



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

June 13, 2008

Docket No. 03029462

License No. 45-23645-01NA

Chief of Naval Operations
Environmental Readiness Division (N45)
ATTN: CAPT Lino Fragoso, Ph.D.
Executive Secretary, Navy Radiation Safety Committee
Radiological Controls and Health Branch
2000 Navy Pentagon (NC-1 Suite 2000)
Washington, D.C. 20350-2000

SUBJECT: INSPECTION 03029462/2006014, NAVAL SEA SYSTEMS COMMAND
DETACHMENT, RADIOLOGICAL AFFAIRS SUPPORT OFFICE, YORKTOWN,
VIRGINIA

Dear CAPT Fragoso:

On November 13-16, and December 14, 2006, January 17, February 9, July 31, and October 16-17, 2007, and May 22, 2008, Orysia Masnyk Bailey of this office conducted a safety inspection at the above address of activities authorized by the above listed NRC license. The inspection was an examination of your licensed activities as they relate to your decommissioning program and to compliance with the Commission's regulations and the license conditions. The inspection consisted of observations by the inspector, interviews with personnel, and a selective examination of representative records.

On July 31, 2007, at the Navy's request, staff from NRC Region I and NRC Headquarters (HQ) met with personnel from the Navy's Master Materials License (MML) oversight staff, Hunters Point Shipyard Base Closure and Relocation Office, and the Office of the Assistant Secretary of the Navy for the Environment, to discuss decommissioning activities at the Hunters Point Shipyard (HPS) in San Francisco, California. On October 16-17, 2007, the inspector accompanied personnel from NRC HQ's Division of Waste Management and the Office of General Counsel to the HPS, to obtain an overview of the site and ongoing decommissioning activities and to evaluate options for NRC involvement.

Review of decommissioning activities continued with in office review of decommissioning documents and procedures, discussion of decommissioning activities during the Navy's quarterly Radiation Safety Committee meetings, and phone discussions with you and members of your staff until the telephone exit interview between you and Orysia Masnyk Bailey on May 22, 2008.

Within the scope of this inspection, no violations were identified. As discussed with you, the NRC is evaluating its regulatory role at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Base Closure and Relocation (BRAC) sites and at sites where radium-226 and 91(b) material is commingled with NRC regulated material.

L. Fragoso

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To assist in this evaluation we are requesting that the Navy review the characterization of the Navy's decommissioning sites discussed in this report and to advise us of any discrepancies. Also, please delineate for each site, whether they are impacted by: (1) current NRC regulated material, (2) previously licensed AEA materials (specifying sealed source or non-discrete materials licenses), (3) radium-226, or (4) 91(b) material or radium-226 material that is commingled with NRC regulated material.

Current NRC regulations are included on the NRC's website at www.nrc.gov; select **Site Map**; then **Regulations, Guidance, and Communications**. The current NRC Enforcement Policy is included on the NRC's website at www.nrc.gov; select **Site Map**; then **Enforcement Policy**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 7:00 a.m. to 8:00 p.m. EST, Monday through Friday (except Federal holidays).

Please contact Orysia Masnyk Bailey at (864) 427-1032, if you have any questions regarding this matter.

Sincerely,
Original signed by Sattar Lodhi, Ph.D.

Marie Miller, Chief
Security and Industrial Branch
Division of Nuclear Materials Safety

Enclosure:
NRC Inspection Report 03029462/2006014

cc:
District of Columbia

L. Fragoso

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EXECUTIVE SUMMARY

Department of the Navy
NRC Inspection Report No. 03029462/2006014

This NRC inspection was conducted to evaluate the Navy's decommissioning program. The inspection included a review of decommissioning oversight activities at the licensee's Radiological Affairs Support Office (RASO), discussion with Navy personnel, review of procedures and documentation, and a site visit at the Hunters Point Shipyard (HPS) in San Francisco, California.

