



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
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Ser N45/17U132341
January 12, 2017

Ms. Orysia Masnyk Bailey
U.S. Nuclear Regulatory Commission
Region I, DNMS
2100 Renaissance Blvd, Suite 100
King of Prussia, PA 19406-2713

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Subj: REQUEST FOR ADDITIONAL INFORMATION FOR A DELAY IN INITIATION OF
DECOMMISSIONING ACTIVITIES AT NAVAL AIR WARFARE CENTER WEAPONS
DIVISION CHINA LAKE, MAIL CONTROL NUMBER 590418

The Navy's radioactive materials program is licensed with the Nuclear Regulatory Commission (NRC) under Master Materials License (MML) 45-23645-01NA. As outlined in the Office of the Chief of Naval Operations letter 5090 Serial N45/16U132496 dated 21 December 2016, the Navy submitted a request for delay in initiation of decommissioning activities for Naval Radioactive Materials Permit (NRMP) 04-60530-L1NP at Naval Air Warfare Center Weapons Division (NAWCWD) China Lake in accordance with 10 CFR 40.42(f).

The enclosed compact disk to this letter contains the electronic copies of the enclosures from the Office of the Chief of Naval Operations letter of 21 December 2016. The material of each enclosure is summarized here. Enclosure (2) provides a copy of NAWCWD China Lake's NRMP 04-60530-L1NP (DU Munitions Distribution and Storage), Amendment 8. Enclosure (3) is the command's Radiological Affairs Support Program instruction for storage of depleted uranium. Enclosure (4) provides a list of currently identified Atomic Energy Commission (AEC) and NRC licenses and NRMP's issued to NAWCWD China Lake. Enclosure (5) provides illustrations and locations of depleted uranium (DU) range permanent frisking stations. Enclosure (6) provides Occupations Services Incorporated DU scoping survey results of ground and building surfaces for 30 selected structures and 14 surrounding ground (range) areas. Enclosure (7) outlines the NAWCWD China Lake Comprehensive Land Use Management Plan performed in May 2005. Enclosure (8) provides a draft decommissioning plan prepared by New World Technology in 2007.

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If you have additional questions, please do not hesitate to contact me via telephone at (703) 695-5259 or through electronic mail at jerry.n.sanders@navy.mil.

Sincerely,

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J. N. SANDERS, JR
Captain, Medical Service Corps,
United States Navy
Executive Secretary
Naval Radiation Safety Committee

- Enclosures:
1. Additional Information For a Delay in Initiation of Decommissioning Activities at NAWCWD China Lake, Mail Control Number 590418
 2. Naval Radioactive Materials Permit (NRMP) 04-60530-L1NP (DU Munitions Distribution and Storage), Amendment 8
 3. NAWCWD China Lake Instruction 5104.1B
 4. NAWCWD China Lake Licenses and Naval Radioactive Materials Permits
 5. NAWCWD China Lake Frisking Station Locations
 6. NAWCWD China Lake Scoping Survey Phase I – Depleted Uranium Sites
 7. NAWCWD China Lake Comprehensive Land Use Management Plan
 8. NAWCWD China Lake Decommissioning Plan (2007)

Copy to: Nuclear Regulatory Commission
Naval Sea Systems Command (04N)
Naval Sea Systems Command Detachment, Radiological Affairs Support Office

ADDITIONAL INFORMATION FOR A DELAY IN INITIATION OF DECOMMISSIONING
ACTIVITIES AT NAVAL AIR WARFARE CENTER WEAPONS DIVISION CHINA LAKE,
MAIL CONTROL NUMBER 590418

1. Question: You state that China Lake has held numerous materials licenses from 1950 until 1985 authorizing the possession and use of radioactive materials in support of research, development, testing, and evaluation of weapons and warfare systems. Later in the paragraph you advise that the Navy's Master Materials License (MML) issued an "L" permit to China Lake for distribution and storage of depleted uranium (DU). Please delineate what materials licenses were previously issued at China Lake, listing the radioactive materials; to include form, amount, and location of use. Explain why these materials are no longer of concern at China Lake. For example, you could provide records showing that previous materials and use areas have been decommissioned. Or you could identify what radioactive materials and material use areas remain at China Lake, in addition to the DU.

