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

December 14, 2005

Docket No. 03017584 License No. 01-02861-05

Stanley H. Lillie, Brigadier General, US Army
Commandant, US Army Chemical School
401 Manscem Loop, Suite 1843
Fort Leonard Wood, MO 65473-8925

SUBJECT: INSPECTION 03017584/2005001, FORT MCCLELLAN, ALABAMA

Dear General Lillie:

On September 27 and November 10, and 14-15, 2005, Orysia Masnyk Bailey of this office conducted a safety inspection at of activities authorized by the above listed NRC license. The inspection was a confirmatory survey of the remediation work done at LaGarde Park in Anniston, Alabama. The inspection consisted of a confirmatory survey of a portion of the affected area by the inspector, interviews with personnel, and a selected examination of representative records. The findings of the inspection were discussed with John May by telephone on November 15, 2005.

Within the scope of this inspection, no violations were identified.

Current NRC regulations are included on the NRC's website at www.nrc.gov; select **Nuclear Materials; Medical, industrial, and academic uses of nuclear material;** then **toolkit index page.** The current NRC Enforcement Policy is included on the NRC's website at www.nrc.gov; select **What We Do, Enforcement,** then **Enforcement Policy.** Or you may obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-888-293-6498. The GPO is open from 7:00 a.m. to 9:00 p.m. EST, Monday through Friday (except Federal holidays).

No reply to this letter is required. Your cooperation with us is appreciated.

Sincerely,

Original signed by John D. Kinneman

John D. Kinneman, Chief
Security and Industrial Branch
Division of Nuclear Materials Safety

cc:
John May, Radiation Safety Officer
State of Alabama

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U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Inspection No.	03017584/2005001
Docket No.	03017584
License No.	01-02861-05
Licensee:	Department of the Army U.S. Army Chemical School
Address:	401 Manscem Loop, Suite 1843 Fort Leonard Wood, Missouri 65473-8925
Locations Inspected:	LaGarde Park, Anniston, Alabama (formerly portion of Fort McClellan, Alabama)
Inspection Dates:	September 27, November 10, and 14-15, 2005

Inspector: ***Original signed by Orysia Masnyk Bailey*** ***November 17, 2005***

Orysia Masnyk Bailey, Health Physicist — date

Approved By: ***Original signed by John D. Kinneman*** ***December 7, 2005***

John D. Kinneman, Chief — date
Materials Security and Industrial Branch
Division of Nuclear Materials Safety

Document Name: E:\Filenet\ML053480096.wpd

EXECUTIVE SUMMARY

Department of the Army
U.S. Army Chemical School
NRC Inspection Report No. 03017584/2005001

This special, announced inspection was conducted to evaluate the remediation work done at the LaGarde Park in Anniston, Alabama in support of releasing the Fort McClellan site for unrestricted use. A review of "Final Remedial Investigation Report, Expanded Investigation at LaGarde Park, Anniston, Alabama", dated April 2005 and "Draft Final Remedial Action Report, Final Interim Removal Action at LaGarde Park, Anniston, Alabama", dated August 2005 disclosed that the Army Corps of Engineers (ACE) found the site acceptable for unrestricted release as delineated in 10 CFR Part 20. This NRC inspection and survey supports this conclusion.

REPORT DETAILS

a. Inspection Scope

This announced inspection was a confirmatory survey of a portion of the LaGarde Park in Anniston, AL. This area previously belonged to Fort McClellan, the former location of the Army's Chemical School. In the 1950s unsealed Co^{60} and Cs^{137} was used at an area known as Rattlesnake Gulch or Iron Mountain. Waste from the work was buried in an adjacent area. In the late 1960s the laboratory building, which was constructed of cinder blocks and sand bags, where the material was used, was demolished. Debris from this demolition was buried in a disposal area southeast of the laboratory site. In 1974, approximately 185 acres were deeded to the city of Anniston by the Army. In 2001, an aerial survey by the Army disclosed the presence of a radioactive "hot spot" within the boundaries of LaGarde Park. The "hot spot" and a portion of the surrounding area was fenced until action could be taken. The site was characterized as a Formerly Utilized Defense Site (FUDS) and the Army Corps of Engineers (ACE) took over responsibility for remediating the site in 2002. ACE hired a contractor, Solutions To Environmental Problems (STEP) to perform this remediation. In February 2003, STEP performed a characterization survey. Based on the results of this survey, STEP proposed a Comprehensive Environmental Response Compensation and Liability Act (CERCLA) Time Critical Removal Action (TCRA) to remediate the site. This work was started in September 2003, when 170 cubic yards of contaminated soil was removed and shipped off site. Additional work was required due to the unexpected volume of contaminated soil. This work was done in July 2004. STEP described the work done and results accomplished in "Final Remedial Investigation Report, Expanded Site Investigation at LaGarde Park, Anniston, Alabama", dated April 2005 and "Draft Final Remedial Action Report, Final Interim Removal Action at LaGarde Park, Anniston, Alabama", dated August 2005. This NRC inspection was a confirmatory survey to evaluate the results contained in the STEP reports.