Within the realm of this program, 170 sites at 26 installations have decommissioning activities currently underway or planned for the future. The majority of these sites are Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites that are undergoing the Base Closure and Relocation (BRAC) process. Three of the sites are on the National Priorities List (NPL), also known as Superfund sites. As CERCLA and BRAC sites they are subject to scrutiny by the State Environmental Protection Agency (EPA). In the case of the NPL sites, the US EPA is the lead regulatory agency. Many of the sites have residual radium - 226 (RA-226) or 91B material contamination, which are not subject to NRC jurisdiction; or a combination of these materials and NRC regulated radionuclides (mixed material sites).

The NRC is currently evaluating its role in the BRAC process and at these mixed material sites. The results of these deliberations will be provided by separate correspondence.

In addition to the BRAC sites, seven Master Material License (MML) permittees are undergoing decommissioning with shared responsibilities by the Navy and NRC as discussed in the MML Letter of Understanding (LOU).

On July 31, 2007, at the Navy's request, staff from NRC Region I and NRC Headquarters (HQ) met with personnel from the Navy's MML oversight staff, HPS BRAC office, and the Office of the Assistant Secretary of the Navy for the Environment, to discuss decommissioning activities at HPS. On October 16-17, 2007, the inspector accompanied personnel from NRC HQ's Division of Waste Management and the Office of General Counsel to HPS, to obtain an overview of the site and ongoing decommissioning activities and to evaluate options for NRC involvement.

Based on the results of this inspection, no NRC violations were identified.

REPORT DETAILS

I. Navy Decommissioning Program

a. Inspection Scope

This inspection was conducted to review the Navy's decommissioning program. Activities included detailed discussions with Navy personnel, site visits, review of selected site work plans in use by the licensee or licensee's contractors, and review of other selected decommissioning documents and survey results.

b. Observations and Findings

The Navy has 170 decommissioning sites at 26 different installations. These sites can be characterized in one of three ways, with one exception.

- (1) Nine installations (134 sites) are being remediated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and are undergoing the Base Closure and Relocation (BRAC) process. Site release limits are established by, and decommissioning activities are subject to, oversight by the Navy BRAC committee which includes staff from State and local regulatory agencies. Three of the CERCLA/BRAC installations (141 sites) are on the National Priority List (NPL), also known as Superfund sites. The lead regulatory agency at these sites is the US EPA within the BRAC process. Remediation work and surveys are performed by contractors working under NRC or Agreement State decommissioning materials licenses. Contractor work is managed by Radiological Affairs Support Office (RASO) Environmental Division, with an Environmental Manager (EM) assigned to each site. RASO staff develop technical specifications for contract work and review all records and documentation generated by contractors. RASO does not perform confirmatory surveys or independent split sample analysis.
- (2) Seven of these installations (18 sites) are Master Material License (MML) permittees undergoing decommissioning with shared responsibilities by the Navy and NRC as discussed in the MML Letter of Understanding (LOU).
- (3) Ten installations (18 sites) are undergoing installation restorations. The radionuclide of interest is Ra-226, which is not subject to NRC jurisdiction. The Energy Policy Act (Act) of 2005 expanded the Atomic Energy Act of 1954 definition of byproduct material to include discrete sources of RA-226, accelerator-produced radioactive materials, and discrete sources of naturally occurring radioactive material, other than source material. The Commission determined that discrete sources of Ra-226 used in military operations would be outside of the NRC's jurisdiction. This includes material that may be subject to decontamination and disposal. The projects are managed by RASO's Environmental Division.

The following are CERCLA/BRAC sites on the NPL list:

Hunters Point Naval Shipyard, San Francisco, CA (92 sites)
Marine Corps Air Station El Toro, CA (6 sites)
Naval Air Station Alameda, CA (17 sites)

The following are BRAC/CERCLA sites:

Long Beach Naval Complex, CA (2 sites)
Mare Island Naval Shipyard, CA (2 sites)
Naval Station Treasure Island, CA (5 sites)
Naval Air Station Brunswick, ME (1 site)
Naval Weapons Station Seal Beach Detachment Concord, CA (1 site)
Roosevelt Roads Naval Station, PR (8 sites)

The following are Installation Restoration sites:

