

DEPARTMENT OF THE ARMY  
FORT MCCLELLAN, GEORGIA  
SAFETY EVALUATION REPORT (SER) SUPPORTING TERMINATION  
OF LICENSE NO. 01-20861-05, DOCKET NO. 03017584

## 1.0 INTRODUCTION

By letter dated April 26, 2005, the Army requested that License No. 01-02861-05 (Docket No. 030-17584) be terminated. The following is a summary of the NRC review performed to support termination of this license. The isotopes of interest are cobalt 60 and cesium 137.

A list of documents used to provide an overview of licensed material use at Fort McClellan or evaluated to support license termination is included at the end of this report. These documents identify buildings and areas which may have been associated with the use, storage, handling, or disposal of burial of radioactive materials at Fort McClellan or contained information supporting unrestricted site release. The information in these documents is based on review of records, interviews with personnel associated with Fort McClellan, site visits, and radiological surveys for both fixed and removal contamination of buildings and outside areas including soil, vegetation, and groundwater sampling.

The documents record the Army's characterization, remediation and final status surveys and the NRC's in-process inspections and confirmatory surveys. Since Fort McClellan was in the Base Realignment and Closure (BRAC) process, the NRC worked closely with the US Environmental Protection Agency (EPA) and the Alabama Department of Radiological Safety. In most cases, representatives from both agencies were present during NRC inspections. All locations at the site where radioactive material was used were evaluated using current release criteria (see Section 6.0). Copies of NRC inspection reports and licensing actions were sent to both the EPA and Alabama. Areas at Fort McClellan were released for unrestricted use as remediation was completed, to facilitate the turn over of Army property to the State of Alabama.

## 2.0 Background

Fort McClellan abuts the city of Anniston, Alabama and lies within Calhoun County. In 1917, Congress authorized the establishment of Fort McClellan and the base was formally established in 1929. Originally it encompassed 1,160 acres. In 1941 26,912 additional acres were acquired and eventually became Pelham Range. This area is separated from the Main Post by approximately 6 miles. The U.S. Army Chemical School was located at Fort McClellan from 1951-1973 and 1979-1999. From 1952 until 1957, the work performed at Fort McClellan was classified and done under the auspices of the AEC out of Oak Ridge, TN and a license was not required from the then Atomic Energy Commission (AEC). No records were located concerning this work. The only information available was from interviews of the original Army personnel involved in the work conducted in the 1970s and obtained from discussion with those interviewers. From 1957 until 1972 Fort McClellan was authorized to use radioactive material by AEC License Nos. 01-02861-01, 02, and 03. In 1959 License No. SNM-344 was issued to authorize U-233 and plutonium. These licenses were terminated when the Chemical School relocated to Aberdeen, Maryland in 1973. At that time, License No. 01-02861-04 was issued for residual cobalt 60 and cesium 137 contamination in the hot cell in Building 3192 and surrounding ground contamination from an associated underground holding tank. License No. 01-02861-05, a license of broad scope, was issued in 1979 when the Chemical School was

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reactivated at Fort McClellan. License No. 01-02861-04 was terminated on October 19, 1998. License No. 01-02861-05 is the subject of this review document. Although the Army Chemical School was relocated to Fort Leonard Wood in Missouri in 1999, remediation continued under the supervision of the Army Chemical School Radiation Safety Officer.

The US Army Corps of Engineers (USACE) completed a Radiological Historical Assessment for Fort McClellan in two reports, both dated December 2001, one for the Main Post and one for Pelham Range. Based on these reports, radioactive materials were used, stored or buried at the following locations:

### Main Post Area:

- Alpha Field
- Bromine Field
- Bromine Tanks
- Building T-810 (Temporary Lab)
- Building T-811 (Temporary Lab)
- Building T-812 (Temporary Lab)
- Building 812 ½ (Radioactive Storage)
- Building T-836 (Temporary Lab)
- Building T-837 (Temporary Lab)
- Building 1081
- Building 2281 (Edwin R. Bradley Radiological Laboratory)
- Building 3180 (Storage Vault)
- Building 3181
- Building 3182 (Radiological Lab)
- Building 3185 (Personnel Decontamination Center)
- Building 3192 (Permanent Hot Cell)
- Chemical School Radiological Burial Grounds
- Field Hot Cell
- Liquid Waste Disposal Pit
- Rattlesnake Gulch Radiological Survey Area (Iron Mountain)
- Radioactive Waste Storage Yard
- Radiological Survey Area #1
- Range 25

### Storage Buildings associated with radioactive materials were:

- Building 4416
- Building 256
- Building 257
- Building 303A
- Building 341
- Building 345

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Maintenance Buildings associated with radioactive materials were:

Building 228  
Building 335  
Building 337  
Building 338  
Building 339  
Building 350

Pelham Range Areas:

Area 10-A (Toxic Training Area)  
Area 10-B (Toxic Training Area, includes Lima Pond A-Bomb Crater Simulation)  
Area 9-D (Training Area)  
Area 24-A (South Half Rideout Field, includes second version of Radiological Survey Area)  
Area 24-C (North Half Rideout Field, includes first version of Radiological Survey area and Burial Mound)

The following is a discussion of the radiologically impacted areas and the Army's decommissioning work and survey results.

### Rattlesnake Gulch - Iron Mountain (RG-IM)

In 1952, field training in performing radiological surveys was initiated at Rattlesnake Gulch using 48 curies of cobalt 60 contained in sources of 2 to 4 curies each. This training area was located south of the Sumerall Gate Road. Approval was also granted for the use of 10 cobalt 60 sources at the Chemical/Biological/Radiological (CBR) familiarization Course at Pelham Range. In 1953 the Rattlesnake Gulch Survey Area was moved closer to the Summerall Gate Road and re-named Radiological Survey Area #1. This area was in use from 1953 until 1958. These areas were generally referred to as either Rattlesnake Gulch or Iron Mountain.