b. Observations and Findings

Final Remedial Investigation Report, Expanded Site Investigation at LaGarde Park, Anniston, Alabama, dated April 2005 completed by STEP for the ACE contains the results of the contractor's expanded site investigation. The expanded site investigation included a surficial site field screening survey, downhole field screening, and surface and subsurface soil sampling. The intent of the investigation was to determine the lateral and vertical extent of radiological contamination at LaGarde Park.

Draft Final Remedial Action Report, Final Interim Removal Action at LaGarde Park, Anniston, Alabama, dated August 2005, completed by STEP for the ACE contains further details of the removal action. It describes the activities conducted during the removal action and the results of the laboratory analysis of samples collected from the excavation. The report concluded that all radioactive contaminated material had been removed from the site.

The following is a synopsis of the pertinent information contained in these two documents.

For the removal action, contaminated areas exceeding NRC residential surface soil screening levels and areas three times the background radiation count of 6,040 counts per minute (CPM) were planned for removal. The soil release limits used were 2.3 picoCuries per gram (pCi/g) for Co^{60} and 9.2 pCi/g for Cs^{137}. These are the limits that were used for the remediation of Pelham Range, another location at Fort McClellan. They are more conservative than the limits listed in Table B.3, Screening Values (pCi/g) of Common Radionuclides for Soil Surface Contamination Levels, in NUREG-1757, Volume 1, Revision 1, Consolidated NMSS Decommissioning Guidance, dated September 2003, which are 3.8 E+0 for Co^{60} and 1.1 E+1 for Cs^{137}. STEP personnel conducted a surficial site radiation survey, established a regular grid area over the site, sampled surface and subsurface soil, and performed downhole radiation screening. The surficial radiological survey identified an area roughly 65 feet by 95 feet that exceeded 9,900 cpm. Based on review of historical aerial photographs, this area appeared to correspond to the location of the former Rattlesnake Gulch laboratory. A grid array (grids spaced at 25 foot intervals) was established. Surface and subsurface soil samples were taken at selected grid sites. Biased samples were taken at areas of elevated surface readings. No soil samples exceeded NRC limits. Gamma spectrum were evaluated and demonstrated that elevated gamma readings tended to occur where Ra^{226} and/or Ra^{228} were above 1 pCi/g.

Based on the above surveys two areas of subsurface contamination were identified, both approximately 10 feet by 10 feet. The first had contamination up to a depth of 6 feet, the second up to 12 to 15 feet. In March 2005, 8 tons of soil were removed. The bottoms and sides of the pits were scanned and soil samples were taken at the corners and middle of each pit. The highest concentrations detected were 5.93 pCi/g for Cs^{137} and 0.228 pCi/g for Co^{60}. These were from samples obtained from one of the excavated pits. The dirt in the excavator bucket was scanned while dirt was removed. Contaminated dirt was placed in containers for disposal. If no contamination was detected the excavated material was spread in a thin layer adjacent to the excavation and scanned. This clean dirt was used to backfill the excavations.

A Ludlum Model 44-2 gamma-ray scintillation probe attached to a Ludlum Model 2221 count ratemeter/scaler; a Ludlum Model 44-10 gamma-ray scintillation connected to a Rainbow 1, Model 7010 multi-channel analyzer, and a Ludlum Model 44-9 survey instrument attached to a Ludlum Model 12 count ratemeter/scaler were used during STEP's remediation work. Soil samples were also sent to an independent contractor for analysis.