Naval Air Station Lakehurst, NJ (1 site)
Naval Air Station Jacksonville, FLA (2 sites)
Naval Air Station North Island, CA (3 sites)
Naval Air Station Pensacola, FLA (3 sites)
Naval Air Station Ventura County Point Magu, CA (3 sites)
Naval Surface Warfare Center Indian Head Division, MD (1 site)
Portsmouth Naval Shipyard, ME (2 sites)
Marine Corps Camp Lejeune, NC (1 site)
Naval Air Station Norfolk, VA (1 site)
Naval Station San Diego, CA (1 site)

The following are permittees under the MML:

Naval Air Depot Cherry Point, NC (3 sites)
Naval Air Warfare Center Weapons Division China Lake, CA (8 sites)
Naval Medical Research Center Bethesda, MD (2 sites)
Naval Research Laboratory Chesapeake Bay, MD (1 site)
Naval Surface Warfare Center Dahlgren Division, VA (1 site)
Radiological Affairs Support Office, York, VA (2 sites)

The exception to the above categories is the Naval Training Center Great Lakes, IL, which was the location of a terminated license. Engelhard Minerals & Chemicals Corporation (Engelhard), which is no longer in business, was licensed to repackage and ship monazite sand from the Great Lakes Naval Training Center to other U.S. Atomic Energy Commission (AEC)/NRC licensees. The area was used by the U.S. General Services Administration (GSA), which transferred control to the Defense Logistics Agency. The Engelhard license to ship the material was terminated in 1975 (SMC-1207), and 1983 (SUC-1332). The former licensee was authorized to possess 119,829.33 kilograms (SMC-1207) and 67,965 kilograms (SUC-1332) of natural thorium

(Monazite Sand). The Navy, which is the site owner, assumed responsibility for the Great Lakes site cleanup.

NRC Region III in Lisle, Illinois is providing oversight of this decommissioning project. NRC activities are documented under the license and docket numbers for the terminated license, 040-08306 and SMC-1207.

Each Navy installation undergoing decommissioning has a Base-Wide Radiological Work Plan; and if the site is large enough, a Site Specific Work Plan. Information contained in these includes site location and description, general site history, radiological history, and release criteria and investigation levels. Review of these plans showed them to be generally comparable to decommissioning plans (DPs) submitted under 10 CFR 30.36. Site release criteria used by the Navy are either the screening values delineated in NUREG-1757 for radioactive material regulated by the NRC or site specific release limits approved by a competent authority, such as the Agreement State in which the base is located or by the EPA. If site specific DCGLs are developed for MML permittees undergoing decommissioning, they are submitted to the NRC in a DP for approval. Release criteria for equipment and material are those delineated in Regulatory Guide 1.86. Criteria for surfaces (structures) are taken from either Regulatory Guide 1.86 or developed using a dose based calculation. The dose based calculation is performed with a dose limit of 25 millirem per year using the D&D code. NUREG -1575, "Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)" methodology is used for site investigation and surveys.

MML permittees who wish to terminate their permit advise one of two Navy Technical Support Center (TSC), the RASO or the Navy Environmental Health Center (NEHC). Then the Navy Radiation Safety Committee (NRSC) makes the determination that decommissioning should be initiated. The Navy develops a decommissioning assessment (DA) which is sent to the NRC. This provides a short radiological history, the Navy's plans for remediation and site release, and the Navy's determination of whether or not a DP is required. The NRC is asked if they plan to review the DP. If a DP is not required the Navy either provides results of its final status survey (FSS) to support site release or discusses its plans for remediation based on methods approved in the current permit.

The Navy has committed to using NRC guidance and policies in its management of the MML including decommissioning guidance contained in NUREG 1757, "Consolidated Guidance for Decommissioning", and Manual Chapter 2602, "Decommissioning Oversight and Inspection Program for Fuel Cycle Facilities and Materials Licensees".

The following is a discussion of the status of the MML permittees undergoing decommissioning:

Naval Air Warfare Weapons Division, China Lake, CA

There are two MML permitted areas undergoing decommissioning at China Lake at this time.

