DEPARTMENT OF THE ARMY
US ARMY CHEMICAL MATERIALS AGENCY
ANNISTON CHEMICAL AGENT DISPOSAL FACILITY
3580 MORRISVILLE ROAD
ANNISTON, ALABAMA 36201

REPLY TO
ATTENTION OF:

AMSCM-SEA

03 June 2009

MEMORANDUM FOR RECORD

SUBJECT: Final Finding of No Significant Impact (FNSI) Explosive Destruction Technology (EDT)

PROPOSED INSTALLATION AND OPERATION OF AN EXPLOSIVE DESTRUCTION TECHNOLOGY AT THE ANNISTON ARMY DEPOT ANNISTON, ALABAMA FINDING OF NO SIGNIFCANT IMPACT

PROPOSED ACTION:
The remaining mission of the Anniston Chemical Agent Disposal Facility (ANCDF) located at the Anniston Army Depot (ANAD) is to safely dispose of the mustard-filled munitions and ton containers stockpiled at the ANAD. It is anticipated that the ANCDF may encounter deteriorated mustard-filled projectiles and mortars that will be armed, fused and not amenable to being processed at the ANCDF. An Environmental Assessment (EA) has been prepared to determine the best alternative to address the potential for deteriorated mustard-filled munitions. The proposed action is to implement an Explosive Destruction Technology (EDT) to facilitate safe and prompt destruction of deteriorated munitions that may be encountered during mustard munition processing at the ANCDF that cannot be disassembled.

The primary difference between an EDT and the existing three incinerators already operating at the ANCDF is the ability to process explosively configured munitions that are not suitable for disassembly (separation of the explosives, agent, and munitions bodies to the existing three incinerator systems). The proposed location is near Building 695, located in the north central part of ANAD. Once all the chemical agent munitions stored at ANAD are processed, the EDT could also be used for destruction of conventional munitions as a companion to ANAD's current Open Burning/Open Detonation (OB/OD) operations.

REASON FOR USING AN ENVIRONMENTAL ASSESSMENT
The Army's implementing National Environmental Policy Act (NEPA) regulations, 32 CFR 651, requires an EA be prepared whenever a project involves the construction and operation of a major new fixed facility. Disposal of the ANAD stockpile chemical munitions was addressed in previous Environmental Impact Statement (EIS) documentation as described below.

SUMMARY OF NEPA DOCUMENTATION

In 1991, the US Army published a site-specific Final Environmental Impact Statement (FEIS) assessing the destruction of lethal unitary chemical agent and munitions stored at the ANAD and concluded that on-site incineration was the preferred alternative. In 2003 and again in 2007, the Army prepared the ANCDF Review and Evaluation of Information for updating the 1991 FEIS. These documents evaluated all relevant, available new information to determine whether or not the 1991 FEIS needed to be supplemented. Determinations were made, both times, that supplementation of the FEIS was not required.

This EA has been prepared by the Army in compliance with NEPA and Army 32 CFR Part 651 to determine if significant impacts to the environment are likely to result from the implementation and operation of an EDT at ANAD. The generic environmental impact of operating an EDT was evaluated in the Transportable Treatment Systems for Non-Stockpile Chemical Warfare Material Programmatic FEIS (PFEIS) in 2001.

SUMMARY OF ENVIRONMENTAL PERMITS

The ANAD was issued a Resource Conservation and Recovery Act (RCRA) operating permit and the necessary Clean Air Act (CAA) Air Permits in June 1997 to operate the ANCDF. Operation of the ANCDF began in August 2003. Revisions and modifications have been made to both the RCRA and CAA permits since their initial approval in 1997. The RCRA permit was reissued in 2007 and revisions are still ongoing as required by applicable regulations. Both CAA and RCRA Permit applications will be prepared for the proposed action and issuance of the permits will be required prior to beginning construction of an EDT.

DETERMINATION

Disposal of mustard-filled munitions has been addressed in previous environmental reviews. The 1991 FEIS concluded that the ANAD stockpile of chemical munitions can be destroyed in a safe and environmentally acceptable manner and that the preferred alternative was onsite disposal. This was supported in 2003 and 2007 in the EIS updates. Prior to beginning disposal operations, the ANAD stockpile consisted of 661,529 individual munitions containing over 4.5 million pounds of agent. The EDT would dispose of munitions that are part of the ANAD stockpile but not suitable for disassembly at the ANCDF. The number of potential munitions that would be disposed of will be minimal compared to the remaining stockpile that will be processed at the ANCDF. In comparison to the impacts previously assessed, the proposed action would create no new environmental impacts.

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The continued use of the EDT after completion of the chemical agent disposal mission as a companion to OB/OD operations will enhance ANADs ability to dispose of some conventional munitions due to the EDT's pollution abatement equipment.

I have determined that in accordance with the Army's implementing NEPA regulations and in consideration of the EA prepared by subject-matter experts that no significant impacts would result from the proposed action. There is no significant increase of impact to the environment when compared to the current mission of the ANCDF. There is also no significant increase of impact to the environment for future use of an EDT for disposal of conventional munitions. The use of other alternatives and the no-action alternative were considered and determined to be unacceptable.

TIMOTHY K. GARRETT
ANCDF Site Project Manager

Enclosure

Copies Furnished: (w/o enclosure)
AMSCM-RDE/Mr. Matt Hurlburt
AMSTA-IN/S. B. Keller, Colonel, LG, Commanding
ANCDF FO SAIC/Ms. Susan Ankrom (w/enclosure)
Westinghouse Anniston/Mr. Brian Brasher (w/enclosure)
ANAD, AMSTA-AN-RM/Mr. Bruce Williams (w/enclosure)
CMA, AMSCM-RDE/Ms. Penny Robitaille, CMA (w/enclosure)
ANAD, AMSCM-AN-L/Ms. Mickey Starling
ANAD, AMSCM-AN-RK/Mr. Jacob Craft
Westinghouse Anniston/Mr. John LeVea (w/enclosure)

Proposed Installation and Operation of an Explosive Destruction Technology at the Anniston Army Depot, Anniston, Alabama

April 2009

Anniston Chemical Agent Disposal Facility Field Office
Chemical Materials Agency

Executive Summary

The remaining mission of the Anniston Chemical Agent Disposal Facility (ANCDF) located at the Anniston Army Depot (ANAD) is to safely dispose of the mustard-filled munitions and ton containers stockpiled at the ANAD. It is anticipated that the ANCDF may encounter deteriorated mustard-filled projectiles and mortars that will be armed, fused and not amenable to being processed at the ANCDF. This Environmental Assessment (EA) has been prepared to determine the best alternative to address the potential for deteriorated mustard-filled munitions. The proposed action is to implement an Explosive Destruction Technology (EDT) to facilitate safe and prompt destruction of deteriorated munitions that may be encountered during mustard munition processing at the ANCDF that cannot be disassembled.

The primary difference between an EDT and the existing three incinerators already operating at the ANCDF is the ability to process explosively configured munitions that are not suitable for disassembly (separation of the explosives, agent, and munitions bodies to the existing three incinerator systems). The proposed location is near Building 695, located in the north central part of ANAD. Once all the chemical agent munitions stored at ANAD are processed the EDT could also be used for destruction of conventional munitions as a companion to ANAD's current Open Burning/Open Detonation (OB/OD) operations.

There are two basic types of EDTs that could be used. The first is a system that uses donor charges to destroy the munition and the associated agent, such as the Controlled Detonation Chamber (CDC), the Detonation of Ammunition in Vacuum Integrated Chamber (DAVINCH) and the Explosive Destruction System (EDS). The second type uses indirect heat to raise the munition to above auto-ignition temperature to destroy the munition and the agent, such as the Static Detonation Chamber (SDC). EDTs can be a transportable unit or a fixed system constructed at the ANAD. Either type of system could be used for the intended purpose at the ANAD and each type has advantages and disadvantages.

The information and analyses presented in this EA indicate that no significant impacts would result from the proposed action. There is no significant increase of impact to the environment when compared to the current mission of the ANCDF. There is also no significant increase of impact to the environment the future use of an EDT for disposal of conventional munitions. The use of other alternatives and the no-action alternative were considered and determined to be unacceptable.