In the early 1950s a Field Hot Cell was constructed near Radiological Survey Area #1. It was constructed of cement blocks and sand bags and used until another temporary hot cell was established in Building 3182 in 1954. Single walled cobalt 60 sources were manufactured at the Field Hot Cell, temporary hot cell, and later in a permanent hot cell in Building 3182.

During this time, a radioactive waste burial ground was established and designated as the Chemical School Radioactive Burial ground (CSRBG). Around 1958 the material at the burial ground was dug up and moved to the Pelham Range to make it less accessible to members of the public. In 1971, staff from the Army Chemical School removed eighteen 55 gallon drums of waste from the CSRBG and disposed of it as radioactive waste. In 1973 10 more drums were removed and shipped as waste. Both times the soil was trenched and back filled. In 1976 a portion of the property near these areas was deeded to the city of Anniston, Alabama. This property is now called the LaGarde Park and will be discussed at the end of this report.

In 1993, the Army's Environmental Hygiene Agency completed a radiological assessment of the

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RG-IM area (CETHA-TS-S dated January 15, 1993). An additional survey was completed by the Army's Center for Health Promotion and Preventative Medicine (CHPPM) in 1997 (Industrial Radiation Study No. 27-MH-0987-R1-96 dated March 28, 1997). The licensee used a contractor, Allied Technology Group (ATG), to remediate the RG-IM area and perform a final status survey (FSS). The sampling and analysis plan for these areas were included in ATG's Sampling and Analysis Plan for Commodity Use Area, dated July 20, 2000. The results are documented in ATG's report dated October 2000. The report supports unrestricted release of the area.

### "T" Buildings - Post Area # 8

From 1952 until 1954, the Army's Radiological Laboratories were located in Post Area No. 8 in Buildings T-810, T-811, T-812, T-836, and T-837 (also known as old T-836A). A concrete vault, T-812 ½, was used for the storage of radioactive material (RAM), primarily radium and cobalt 60, from 1952 until 1973.

ATG's report, "Final Radiological Status Report," dated March 2000 contains the FSS results for Building T-812 ½. ATG's Final Radiological Status Report, dated October 2000 contains the FSS results for Buildings T-810, T-811, T-812, T-836, and T-837. These results support unrestricted release for these buildings.

### 1950s to 1973 - Post Area 31

In 1954 the Army Chemical School established Radiological Facilities in Post Area 31 that included the following: two Radiological Laboratories (Buildings 3180 and 3182), a Nuclear Accident Training Facility (Alpha Field) located behind Building 3185, a Radiological Decontamination Training Facility (Bromine Field), a Personnel Decontamination Center (Building 3185) and an Isotope and Scaler Laboratory (Building 3181). Buildings 3180 and 3181 housed Radioactive Vaults. A Radioactive Waste Storage Yard where cobalt 60 sources were stored in 3 ton and 5 ton containers was located near Building 3192. A Liquid Waste Disposal Pit was connected to Building 3192 and was used from 1954 until 1973. A Hot Cell Facility (Building 3192) was built in the late 1950s and used until 1973. The Hot Cell was connected to an underground drainage system leading to two underground storage tanks.

A portion of the parking lot near Building 3185 and the field adjacent to the parking lot were used as a decontamination training area (Bromine Field). In the 1960s and 1970s, equipment was contaminated with Bromine 82, which has a half life of 35 hours, and personnel practiced decontamination procedures. Personnel decontamination practice was conducted in Building 3185. Tanks located next to the Bromine Field and were used to hold contaminated waste water for decay-in-storage. These tanks were removed and disposed of in 1972. A portion of the parking lot near Building 3185 known as Alpha Field was to be used as a training area where U-233 plates would be placed on the ground for radiation survey training purposes. A building was subsequently built on the site of the parking lot. The Army determined that Alpha Field was never used as planned.

The Chemical School closed the Radiological Facilities in 1972 and removed all radioactive sources from Fort McClellan. The Chemical School was deactivated in 1973 and at this time

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Building 3182 was turned into a Military Police Museum. Building 3180 was demolished in 1989.

Chem-Nuclear Systems, Inc. started remediation at Building 3192 and the surrounding areas in 1985 (Project Report dated 1986). The underground tanks were removed at this time. CHPPM performed a radiological assessment of this area in 1993 and recommended additional remediation (Consultation No. 27-42-EU66-93 dated July 27, 1993). Additional work was done by ATG from 1994 until 1996 at Buildings 3182 and 3192 and surrounding areas (ATG Interim Report dated November 1994 and Final Report dated December 1996). CHPPM performed a final status survey of this area in 1997 (Industrial Radiation Study No. 27-MH-0987-R2-07 dated February 6, 1998). CHPPM performed a final status survey of Building 3181, the area where Building 3180 had stood, the area behind Building 3182, and Alpha Field in 1998 (Industrial Radiation Study No. 27-MH-7748-98 dated September 8, 1998). ATG completed a FSS for the Bromine Storage Tanks, Bromine Fields and Buildings 3181 and 3185 in 2000 (Final Radiological Status Report dated March 2000). In all cases unrestricted release was recommended.

### 1979 -1999

The Army Chemical School was reactivated at Fort McClellan in 1979. The main places where licensed material was used were the Edwin R. Bradley Radiological Laboratory (Building 2281), Building 4416, Building 2281, and Building 1081. Building 2281 was used from 1979 until the late 1980s when training facilities were moved to Building 1081 which was used until 1999. In 1996 actuator tests, using cobalt 60 sources, were conducted on Range 25 (Old Bandholtz KD Range). Five prototypes were tested for a period of 6 weeks. The Army Chemical School was moved to Fort Leonard Wood, Missouri in 1999.

