May 17, 2011

Dr. Robert Cherry
IMCOM Radiation Safety Staff Officer
U.S. Army Installation Management Command
ATTN: IMSO/Dr. Cherry-Y17
11711 North IH 35, Ste 110
San Antonio, TX 78233-5498

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION STAFF REVIEW OF THE IMCOM RADIATION SAFETY PLAN

Dear Dr. Cherry:

On March 31, 2011, U.S. Nuclear Regulatory Commission (NRC) staff met with U.S. Army Installation Management Command staff at NRC headquarters in Rockville, Maryland. The purpose of this meeting was to discuss the NRC staff's review of the IMCOM Radiation Safety Plan (RSP) for the IMCOM facilities in Hawaii. At this meeting the NRC staff stated that we would provide our comments on the RSP to the IMCOM staff in writing. Our comments on the RSP are enclosed.

In accordance with 10 CFR 2.390 of the NRC "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html.

If you have any questions concerning the NRC staff comments, please contact me at 301-415-6749 or by email at Dominick.orlando@nrc.gov.

Sincerely,

/RA/

Dominick A. Orlando, Senior Project Manager
Special Projects Branch
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Docket No. 040-9083

Enclosure: Staff Comments

Dr. Robert Cherry
IMCOM Radiation Safety Staff Officer
U.S. Army Installation Management Command
ATTN: IMSO/Dr. Cherry-Y17
11711 North IH 35, Ste 110
San Antonio, TX 78233-5498

Dear Dr. Cherry:

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION STAFF REVIEW OF THE IMCOM RADIATION SAFETY PLAN

On March 31, 2011, U.S. Nuclear Regulatory Commission (NRC) staff met with U.S. Army Installation Management Command staff at NRC headquarters in Rockville, Maryland. The purpose of this meeting was to discuss the NRC staff's review of the IMCOM Radiation Safety Plan (RSP) for the IMCOM facilities in Hawaii. At this meeting the NRC staff stated that we would provide our comments on the RSP to the IMCOM staff in writing. Our comments on the RSP are enclosed.

In accordance with 10 CFR 2.390 of the NRC "Rules of Practice for Domestic Licensing Proceedings and Issuance of Orders," a copy of this letter will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at http://www.nrc.gov/reading-rm/adams.html. If you have any questions concerning the NRC staff comments, please contact me at 301-415-6749 or by email at Dominick.orlando@nrc.gov.

Sincerely,

Dominick A. Orlando, Senior Project Manager
Special Projects Branch
Decommissioning and Uranium Recovery
Licensing Directorate
Division of Waste Management
and Environmental Protection
Office of Federal and State Materials
and Environmental Management Programs

Docket No. 040-9083

Enclosure: Staff Comments

DISTRIBUTION:
EUllrich, RI JClements REvans, RIV BSpitzberg, RIV

ML111360082

OFC	DURLD	DURLD	DURLD
NAME	DOrlando	PMichalak	DOrlando
DATE	5/16/11	5/16/11	5/16/11

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION STAFF COMMENTS ON ARMY RADIATION SAFETY PLAN FOR U.S. ARMY GARRISON HAWAII RANGES AFFECTED BY DEPLETED URANIUM IN M101 DAVY CROCKETT SPOTTING ROUNDS Dated 2/9/2011

General Comments:

1. The map in Section 23, showing the boundaries of the Radiation Control Area (RCA) for the Schofield Barracks is not consistent with those provided to the U.S. Nuclear Regulatory Commission (NRC) in the past. Specifically, the map in the Radiation Safety Plan (RSP) appears to exclude a portion of the area designated as the "Residual Impact Area" on the map entitled "Schofield DU Map 5Jan10" and the map provided to NRC staff during the October 30, 2010, briefing by the U.S. Army Corps of Engineers. This may be due to the completion of more detailed characterization of the Schofield Barracks or additional information being gleaned during the Archival Search activities. However, please provide the reasons for this apparent revision to the RCA and provide justification for the new RCA boundaries.

2. The discussion of the Administrative Dose Control Levels (ADCLs) program indicates that the ADCL will be 1% of the NRC's occupational dose limits. However, the RSP indicates that dosimetry will not be issued to individuals entering the RCS. Therefore, it is not clear how the applicant will demonstrate compliance with the ADCL program. NRC staff agrees that the potential for an individual receiving a dose in excess of the public dose limit is unlikely given the configuration of the depleted uranium (DU) on the RCA/ranges. Thus, it may be more appropriate for the Army to demonstrate that the individuals entering the RCA will not receive a dose in excess of 10% of the public dose limit using the guidance in NUREG-1556, volume 7. The Army may also wish to evaluate the information provided previously to NRC (November 6, 2009, license application, April 2008 Baseline Risk Assessment, et. al.) in making this demonstration. Also, please note that Section 6.3 indicates that the Garrison Radiation Safety Officer (GRSO) will perform a retrospective review of doses to the Declared Pregnant Worker and provide increased radiation safety surveillance during the gestation period. However, it is not clear how these activities will be completed if dosimetry is not provided to workers entering the RCA.