LIST OF ACRONYMS

ADMC - Anniston Defense Munitions Center
ADEM - Alabama Department of Environmental Management
ANAD - Anniston Army Depot
ANCDF - Anniston Chemical Agent Disposal Facility
AR - Army Regulation
BACT - Best Available Control Technology
CAA - Clean Air Act
CDC - Controlled Detonation Chamber
CMA - Chemical Materials Agency
DAVINCH - Detonation of Ammunition in Vacuum Integrated Chamber
DDESB - Department of Defense Explosive Safety Board
DFS - Deactivation Furnace System
DOD - Department of Defense
DoDAC - DoD Ammunition Code
DRE - Destruction Removal Efficiency
EA - Environmental Assessment
EDS - Explosive Destruction System
EDT - Explosive Destruction Technology
FEIS – Final Environmental Impact Statement
FNSI - Finding of No Significant Impact
HD - blister agent distilled mustard, Bis(2-chloroethyl)sulfide ($C_2H_8Cl_2S$)
HT - 60 wt% blister agent-distilled mustard and 40 wt% agent T [Bis[2(2-chloroehtylthio)ethyl]ether]
HVAC – Heating, Ventilation and Air Conditioning
LIC - Liquid Incinerator
LPMD - Linear Projectile Mortar Disassembly
MDM - multipurpose demilitarization machines
MPF - Metal Parts Furnace
NEPA - National Environmental Policy Act
NEW - Net Explosive Weight
OB/OD - Open Burning/Open Detonation
OPCW - Organization for the Prohibition of Chemical Weapons
PAS - Pollution Abatement System
PCBs - Polychlorinated Biphenyls
PFEIS – Programmatic Final Environmental Impact Statement
PMD - Projectile Mortar Disassembly
PPE – Personal Protective Equipment
RCRA - Resource Conservation and Recovery Act
SCC - Secondary Combustion Chamber
SDC - Static Detonation Chamber
SEL - Source Emission Limit
STEL - Short Term Exposure Limit
TOCDF - Tooele Chemical Disposal Facility
TSCA - Toxic Substance Control Act
TSDF - Treatment Storage and Disposal Facility

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Environmental Assessment Organization

This EA evaluates the environmental effects of the Army's proposed action: Installation and operation of an EDT at ANAD for the purpose of prompt and safe destruction of armed and fused mustard-filled munitions that cannot be safely destroyed at the ANCDFand for future destruction of conventional non-chemical munitions. This EA will provide information used in making the decision regarding the proposed action and other alternatives considered.

SECTION 1 PURPOSE AND NEED - This section summarizes the purpose of and the need for the proposed action and provides relevant background information.

SECTION 2 THE PROPOSED ACTION AND ALTERNATIVES CONSIDERED – This section describes the proposed action, the other alternatives considered and the no-action alternative.

SECTION 3 EXISTING ENVIRONMENT AND POTENTIAL ENVIRONMENTAL CONSEQUENCES - This section describes the existing environmental resources that could be affected by the proposed action, identifies potential environmental impacts of implementing the proposed action versus the no-action alternative.

SECTION 4 CONCLUSIONS – This section summarizes the significance of specific and cumulative impacts for the proposed action, of the alternatives and of the no-action alternative, and makes a recommendation to proceed with a Finding of No Significant Impact (FNSI).

SECTION 5 REFERENCES – This section provides bibliographic information for sources used in the preparation of this EA.

1.0 INTRODUCTION

1.1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

Under Title 14, Part B Section 1412 of Public Law 99-145 and in compliance with the Chemical Weapons Convention (Senate Resolution 75, 105th Congress), the US Army Chemical Materials Agency (CMA) has the responsibility for destroying the U.S. national defense stockpile of lethal unitary chemical agents and munitions. The Army is currently destroying chemical munitions at the ANCDF, located at the ANAD, in Anniston, Alabama. (See Figure 1) In August 2003, the destruction of the ANAD inventory began in a specifically constructed facility at the ANCDF. The destruction of GB and VX-filled munitions that were stored at ANAD has been completed and the disposal of the mustard-filled munitions is scheduled to begin in June 2009. These mustard-filled projectiles and mortars will be processed at the ANCDF using reverse disassembly. Chemical agent drained from the munitions will be processed in the Liquid Incinerator (LIC), the explosive material will be disposed of in the Deactivation Furnace System (DFS) and the munitions bodies will be processed in the Metal Parts Furnace (MPF). During the destruction of mustard munitions at a similar chemical agent disposal facility (the Tooele Chemical Disposal Facility (TOCDF), located in Utah) there have been munitions found that were deteriorated to a point where they could not be safely processed using reverse disassembly. In anticipation that similar munitions will be found at the ANCDF, this EA has been prepared to determine the best alternative to deal with these deteriorated mustard-filled munitions that are armed, fused and unsafe to process at the ANCDF. The Army currently disposes of conventional non-chemical agent munitions at the ANAD OB/OD Areas. The alternative selected could also have a future use as a companion to the ANAD OB/OD operations for the disposal of some of the conventional munitions.

The Army is required to destroy the entire stockpile of chemical munitions stored at ANAD for several reasons:

- To protect human health and safety and the environment
- To comply with the Organization for the Prohibition of Chemical Weapons (OPCW) Convention
- To execute the requirements of the U.S. Congress and Public Law

The proposed Army action is to make available safe and cost-effective methods to dispose of the mustard-filled chemical stockpile munitions currently stored at ANAD that cannot be reasonably processed at the ANCDF due to deterioration.

1.2 BACKGROUND

1.2.1 NEPA DOCUMENTATION

In 1991, the US Army published a site-specific Final Environmental Impact Statement (FEIS) assessing the destruction of lethal unitary chemical agent and munitions stored at the ANAD and concluded that on-site incineration was the preferred alternative. In 2003 and again in 2007, the Army prepared the ANCDF Review and Evaluation of Information for updating the 1991 FEIS.

This document evaluated all relevant, available new information to determine whether or not the 1991 FEIS needed to be supplemented. Supplementation of the EIS was not required at that time.

This EA has been prepared by the Army in compliance with National Environmental Policy Act (NEPA) and the Army's implementing regulations (32 C.F.R Part 651) to determine if significant impacts to the environment are likely to result from the implementation and operation of an EDT at ANAD. The generic environmental impact of operating an EDT for the destruction of non-stockpile chemical warfare materials has been evaluated in a Programmatic FEIS (PFEIS) in 2001. The system described in the 2001 PFEIS is a transportable system that uses a donor charge to detonate the munitions, followed by the use of a decontamination liquid to neutralize the agent. A transportable system was proposed for the non-stockpile munitions because of the potential large number of sites and the small numbers of munitions that could potentially be at each site. A fixed facility at ANAD is more feasible due to the larger potential number of munitions and the potential future use of the facility for destruction of some conventional munitions stored at the ANAD.

1.2.2 ENVIRONMENTAL PERMITS

The ANAD was issued a Resource Conservation and Recovery Act (RCRA) operating permit and the necessary Clean Air Act (CAA) air permits in June 1997 to operate the ANCDF. A Toxic Substance Control Act (TSCA) permit was also issued because of Polychlorinated Biphenyls (PCBs) contained in the shipping and firing tubes of GB and VX agent-filled M-55 rockets. All of the rockets have been destroyed and ANCDF has successfully completed TSCA closure. Revisions and modifications have been made to both the RCRA and CAA permits since their initial approval in 1997. The RCRA permit was reissued in 2007 and revisions are still ongoing. Construction of the ANCDF began in June 1997 and was completed in June 2001. Operation of the ANCDF began in August 2003. The LIC, MPF and DFS surrogate and GB and VX nerve agent trial burns reports have been approved by the Alabama Department of Environmental Management (ADEM). Mustard agent trial burn plans are currently under review by ADEM but are expected to be approved in May 2009.

ANAD and the Anniston Defense Munitions Center (ADMC) currently operate the OB/OD Areas for conventional non-chemical munitions under interim status permit. A RCRA permit application is currently being considered by ADEM and is expected to be approved in 2009.

Both CAA and RCRA permit applications will be prepared for the proposed action and issuance of the permits will be required prior to beginning construction of an EDT.

Approval from the Department of Defense Explosive Safety Board (DDESB) will be required.

1.3. MUNITIONS

1.3.1 MUSTARD-FILLED MUNITIONS STORED AT ANAD

The chemical munitions currently stored at ANAD consist of HT-filled 4.2 inch Mortars (M2), HD-filled 4.2-inch Mortars (M2A1), HD-filled 105-mm Projectiles (M60), HD-filled

155-mm Projectiles (M110). ANAD also stores HD-filled ton containers which will not be considered for disposal in the proposed EDT. The mortars and projectiles contain explosive materials. Table 1 is a description of chemical agent munitions that may be disposed of in an EDT. Figures 2-4 include a graphic depiction of these munitions.

1.3.2. CONVENTIONAL MUNITIONS CURRENTLY BEING DISPOSED AT THE ANAD OB/OD AREAS

An EDT could also be utilized to destroy conventional munitions and components and could be used to supplement disposal operations at the ANAD OB/OD Areas. Table 2, though not all inclusive, is a listing of items identified as possible candidates for disposal in an EDT. The safe net explosive weight limit of the particular EDT chosen would never be exceeded if the system is used for disposal of conventional munitions and components.