STEP concluded that all radioactive material had been removed from the site and that no further remedial action was required.

During the NRC confirmatory survey the NRC inspector was accompanied by the Director of the Alabama Department of Radiological Health and an inspector from that office and by an inspector from the Federal Environmental Protection Agency (EPA). The State and EPA inspectors performed surveys using a MicroR meter. The NRC

inspector performed surveys using a Ludlum Model 3-98 meter equipped with a Ludlum Model 44-10 NaI probe and a Ludlum Model 9 ion chamber.

Background readings observed by all inspectors were 5-7 microR per hour (uR/hr) with the MicroR meters and ion chamber and 7, 000 counts per minute (cpm) with the Model 3-98, which was comparable to that seen by STEP. A walkover was performed over 100% of the excavated areas and 25% of the fenced area. Most of the area surveyed was at or below background. Two areas of elevated activity were identified. One was in the center of one of the excavated and backfilled areas where readings were 2 times background. This was located at Global Positioning System (GPS) coordinates 33.6997N, 85.81283W. The other was in an area that had not been remediated where there were spots that were three times background. This was located at GPS coordinates 33.69969N, 85.81291W. The Alabama inspector took shallow soil samples at each location; one from the remediated area and two from the undisturbed area. The sample from the remediated area contained 3.29 pCi/g of Cs^{137} and 0.441 pCi/g of Co^{60}. The samples from the undisturbed area contained 6.98 and 1.53 pCi of Cs^{137} and 0.284 and 0.162 pCi of Co^{60}.

A review of STEP's survey results disclosed that bore soil samples were taken adjacent to both areas discussed above, identified by STEP as locations 3G and 4G. 3G had two samples taken, one at a depth to 1 foot, the other at a depth of 3-4 feet. The results are 1.48 pCi/g of Cs^{137} and 0.0415 pCi/g of Co-Co^{60} for the first sample and 0.105 pCi/g of Cs^{137} and 0.0155 pCi/g of Co-Co^{60} for the second sample. 4G had two samples taken, one at a depth to 1 foot, the other at a depth of 19-20 feet. The results are 0.0762 pCi/g of Cs^{137} and 0.00895 pCi/g of Co-Co^{60} for the first sample and -0.00904 pCi/g of Cs^{137} and -0.00141 pCi/g of Co^{60} for the second sample. Downhole scans were also performed and no Cs^{137} or Co^{60} was detected. Scans were performed with a Ludlum Model 2221 ratemeter attached to a Ludlum Model 44-2 probe. Gamma spectrum were collected at depths exhibiting the highest gross gamma count and STEP concluded that elevated readings were most likely attributable to naturally occurring sources.

c. Conclusions

Based on a review of "Final Remedial Investigation Report, Expanded Site Investigation at LaGarde Park, Anniston, Alabama", dated April 2005 and "Draft Final Remedial Action Report, Final Interim Removal Action at LaGarde Park, Anniston, Alabama", dated August 2005; discussion with Army Corps of Engineer, Department of the Army, contractor personnel, and State and EPA radiological staff; and the results of the NRC confirmatory survey; there are no further radiological concerns with the LaGarde Park in Anniston, Alabama. This area is acceptable for unrestricted use as delineated in 10 CFR 20.1402.

EXIT MEETING

An exit meeting was held by telephone with the Radiation Safety Officer for the Army Chemical School on November 15, 2005. The NRC inspector described the scope and conduct of the inspection. The inspector advised that the portion of LaGarde Park evaluated was acceptable for unrestricted release. The inspector further advised that the Army's request for the termination of the Fort McClellan license was under review and that the Army would be advised of the results of this review by separate correspondence.

PARTIAL LIST OF PERSONS CONTACTED

Jeffrey Carter, STEP
Jeffrey Devine, U.S. Army Corps of Engineers
Lloyd Generette, U.S. Environmental Protection Agency
Roy Hoekstra, P.E., Project Manager, STEP
John May, U.S. Army Chemical School, Department of Army
Greg Shank, Project Manager, Matrix Environmental Services, LLC
Kirk Whatley, Director, Alabama Radiation Control
Terry Williams, Alabama Radiation Control