3. While the RSP indicates that a site-specific Environmental Radiation Monitoring Program will be developed for the Hawaiian installations, the applicant should describe any environmental monitoring activities they will undertake to support the activities listed in Section 4.3 that may be permitted prior to the NRC issuing a license. Specifically, if the Army will perform air monitoring during range burns, they should state this in the RSP or explain why air monitoring is not necessary.

4. In several sections of the RSP (see Sections 2.6, 11.3, or 19) the duties of the GRSO appear to devolve to "his or her designee". It is not clear from the discussion in the RSP what, or if, this individual will be qualified to perform the duties that will be expected of them. Please provide the qualifications and training that is contemplated for the GRSO "designees".

5. Section 14.4.2, bullet 3 indicates that the Army is requesting an exemption from the requirements of 10 CFR, Part 21. However, no information is provided in the RSP or elsewhere indicating why the Army is requesting this exemption.

6. While the RSP contains several examples of the types of survey instrumentation that may be available for use on U.S. Army Installation Management Command (Army/IMCOM) installations, it is not clear if all of the instruments will be available at each installation or which ones will be available at individual installations. Army/IMCOM will need to ensure that the survey instruments provided at the various installations are appropriate for DU and this will be evaluated during inspections of the installations.

7. The RSP discusses several forms and log sheets that will be used to demonstrate compliance with the RSP. It is not clear if these forms and log have been developed.

Specific Comments

1. The RSP states in Section 1.1 that it is for the purpose of a NRC-approved RSP, however in the introduction (Section 1) it states that the Radiation Safety Officer will change the RSP and only submit the changes to the NRC, not get them approved. Further, the RSP indicates in Section 1.5 that procedures established to respond to unexpected safety situations will be developed by the GRSO, communicated to the License Radiation Safety Officer (LRSO), and be incorporated into the RSP. It does not address how these revisions will be reviewed and approved by NRC. Please include a commitment to communicate changes and unexpected safety situations to NRC in accordance with 10 CFR 20, Subpart M, if necessary, or within a proposed timeframe.

2. RSP indicates that the Garrison Commander (GC) will select the GRSO. However, it is not clear if the LRSO will concur in the GC's selection. In that the LRSO is responsible for ensuring compliance with the conditions of the license and commitments made in the RSP, the LRSO will need to ensure that the GRSO has the prerequisite training and experience to perform the GRSO duties as discussed in the RSP. Please confirm that the LRSO will be appropriately involved in the selection of the GRSO.

3. The duties of the LRSO discussed in Section 2.3 appear to be consistent with those outlined in Appendix I of NUREG-1556, volume 7. However, some of the LRSO's duties described in the RSP may be more appropriate for the GRSO. For example bullet 11 indicates that the LRSO (stationed in Texas) will distribute and collect personnel radiation monitoring devices, a duty more applicable to the GRSO (stationed in Hawaii). Please review the specific duties of the LRSO and GRSO and revise to describe those that will be overseen by the LRSO and those that will be performed by the GRSO.

4. The RSP indicates in Section 2.4, that the Hawaiian installation GRSO will receive training in the duties and responsibilities associated related to the M101 spotting round. However, it is not clear what level of training this will involve. The GRSO will be responsible for providing the training described in Section 20.2.2 to troops and other individuals entering the RCA. Please confirm that the training associated with the M101 spotting round will be sufficient for the GRSO to perform all duties assigned to the GRSO in this RSP.

5. The RSP states in Section 3.4 that the LRSO will inform NRC of the changes to the size, number and locations of RCAs, although it is not stated that LRSO will inform NRC if heretofore unknown radioactive material is discovered on an RCA or when the notification will occur. Please revise the RSP to state when the NRC will be informed of changes to the RCAs and if heretofore unknown radioactive material is discovered.

6. The RSP describes the activities that explosive ordnance disposal personnel and the GRSO will undertake if a Blow-in-Place (BIP) is contemplated for unexploded ordnance. However, the RSP does not discuss air monitoring during a BIP or any post BIP soil monitoring of the blast area. As DU could be dislodged or fractured and further dispersed during a BIP additional monitoring may be necessary. Please describe the activities envisioned for BIP, either in Section 4 or in Section 12.

7. Section 4.3 of the RSP lists the activities the Army wants authorization to perform. Several of the activities, if authorized, would require the presence of the GRSO (e.g. controlled burning). However, the RSP appears to indicate that the GRSO will not be present and only the range personnel will be present. In addition, Section 4.3 does not discuss range reclamation work; emergency response (ambulance, firefighting); environmental monitoring; radiological surveys; or quality assurance, quality control, and audits to support the listed activities. These activities may be necessary to ensure that the ranges are managed safely. Please provide a revised discussion of the requested authorized activities and indicate which ones will necessitate direct oversight by the GRSO.

8. Section 6.2 of the RSP indicates that Regulatory Guide 1.86 surface contamination levels are, and apparently will be considered, as low as reasonably achievable (ALARA) for purposes of the RSP. Regulatory Guide 1.86 levels are not unilaterally considered ALARA by NRC and should not be considered as such for the decontamination of equipment leaving the RCA. Please revise the discussion to state that decontamination efforts should result in surface contamination levels that do not exceed the Regulatory Guide 1.86 criteria PLUS ALARA.