2.0 PROPOSED ACTION AND ALTERNATIVES

The Proposed Action is described in Section 2.1. The No Action Alternative is discussed in Section 2.2. Alternatives to the Proposed Action are discussed in Section 2.3. The Army has determined that these other alternatives considered would not meet the mission requirements or could not be feasibly implemented at this time. Section 2.4 describes continued use of the EDT as a companion to the ANAD OB/OD for the disposal of some conventional munitions at the completion of the chemical agent disposal mission.

2.1 PROPOSED ACTION: To Install and Operate an EDT at ANAD.

In the near future, the Army will begin processing mustard-filled munitions. Based on the number of deteriorated munitions found at TOCDF coupled with information from the ANCDF stockpile surveillance program, it is estimated that there will be approximately 2,500 to 5,000 munitions found that cannot be disassembled and processed using existing equipment at the ANCDF. The proposed action is to implement an EDT to facilitate safe and prompt destruction of deteriorated munitions that may be encountered during mustard munition processing at the ANCDF that cannot be disassembled. The implementation of an EDT at ANAD is intended to meet the need for a mechanism for prompt destruction of the deteriorated mustard munitions that are armed, fused or otherwise unsafe. An EDT could also be used after completion of the destruction of the ANAD mustard stockpile for disposal of conventional munitions.

2.1.1 THE PROPOSED ACTION AND ASSOCIATED EQUIPMENT

This section describes the installation and operation of an EDT at ANAD. This section also describes the waste streams that would be produced during the use of an EDT. Section 2.3 discusses other alternatives considered by the Army.

The proposed action is to install and operate an EDT at ANAD. The primary difference between an EDT and the existing three incinerators already operating at ANAD's ANCDF is the ability to process explosively configured munitions that are not suitable for disassembly (separation of the

explosives, agent, and munitions bodies to the existing three incinerator systems). The proposed location is near ANAD Building 695, located in the north central part of ANAD.

There are two basic types of EDTs that could be used. The first is a system that uses donor charges to destroy the munition and the associated agent, such as the Controlled Detonation Chamber (CDC), the Detonation of Ammunition in Vacuum Integrated Chamber (DAVINCH) and the Explosive Destruction System (EDS). The second type uses indirect heat to raise the munition to above auto-ignition temperature to destroy the munition and the agent, such as the Static Detonation Chamber (SDC). These types of units are described below. EDTs can be a transportable unit or a fixed system constructed at the ANAD. Either type of system could be used for the intended purpose at the ANAD and each type has advantages and disadvantages.

Both CAA and RCRA permit applications will be prepared for the proposed action and issuance of the permits will be required prior to beginning construction of an EDT. Regardless of the type of system selected, an EDT will be required to achieve a destruction and removal efficiency of 99.9999% for mustard agent. These permits will also contain emissions limits for other hazardous constituents.

2.1.1. EDTs That Use a Donor Charge

2.1.1.1 Controlled Detonation Chamber (CDC)

The CDC is a cold detonation chamber technology that employs donor charges in the form of sheet explosives which are manually prepared and applied by operators. The munition is placed into the detonation chamber using a jib crane. The CDC is configured with a manual firing system with positive feedback continuity checks, confirming the system is ready for detonation. Additional oxygen is added to the chamber just prior to the detonation to aid in the destruction process. An expansion chamber downstream of the detonation chamber is designed to control the sudden increase in pressure from the detonation. The system is designed with two flow control valves between the expansion tank and the off-gas system. These valves can be closed which allows for detonation gases to be held in the expansion tank and tested. The off gas treatment system removes particulates, organics and metals. The system achieves a Destruction Removal Efficiency (DRE) of > 99.9999% for mustard.

The CDC is considered a mobile unit and has DDESB approval for the destruction of munitions containing high-explosive, smoke, riot control agents, incendiary fills, and propellants.

Figure 5 is a diagram of the CDC unit that includes identification of all critical subsystems. This system is housed in a structure with a redundant filtration system to provide secondary vapor containment.

The CDC has been extensively tested and evaluated by the Department of Defense (DOD) organizations with an ongoing chemical demilitarization mission. There is considerable documentation available that is related not only to the viability of the system, but also to the safety of the system.

2.1.1.2 Detonation of Ammunition in Vacuum Integrated Chamber (DAVINCH)

The DAVINCH is a cold detonation chamber. Munitions placed in the DAVINCH vessel are detonated in a near vacuum using a donor explosive charge to open the munitions and access the chemical agent. The agent is destroyed as a result of the high temperature and pressure generated by the shock wave, followed by high-speed cavitation and then a fireball. Figure 6 presents main components of the DAVINCH system. The main two structural elements of the DAVINCH unit are the outer chamber and the inner chamber. The outer chamber is designed as a pressure boundary to withstand detonation pressure. It is made of multiple-layered, cylindrical shell, steel structure. The multiple layers act as crack arrestors and do not permit cracks in the innermost layer to propagate into the outer layers, due to the discontinuity of the structure. The inner chamber is designed to resist the impulsive load and to protect the outer chamber from associated munition fragments. The inner chamber does eventually need to be replaced, but because this inner vessel is easily removed and examined, it also can be thought of as a "sacrificial barrier."

Munitions are loaded in the chamber via a moving deck with a robotic arm. The donor charge is detonated by remote control after a pre-detonation procedure which results in the destruction of the munitions. The detonation product gas is kept under negative pressure in the detonation chamber throughout the process, excluding the positive pressure which lasts approximately one minute after detonation. The negative pressure prevents unexpected leakage of any gases, even though no detectible agent is normally found in the off-gas after detonation. The detonation product gas is extracted by the vacuum pump through an off-gas pre-filter and sent to the off-gas treatment system. A predetermined amount of oxygen is mixed with the off-gas at the Cold-Plasma Oxidizer where hydrogen and carbon monoxide are oxidized.

The DAVINCH system incorporates a hold, test and release capability. The gas is monitored at the outlet of the oxidizer to ensure the gas contains no chemical agent and then passes through the off-gas retention tank where it is held and tested to confirm agent is below the Short Term Exposure Limit (STEL) before the gas is discharged. After the chemical agent level is confirmed, the gas is discharged by the off-gas blower through an activated carbon filter system. From operational experience and surrogate testing, residual chemical agents are non-detectable in detonation off-gases and are below the STEL. The DRE for the detonation product gas prior to any treatment has been determined to be >99.9999% on VX-simulant.

2.1.1.3 The Explosive Destruction System (EDS)

The primary component of the EDS is a stainless steel vessel. The system is operated by placing the munition in the containment vessel with explosive charges attached. Detonation of the charge destroys the explosive component of the munition and opens its outer casing (munition body) to release the chemical fill under total containment (i.e. no release to the environment). Neutralizing reagents are then pumped into the sealed containment vessel to chemically react with the chemical fill and contaminated components of the munitions. After allowing the mixture of chemicals to react, a sample is drawn through the vessel door to verify that the fill has

been neutralized. After verification, the neutralent is drained into drums for shipment to a permitted, commercial Treatment Storage and Disposal Facility (TSDF). The pressure generated inside the vessel during the detonation and treatment is vented through a carbon filter, which removes any residual reagents and other chemicals from the air stream. Figure 7 shows the major components of the EDS. The EDS is typically a portable system.

2.1.2 Indirect Fired EDTs

2.1.2.1 The Static Detonation Chamber (SDC)

The indirect fired unit referred to as the Static Detonation Chamber (SDC) is equipped with a secondary combustion chamber (SCC) and pollution abatement system (PAS). The system is interlocked so it is never open to the outside during operations. The detonation chamber is heated above the auto-ignition temperature of all known explosives and propellants, ensuring complete destruction of both the explosive and agent components in one step without the need to dismantle unstable munitions. The flue gas from the chamber passes through the SCC to assure agent destruction. The munition bodies are held in the chamber a sufficient amount of time to assure that they are free from explosive and/or agent and are suitable for being disposed as scrap metal. No counter charges are required and munitions will need no preparation prior to disposal. The ability to eliminate the need for counter charges and to minimize the handling requirements for these unstable munitions provides significant safety enhancements to the workforce. The primary components of the SDC are indicated in Figure 8.

The PAS would be comprised of a quench tower, scrubber system, activated carbon and a baghouse prior to exhausting through the stack. This type system has successfully demonstrated a DRE greater than 99.9999% for mustard and has been used and is still in service at many international locations.

2.1.3 Installation of an EDT

Regardless of the type of EDT selected, the footprint will be less than five acres. Any system would be installed in accordance with manufacturer's recommendations and each component would be pre-assembled and tested prior to delivery. Electrical power for the site would be provided via the ANAD distribution system. Air monitoring would be housed in a shelter to protect workers and the equipment from the weather and to provide a suitable operating environment. Operations would be conducted from a command post equipped with the necessary computers, communications equipment and controls to enable operations and data collection functions.