Army Chemical school staff completed a FSS of Building 2281 in 1988 (November 1988 Closeout Survey) and of Building 1081 in 2000 (Army Final Survey Report dated March 2000). ATG performed a FSS for Building 3185 and Range 25 in 2000 (Final Radiological Status Report dated October 2000). In all cases unrestricted release was recommended.

### Storage and Maintenance

A variety of buildings was used for general storage, calibration of equipment and vehicle maintenance that involved the use of radioactive materials, including lensetic compasses and radium dials. Buildings 256, 257, 303A, 341, 345 and 4416 were used to store commodities incorporating sealed sources. Building 228 was used as a radiological calibration facility from the 1950s until the 1980s. Buildings 335, 337, 338, 339, and 350 were used as Vehicle Maintenance Shops.

ATG completed a FSS for Buildings 228, 256, 257, 303A, 335, 337, 338, 339, 341, 345, 350, and 4416 in March 2000 (Final Radiological Status Report dated March 2000). No residual radioactive contamination was found.

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### Pelham Range and Rideout Field

In 1952 the Army purchased 10 cobalt 60 sources to be used at the CBR Familiarization Course at the Pelham Range (Areas 10A and B and Area 9D). The sources were placed in a pit (Lima Pit) for the students to monitor. In 1954 approval was granted for the purchase of up to 500 curies of unencapsulated cobalt 60 which 60 was manufactured onsite into sources of 5 curies each. Sealed cobalt 60 and cesium 137 sources manufactured at other locations were also purchased. In 1956 the field location of the sources was designated Radiological Survey Area # 3 (Area 24-C). The field consisted of 300 source wells to simulate a fallout pattern from a nuclear detonation. Cobalt 60 sources were used to simulate a uniform fallout pattern and cesium 137 sources were used to simulate "hot spots." The sources were manually raised and lowered via a pulley system into storage positions 6 feet below the ground surface.

Extensive leaking of the cobalt 60 sources led to the formation of a radioactive burial ground at the Pelham Range in 1957. At this time waste from Rattlesnake Gulch was moved to the Pelham Range burial mound. In 1958 the sources and wells were removed from the Pelham Range. In 1965 Radiological Survey Area # 3 was replaced by Rideout Field (Area 24-A). This area used hydroelectric actuators to raise and lower the sources to change the fallout pattern. Approximately 800 sources including up to 3,750 curies of cobalt 60 were stored on rods in the below-ground wells. Rideout Field was closed in 1972 and the sources were removed. Over the years, Army Chemical School Radiation Safety Staff and students performed walk over surveys of the Pelham Range use areas; however, these were not formalized into reports. This was done to train students in how to perform field surveys. During a routine survey of Rideout Field in 1985, a cobalt source was found and removed. Subsequently, Pelham Range has been used as a bombing practice range and is currently used by the Alabama National Guard as an armored tank training area.

CHPPM performed a characterization of the Pelham Range burial mound in 1996 (Industrial Radiation Study No. 27-MH-0987-R2-97 dated February 5, 1998). The mound was found to have cobalt 60 and cesium 137 contamination, including small discrete sources. Remediation was recommended. ATG submitted a Decommissioning Plan in 1999 (Burial Mound Decommissioning Plan dated July 1999). Adhering to this plan, ATG removed soil from the burial mound and ran it through a conveyer system outfitted with a sodium iodide array. Contaminated dirt was segregated and disposed of as radioactive waste. Clean dirt was used to back fill the pit.

A FSS was completed in 2002 by ATG (Final Radiological Status Report - Burial Mound dated October 2002). The report, transmitted by cover letter dated January 2, 2003, contains a summary of the remediation work and results of the final status survey of the Pelham Range burial mound. Dirt was removed to a depth of 12 feet and the pit was back filled with clean dirt. Periodic soil samples were analyzed during the remediation and a walk over survey was performed. The report concluded that the site could be released for unrestricted use.

Due to the lack of complete records, the Army contracted Fugro Airborne Services Corporation (Fugro) to develop a plan to assess the radiological status of the base from the air. Fugro submitted a work plan for a flyover survey of Fort McClellan to demonstrate that there was no residual contamination remaining at Fort McClellan and that all radiological concerns had been

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addressed (Work Plan for an Airborne Gamma Radionuclide Survey of Fort McClellan dated November 6, 2000). This flyover survey was to serve as a FSS of the various places of use at the Pelham range.

The IT Corporation submitted a groundwater investigation work plan in July 2001 to demonstrate that the Pelham Range burial mound had not contaminated the groundwater in the area (Work Plan for Groundwater Investigation dated July 6, 2001).

The results of the flyover survey, conducted in October 2001, were submitted in October 2002 report by IT Corporation [later known as Shaw I&E] (Airborne Radiological Survey dated October 2002). The report identified several anomalies in addition to the burial mound undergoing remediation. These anomalies were investigated by performing walk over surveys and in situ analysis. All were investigated, and with the exception of one spot, were found to be naturally occurring uranium series radionuclides, shale outcroppings or clay soil. The exception was a "hot spot" observed at LaGarde Park in Anniston, AL. Further surveys and soil sampling found this to be the result of a burial ground containing cobalt 60 and cesium 137 contaminated dirt. LaGarde Park will be discussed later in this report. The October 2002 report, containing the flyover survey results, also contained the results of the investigational walk over surveys of the anomalies and of the groundwater investigation. It was recommended that the Pelham Range be released for unrestricted use. The fact that the flyover survey of Pelham Range and the Main Post was able to detect naturally occurring "hot spots" which consisted of underground rock formations like shale and the contaminated soil at the LaGarde Park provides a high degree of confidence that unaccounted for sources or additional burial areas at Pelham Range would also have been detected.