Answer: Enclosure (4) provides a list of currently identified AEC and NRC licenses and Naval Radioactive Material Permits (NRMPs) issued to Naval Air Warfare Center Weapons Division (NAWCWD) China Lake and their status. NAWCWD China Lake is currently completing a Historical Radiological Assessment (HRA) documenting the use of radioactive materials, including DU and DU munitions for AEC and NRC licensed activities, prior to the establishment of the Navy's MML. The estimated completion of the HRA is December 2018. At this time a finalized list of AEC and NRC licenses will be provided. The U.S. Navy will forward this information to the NRC if it becomes available prior to the completion of the HRA. All identified AEC and NRC licenses for use of licensed radioactive materials were either terminated or the materials were subsequently transferred to NRMPs generated under the Navy's MML. Termination and/or decommissioning activities under AEC and NRC licenses, prior to the generation of the Navy's MML, were performed in accordance with AEC or NRC regulations and are no longer a concern of NAWCWD China Lake. A majority of these terminated licenses dealt with radioactive materials not associated with DU. NAWCWD China Lake currently has only one active NRMP (04-60530-L1NP) that authorizes the indefinite storage of DU projectiles/projectile fragments, as metallic solids, or as oxides of DU, target vehicles, plates, platforms and soils contaminated with projectiles/projectile fragments as metallic solids or as oxides of DU.

On 30 December 2010, the Chief of Naval Operations issued a naval message to all Department of the Navy (DON) commands holding a NRMP(s) to conduct a search for all sources or radioactive materials at their command, to include exempt and generally licensed source material. The message also directed contamination surveys of all locations where any radioactive source had been used or stored. Under this directive, NAWCWD performed over 2300 hours of searches and surveys of nine buildings located at their command for any licensed radioactive material. In addition, scoping surveys were conducted by an independent contractor at 33 selected structures and 14 surrounding ground areas as detailed in enclosure (6). Based on these extensive surveys and searches, NAWCWD China Lake has confidence that they have identified and controlled DU impacted areas identified under NRMP 04-60530-L1NP and that legacy radioactive materials from terminated NRC and AEC licenses do not exist outside of these controlled areas.

2. Question: Please advise if the 2014 bill to permanently designate China Lake for military use has been approved.

Answer: This land was already withdrawn for military use by National Defense Authorization Act for Fiscal Year 2014. The current withdrawal, which was approved by Congress, extended the reservation until March 31, 2039. House Report (H.R.) 4458 directed the Secretary of the Interior to permanently withdraw and reserve the approximately 1,056,313 acres of BLM land in Inyo, Kern and San Bernardino Counties, California, to support the operations of NAWCWD China Lake. In addition to the lands that are currently withdrawn and to meet expanded Navy training needs, H.R. 4458 withdraws an additional 26,313 acres near the southwest corner of the South Range at NAWCWD China Lake, which includes the currently inactive Cuddeback Lake Air Force Range (approximately 7,379 acres). H.R. 4458 was introduced on April 10, 2014, by Congressman Kevin McCarthy (R-CA). The bill was referred to the Committee on Natural Resources, and within the Committee to the Subcommittee on Public Lands and Environmental Regulation. On April 29, 2014, the Subcommittee held a hearing on the bill. On May 8, 2014, the Natural Resources Committee met to consider the bill. The Subcommittee on Public Lands and Environmental Regulation was discharged by unanimous consent. Congressman Rob Bishop (R-UT) offered an amendment designated #1 to the bill; the amendment was adopted by voice vote. No further amendments were offered, and the bill, as amended, was then adopted and ordered favorably reported to the House of Representatives. On 30 June 2014, H.R. 4458 was placed on the Union Calendar, Calendar No. 378 where it remains to date.

3. Question: Does the permit at China Lake allow for DU munitions distribution? At what frequency will the “periodic” inspections occur?

Answer: NRMP 04-60530-L1NP does not authorize DU munitions distribution. Authorized use is limited to indefinite storage of DU projectiles/projectile fragments, as metallic solids, or as oxides of DU, target vehicles, plates, platforms and soils contaminated with projectiles/projectile fragments as metallic solids or as oxides of DU. A limited number of DU projectiles will be used for calibration purposes of survey equipment used to locate DU projectiles. Soil samples may also be taken from within the sites for analysis. If NRC approval is granted for a delay in initiation of decommissioning activities, the Naval Radiation Safety Committee (NRSC) will amend NRMP 04-60530-L1NP to a Y-1 NRMP (Source Material Standby – No Operations). Periodic Radiological Affairs Support Program (RASP) inspections by Naval Sea Systems Command Detachment, Radiological Affairs Support Office (NAVSEA DET RASO), are currently conducted every three years. When the NRMP is converted to a Y-1 NRMP, this frequency is reduced to every two years.