Depleted Uranium (DU) Gun Ranges:

By letter dated September 29, 2000, the Navy notified the NRC of their intent to decommission four test ranges that were used for DU testing. These are the K-2 Small Caliber Gun Range, the Kennedy Stands Air-to-Ground Test Area, the Tower 11 Target Area, and the G-6 DU Impact Area. By letter dated December 20, 2002, the Navy requested a decommissioning extension until September 2009. The Navy advised that a characterization survey was planned and that a Historical Radiological Assessment was being developed. The ranges are located within the restricted area of the base and are not accessible to the public. By letter dated May 12, 2004, NRC granted the extension. The Navy was advised to submit a DP in a timely manner to allow for NRC review prior to the 2009 extension date. The Navy was also asked to provide copies of the Historical Radiological Assessment and characterization survey results when complete. The Navy plans to have these documents available in July 2008.

Building 5, Room 1613:

By letter dated October 27, 2006, the Navy advised the NRC of their intent to release Building 5 at the Naval Air Warfare Center Weapons Division at China Lake, California, for unrestricted use. The radionuclide of concern is Carbon-14. Remediation work and FSSs were accomplished within the scope of work authorized by the permit. The Navy submitted its FSS and request for permit termination approval by letter dated February 8, 2008. It is under NRC review.

Naval Medical Research Center, Bethesda, MD

The Navy submitted a letter dated July 6, 2005, enclosing a FSS for Building 150 and two underground storage tanks (USTs) located at the Naval Medical Research Laboratory (NMRL) in Bethesda, Maryland. The Navy had previously decommissioned the remainder of the NMRL. Building 150 was used in the 1950s for conducting gamma exposure experiments on animals using 2,500 curies of cobalt-60 in ceramic slugs. In 1962 widespread loose and fixed surface cobalt-60 contamination was found in Building 150, probably as the result of cracks in the ceramic slugs. Decontamination was conducted and the cobalt 60 sources and contaminated building materials were removed. In March 2002, a Navy contractor performed a site investigation at the facility and found residual cobalt 60 contamination in Building 150 and its associated sewer lines. In addition, USTs were found to contain tritium contamination. Subsequently, the contractor remediated the facility, removing the contaminated portions of Building 150, its associated sewer lines, and the two USTs. The Navy submitted the results of the FSS by letter dated July 5, 2005 and additional information clarifying the FSS data by letter dated October 22, 2007. The FSS data is under NRC review.

Naval Surface Warfare Center, Dahlgren, VA

By letter dated November 15, 2006, the Navy notified the NRC of their intent to decommission an indoor DU test range located within Building 200, Bay 4 at the Naval Surface Warfare Center in Dahlgren, Virginia. Approximately 30 square meters of the floor, and the exhaust fan and housing above the target in Building 200 are known to be

contaminated with DU. Additional contamination is expected on the walls and roof of Bay 4 and in the outdoor soil on the west side of Building 200. Remediation will require methods not previously approved for the permit. The Navy submitted a DP by letter dated March 4, 2008. It is under NRC review.

Naval Air Depot, Cherry Point, NC

By letter dated March 17, 2006, the Navy submitted a DA for the Naval Air Depot at Cherry Point, North Carolina. Since 1979 the Navy has performed maintenance of magnesium-thorium (Mg-Th) aircraft components containing no more than four percent thorium. The Navy provided the results of its FSS by letter dated May 21, 2007. Review of the survey results disclosed that the Navy had developed site specific DCGLs for site release. These were evaluated by the NRC and found to be acceptable. An Environmental Assessment in support of the NRC's approval of the Navy's permit termination was developed by the NRC and published in the Federal Register on May 15, 2008.

Naval Research Laboratory, Chesapeake Beach, MD

By letter dated January 19, 2006, the Navy advised the NRC of its intent to decommission the Hypervelocity Gun Facility (HGF) at the Naval Research Facility at Chesapeake Beach, Maryland. From the early 1970s until the early 1990s, the Navy used the HGF to test the impact of high velocity projectiles on DU targets. The Navy has determined that the facility is not suitable for unrestricted release and will require decommissioning beyond that allowed by the current permit. The Navy plans to submit a DP in June 2008.