### LaGarde Park

A "hotspot" was identified during the flyover survey of Fort McClellan in October 2001 at a location which was originally part of Ft. McClellan, but had been deeded to the city of Anniston in 1976. This area is now LaGarde Park, a recreation area in the city of Anniston. Review of records during previous inspections indicated that the material buried in this location was probably from material used in the early 1950s before a materials license was issued to the Army. An inspector from the Alabama Department of Public Health, Division of Radiation Control obtained a soil sample from approximately a six inches depth near the roots of a tree in the affected area in January 2002. The results indicated 2.22 picocuries per gram (pCi/gm) of cobalt-60 and 416 pCi/gm of cesium-137.

An August 1, 2002 memorandum from US Army Corps of Engineers to NRC advised that the Army Corps of Engineers (ACE) would remediate LaGarde Park consistent with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and that the site was eligible for action under the Defense Environmental Restoration Program (DERP) since it is a formerly used defense site (FUDS).

USACE used a contractor, STEP, Inc. (STEP) to perform a characterization survey, remediation, and final status survey of the contaminated area at the LaGarde Park. Work was completed in 2006 and USACE concluded that no further remedial action was necessary for this site and that it can be released for unrestricted use. Summaries of work done and results

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achieved are contained in STEP reports for USACE dated June 2003, May 2004, April 2005, August 2005, November 2005, and May 2006. A June 2006 Final Decision Document concludes that no further remedial action is required at the LaGarde Park.

### 3.0 NRC INSPECTIONS AND SURVEYS

#### Rattlesnake Gulch - Iron Mountain (RG-IM)

The NRC performed inspections and comparative and confirmatory surveys while work was ongoing. This work is documented in NRC Inspection Report Nos. 01-02861-05/99-01 dated October 21, 1999, same titled Report Nos. 01-02861-05/99-01 dated March 1, 2000, and 01-02861-05/01-01 dated March 9, 2001. The March 2000 and 2001 reports released the IM-RG areas for unrestricted use.

#### "T" Buildings - Post Area # 8

The NRC released Building T-812 ½ in a licensing letter dated July 27, 2000 and Buildings 3182, 3185, T-810, T-811, T-812, T-837, and T-836 in Report No. 01-02861-05/01-01 dated March 9, 2001.

#### 1950s to 1973 - Post Area 31

In-process inspections and confirmatory surveys were done by the NRC in 1997 and 1998 (Inspection Report Nos. 01-02861-04/97-01 dated October 7, 1997, 01-02861-04/98-01 dated April 21, 1998, and 01-02861-04/98-02 dated May 22, 1998). An NRC licensing letter dated October 19, 1998, transmitting Amendment No. 17 to License No. 01-02861-04 released Buildings 3182 and 3192 and surrounding grounds for unrestricted use and terminated the license. The surrounding grounds included the site where Building 3180 had stood and the location of the Liquid Waste Disposal Pit. Inspection Report No. 01-02861-05/01-01, dated March 9, 2001, concluded that Buildings 3182 and 3185 could be released for unrestricted use. NRC licensing letter dated July 27, 2000 transmitting Amendment No. 15 to License No. 01-02861-05 released Building 3181, 3182, Bromine Field, and Alpha Field for unrestricted use.

#### 1979 -1999

NRC performed a confirmatory survey of Buildings 1081 and 2281 on October 21, 2001 (01-02861-05/99-01 dated October 21, 1999) and released Building 1081 on March 1, 2000 (01-02861-05/99-01 dated March 1, 2000). A NRC licensing letter dated July 27, 2000 released Building 1081 and Alpha Field for unrestricted use.

#### Storage and Maintenance

NRC released Buildings 228, 256, 257, 303A, 335, 337, 338, 339, 341, 345, 350, and 4416 in a July 27, 2000 licensing letter.



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### Pelham Range and Rideout Field

Inspection Report No. 01-02861-05/03-01, dated August 25, 2003 documents an inspection and confirmatory survey done at the Pelham Range July 5-6, 2003. The inspection included an evaluation of the results of the flyover and walkover surveys. The confirmatory surveys performed by the NRC were of the anomalies found during the flyover survey and of the Burial Mound "footprint." NRC results were consistent with those of the licensee. Contamination at the LaGarde Park was confirmed. An NRC letter dated June 24, 2004 released the area of the Pelham Range burial mound for unrestricted use. At that time all areas at Fort McClellan that had been utilized under an NRC license had been released for unrestricted use. The license was not terminated at that time due to the presence of contamination at LaGarde Park. Although the material at LaGarde Park could not be traced to NRC licensed activities, 10 CFR Part 20 requires the licensee and NRC to consider all sources of residual radioactivity, licensed and unlicensed, resulting from activities under the licensee's control when releasing a facility for unrestricted use.

### LaGarde Park

Inspection Report No. 03017584/2005001 dated December 14, 2005 contains the results of an NRC confirmatory survey performed at the site on September 27, 2005. The inspection included a review of STEP's remediation work and surveys done at the site. The confirmatory survey consisted of walkover surveys, fixed point measurements, and soil sampling. The inspection results support the conclusion that LaGarde Park is acceptable for unrestricted release.

## 4.0 STATE CONSULTATION

Throughout the decommissioning process at Fort McClellan, NRC staff communicated with Alabama State and Federal environmental Protection Agency Inspectors on technical issues, surveys, and results. In most cases inspectors from both Agencies accompanied NRC Inspectors during field observations of the performance of the licensee's contractors and NRC in-process and confirmatory surveys.

