UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

March 9, 2001

Department of the Army
ATTN: Colonel Patricia L. Nilo
Commandant
U.S. Army Chemical School
Fort Leonard Wood, Missouri 65473-8926

SUBJECT: NRC INSPECTION REPORT 01-02861-05/01-01

Dear Colonel Nilo:

On February 20-22, 2001, the NRC completed an inspection and confirmatory survey at several locations at the former site of the Army Chemical School in Fort McClellan, Alabama. These locations are those areas where NRC licensed material was used as described in your report, HQ, OSC Project Number USA 99-100, dated October 2000. These areas included Buildings 3182, 3185, T-810, T-811, T-812, and T-837, the foundation of the demolished Building T-836, and areas identified by you as the original Rattlesnake Gulch area and Chemical School Radiological Burial Grounds.

During the inspection records were reviewed, procedures were discussed with personnel, and direct confirmatory measurements were taken. The inspectors also obtained smears for removable contamination assessment. Based on these reviews, discussions, and measurements, no violations were identified. Survey and smear results are contained in the enclosed report.

Based on its review, the staff has concluded that the areas delineated above meet the criteria for unrestricted use described in 10 CFR 20.1402. The remaining area of concern at Fort McClellan is the Pelham Range Burial Mound and the need to ensure that no residual contamination remains in other areas of the Range, including any impact on the ground water.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records, (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Should you have any questions concerning this letter or report, please contact us.

Sincerely,

Anne T. Boland, Acting Chief
Materials Licensing and Inspection Branch 1
Division of Nuclear Materials Safety

Docket No. 030-17584
License No. 01-02861-05

Enclosure: NRC Inspection Report
No. 01-02861-05/01-01

cc w/encl:
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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	030-17584
License No.:	01-02861-05
Report No.:	01-02861-05/21-01
Licensee:	Department of the Army
Location:	Fort McClellan, Alabama
Date:	February 20-22, 2001
Inspectors:	Orysia Masnyk Bailey, Health Physicist
Accompanying Personnel:	Jeff Griffis, Co-op Student Andy Miller, CHP, Health Physicist Anita Turner, Ph.D., Health Physicist
Approved by:	Anne T. Boland, Acting Chief Materials Licensing and Inspection Branch 1 Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

DEPARTMENT OF THE ARMY
FORT MCCLELLAN, ALABAMA
NRC INSPECTION REPORT NO. 01-02861-05/21-01

This special, announced inspection was conducted to evaluate the licensee's closeout surveys in support of releasing Buildings 3182, 3185, T-810, T-811, T-812, and T-837, the foundation of the demolished Building T-836, and areas identified by the licensee as the original Rattlesnake Gulch area and Chemical School Radiological Burial Grounds as described in the Army's report, HQ, OSC Project Number USA 99-100, dated October 2000. The release criteria were those contained in 10 CFR 20.1402.

The confirmatory fixed point measurements and smears for removable contamination were at or near background levels and were well below release limits. The NRC survey results were comparable with the results documented in the Army's survey report. The staff has concluded that the areas described in this report are acceptable for release for unrestricted use.

Attachments:
List of Persons Contacted
Inspection Procedures Used
Survey Instruments Used
Confirmatory Survey Results

REPORT DETAILS

1. Scope

This special, announced inspection was conducted to evaluate the licensee's closeout surveys in support of releasing Buildings 3182, 3185, T-810, T-811, T-812, and T-836, and areas identified by the licensee as the original Rattlesnake Gulch area and Chemical School Radiological Burial Grounds as described in the Army's report, HQ, OSC Project Number USA 99-100, dated October 2000. The method used for the NRC confirmatory survey was that described in NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination," published in June 1992.

The release criteria were those contained in 10 CFR 20.1402. A site is considered acceptable for unrestricted use if the residual radioactivity that is distinguishable from background radiation results in a Total Effective Dose Equivalent (TEDE) to an average member of the critical group that does not exceed 25 mrem per year, including that from groundwater sources of drinking water, and that residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA). The critical group means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances. The surface contamination levels used were those published in the Federal Register, Volume 63, No. 222, on November 18, 1998 - Table 1- "Acceptable License Termination Screening Values of Common Radionuclides for Building Surface Contamination."