2.1.4 Operation of an EDT

After preparation of the site and installation of an EDT, the system would undergo systemization and pre-operational verifications to ensure that the equipment, procedures, and crew are ready to begin destroying munitions safely should they be encountered. A Demonstration Test will likely be required by the State of Alabama to assure that emissions are within permitted limits.

As munitions are identified that cannot be reverse disassembled, they will either be brought directly to an EDT for disposal or returned to permitted storage, awaiting disposal at an EDT.

The EDT is expected to be in operation by 2010. Completion of the chemical agent disposal mission is expected to be completed before April 20, 2012. At the completion of the chemical munitions disposal mission the EDT will be closed in accordance with the ANCDF closure plan and ADEM requirements. At that time the EDT could be available for use by ANAD as a companion to OB/OD operations.

2.1.5 Waste Management

Regardless of the type of EDT chosen, all wastes will be disposed of in accordance with applicable solid and hazardous waste regulations and permit requirements. The munitions would be required to be treated to a chemical agent free level allowing the scrap metal and shell fragments to be sent to a smelter for recycling. Agent related secondary waste such as used carbon, Heating Ventilation and Air Condition (HVAC) filters, Personal Protective Equipment (PPE) and spent decontamination solution could be disposed of at the ANCDF in accordance with the ANCDF Waste Analysis Plan. Two of the EDTs discussed in this document would generate agent free liquid process waste that would be disposed of in accordance with solid and hazardous waste regulations.

2.1.6 Air Emissions

The system selected will be required to achieve DRE of 99.9999%. The EDT selected must be able to satisfy applicable state emission requirements. These requirements include control of agent emissions to <0.2 Source Emission Limit (SEL.) The system must incorporate Best Available Control Technology (BACT) to control emissions of agent, particulate matter, metals and organic compounds. The system must also comply with all RCRA requirements including requirement to not pose an unacceptable human health carcinogenic risk, considering cumulative affects from the ANCDF and ANAD/ADMC OB/OD operations.

2.2 THE NO ACTION ALTERNATIVE: Continued Storage of the Deteriorated Mustard Munitions at ANAD

The no-action alternative would be to not place an EDT at the ANAD and to continue to store the munitions that could not be processed at the ANCDF at the ANAD. The site modification required to support an EDT would not be performed. If munitions were encountered that could not be safely processed at the ANCDF, they would be returned to storage and the risk of unintended explosion and release of agent would continue. Under this alternative, the unsafe munitions would continue to be monitored for leaks and other signs of deterioration. If leaks were detected during routine monitoring and inspection, the leaking munition would be repackaged to contain the leak and allow continued storage. Continued maintenance, surveillance, and monitoring activities would consume financial and manpower resources for as long as the unstable munition remained in storage. While these munitions remain in storage, the

igloos cannot be used for other purposes. Additionally, continued storage of chemical munitions would not allow the Army to meet United States treaty obligations under the Chemical Weapons Convention. For the reasons state above this alternative was not further evaluated or preferred.

2.3 ALTERNATIVES TO THE PROPOSED ACTION

2.3.1 MANUAL DISASSESSMBLY AND PROCESSING AT THE ANCDF

The ANCDF uses reverse disassembly to break down chemical munitions prior to disposal in three separate incinerator systems. The explosive components are removed using a projectile/mortar disassembly machine (PMD) in an explosive containment room. Explosive components may also be removed by Linear PMD, located at ANAD building 695. Agent is drained from the munitions using the multipurpose demilitarization machines (MDM). The PMD and MDM are remotely operated from a central control room. The explosive components are removed from the munitions and fed to the DFS, which is a rotary kiln designed to deactivate energetics. The liquid chemical agent is drained from the munition and fed to the LIC designed to destroy liquid chemical agents. The munition body containing residual chemical agent is fed to the MPF to thermally decontaminate, producing scrap metal. None of the three existing furnaces are designed to process an intact, explosively configured mustard-filled munition.

Manual disassembly of the deteriorated munitions was considered. Though ANCDF employees routinely perform maintenance of equipment contaminated with chemical agent while wearing protective equipment to prevent agent exposure, manual disassembly is considered dangerous for the ANCDF workforce due to the explosive components of the munition. Thus, this alternative was not further evaluated or preferred.

2.3.2 OFFSITE DISPOSAL ALTERNATIVE

Commercial facilities are available that can dispose of explosive materials, but there are none that are also permitted to dispose of military chemical agents. The movement of mustard-filled munitions to an EDT at another location would be an option, but public law currently restricts the movement of stockpile chemical munitions. Due to these restrictions this alternative was not further evaluated or preferred.

2.3.3 OPEN BURNING/OPEN DETONATION OF MUSTARD MUNITIONS

Conventional munitions are often destroyed using open burning or open detonation. This practice is not considered appropriate for chemical munitions due to the potential release of chemical agent into the environment. In addition, open detonation of chemical munitions is not permitted by ADEM.

2.4 CONTINUED USE OF THE EDT FOR DISPOSAL OF CONVENTIONAL MUNITIONS

2.4.1 PROCESS AT THE ANAD OB/OD AREAS

The waste management activities conducted at the ANAD OB/OD Areas is thermal treatment of conventional waste military munitions and related energetic wastes. OB operations are completed within burn pans. OD operation is typically accomplished below ground with a small fraction of surface detonations. The OB/OD Areas currently operate under RCRA Interim Status. Permitting activities are ongoing and a RCRA permit is expected prior to the end of Calendar Year 2009. A health risk assessment required by RCRA indicates the OB/OD operations do not pose an unacceptable risk to human health or the environment even when cumulatively added to emissions from the ANCDF. The EDT can be used as a companion to OB/OD operations once the chemical munitions disposal mission is completed and will be required to meet permitted emissions limits.

3.0 EXISTING ENVIRONMENT AND POTENTIAL ENVIRONMENTAL CONSEQUENCES

This section describes the existing environment that could be affected by the proposed action and the potential environmental impact that could occur as a result of the proposed action and the no-action alternative. Disposal of mustard-filled munitions has been addressed in previous environmental reviews (Section 1.2.1). The 1991 FEIS concluded that the ANAD stockpile of chemical munitions can be destroyed in a safe and environmentally acceptable manner and that the preferred alternative is onsite disposal. This was supported in 2003 and 2007 in the EIS updates. Prior to beginning disposal operations, the ANAD stockpile consisted of 661,529 individual munitions containing over 4.5 million pounds of agent. The EDT will dispose of less than one percent of the total munitions destroyed at the ANDCF. In comparison to the impacts previously assessed, the proposed action would create no new environmental impacts.

The continued use of the EDT after completion of the chemical agent disposal mission as a companion to OB/OD operations will enhance ANADs ability to dispose of some conventional muntions due to the EDT's pollution abatement equipment.

3.1 LAND USE

3.1.1 Affected Environment

ANAD is located in Calhoun County, Alabama, approximately 10 miles west of the city of Anniston. The installation covers an area of approximately 15,246 acres and is a government owned, government operated installation which also has government contractor as tenants. The ANCDF is a government owned contractor operated tenant organization of the ANAD and is located in the north central portion of ANAD. The proposed EDT will be located near ANAD Building 695 (The Reconfiguration Building), just south of the ANCDF. Figure 9 shows the location of the ANAD relative to the City of Anniston. The ANCDF, the ANAD Reconfiguration Building and the ANAD OB/OD Areas are indicated on Figure 1.

3.1.2 Impacts of the Proposed Action Alternative

The site is currently cleared, leveled and covered with gravel and ready for industrial use. Excavation for installation of utilities would be minimal. The implementation of an EDT at this location will have no significant land use impacts.

3.1.3 Impacts of the No-action Alternative

Under the no-action alternative, the site would remain ready for industrial use.

The ANAD currently disposes of conventional munitions using OB/OD Areas, therefore there would be no additional impact to land use if the conventional munitions are disposed of in an EDT.

3.2 AIR QUALITY

3.2.1 Impacts of the Proposed Action Alternative

Air emissions from site preparation is anticipated to be minimal because the area is already an industrial site and the land disturbance is anticipated to be minimal. There should be negligible generation of dust from equipment installation activities. The emissions from vehicles would be incidental, short-term and small.

Regardless of the EDT selected, emissions from processing the mustard-filled munitions will be required to meet both CAA and RCRA permit limits. A risk assessment will be conducted to verify that cumulative effects from operation of the EDT, the ANAD OB/OD Operations and the ANCDF will not pose an unacceptable risk to human health or the environment.

Emissions from vehicles transporting munitions to an EDT are expected to be incidental and small.

3.2.2 Impacts of the No-action Alternative

During continued storage of mustard-filled munitions it would be expected that munitions may occasionally leak, just as they occasionally leak during current storage activities. Leaks would be contained and carbon ventilation system added to the storage igloo to prevent agent migration to the atmosphere, so there would be no additional air quality impacts expected.

The future use of an EDT for disposal of some conventional munitions could have positive impact on emissions.