4. Question: You state that operations for the use of the permitted radioactive material are prohibited, but say that operating procedures have been developed for the handling, movement, storage, security, accountability, and disposal of permitted radioactive materials. These imply the use of radioactive material. Please clarify the discrepancy. Please provide a copy of the “L” permit and of the procedures in use at China Lake.

Answer: Use under the original NRMP 04-60530-L1NP was defined as “indoor and outdoor testing and possession of ammunition containing DU as a kinetic energy armor penetration

projectile and/or for the pyrophoric properties.” These uses were no longer authorized under the NRMP effective 16 March 1998. NAWCWD China Lake no longer possesses or tests live DU munitions. Operating and emergency procedures have been developed to assist authorized and trained personnel that still require access to the active ranges containing DU. The procedures aid in the safe handling and movement of expended DU projectiles as well as inventory, surveys, and storage.

A copy of NRMP 04-60530-L1NP is provided as enclosure (2). A copy of the commands RASP instruction for the storage of DU is provided as enclosure (3).

5. Question: Please identify the areas where radioactive material contamination is known or suspected at China Lake.

Answer: NAWCWD China Lake ranges are divided into 19 land use management units. Enclosure (7), Chapter 2 provided NAWCWD China Lake identification and documentation of land use for military activities for air warfare weapons systems Research, Development, Test and Evaluation operations. All known and suspected DU contamination sites are within the George, Charlie, Baker, Airport Lake, Cole Flats and Ordnance Test and Evaluation land use management units.

Between June 13, 2011 and May 10, 2012, Occupational Services, Inc. was contracted to perform scoping surveys of ground and building surfaces for DU in 30 selected structures and 14 surrounding ground areas at NAWCWD China Lake. The results of these scoping surveys are included as enclosure (6). The areas evaluated for DU surveys were identified as potentially impacted in the draft decommissioning plan of enclosure (8). The NAWCWD China Lake Scoping Survey project did not include all of the buildings and land areas identified as potentially impacted in enclosure (8). The main focus of these surveys was on areas with a higher probability of being contaminated with surface DU.

Based on surveys and data provided in enclosures (6) and (8), as well as reports from range and radiation safety personnel that have been on site for over 25 years, the command has identified, plotted and documented all known or suspected DU impacted sites listing the testing location, range, license (if available) or NRMP used for the test, DU test article, area designation, range status, and high explosives usage for that area. Enclosure (2) was amended to include legacy areas that were not on the commands original NRMP application. Areas that have been confirmed to contain (stored and/or deposited) DU and identified in NRMP 04-60530-L1NP are:

Site Location	NAWCWD China Lake Land Use Management Unit	DU Usage at Site Location
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Site Location	NAWCWD China Lake Land Use Management Unit	DU Usage at Site Location
Kennedy Stands Air-to-Ground Test Area	George Range	Size: Approximately 150 meters x 900 meters. Between 1980 to 1988, Harrier jets and helicopters fired approximately 4000 rounds of 25 mm pyrophoric antitank munitions containing DU at 13 targets (tanks and other vehicles). Total weight of DU fired estimated at 1287 pounds.
Tower 11 Target Area (also known as Tower 11 Catch Box Area)	George Range	Size: The target area is approximately 800 feet x 640 feet. Approximately 4000 120 mm rounds containing 35,000 pounds of DU were fired at the target area. The munitions were fired into a sand-filled catch box building into a uranium bearing granite hillside. A 100 x 100 meter equipment storage area approximately ½ mile south is located near the target area. This area was contaminated with DU from the original site by the contractor performing remediation of the site.
K-2 Small Caliber Gun Ranges (1000 and 500 meter)	George Range	Size: 100 meters wide by 1000 meters long with a firing pad at the south end and a sand and earth berm backstop at the target end. Between 1969 to 1987, testing included static firing of 20 mm and 25 mm munitions containing DU penetrators at targets placed at varying distances along the range. Approximately 5000 rounds were fired with an estimated total weight of 3900 pounds. The berm is also impacted by high explosive (HE) ammunition. There are unexploded HE rounds in the berm.
G-6 Impact Area	George Range	Size: 20 square miles. Between 1982 to 1990, approximately 100,000 rounds (16,400 pounds) of DU ammunition was used to test fire the 20 mm Phalanx at live air targets using DU projectiles.