Radiological Affairs Office, York, VA

The Navy is decommissioning a laboratory and a radiological materials storage area under its approved materials permit.

As previously discussed, the NRC is evaluating its role at CERCLA/BRAC sites and at mixed materials sites. One site that fits into both categories is HPS.

HPS is located in San Francisco Bay Area in California. It comprises approximately 936 acres, with 443 of these acres under water. From 1941 until 1969 various radiological operations were conducted at HPS under the authority of either the Department of Defense (DOD) or under 22 different Atomic Energy Commission (AEC) or NRC licenses resulting in 94 radiologically impacted sites. HPS was placed on the NPL in 1989. In 1990 HPS was placed on the BRAC list. The Navy is currently remediating HPS under CERCLA. HPS is divided into 6 parcels, each containing various numbers of radiologically impacted sites. The pedigree of the resultant contamination has not been clearly defined and includes radionuclides that both are and are not regulated by the NRC. One parcel, with three remediated sites, was turned over to the city of San Francisco in 2004.

Oversight, review, and approval of work activities at HPS are provided by Navy BRAC and MML team members, including California and City of San Francisco regulatory agencies. The US EPA is the lead regulator. Remediation work and surveys are performed by NRC licensed contractors under the oversight of BRAC and MML staff.

On July 31, 2007, at the Navy's request, staff from NRC Region I and NRC Headquarters (HQ) met with personnel from the Navy's MML oversight staff, HPS BRAC office, and the Office of the Assistant Secretary of the Navy for the Environment, to discuss decommissioning activities at HPS. On October 16-17, 2007, the inspector accompanied personnel from NRC HQ's Division of Waste Management and the Office of General Counsel to the HPS, to obtain an overview of the site and ongoing decommissioning activities and to evaluate options for NRC involvement.

The Navy requested the meetings with the NRC to ask if NRC planned to exercise regulatory oversight at HPS. The Navy asked the NRC to consider that the EPA be allowed to act as the sole Federal regulator in that work was progressing in a method comparable to that contained in NRC guidance and release limits were equivalent to or more restrictive than NRC release limits. NRC staff advised that this would be taken under advisement and would be addressed in future correspondence.

c. Conclusions

Decommissioning at the MML permitted sites is proceeding in accordance with the MML. RASO staff interviewed were knowledgeable of regulatory requirements and conversant with the status of their assigned sites. Review of work plans and survey results disclosed that the work was accomplished in accordance with NRC guidance and accepted decommissioning practices.

II. Exit Meeting

The NRC Navy MML Project Manager (PM) discussed the inspection scope and findings with the NRSC Executive Secretary by telephone on May 22, 2008. The PM advised that no violations were identified and discussed the observations made during the inspection.

The Executive Secretary was asked to review the characterization of the Navy's decommissioning sites discussed in this report and to advise the NRC of discrepancies. Also he was asked to delineate for each site whether they were impacted by (1) current NRC regulated material, (2) previously licensed AEA materials (specifying sealed source or loose materials licenses), (3) radium-226, or (4) sites containing 91(b) and/or radium-226 material that is commingled with NRC regulated material.

PARTIAL LIST OF PERSONS CONTACTED

US EPA Region 9

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Andrea Ruiz-Esquide, City Attorney's Office

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Chief of Naval Operations N455 (OPNAV N455)

CAPT Lino L. Fragoso, Executive Secretary, Naval Radiation Safety Committee,

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Keith Forman, Hunters Point Base Environmental Coordinator

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Ralph Pearce, Hunters Point Remedial Project Manager,
Rex Callaway, BRAC Counsel for Hunters Point

TetraTech ECI (Prime Contractor for Radiological Work)

Bill Dougherty, Hunters Point Site Manager
Daryl DeLong, Hunters Point Radiological Safety Officer

New World Technology (Subcontractor for Radiological Work which is performed under their NRC license)

Bill Haney, Environmental Project Director
Lennar (Master Developer for Hunters Point)
Sheila Roebuck, Environmental Manager

TechLaw (EPA consultant)

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