3.3 WATER RESOURCES

3.3.1 Impacts of the Proposed Action Alternative

Regardless of the EDT selected, use of ANAD groundwater will not occur. All water used will be from municipal source that currently supplies the ANCDF and ANAD. Municipal water supply available is expected to be adequate for operation of any of the EDTs selected. Use of groundwater is not allowed on ANAD per the Installation Land Use Control. Therefore there will be no impact to groundwater. Regardless of the type of EDT selected, sanitary wastewater from restrooms, etc. will be produced and will be disposed of via the ANAD sewage treatment plant. The ANAD sewage treatment plant has adequate capacity to accommodate expected volume of sanitary wastewater. If the SDC is selected, water will be used for the operation of the PAS and PAS brine will be produced. The EDS will produce spent decontamination solution. Liquid wastes would be disposed of either offsite or at the ANCDF in accordance with applicable solid and hazardous waste regulations. Wastewater would not be discharged to the surface, so there will be a no impact to surface water.

3.3.2 Impacts of the No-action Alternative

Continued storage of mustard munitions is not expected to impact groundwater or surface water.

3.4 ECOLOGICAL RESOURCES

3.4.1 Impacts of the Proposed Alternative

The site for an EDT is already cleared for industrial usage so the site encompasses no habitat for endangered or threatened plants or animals. The closest threatened species is the Tennessee Yellow Eyed Grass located at the OB Area approximately 1.5 miles away. There are no wetlands or floodplains present in the immediate area. (Basinger, 2009) There will be no adverse effects on any wetlands, aquatic resources, or threatened and endangered species.

In 2004, a biological assessment for operations of the ANCDF was prepared and submitted to the US Fish and Wildlife Service for concurrence. In addition, an Integrated Natural Resource Management Plan for ANAD was prepared, coordinated with the US Fish and Wildlife Service and signed into effect on Jan 22, 2007. While nine threatened or endangered species may occur within six miles of the ANCDF, none of these species are located closer than approximately two miles from the ANCDF site itself. The 2004 biological assessment concluded that no adverse impacts are likely to occur to threatened or endangered species during the operational lifetime of the ANCDF. The U.S. Fish and Wildlife Service concurred with the Army's conclusions. Since an EDT will process such a small number of munitions that would have been processed at the ANCDF, and the proposed location is within 0.5 miles of the ANCDF, it is concluded that the disposal of these munitions in an EDT instead of the ANCDF would have a negligible effect on threatened or endangered species. Continued use of an EDT for conventional munitions would also have a negligible affect on threatened or endangered species.

3.4.2 Impacts of the No Action Alternative

Continued storage of mustard munitions will not affect ecological resources.

3.5 SOCIOECONOMIC RESOURCES

3.5.1 Impacts of the Proposed Action.

EDT staff will be less than 20 employees for an estimate of 2 years for disposal of the mustard munitions that cannot be processed at the ANCDF. This number is insignificant compared to the approximately 800 currently employed at the ANCDF. The use of an EDT for processing the mustard munitions would not contribute to significant impact of socioeconomic resources. If the unit is used for disposal of conventional munitions after completion of the mission to dispose of the mustard munitions, a staff of less than 20 would be employed and would also be considered minimal. Therefore, there would be no significant impact of socioeconomic resources for continued use of an EDT for conventional munition disposal.

3.5.2 Impacts of the No Action Alternative

When the last chemical agent munition stored at ANAD is destroyed, the workers who monitor and maintain the stockpile will no longer be needed. Continued storage would require a part of that workforce to be kept to maintain and monitor the remaining chemical munitions. Continued storage would also require that staff, equipment and procedures be maintained to respond to Chemical Agent Accidents and Incidents. An estimated 150 personnel would have to be retained until the mustard munition processing was completed (John Harsch, ANCA).

3.6 CULTURAL, ARCHAEOLOGICAL AND HISTORIC RESOURCES

3.6.1. Impacts of the Proposed Alternative

Because all activities associated with an EDT would occur within areas that are already considered an industrial site, there is no potential for the action to disturb or effect cultural, archaeological or historic resources. There are no archeological sites at ANAD. The Ammunition Limited Area where the unit will be located is considered an historic district, but a memorandum of understanding was issued by the State Historic Preservation Office that allows the facility to conduct mission required operations. (Brockington & Associates 2004)

3.6.2. Impacts of the No action Alternative

If the munitions are allowed to remain in storage, there will be no impact on cultural resources.

If an EDT is not used for the disposal of conventional munitions the munitions would continue to be disposed of at the ANAD OB/OD Areas. There would be no impact to cultural resources.

3.7 MINORITY AND LOW-INCOME POPULATIONS

3.7.1 Impacts of the Proposed Alternative

Environmental justice populations were considered in the decision to dispose of chemical munitions at the ANCDF. At that time low income and minority populations were not considered to be disproportionately impacted. The disposal of some mustard-filled munitions using an EDT instead of disposal at the ANCDF will still result in the disposal of chemical munitions at the ANCDF and should not change the impact to surrounding populations.

Continued use of an EDT for disposal of conventional munitions would not change the impact on low income and minority populations, because conventional munitions are already being disposed of in the ANAD OB/OD Areas.

3.7.2 Impacts of the No Action Alternative

It is unlikely that there would be any offpost impact from continued storage of mustard-filled munitions.

3.8 WASTE MANAGEMENT ISSUES

3.8.1. Impacts of the Proposed Alternative

The wastes produced by an EDT are similar in nature and quantity as those produced at the ANCDF. Wastes will be disposed of in accordance with the ANCDF Waste Analysis Plan and applicable solid waste and hazardous waste regulations.

Use of an EDT for disposal of conventional munitions would not significantly alter the waste produced during OB/OD Operations.

3.8.2. Impacts of the No Action Alternative

Continued storage of the mustard munitions would only defer production of the wastes produced from disposal. Waste associated with monitoring and maintenance of stored munitions will continue to be produced.

3.9 HUMAN HEALTH AND SAFETY

3.9.1. Impacts of the Proposed Alternative

Impacts of the installation of an EDT would be similar to those of any small-scale industrial construction project and would not be considered significant or unique.

If the mustard munitions could not be disassembled using equipment at the ANCDF, manual disassembly of the munitions would be required before processing at the ANCDF. Manual

disassembly could subject employees to dangers of explosion. Munitions could be fed without manual disassembly into an EDT, resulting in improved safety for the workforce. Though EDTs that use donor charges would require application of explosive material, this operation is considered safer than manual disassembly of agent-filled munitions. DDESB permits will be required for operation of an EDT.

There is no significant difference in the worker safety from disposal of conventional munitions in an EDT compared to OB/OD operations. Both require handling of the munitions and some EDTs require use of a donor charges.

3.9.2. Impacts of the No Action Alternative

Continued storage of mustard-filled munitions could result in personnel exposure to chemical agent in case of a leak. Munitions have been safely stored at ANAD since the 1960's, so the impact of continued storage of mustard-filled munitions to the workforce is considered to be relatively small.

4.0 CONCLUSIONS

The information and analyses presented in this EA indicate that no significant impacts would result from the proposed action as described in section 2.1. There is no significant increase of impact to the environment when compared to the current mission of the ANCDF.

The use of other alternatives as described in section 2.3 were considered unacceptable.

Evaluation of the no-action alternative, continuing to store the problematic mustard-filled munitions, could result in a significant impact. This alternative would prevent the Army from completing the destruction of stockpile chemical munitions stored at ANAD, resulting in missing an OPCW Convention deadline. It would also continue to represent an extremely minor general population risk and the risk to the storage workforce.

Based on the above consideration and the absence of significant adverse environmental impacts of the proposed action, the Army concludes that the most desirable course of action would be to install and operate an EDT at ANAD and use it to destroy any mustard-filled munitions that can not be safely disassembled and processed at the ANCDF as well as for conventional munitions that are currently disposed of at the ANAD OB/OD Areas. This action would not cause any significant impacts. A draft Finding of No Significant Impact (FNSI) indicating this conclusion will be prepared and published for public comment.

5.0 REFERENCES

May 1991, *Disposal of Chemical Agents and Munitions Stored at Anniston Army Depot, Anniston, Alabama, Final Environmental Impact Statement*, Program Manager for Chemical Demilitarization.

2003 and 2007, *Anniston Chemical Agent Disposal Facility (ANCDF) Review and Evaluation of Information for Updating the 1991 Final Environmental Impact Statement*

2001, *Final Programmatic Environmental Impact Statement, Transportable Treatment Systems for Non-stockpile Chemical Warfare Material.*

2004, Brockington and Associates, *Intensive Architectural Survey for Anniston Army Depot.*

March 30, 2009, Conversation with Chad Bassinger, ANAD Natural Resource Specialist.

March 3, 2009, Conversation with John Harsch, ANCA.