9. Section 10 states that respiratory protection is not required for entry into the RCA. Please confirm if respiratory protection would be required for certain activities within the RCA, such as burning or mowing. If not, explain what monitoring will be performed to ensure that individuals performing activities that may generate airborne contaminants, would not have an intake of DU.

10. Section 11 of the RSP discusses decontamination surveys, etc., but does not appear to include a commitment to develop and maintain a procedure for monitoring and decontaminating personnel, equipment, and vehicles. Please revise RSP to state that a procedure will be developed for the monitoring and, if necessary decontaminating personnel, equipment and vehicles. The GRSO must be trained in the procedure and it should be available for review during NRC inspections. Also, it should be available at the entry/exit points to the RCA when personnel are working on the RCA.

11. Section 11.2 of the RSP indicates that only instances where contamination is detected on personnel, equipment, or vehicles will be documented. Exit survey documentation should be maintained for all personnel, etc. leaving the RCA, not only when contamination is detected. Please revise the RSP to state that the results of all surveys of personnel, equipment, and vehicles will be maintained or state how the results of surveys will be documented.

12. Section 11.3 of the RSP states that swipe tests MAY be conducted if scanning detects contamination. As the criteria in Regulatory Guide 1.86 include removable contamination limits, it is not clear how this will be demonstrated if swipes are not done. Please revise the RSP to state that swipes will be taken any time scanning detects contamination and after decontamination efforts are completed.

13. The RP indicates that signage is not necessary for the RCA. 10 CFR Part 20, Subpart J (20.1902(e)) requires cautionary signs for any area containing radioactive material in excess of 10 times the Part 20 Appendix C values. Ten times the DU (U234, U235, and U238) values in Appendix C are 0.01, 0.01 and 1000 microcuries, respectively. Based on the information provided in the application dated November 6, 2008, each Davy Crockett round contained approximately 190 grams of uranium. The concentration of uranium in the projectile is about 0.4 microcurie per gram (RSP pp.16-1). Assuming half the 714 rounds delivered to Hawaii were fired at the Schofield Barracks, 27,132 microcuries of uranium may be present. Therefore, the RCA will need to be posted with appropriate cautionary signs. Please revise the RSP to indicate that signage will be established around the RCA.

14. The information on instrument types seems to be acceptable, though very general. Several different instrument possibilities are listed, and there are statements that the GRSO will assure that appropriate instruments are available for use (Sections 11.1 and 17). Thus, it becomes imperative that the GRSO has the appropriate level of training and expertise to determine the appropriate instrumentation. Please confirm that the GRSO will have this training.

15. Some additional clarification is needed on survey instruments that are repaired. In Section 17.1, it is indicated that "if survey equipment requires repair during a workday, it shall be repaired and its proper function verified before it is returned to use." NRC guidance documents on materials and uranium recovery surveys (Regulatory Guides 8.21 and 8.30) have stated that instruments should be re-calibrated after repair, and this would be the expected practice in the Army's case as well. Please revise the RSP to better describe post instrument repair procedures.

16. Both the static and scan Minimum Detectable Concentration (MDC) calculations indicate that there is a "final factor, which equals 1" that helps put the units into dpm per 100 cm^2. It is not clear if that portion of the equation listed as "100 cm^2/100 cm^2" is actually considered to be numerically 1 for the purpose of the calculation (and essentially ignored). If that is the case, the final result would be off by a factor of 100. An example calculation that clarifies this is found in Section 9.2 of "Decommissioning Health Physics" by Eric Abelquist. Please clarify this point about the calculation and the statement about the final factor equal to 1. Also, an example calculation and example calculations to be

provided in any survey procedures would be helpful. The static MDC equation also assumes that a one minute count will always be used. Note that point would need to be clear in all survey procedures as well or else a time factor needs to be added to the equation.

17. The source efficiency (ε_s) for the static MDC calculation is stated to be 0.5. Depending on the type of instrument and radionuclide actually being measured, this will not arbitrarily be 0.5. Considering the general nature in which the Army lists the various instruments, this value should not always be specified as 0.5. For example the ISO-7503-1 standard on the evaluation of surface contamination for beta-emitters and alpha emitters recommends an ε_s value of 0.5 for betas ($E_{\beta max} > 0.4$ MeV) and an ε_s value of 0.25 for alpha and betas (0.15 MeV < $E_{\beta max}$ < 0.4 MeV).

18. In Section 19.2, the sixth bullet discusses radiological surveys and compliance with 10 CFR 20.2130. However, how compliance with 10 CFR 20.1301 will be demonstrated is not discussed. The eighth bullet discusses the use of dosimetry and states that doses are not expected to exceed 10 percent of NRC's limits. It is not clear how will they conduct this audit requirement (verification that dose limits will not exceed 10 percent of limits). Please provide clarification on the Army's demonstration of compliance with 10 CFR 20.2130.

19. Section 22.1 discusses radiological emergencies without any pertinent details. The RSP should discuss contact lists and equipment for emergencies and should specify that this information will be available at the locations where DU will be possessed.