2. Observations and Findings

The Army performed a Historical Records Search as a part of its Base Realignment and Closure (BRAC) process. This records search identified several areas as having radiological issues (the storage and/or routine maintenance of Army radioactive commodities). A contractor, Allied Technology Group (ATG), was hired to survey, and remediate as necessary, any areas that had not been previously addressed. This work was detailed in a report, HQ, OSC Project Number USA 99-100, Select Commodity Site Areas, dated October 2000. The work was performed from August 1 through the 18, 2000. During the conduct of the survey, an NRC inspection was performed, this is documented in Report No. 01-12861-05/00-01. The surveys and remediation were performed in accordance with the approved decommissioning plan. The final report was reviewed and found to be complete and accurate. It demonstrated that the facility could be released for unrestricted use.

Nine potentially impacted areas were identified; Buildings 3182, 3185, T-810, T-811, T-812, and T-837, and three outdoor areas; the foundation for T-836, the original Rattlesnake Gulch area, and the Chemical School Radiological Burial Grounds. Although these last two areas were previously identified by records review and survey activity to be located elsewhere, the Army chose to be conservative and perform additional surveys in these new areas. Three additional areas were identified to be non-impacted areas,

based on records investigation, and no surveys were performed. These areas were the Radiological Survey Area, the Field Hot Cell area, and Range 25. These first two areas are included in a portion of the base that was previously surveyed and released, it was called the Rattlesnake Gulch Area in earlier Army and NRC reports. This is not to be confused with the "original Rattlesnake Gulch" area discussed in this report.

Although Building 3182, the site of an earlier Chemical School classroom and the Military Police Museum, was preciously surveyed and released, elevated areas of activity were found in two rooms after the building was emptied as part of the BRAC process. The contractor remediated these areas and performed a final close out survey. The remediation consisted of some scabbling of the concrete floors in these rooms.

The "T" Buildings were the original Chemical School buildings used in the early 1950s. NRC review of records associated with this building indicate that isotope use in this building consisted of Co-60, short lived radionuclides, and sealed sources.

Building 3185 was historically used as a personnel decontamination center for training purposes. Earlier NRC review of records showed that the isotope used in this building was Bromine 82 with a half life of 35 hours.

The Army, conservatively, surveyed all buildings for Cesium 137, Radium 226, Cobalt 60 and Strontium 90.

The inspector performed confirmatory surveys and took smears for removable contamination. The inspectors selected approximately 10 percent of the licensee's fixed point measurements for verification and approximately 10 percent of the floor area was surveyed for "hot spots." The two rooms where elevated raedings were found by the licensee were subjected to a 100 percent scan of the floor and one meter up the wall. In addition, the inspectors surveyed the sink surface and removed the trap. A sodium iodide (NaI) probe was lowered into the drain, no elevated readings were seen. Approximately 50 percent of the outdoor areas were scanned for elevated activity. The fixed point measurements were performed using either an Eberline ESP-2 or E-600 with a pancake probe. The scans were performed with an Eberline ESP-2 with a pancake or SPA-6 probes, or the E-600 with pancake probe. Fixed point contamination smears were counted on a Gamma 5000 Alpha/Beta counter.

The results of the measurements and smear analysis are given in the attachment to this report. Average background levels were 51 counts per minute (cpm) for the pancake probes for inside surfaces, and 1,700 cpm for the SPA-6 probe for outdoor areas. Average background smears were 5 cpm for beta.

3. Conclusions

The confirmatory fixed point measurements and smears for fixed and removable contamination were at or near background levels and were well below release limits. The NRC survey results were comparable with the licensee's results. Buildings 3182, 3185, T-810, T-811, T-812, and T-837, the foundation for Building T-836, and areas identified by the licensee as the original Rattlesnake Gulch area and Chemical School

Radiological Burial Grounds as described in the Army's report, HQ, OSC Project Number USA 99-100, dated October 2000 may be released for unrestricted use.