## 5.0 ENVIRONMENTAL CONSIDERATION

On March 7, 2007, the NRC published the Environmental Assessment (EA) in support of license termination (72 FR 10262-64).

## 6.0 CONCLUSION

The Department of the Army and the Army Corps of Engineers FSS reports discussed in this evaluation demonstrate that the buildings land used under NRC Materials License Nos. 01-02861-01, 02, 03, 04, 05 and SNM-344 and those contaminated with radioactive material prior to licensing, meet the radiological criteria for unrestricted use, as defined in 10 CFR 20.1402. Based on review of available information, as discussed below, residual radioactivity that is distinguishable from background radiation results in a TEDE to an average member of the critical group that does not exceed 25 mrem (0.25 mSv) per year. The dose evaluation

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includes consideration of all sources of exposure, including groundwater. In addition, the residual radioactivity has been reduced to levels that are as low as reasonably achievable (ALARA).

Although some of the documents reviewed during this evaluation (listed at the end of this report) refer to Regulatory Guide 1.86 release limits as the release criteria used, for purposes of this evaluation, the information and data in the documents was compared to the release criteria contained in 10 CFR 20.1402. The approach used was to compare actual data to the acceptable license termination screening values for building surface contaminants and for soil surface contaminants published in Appendix B to NUREG-1757, Volume 1, Revision 1, "Consolidated NMSS Decommissioning Guidance, Decommissioning Process for Materials Licenses."

The NRC staff also reviewed the FSS reports and compared the residual contamination levels to the trigger values for soil and groundwater in the "Memorandum of Understanding (MOU) between the U.S. Environmental Protection Agency and the NRC on Consultation and Finality on Decommissioning and Decontamination of Contaminated Sites." The staff concluded that the trigger levels for soil and/or groundwater were not met or exceeded. Thus, in accordance with Section V.C.2 of the MOU, consultation is not required.

### 7.0 DOCUMENTS REVIEWED

(ML052760331) Project Report for Fort McClellan, Alabama, Decontamination Project, dated 1986, prepared by Chem-Nuclear Systems, Inc. Delineates the investigation, assessment and remedial actions at Building 3192 and surrounding grounds in 1985 and 1986. This is the time frame in which the underground tanks adjacent to Building 3192 were removed.

(ML052760321) Closeout Survey, Building 2281, Edwin R. Bradley Radiological Laboratories, dated November 1988. Contains the results of the final status survey for Building 2281. This survey was performed by Army Chemical School radiation safety personnel.

(ML052760315) March 7, 1989 Army memorandum to NRC forwarded Closeout Survey, Building 2281, Edwin R. Bradley Radiological Laboratories, dated November 1988.

(ML052700150) US Army Environmental Hygiene Agency (EHA) memorandum, "Radiological Status of Iron Mountain, Fort McClellan", CETHA-TS-S, dated January 15, 1993. Contains the initial characterization of Rattlesnake Gulch/Iron Mountain. It recommended further surveys.

(ML052760280) US Army Environmental Hygiene Agency Industrial Radiation Consultation No. 27-42-EU66-93, US Army Chemical School and Military Police Center and Fort McClellan, Alabama, dated July 27, 1993. Contains a radiological evaluation of past operations at Fort McClellan for Buildings T-812 ½, 2281, 3180, 3181, 3182, 3192, and Alpha, Bromine, and Rideout Fields. It recommended further surveys for Buildings T-812 ½, 3180, 3181 and 3192 and Alpha and Rideout Fields.

(ML052760187) Interim Report, Project Manager's Log, Radiological Characterization, Fort McClellan, Building 3192 and Grounds, Anniston, Alabama, dated November 1994, prepared by

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Allied Technology Group, Inc. Contains a radiological characterization for Building 3192 and surrounding contaminated grounds.

(ML052760165) August 10, 1995 letter from the Army Chemical School Commandant responding to a July 27, 1995 NRC request for additional information concerning the decommissioning of Building 3192. It contains information concerning the Decommissioning Plan discussing the use of soil and water sampling.

(ML052760149) Fort McClellan, Anniston, Alabama, Final Report, Radiological Remediation of Building 3192 Hot Cell and Grounds and Building 3182 Military Police Museum dated December 1996, prepared by the Allied Technology Group. Provides additional information concerning the radiological status of these areas, the characterization survey results up to 1996, and a synopsis of the remediation work done, including the disassembling of the Hot Cell and removal of the drains and contaminated soil.

(ML052700142) U.S. Army Center for Health Promotion and Preventative Medicine (CHPPM) Industrial Radiation Study No. 27-MH-0987-R1-96, Iron Mountain & Rattlesnake Gulch Sites, Fort McClellan, AL 27 February - 15 March 1995, dated March 28, 1997. Contains a historical summary and the results of a comprehensive survey of the area, including bore soil samples. It concludes that there are no radiological health hazards based on Regulatory Guide 1.86 release limits.

(ML052730459) NRC Inspection Report No. 01-02861-04/97-01, dated October 7, 1997. Documents the in-process inspection of decommissioning activities of Buildings 3182, 3192 and surrounding areas and contains the NRC's initial characterization of the radiological status of Fort McClellan. CHPPM staff were performing the survey reported in Industrial Radiation Study No. 27-MH-6999-97, during the NRC inspection.

(ML052710321) US Army Center for Health Promotion and Preventative Medicine (CHPPM) Industrial Radiation Study No. 27-MH-0987-R2-97, Pelham Range Burial Mound Site, Fort McClellan, AL, 29 August -15 September 1995 and 14 January - 28 January, 1996, dated February 5, 1998. Contains a radiological characterization of the waste in the burial mound at Pelham Range. Cobalt 60 and cesium 137 contamination was found, including small bits of discrete sources. It recommended remediation.