Jan 22, 2007, *Integrated Natural Resource Management Plan for ANAD*

Information on the various EDTs obtained from open sources.

Anniston Army Depot RCRA Permit, EPA ID# AL3 210 020 027, Date of Issuance: November 14, 2007 by the Alabama Department of Environmental Management, and Modified on March 24, 2008 and September 19, 2008.

TABLE 1: DESCRIPTION OF MUSTARD-FILLED CHEMICAL AGENT MUNITIONS

Munitions	Model/ Agent	Dimensions		Total Mass (lb)	Fill		Burster			Propellant		Fuze Model	Other Energetic Components
		Diameter	Length (in)		Agent	Mass (lb)	Model	Explosive	Mass (lb)	Model	Mass (lb)		
105-mm Cartridge	M60	105 mm	31.1	42.92	HD	2.97	M5	Tetrytol	0.3	M67	2.83	M557	M28A2/M28B2 Primer
		105 mm	31.1	42.92	HD	2.97	M5	Tetrytol	0.3	M67	2.83	M51A5	M22 Booster
4.2-inch cartridges/ mortars	M2	4.2 in.	21.0	24.67	HT	5.8	M14	Tetryl	0.14	M6	0.4	M8	M2 Primer
	M2A1	4.2 in.	21.0	24.67	HD	6.0	M14	Tetryl	0.14	M6	0.4	M8	M2 Primer
155-mm Projectile	M110	155 mm	26.8	94.59	HD	11.7	M6	Tetrytol	0.41	--	--	--	--

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TABLE 2: CONVENTIONAL MUNITIONS AND COMPONENTS IDENTIFIED AS POSSIBLE CANDIDATES TO BE TREATED IN AN EDT

DODAC	Nomenclature	Quantity on Hand	NEW per Item (lb)	Quantity-Distance
1315-C244	Ignition Cartridge	201,935	0.0240	1.4G
1315-C751	Burster, Proj M53/Mf3A1 f/105MM WP Ctg	1,089	0.2100	1.1D
1315-CX66	Initiator, Burster	33,740	0.015	(04)1.2D
1315-C245	Ctg, Ign M8 f/81MM	218,268	0.0176	1.4G
1315-C243	Ctg, Ign M6 f/81MM	676,154	0.0171	1.4G
1320-00-825-1469	Ejection Charge Assembly	7,635		1.1D
1325-F740	Fuze, Bomb Nose MK339 MOD 1	2	0.0006	1.4D
1325-F742	Fuze, Bomb, Nose FMU 107/B	5	0.0027	(04)1.2D
1325-F677	Fuze, Bomb, Nose & Tail AN-M173A1	274	0.0280	1.1B
1325-F829	Fuze, Bomb Nose M147A1	114	0.0027	1.4D
1325-F870	Fuze, Bomb Nose AN-M166	70	0.0885	1.1B
1325-F724	Fuze, Bomb Tail M990E4	45	0.2710	1.1B
1325-F723	Fuze, Bomb Tail M990E3	174	0.2710	1.1B
1325-G104	Fuze, Bomb Tail MD376 MOD 0	178	0.02722	1.1D
1325-376	Extension, Fuze Bomb, M1 Series	174	2.0	1.1D
1325-G210	Igniter, Bomb, MK273, MOD 0	214	0.858	1.3G
1325-F716	Fuze, Bomb Nose/Tail, M907E2	100	0.015	(04)1.2.2D
1325-F390	Adapter, Booster Bomb Tail M150	2,101	0.904	1.1D
1325-F835	Fuze	73	0.163	1.1D
1325-F382	Adapter Booster Bomb T46E3/E5	2,646	0.88	1.1D
1325-F744	Fuze, Proximity FMU56D/B	13,608	0.0008	1.4D
1325-F736	Fuze Bomb Nose MK374 MOD 1	30	0.032	(04)1.2.2D
1325-F738	Fuze Bomb Nose FMU81/B	23	0.0007	1.4D
1325-F504	Booster, Aux, Bomb	659	0.01	1.3C
1325-F372	Adapter, Booster T45E7	1,553	0.3900	1.4D
1325-F381	Adapter, Booster Bomb Tail T46E1	60	0.9040	1.1D
1325-G374	Axtension, Bomb Fuze	145	1.0	1.1D
1325-F553	charge, Spotting, MA-1	821	6	1.1D
1325-G216	Delay Element, Fuze Bomb, M9, 10 Sec Delay	8,921	0.0002	1.4S
1325-G212	Delay Element, Fuze Bomb, M9, Non Delay	4,357	0.0002	1.4S
1325-G213	Delay Element, Fuze Bomb, M9, 01 Sec Delay	2,918	0.0002	1.4S
1325-G217	Delay Element, Fuze Bomb, M9, 25 Sec Delay	20	0.0002	1.4S
1325-F841	Fuze, Bomb Tail, FMU-54 A/B	1	0.36	(04)1.2.2D
1325-F739	Fuze, Bomb, Nose, M904E4	52	0.1652	1.1D
1325-989	Fuze, Bomb, Tail, M905	2	0.015	(04)1.2.2D
1325-F835	Fuze, Bomb, Nose, M904E2/E3	73	0.165	1.1D
1325-F688	Fuze, Bomb, Nose/Tail, FMU26A/B	15	0.0007	1.4D
1325-F837	Fuze, Bomb, Tail, MK344, MOD 0	14	0.0400	1.1D
1325-F680	Fuze, Bomb, Nose, M904E2	10	0.1652	1.1D
1325-F681	Fuze, Bomb, Nose, M904E2	8	0.1652	1.1D
1325-F372	Adapter, Booster, T45E7	1,553	0.39	1.1D
1325-F382	Adapter, Booster, Bomb T46E3/E5	2,646	0.88	1.1D
1325-F716	Fuze, Bomb, Nose/Tail, M907E2	100	0.015	(04)1.2.2D
1325-F679	Fuze, Bomb, Tail M990E1	304	0.271	1.1D
1325-F387	Adapter, Booster Bomb M147	50	0.88	1.1D
1325-F845	Fuze, Bomb Side M918	525	0.0153	1.1B
1325-G109	Fuze, Bomb, Tail MK346	1,864	0.0007	1.4D
1325-F746	Fuze, Prox, FMU113/BW/O Booster	1	0.002	1.4S
1330-G877	Fuze, Hand Grenade M213	1,367	0.0032	1.4G

TABLE 2: CONVENTIONAL MUNITIONS AND COMPONENTS IDENTIFIED AS POSSIBLE CANDIDATES TO BE TREATED IN AN EDT

DODAC	Nomenclature	Quantity on Hand	NEW per Item (lb)	Quantity-Distance
1330-G874	Fuze, Hand Grenade M201A1	4,570	0.0032	1.4G
1330-G873	Fuze, Hand Grenade M10A3/M204	8,107	0.0071	1.1B
1336-V264	S&A, Guided Missile	54	0.2	1.4D
1336-V021	S&A, TOW	67,739	0.1	1.4D
1337-V837	Igniter Assembly	3	0.375	(04)1.2.2G
1340-H405	Igniter, Rocket Motor, MK 15666-0,1	8	0.2071	(04)1.2.2G
1340-H414	Igniter, Rocket Motor, MK 188-0	732	0.2115	(04)1.2.2G
1340-J329	Fuze, Rocket, nose, M414/MK93	175	0.0245	(04)1.2.2D
1340-J350	Fuze, Rocket, Proximity, M429	4,176	0.0198	1.4B
1340-J3496	Fuze, Rocket, PD, M423	544	0.0203	1.1B
1345-K002	Activator, M1 F/AT Mine, Practice, M12A1	40,512	0.0044	0.4S
1345-K050	Fuze, M603 F/AT Mine, M15	1,246	0.073	1.4D.1.4G
1345-K040	Charge, Spotting, F/Mine AP Practice M8	60	0.0608	1.4G
1345-K030	Primer-Igniter, Mine Fuze, M39 f/M10 mine	980	0.0021	1.4G
1345-K051	Fuze, M604 f/AT Practice Mine, M10A1, M12, M20	332	0.375	1.4G
1345-K058	Fuze, M605 Comb. F/M16 Mine	3,457	0.0028	1.4D
1345-K885	Fuze, Smoke Pot, M208, Mech	103	0.0793	1.4G
1345-K887	Fuze, Smoke Pot, M207A1, Mech	7,901	0.0015	1.4G
1375-00-987-4964	Impact Fuze Section	298	4.8	1.1D
1377-M647	Impulse Ctg.	8	0.0027	1.4C
1377-M517	Ctg, Impulse, MK47, MOD 0	23	0.0446	1.4C
1377-M185	Ctg, Jmpulse, MK8, MOD 0	77	0.0438	1.4C
1344-M548	Ctg, Impulse, MK127, MOD 0	83	0.0009	1.4C
1377-M282	Ctg, Delay, MK4, MOD 2	285	0.0003	1.4S
1377-M284	Ctg, Delay MK5, MOD 1	1,493	0.0003	1.4S
1377-M934	Ignition Element, Electric	257	0.0007	1.4S
1377-M943	Ctg, Impulse MK107, MOD 0	457	0.0569	1.4C
1377-M657	Ctg, Impulse	8	0.0038	1.4S
1377-M258	Initiator, Ctg, Actuated Delay 0.4 Sec	45	0.0021	1.4S
1377-M783	Ctg, Impulse	26	0.016	1.4C
1377-M363	Ctg, Impulse, MK124, MOD 0	886	0.0189	1.4C
1377-M571	Ctg, Impulse, Gas Generator	2,966	0.0773	1.4C
1377-M948	Ctg, Impulse	62	0.0013	1.4C
1377-MC54	Ctg, Impulse	21	1.0	1.4C
1377-M232	Ctg, A/C/Fire Extinguisher	12	0.0009	1.4S
1390-N411	Fuze, Proximity, M514	18,421	0.0559	(04)1.2.2D
1390-N477	Fuze, Proximity, M514	18,131	0.0554	(04)1.2.2D

