in oxide form, as it is now confirmed that it is, at least qualitatively. This is contrary to the multiple claims that DU at PTA does not migrate far from its source. As inappropriate the current methods are for PTA monitoring, it is still sufficient from repeated sampling to indicate that DU has migrated from the radiation controlled areas. The NRC could have mandated a better program design but chose to accept one that would minimize chances of finding any DU migration. I had proposed a superior program even offering to put you in touch with someone who could oversee a citizen science group of volunteers but you never responded to that offer. I also never heard from you regarding the proposal from the U.S. Army that you moderated that I could participate in selecting a revised sample site.

The results over several years now indicate that even with the deceptive method chosen, DU has migrated and NRC scrambles to spin another justification for shirking its responsibility to the public. It is tragic that the NRC jumps to a backup excuse seemingly saying ‘So what. The exposures are still small as not to be significant.’ It is one thing to reject the now clear and convincing scientific evidence but it is unconscionable to reject your moral responsibility. Residents, visitors, soldiers, and civilians employed at PTA should not be victims of collateral damage because you feel the radiation exposure is not all that great. There should be none. There should be zero risk, not simply minimal risk. The NRC can act to reduce it but seems more content to support the military than to support and protect the citizens of the Big Island of Hawaii.

It becomes imperative to mitigate the area. Rationale for that is stated in the ALARA principle. Such is possible as the U.S. Army has provided NRC with estimates of remediation costs so a program has been developed. It should be implemented. Alternatively, without any cost, the use of the radiation controlled areas should cease. They should be sequestered forever, declared a toxic site as it is now equivalent to a low-level radioactive waste storage facility, removed from all types of use, and never used for any purpose again. Monitoring is still required however, to provide alerts to any contamination migration in the air, on the surface, or to water, above ground or below the surface.

It becomes so easy for an agency when in a position of authority, as is the NRC, to hide behind the curtain of regulation and to abrogate total responsibility to the primary function of the organization, the very reason for its existence. The NRC primary web page, updated as recently as April 17, 2020, makes their mission perfectly clear. It was created “to ensure the safe use of radioactive materials for beneficial civilian purposes while protecting people and the environment.” Of course, the NRC will probably find it easier to delete that goal than adhere to it.

No matter how you spin your justification to support the bogus methodology, you can never do what is right for the people by endorsing a system that intentionally camouflages the truth.

Your letter mentions that you do not believe the exposure to any individual from exposure to DU at PTA is greater than 1 millisievert public dose limit 10 CFR 20.1501(a). This is based on your regulatory definitions and calculated using a theoretical whole body exposure. To clarify this point, you are intentionally neglecting the obvious fact that at PTA the probable transport vector for exposure places the lung as the primary target organ. It is the lung-tissue dose that must be determined. The dose to cells adjacent to a uranium oxide particle embedded in the lung and emitting alpha particles, as well as beta and gamma radiation, can cause cellular mutation easily acting as a carcinogenic initiator. I know I will not win this argument to anyone so willing to disregard the scientific method of keeping an open mind, but it is the real risk to individuals that must be considered, not some mythical farmer used in whole-body exposure estimations at PTA.

In your letter of July 27, 2020, you spend a lot of time addressing water standards for DU. As there are no water samples collected at PTA, the discussion you provide is hardly relevant. The issue, of course, is the presence of DU, not just total uranium. It is possible to collect water samples at PTA if you would be so inclined to include that in the monitoring requirements. There are several times a year that rainfall at PTA does exceed an inch or so per storm and if collection of observed intermittent flow directly

from the radiation controlled areas would be mandated at those times, it could provide a quantitative measure of another transport mechanism, that is, how much might be carried by stream flow compared to airborne mechanisms. The analytical technique should be designed to address those quantities of interest with a robust degree of sensitivity. There were several wells drilled at PTA in cooperation with the University of Hawaii to locate possible sources of potable water. That drilling found perched water levels about 700 feet below the surface and I would appreciative it greatly if you would send me all the inclusive analytical results from testing and analysis of those waters.

One of the most important tenents of the scientific method is to keep an open mind to changes that may occur and address them accordingly. You appear to have failed in following that important principle. There is new evidence, new observations, and new perspectives that require a complete review of the DU monitoring program at PTA to address the issues raised by the results of the monitoring and to implement rigorous methods to determine with certainty the public and environmental risks from migration and exposure.

The current monitoring program at PTA has definitely shown the presence of DU from the activity ratio of U-238/U-234. You have indicated you do not agree with those results but it is nonetheless there, using the methods you have adopted showing that, on occasions, the uranium in the sample collected has around 30 percent DU. While the monitoring methods you promote are woefully inadequate to determine certainty in the range of interest and to lend any support to your summary dismissal of this fact, they do reveal qualitatively the presence of DU. The methods must be changed for rigorous confirmation or the values indicating migration of DU must be accepted. In the latter case, the risk to people must be completely reevaluated.

I therefore formally request that the NRC initiate a comprehensive review including new public hearings to adopt new methodologies.

Eliminating public risk must be the ultimate objective.

Sincerely,

/s/

Michael Reimer, Ph.D.

Retired Geologist

cc: Yadav, Priya

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