EXIT MEETING SUMMARY

The inspectors discussed the inspection results with the BRAC manager on February 22, 2001. The licensee was advised that were no further radiological concerns with Buildings 3182, 3185, T-810, T-811, T-812, and T-837, the foundation for Building T-836, and areas identified by the licensee as the original Rattlesnake Gulch area and Chemical School Radiological Burial Grounds as described in the Army's report, HQ, OSC Project Number USA 99-100, dated October 2000, and that these areas could be released for unrestricted use. The inspectors advised that the remaining area of concern at Fort McClellan was the Pelham Range Burial Mound and the need to ensure that no residual contamination remained in other areas of the Range, including any impact on the ground water.

ATTACHMENT

LIST OF PERSONS CONTACTED

Department of the Army, Fort McClellan:

*Lisa Kingsberry, Base Relocation and Closure Coordinator
Ron Levy, Environmental Manager

Environmental Protection Agency:

Lloyd Generette

State of Alabama:

*James T. Williams, Radiation Physicist, Division of Radiation Control

*Attended exit interview.

INSPECTION PROCEDURES USED

IP 83890	Closeout Inspection and Summary
IP 87104	Decommissioning Inspection Procedure for Materials Licenses

SURVEY INSTRUMENTS USED FOR CONFIRMATORY SURVEY

1. Eberline ESP-2 with Eberline "pancake" HP-260 probe
NRC Tag: 026730 Calibrated: 09-23-00
Background: 36 cpm Efficiency: 15% Tc-99**
70% Cs-137

MDA* 4,800 dpm/100cm^2 (scanning)
1,360 dpm/100cm^2 (scaler) for Tc-99
986 dpm/100cm^2 (scanning)
280 dpm/100cm^2 (scaler) for Cs-137

With SPA-6 probe, Serial No. 286: 8% efficiency for Cs-137. MDA is 9000 dpm/100cm^2 (scanning mode)

2. Eberline ESP-2 with Eberline "pancake" HP-260 probe
NRC Tag: 026729 Calibrated: 05-26-00
Background: 34 cpm Efficiency: 14% Tc-99
72 % Cs-137

MDA: 4,857 dpm/100cm^2 (scanning)
1,420 dpm/100cm^2 (scaler) for Tc-99
944 dpm/100cm^2 (scanning)
369 dpm/100cm^2 (scaler) for Cs-137

3. Eberline ESP-2 with Eberline "pancake" HP-260 probe
NRC Tag: 026418 Calibrated: 05-27-00
Background: 36 cpm Efficiency: 18% Tc-99
74 % Cs-137

MDA: 4,000 dpm/100cm^2 (scanning)
1,134 dpm/100cm^2 (scaler) for Tc-99
973dpm/100cm^2 (scanning)
276 dpm/100cm^2 (scaler) for Cs-137

4. Eberline E-600 with Eberline HP-360 pancake probe
NRC Tag: 073470 Calibrated: 09-23-00
Background: 45 cpm Efficiency: 48% Tc-99
71 % Cs-137

MDA: 1,875 dpm/100cm^2 (scanning)
471 dpm/100cm^2 (scaler) for Tc-99
1,268 dpm/100cm^2 (scanning)
318 dpm/100cm^2 (scaler) for Cs-137

5. The removable contamination smears were counted on a Gamma 5000 gas flow proportional counter. The efficiency for Tc-99 was 29% with an MDA of 25 dpm/100cm^2.

* Minimum detectable activity

** A Tc-99 standard was used in lieu of a Co-60 standard to determine efficiencies and MDAs. Its beta energy of 292 Kev is comparable to that of Co-60's beta energy of 314 Kev.