DoDAC = DoD Ammunition Code

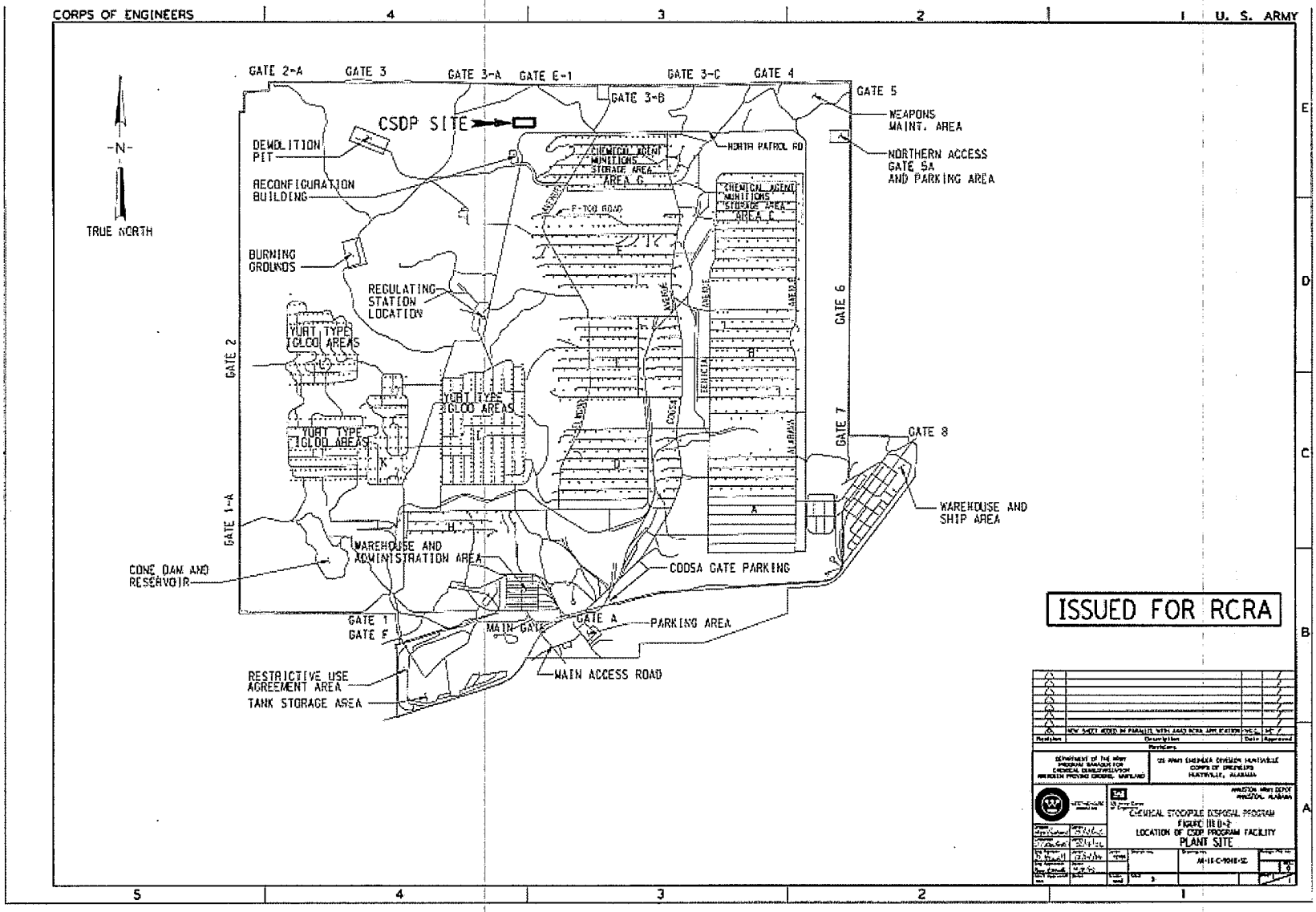

FIGURE 1: ANNISTON ARMY DEPOT

Note: The ANCDF is referred to as the CSDP Site in this figure.

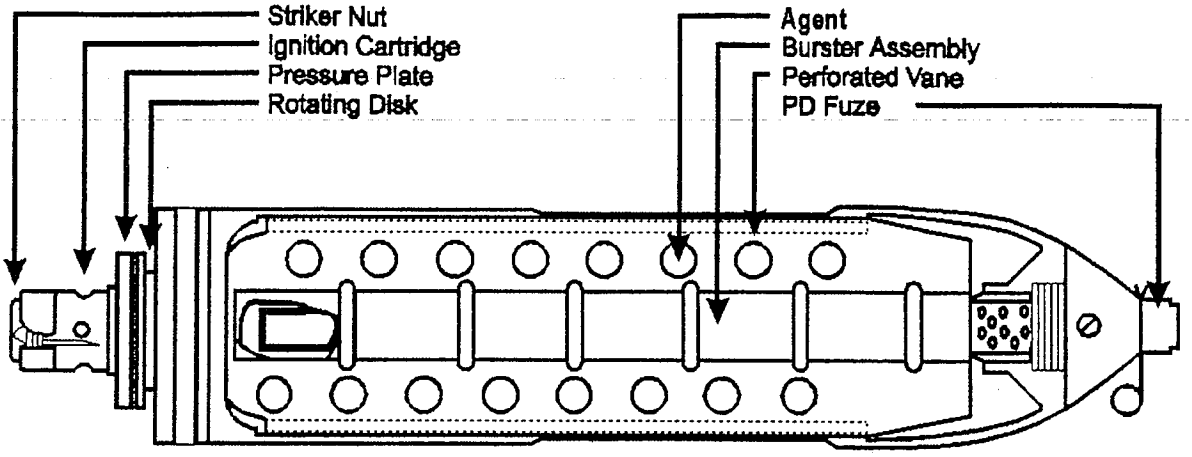

Figure 2: 4.2-inch Mortar

	M2A1	M2
Length	21 in	21 IN
Diameter	4.2 in	4.2 in
Total weight	25 lb	25 lb
Agent	HD	HT
Agent weight	6.0 lb	5.8 lb
Burster	M8	M8
Explosive	Tetryl	Tetryl
Explosive weight	0.14 lb	0.14 lb

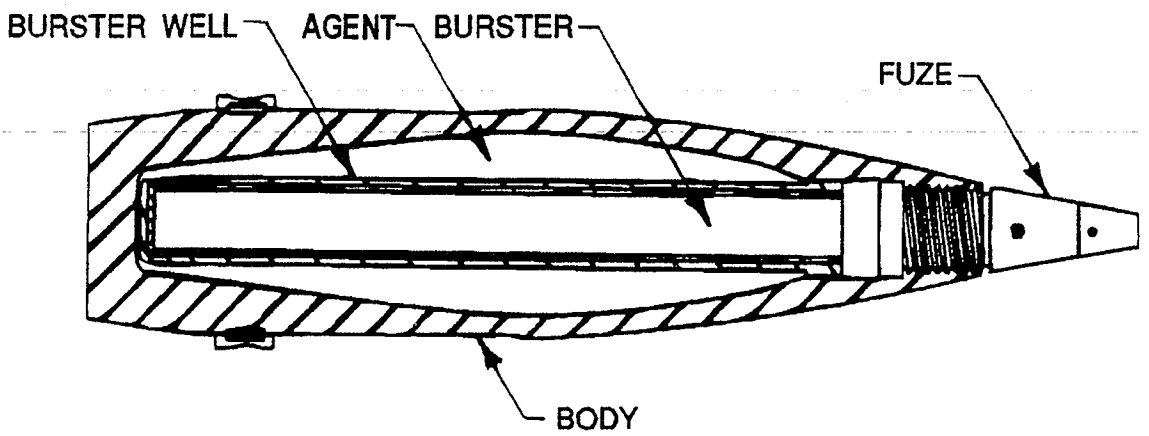

Figure 3: 105mm Projectile

	M60 Cartridge
Length	31.1 in
Diameter	105mm
Total weight	42.9 lb
Agent	HD
Agent weight	3.0 lb
Burster	M5
Explosive	Tetrytol
Explosive weight	0.26 lb