(ML052730509) US Army Center for Health Promotion and Preventative Medicine (CHPPM) Industrial Radiation Study No. 27-MH-6999-97, Facility Close-out Verification Survey, Fort McClellan, AL, dated February 6, 1998. Contains the results of the final status survey for Buildings 3182, 3192 and surrounding outdoor areas performed August 17-22, 1997. It recommended unrestricted release based on criteria contained in Regulatory Guide 1.86.

(ML052730456) NRC Inspection Report No. 01-02861-04/98-01 dated April 21, 1998. Contains a summary of results of the NRC confirmatory survey of Buildings 3182, 3192, and surrounding area. No conclusions were drawn in this report since the results of soil and smear analysis were not available when report was written.

(ML052730453) NRC Inspection Report No. 01-02861-04/98-02 dated May 22, 1998.

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Documents the in-process inspection conducted May 18, 1998, at Buildings 3182 and 3192. Work activities performed by Army personnel involved sampling of building block walls and soil from ground outside of Building 3192. NRC obtained split samples.

(ML052730412) US Army Center for Health Promotion and Preventative Medicine (CHPPM) Industrial Radiation Study No. 27-MH-7748-98, dated September 8, 1998. Contains the results of the final status survey of Buildings T-812 ½, 3181, the area where Building 3180 had stood, the area behind Building 3182, and Alpha Field. It recommended unrestricted release.

(ML052730385) NRC licensing letter dated October 19, 1998, transmitting Amendment No. 17 to License No. 01-02861-04. Released Buildings 3180, 3182 and 3192 and surrounding grounds which include the Liquid Waste Disposal Pit and the Radioactive Waste Storage Yard, for unrestricted use. This letter contains the results of the analysis of samples obtained by the NRC in April and May 1998.

(ML052720140) US Army Chemical School, Fort McClellan, Alabama, Decommissioning Plan, Radiological Laboratories and Alpha Field, dated March 1999, prepared by the Chemical School Health Physics Office staff. The decommissioning plan for Building 1081 and Alpha Field.

(ML020230383, ML020280098, ML020280115)) US Army Fort McClellan, Fort McClellan, Alabama, HQ, IOC Project Number USA 98-046, Phase II, "Burial Mound," Decommissioning Plan, dated July 1999, prepared by Allied Technology Group, Inc. The Decommissioning Plan for the Burial Mound at Rideout Field located at Pelham Range. (The January 18, 2002 license renewal contains the 1999 Decommissioning Plan as an attachment)

(ML993090012) NRC Inspection Report No. 01-02861-05/99-01, dated October 21, 1999. Documents a confirmatory survey performed October 1, 1999 at Buildings 1081 and 2281, and Rattlesnake Gulch and Iron Mountain. No conclusions are drawn in this report since sample analysis were not available when the report was written.

(ML052720146) Final Survey Report, Radiological Laboratories, Building 1081, US Army Chemical School, Fort McClellan, Alabama, dated March 2000. Contains the results of the final status survey for Building 3181 and the information that Alpha Field was never utilized for work with radioactive material. It describes the NUREG-1575, "Multi-Agency Radiation and Site Investigation Manual" (MARRSIM) survey performed by Army Chemical School radiation safety personnel. It recommended unrestricted release.

(ML052720605 (Redacted Version ML081350590) & ML052730265) US Army, Fort McClellan, Anniston Alabama, HQ, OSC Project Number USA 99-100, Select Commodity Site Areas, Final Radiological Status Report, dated March 2000, prepared by Allied Technology Group, Inc. contains results of MARSSIM surveys done of the following Buildings: 228, 256, 257, 303A, 335, 337, 338, 339, 341, 345, 350, T-812 ½, 3181, 3182, 4416, as well as Alpha and Bromine Fields. It recommended release for unrestricted use of most of the areas. Three areas in Building 3182 were found to need additional remediation. Buildings T-810, T-811, T-812, T-837, 3185 and the area under the foundation of T-836 were not surveyed at this time and future surveys were recommended.

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(ML003743701) NRC Inspection Report No. 01-02861-05/99-01 dated March 1, 2000 documents the results of a confirmatory survey of Buildings 1081. No conclusions are drawn about this building in this report since NRC did not have the licensee's final status survey at the time of the inspection. The results of the NRC samples obtained in October 1999 were included for the following areas, Building 2281 and Rattlesnake Gulch and Iron Mountain. They were released for unrestricted use.

(ML003725230) June 12, 2000 amendment request from the Army Chemical School provided survey data results for Building 1081 as well as leak test results and shipping information associated with the disposal of the U-233 and Pu-239 originally licensed by License No. SNM-1877. Although this license was terminated in 1974, the Army transferred the sources to the Chemical School in Aberdeen, Maryland. Subsequently, 400 sources were transferred to Chem Nuclear in Barnwell, South Carolina, in 1999. The Army retains 50 sources under Materials License No. 24-32221-01. The wipe tests showed that no sources had leaked.

(ML003735945) July 6, 2000 memorandum from the Army Chemical School to NRC. Provides information concerning the groundwater assessment at Pelham Range in response to an NRC request made during Inspection No. 01-02861-05/99-01, dated March 1, 2000, including hydrogeologic information for the area of the burial mound and a plan to install groundwater monitoring wells.