Site Location	NAWCWD China Lake Land Use Management Unit	DU Usage at Site Location
Building 30888, Room 102 (LLRW storage)	N/A	This was a previous DU LLRW storage area. DU LLRW was moved to building 31604 due to explosive work in the vicinity of the building. Thorium-232 fixed contamination, not associated with the DU NRMP, is located in rooms 102 and 103. Characterization surveys were completed in the building in December 2014.
Building 31604 (LLRW storage)	N/A	New LLRW storage building. Materials were transferred to this Building from Building 30888.
CT1	Ordnance Test and Evaluation Range	Records indicate that these areas were used for burning DU powders, DU projectile firing into a catch box and possible waste disposal. Areas of contamination have been identified with markers, ropes and signs.
CT4	Ordnance Test and Evaluation Range	Records indicate that these areas were used for burning DU powders (fissionable material was replaced with DU and shapes were ignited), DU projectile firing and possible waste disposal. Areas of contamination have been identified with markers, ropes and signs.
Supersonic Naval Ordnance Research Track (SNORT)	Charlie Range	Size: 5 mile long supersonic test track. Used as a test facility for simulated nuclear weapons shapes made of DU, missile components, and DU munitions from 1975 to 1977. Records indicate only one test firing of DU munitions of approximately two-hundred 20 mm rounds. Gun barrels made from alloys of DU (known as tuballoy) were also reported to have been tested on the SNORT. Areas of DU contamination have been identified with markers.

Site Location	NAWCWD China Lake Land Use Management Unit	DU Usage at Site Location
Dead Man's Canyon	George Range	This canyon is located northeast of the G-6 range. An estimated 400 rounds or less of 20 mm DU ammunition overshots were fired from the G-6 phalanx testing range into this canyon.
Airport Lake	Airport Lake Range	A dry lake bed at the base of the Coso Mountain Ranges covering an area of 12500 feet x 2500 feet. Simulated weapons shapes made from DU were dropped by the AEC in this area in 1951. The weapons reportedly buried themselves deep in the desert floor and could not be retrieved by excavation. The command excavated down to a depth of 65 feet and could not find the weapon shapes.
B-1 Range	Baker Range	Weapons shapes including those made of DU were tested here.
B-4 Track	Baker Range	Weapons shapes including those made of DU were tested here.
X-3 Bomb Craters	George Range	Size: Two craters with an area approximately 4000 feet by 8500 feet are located in the G-6 range. Simulated weapons shapes made from DU were dropped here by the AEC prior to 1957. They were buried deep into the ground and never recovered.
Cole Flats Radar Target Area	Cole Flats Range	AEC test site. No definitive information on the use of DU in testing weapons shapes but DU fragments are still suspected to be in the area.
G-1 Range: Off Station Target-1 (Parachute Drop Zone)	George Range	Located in the G-6 range southeast of the X-3 Crater. This was an AEC site used for air burst explosions using DU and simulated AEC weapon drop tests prior to 1957. 78 rounds 25 mm fired at tank target (22 May 1981), 580 rounds fired at four targets (29 May 1981) and 560 rounds fired at tanks (30 May 1981).