CONFIRMATORY SURVEY RESULTS
DEPARTMENT OF THE ARMY - FORT MCCLELLAN
FEBRUARY 20-22, 2001

ALL READINGS EXCEPT WHERE INDICATED ARE NET READINGS ABOVE BACKGROUND

LOCATION/GRID	FIXED POINT MEASUREMENT (dpm/100cm^2)	WIPE TEST BETA (dpm/100cm^2)
Building 3182, Room 6, J-2	762	2.7
Building 3182, Room 6, I-2	24	-1.3
Building 3182, Room 6, J-3	24	-0.3
Building 3182, Room 6, J-4	714	10.7
Building 3182, Room 6, J-5	24	-1.3
Building 3182, Room 6, I-4	143	-1.3
Building 3182, Room 6, scabbled hole	1286	5.7
Building 3182, Hallway, C-21	238	2
Building 3182, Hallway, C-13	190	8.7
Building 3182, Hallway, B-9	-190	-0.3
Building 3182, Hallway, D-3	286	10.7
Building 3182, Room 16, D-3	428	0.7
Building 3182, Room 16, C-4	-333	-0.3
Building 3182, Room 16, B-6	-95	2.7
Building 3182, Room 16, H-6	-238	2.7
Building 3182, Room 16, G-4	-143	-0.3
Building 3182, Room 16, H-3	333	4.7
Building 3182, Room 2, center floor	524	9.7
Building 3182, Room 3, center floor	238	3.7
Building 3182, Room 1, B-1	-428	-1.3
Building 3182, Rom 1, C-3	95	-0.3

LOCATION/GRID	FIXED POINT MEASUREMENT (dpm/100cm^2)	WIPE TEST BETA (dpm/100cm^2)
Building T837, downstairs bathroom, under sink	125	0.7
Building T837, F-2	97	1.7
Building T837, B-2	0	1.7
Building T837, upstairs bathroom, under sink	-111	-0.3
Building T837, upstairs laundry room, center floor	-111	0.7
Building T812, middle floor in storage room	306	2.7
Building T812, C-2	306	0.7
Building T812, XE-1	458	-1.3
Building T812, F-2 wall	153	1.7
Building T812, C-2	208	2.7
Building T812, E-1	236	3.7
Building T812, E-2	53	1.7
Building T812, storage room, middle floor	194	1.7
Building T812 ½, middle floor	97	-0.3
Building T810, C-1	389	0.7
Building T810, B-2	292	-0.3
Building T810, A-2 wall	-14	1.7
Building T810, E-1	-83	0.7
Building 3180, Room 11, B-3	514	0.7
Building 3180, Room 11, C-1	347	-0.3
Building 3180, Room 15, under sinks, center floor	667	3.7
Building 3180, Room 13, under sinks, center floor	1236	-0.3
Building 3180, Room 12, center floor	167	1.7

LOCATION/GRID	FIXED POINT MEASUREMENT (dpm/100cm^2)	WIPE TEST BETA (dpm/100cm^2)
Building 3180, Room 14, center floor	472	0.7
Building 3180, Room 14, N-1	69	2.7
Building 3182, Room 10, C-2	167	-1.3
Building 3182, Room 10, B-2	83	-0.3
Building 3182, Room 5, B-2	444	3.7
Building 3182, Room 5, A-4	583	9.7
Building 3182, Room 4, B-2	-222	8.7
Building 3182, Room 4, D-5	-111	-0.3
Building 3182, Room 4, E-3	-111	5.7
Building 3182, Room 4, G-5	-56	5.7
Building 3182, Room 4, H-3	-103	-0.3
Building 3182, Room 4, D-2	-250	2.7
Building 3185, ladies room, under sink	1911	3.7
Building 3185, under sink, outside ladies' room	89	10.7
Building 3185, Room 5, center floor	-311	2.7
Building 3185, men room, under sink	3067	-0.3
Building 3185, Room 15, center floor	400	-1.3
Building 3185, mop closet, center floor	222	2.7
Building 3185, sink outside ladies' room, drain	311	0.7