(ML003734232) Sampling and Analysis Plan for Commodity Use Area, dated July 20, 2000, prepared by Allied Technology Group. Describes the MARSSIM survey to be performed in the following areas: Building 3182, Building T-810, Building T-811, Building T-812, Building T-836, Building T-837, Building 3185, Rattlesnake Gulch Area, Radiological Survey Area #1, Field Hot Cell, Chemical School Radiological Burial Grounds, and Range 25.

(ML003735780) NRC licensing letter dated July 27, 2000 transmitting Amendment No. 15 to License No. 01-02861-05. Released Buildings 1081, 337, 338, 339, 341, 3181, 345, 335, 228, 303-A, T- 812 ½, 257, 4416, 256, 3182, 350, Bromine Field, and Alpha Field for unrestricted use. The amendment removed Building 1081 and Alpha Field from License No. 01-02861-05 and removed the "Broad Scope" use authorization. The authorized use remaining on the license was for the possession and decontamination of cobalt 60 and cesium 137 at the burial mound at Rideout Field at Pelham Range.

(ML003763935) US Army, Fort McClellan, Anniston Alabama, HQ, OSC Project Number USA 99-100, Select Commodity Site Areas, Final Radiological Status Report, Revision 0, dated October 2000, prepared by Allied Technology Group, Inc. Contains results of the MARSSIM surveys done at Fort McClellan commodity sites. It concluded that the following areas may be released for unrestricted use: Building 3182, Building T-810, Building T-811, Building T-812, Building T-836, Building T-837, Building 3185, Rattlesnake Gulch Area, Radiological Survey Area #1, Field Hot Cell, Chemical School Radiological Burial Grounds, and Range 25.

(ML003768177) Work Plan for an Airborne Gamma Radionuclide Survey of Fort McClellan (Main Post and Pelham Range), Anniston, Alabama, prepared by Fugro Airborne Surveys Corporation, dated November 6, 2000, compiled by the IT Corporation. Delineates the plan for the flyover survey of Fort McClellan to demonstrate that there was no residual contamination

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remaining.

(ML052710311) January 30, 2001 memorandum from the Department of Energy to the NRC. Contains information concerning flyover detector sensitivity.

(ML010740418) NRC Inspection Report No. 01-02861-05/01-01, dated March 9, 2001. Contains the results of a NRC confirmatory survey conducted February 20-22, 2001 of the following locations: Buildings 3182, 3185, T-810, T-811, T-812, T-837, and T-836 foundation as well as Rattlesnake Gulch and Iron Mountain. It concluded that the areas meet the criteria contained in 10 CFR 20.1401 for unrestricted release.

(ML020280187) Final Site-Specific Work Plan for the Groundwater Investigation at the Burial Mound at Rideout Field -Pelham Range, dated July 6, 2001, prepared by the IT Corporation. Delineates the plan for a groundwater investigation to demonstrate that the Burial Mound did not contaminate the groundwater in the area and discussed the use of 4 groundwater sampling wells.

(ML052710050) Radiological Historical Assessment, Main Post, Fort McClellan, Anniston Alabama, Final Report, dated December 2001, prepared by US Army Corps of Engineers. Identifies buildings and areas which may have been associated with the use, storage, handling, disposal or burial of radioactive materials at Fort McClellan based on review of records, interviews with personnel associated with Fort McClellan, and site visits by ACE personnel. It includes a summary of remediation work and surveys done to the date of the report.

Areas covered by the Main Post Assessment include: Alpha Field, Bromine Field, Bromine Tanks, Building T-810, Building T-811, Building T-812, Building 812 ½, Building T-836, Building T-837, Building 1081, Building 2281, Building 3180, Building 3181, Building 3185, Building 3182, Building 3192, Chemical School Radiological Burial Grounds, Field Hot Cell, Liquid Waste Disposal Pit, Original Rattlesnake Gulch Radiological Survey Area (Iron Mountain), Radioactive Waste Storage Yard, Radiological Survey Area #1, Range 25, Building 4416, Building 256, Building 257, Building 303A, Building 341, Building 345, Building 228, Building 335, Building 337, Building 338, Building 339, Building 350.

(ML052700341) Radiological Historical Assessment, Pelham Range, Fort McClellan, Anniston Alabama, Final Report, dated December 2001, prepared by US Army Corps of Engineers. Identifies radiological material use and burial at the Pelham Range based on review of records, interviews with personnel associated with Fort McClellan, and site visits by ACE personnel. Includes a summary of remediation work and surveys done to the date of the report.

Areas covered by the Pelham Range Assessment include: Lima Pond Area - Range L, Range K Area, Range I Area, Radiological Burial Area, Area 10A - Toxic Training Area, Area 10B - Toxic Training Area, Area 24A - South Half Rideout Field, Area 24C - North Half Rideout Field, and Area 9D - Training Area.

(ML020440004) NRC Inspection Report No. 01-02861-05/01-03 dated February 12, 2002. Documents a reactive inspection. Three violations were identified; the licensee exceeded its possession limit for cobalt 60, the licensee failed to secure licensed material (discrete sources

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removed from the burial mound) and the licensee failed to notify the NRC of these two occurrences.

(ML031490516) August 1, 2002 memorandum from the US Army Corps of Engineers (USACE) to NRC. Advising that the USACE will remediate LaGarde Park consistent with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and that the site is eligible for action under the Defense Environmental Restoration Program (DERP) since it is a formerly used defense site (FUDS).

(ML030290066) Final Radiological Status Report, Fort McClellan, Pelham Range "Burial Mound, dated October 2002, prepared by Allied Technology Group, Inc., sent by cover letter dated January 2, 2003. Contains a summary of the remediation work done and results of the final status survey of the Pelham Range burial mound. It recommended unrestricted release.