Site Location	NAWCWD China Lake Land Use Management Unit	DU Usage at Site Location
G-2 Range	George Range	AEC site for air burst test of "war reserve weapons."
LC Range (Part of Airport Lake)	Airport Lake Range	Records indicate this was an AEC test site for shape tests for deep penetrating weapons. These shapes were buried deeply in the soil and could not be recovered at the time of the tests because they were buried too deep.
Building 10520 Ballistics Test Laboratory (This was incorrectly identified on the NRMP as Building 12510 Explosive Research. NRMP will be amended to correct this error)	George Range	Consisted of a 75 meter x 10 meter area with a 25 mm auto gun at the breach of the firing line and a catch box at the end. Some rounds missed the catch box. Approximately 3000 rounds of 25 mm DU projectiles were fired into this area between 1983 and 1991. A cleanup and survey of this area was performed in 1992 but the area was not released.
CT3	Ordnance Test and Evaluation Range	Records indicate that these areas were used for burning DU powders, DU projectile firing and possible waste disposal. Areas of contamination have been identified with markers, ropes and signs.
IRP-6 Site (T-Range Burn Pits)	Ordnance Test and Evaluation Range	Site-6 was an authorized location for burning DU and other waste materials from 1946 to 1961. This site was a location for DU waste disposal under the AEC license SUB-683. Approximately 2540 pounds of DU were disposed at this site. Surveys were sent to NAVSEA DET RASO in 2010 to release the site. The site has not been released.
Boondock Area	Ordnance Test and Evaluation Range	Test facility located approximately 1 mile from the T-Range where rocket motors with propellant containing DU powder were fired in 1964 and 1965.

6. Question: Please clarify paragraph b(3). This reads as if personnel entering ranges containing DU contamination can do so without escort after receiving a radiation safety briefing and notifying Range Control.

Answer: Enclosure (3) details the training and authorization requirements for authorized individuals to have unescorted access to ranges and storage areas containing DU. Unauthorized individuals and members of the general public are not authorized unescorted access. To obtain unescorted access to ranges and storage areas containing DU, authorized personnel and emergency responders must complete initial and annual refresher radiation safety training. Training records include the training date, attendee name(s), course subject matter, duration of the training, and instructor name. Additionally, command security requirements and instructions include appropriate physical security measures that limit unescorted access to ranges. Authorized unescorted personnel are required to have NAWCWD China Lake issued range badges with range designators and must pass through manned security gates. Unauthorized individuals and members of the general public are not authorized unescorted access on the ranges.

7. Question: How do you ensure that members of the public do not handle or remove DU materials located at China Lake? Is all of the DU located on active ranges?

Answer: Per command security requirements and instructions, storage buildings and ranges used for DU storage purposes have security restrictions on access to include appropriate physical security measures to ensure unauthorized individuals or members of the general public do not gain access to these areas. Only individuals who have received training outlined in enclosure (3) from the Radiation Safety Officer (RSO), Assistant RSO (ARSO), or an RSO designated trainer and have been authorized by the RSO will be allowed unescorted access into contaminated range areas. Members of the general public can be escorted into DU contaminated areas by a person who meets the training and authorization requirements noted above. When accessing DU contaminated areas, all personnel must comply with the operating and emergency procedures listed in enclosure (3). Personnel escorted into areas containing DU are briefed on radiological hazards, signs, and personal conduct to limit exposure, contamination, and ingestion of DU. Personnel, equipment, and articles leaving or being removed from DU ranges must be surveyed for contamination. The command is in progress of establishing permanent frisking stations at access points to DU ranges. Enclosure (5) provides illustrations and locations for those stations that have already been established. For those locations without a permanent frisking station, the radiation safety staff provides survey instrument(s) and/or an ARSO to assist with these functions.

All of the ranges covered under NRMP 04-60530-L1NP are operational (active) military ranges in support of engineering and fleet support for of U.S. Navy and the Department of Defense (DOD) naval aviation platforms, weapons and systems. DU is also authorized to be stored in Buildings 30888, Room 102 and Building 31604 which are not part of the ranges but are used for low level radioactive waste (LLRW) storage. Until the HRA is completed in December 2018, it cannot be ascertained at this point if there is additional DU located in areas not previously identified by the command. NAWCWD China Lake has a high degree of confidence, based on

the HRA currently in progress and data/surveys documented in enclosures 4, 6, 7 and 8, that they have identified and established positive control of all sites impacted with DU.

8. Question: What is the status of the Historical Radiological Assessment (HRA) at China Lake?

Answer: The HRA development is currently ongoing at NAWCWD China Lake. The contractor has reviewed hundreds of documents to date and has been able to identify, to a high degree of confidence, the use of radioactive materials for AEC and NRC licensed activities prior to the establishment of the MML. There are still hundreds of classified and unclassified records to review, interviews to conduct, and many internal Navy reviews of the documents and their contents prior to publication. It is estimated that the contractor will complete the HRA and provide to the Radiological Affairs Support Office (RASO) for review by June 2018. RASO is scheduled to complete the review of the contractor supplied HRA by December 2018.