(ML030100109, ML023440250, ML030100136, ML030100109, ML030100114, ML030100102, ML030090499, ML030090511, ML030090526, ML030090540, ML030090545, ML030100071) Airborne Radiological Survey - Main Post and Pelham Range, Walkover Radiological Survey at Rideout Field and Anomaly Surveys on Main Post and Pelham Range, Groundwater Investigation - Burial Mound at Rideout Field, dated October 2002, performed for the Army Corps of Engineers. Concluded that there were no further radiological concerns at Fort McClellan with the exception of LaGarde Park.

(ML030100109) Draft Airborne Radiological Survey - Main Post and Pelham Range, Walkover Radiological Survey at Rideout Field and Anomaly Surveys on Main Post and Pelham Range, and Groundwater Investigation - Burial Mound at Rideout Field, dated October 31, 2002, prepared by the IT Corporation. Provides evidence that no additional radiological contamination remains at Pelham Range, with one exception - LaGarde Park in Anniston, Alabama.

(ML052720560) Federal Register, January 4, 2001, (66 FR 812-815), Notice of Intent To Amend Byproduct Materials License for the Former U.S. Army Chemical School Facilities in Fort McClellan, Alabama, Environmental Assessment, Finding Of No Significant Impact, and Opportunity for Hearing.

(ML052710179) Final Completion Report, Site Investigation at LaGarde Park, Anniston, Alabama, dated June 2003, prepared by STEP, Inc, for the Army Corps of Engineers. Describes the activities conducted during the site investigation and contains the results of surface surveys and soil and vegetable sample analysis. It contains recommendations for future activities.

(ML032380139) NRC Inspection Report No. 01-02861-05/03-01, dated August 25, 2003. Documents an NRC inspection and confirmatory survey done at the Pelham Range July 5-6, 2003. The inspection included an evaluation of the Airborne Radiological Survey - Main Post and Pelham Range, Walkover Radiological Survey at Rideout Field and Anomaly Surveys on Main Post and Pelham Range, and Groundwater Investigation - Burial Mound at Rideout Field, dated October 2002 and a summary of discussions with contractor and licensee personnel regarding these documents. The letter transmitting the report asks for clarification concerning the conduct of the flyover survey. The confirmatory surveys performed by the NRC were of the

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anomalies found during the flyover survey. NRC findings were consistent with those of the licensee. Contamination at the LaGarde Park was confirmed.

(ML052710136) Removal Action at LaGrange Park, Phase II memorandum dated October 13, 2003. Identifies additional work to be done by the Army Corps of Engineers at LaGrange Park.

(ML042100101) February 10, 2004, Shaw Group, Inc. (Previously IT Group) in response to NRC Inspection Report No. 01-02861-05/03-01. Contains clarification concerning the conduct and analysis of the flyover survey.

(ML041770403) NRC letter dated June 24, 2004, acknowledging the receipt of the Army's Airborne Survey Report. Contains an evaluation of the February 10, 2004 response and concludes the NRC's review of the Army's remediation of the burial mound at the Pelham Range, Rideout Field at Fort McClellan, Alabama. It states that the NRC has no further concerns regarding the radiological status of the burial mound.

(ML061940252) Final Report for Removal Action at LaGarde Park, dated May 2004, completed by STEP, Inc. for the USACE. Contains the details of the Comprehensive Environmental Response, Compensation, and Liability Act, Time Critical Removal Action to excavate and dispose of the contaminated soil and debris located at Lagarde Park. It details the initial removal action at the LaGarde Park site.

(ML061940256) Final Remedial Investigation Report, Expanded Site Investigation at LaGarde Park, Anniston, Alabama, dated April 2005 completed by STEP, Inc. for the USACE. 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.

(MI052840081) Draft Final Remedial Action Report, Final Interim Removal Action at LaGarde Park, Anniston, Alabama, dated August 2005, completed by STEP, Inc. for the USACE. Describes the activities conducted during the removal action and contains the results of the laboratory analysis of samples collected from the excavation. The DCGLs used were 2.3 pCi/g for Cobalt 60 and 9.2 pCi/g for cesium 137. The report concludes that all radioactive contaminated material had been removed from the site.

(ML061940267) Final Remedial Action Report, Final Interim Removal Action at LaGarde Park, Anniston, Alabama, dated November 4 2005, completed by STEP, Inc. for the USACE. Contains further details of the removal action and amplifies the details of the August 2005 report. It concludes that all radioactive contaminated material has been removed from the site and that no further remedial action is recommended. It recommends removal of the perimeter fence surrounding the remediated area.

(ML053480096) NRC Inspection Report No. 03017584/2005001 dated December 14, 2005. Contains the results of an NRC confirmatory survey performed at the site on September 27, 2005 and a review of STEP's remediation work and surveys done at the site. It supports the conclusion that LaGarde Park is acceptable for unrestricted release.



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(ML061940273) Proposed Plan for the LaGarde Park Site of the Former Fort McClellan Anniston, Alabama dated May 2006 completed by STEP, Inc. for the USACE. Contains the site history, current site conditions, actions taken to remove contaminated soils, and the rationale for the determination that no further remediation is required.

(ML061940269) Final Decision Document for the LaGarde Park Site of the former Fort McClellan, Anniston, Alabama, dated June 2006, completed by STEP, Inc. for the USACE contains a summary of the activities at the site and concludes that no further CERCLA remedial action is necessary for this site and that it can be released for unrestricted use.

(ML073100193) Federal Register, March 7, 2007, (72 FR 10262-64), Notice of Availability of Environmental Assessment and Finding of No Significant Impact for Licensing Amendment to Byproduct Materials License No. 01-02861-05, for Termination of the License and Unrestricted Release of the Department of the Army's Chemical School Facility in Fort McClellan, AL.