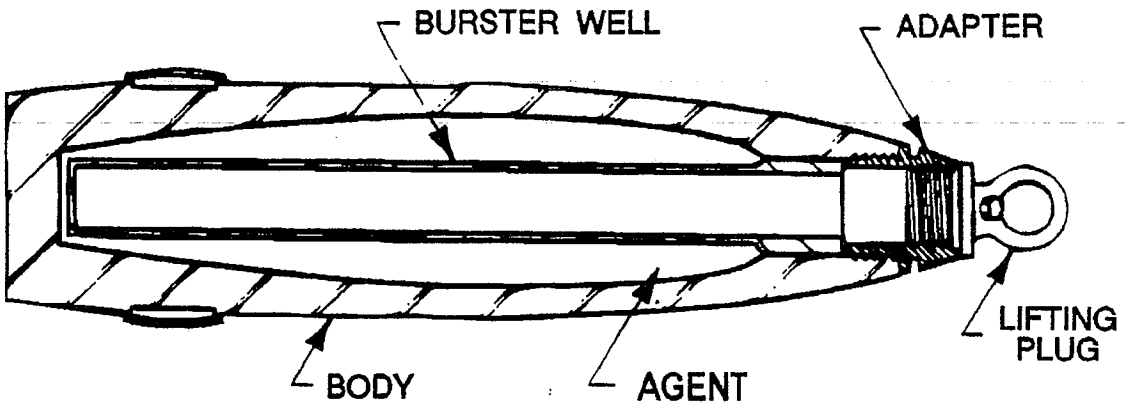

Figure 4: 155mm Projectile

	M110
Length	26.8 in
Diameter	155mm
Total weight	94.6 lb
Agent	HD
Agent weight	11.7 lb
Burster	M6
Explosive	Tetrytol
Explosive weight	0.41 lb

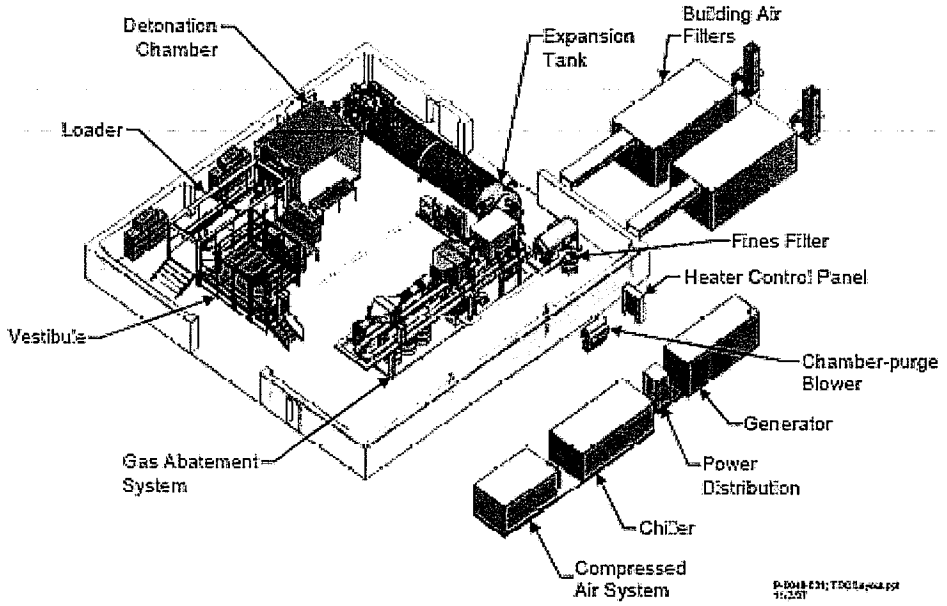

Figure 5: Diagram of the CDC unit

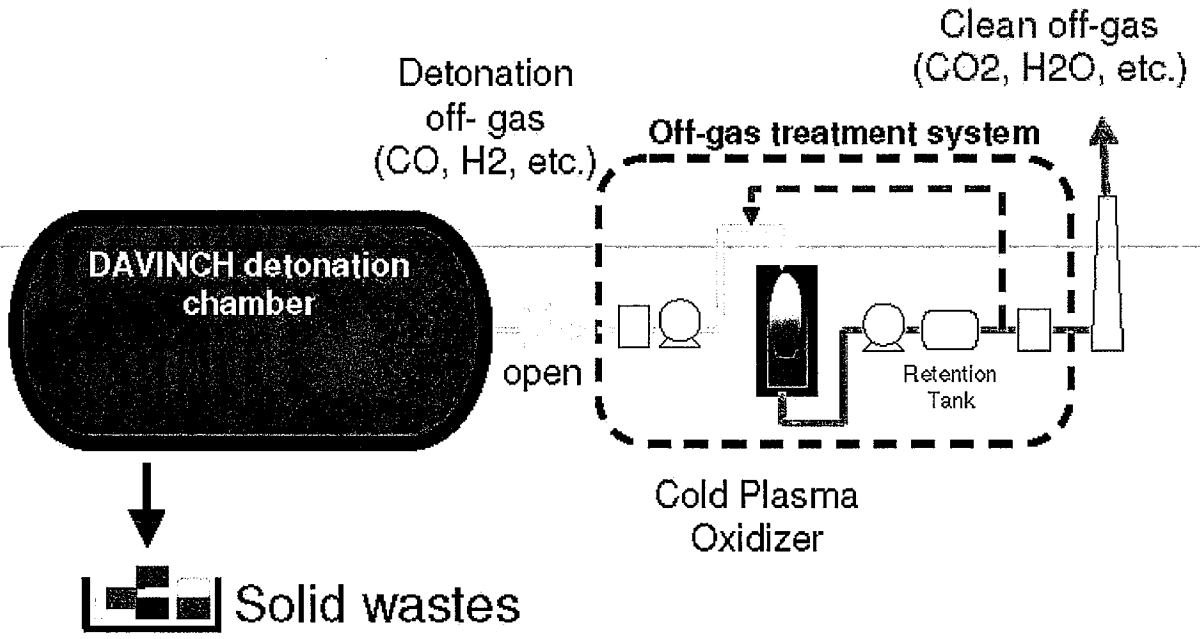

Figure 6: DAVINCH System

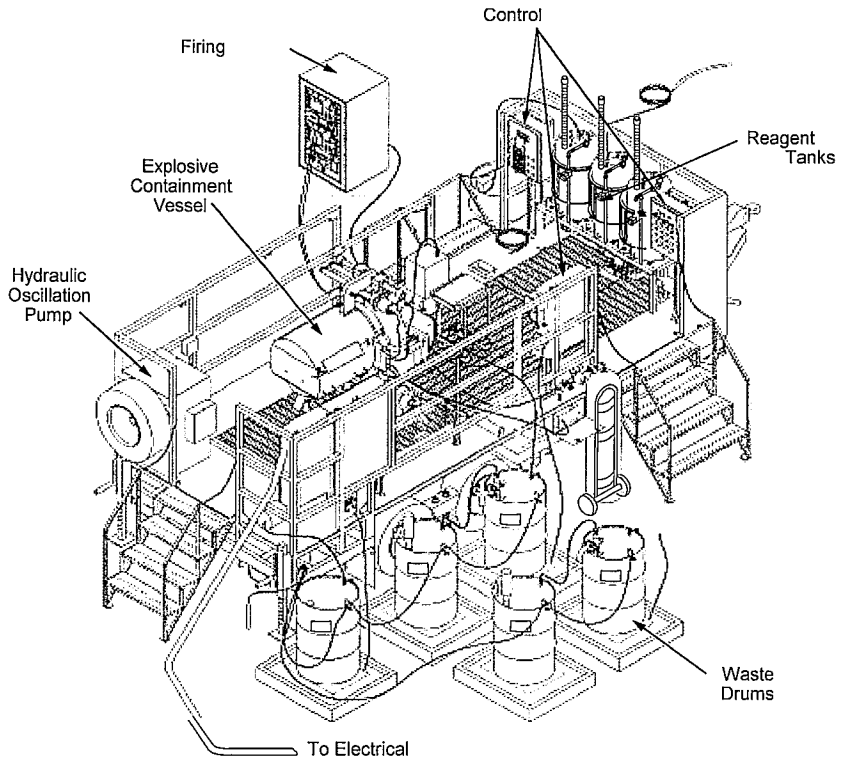

Figure 7: Major components of the Explosive Destruction System

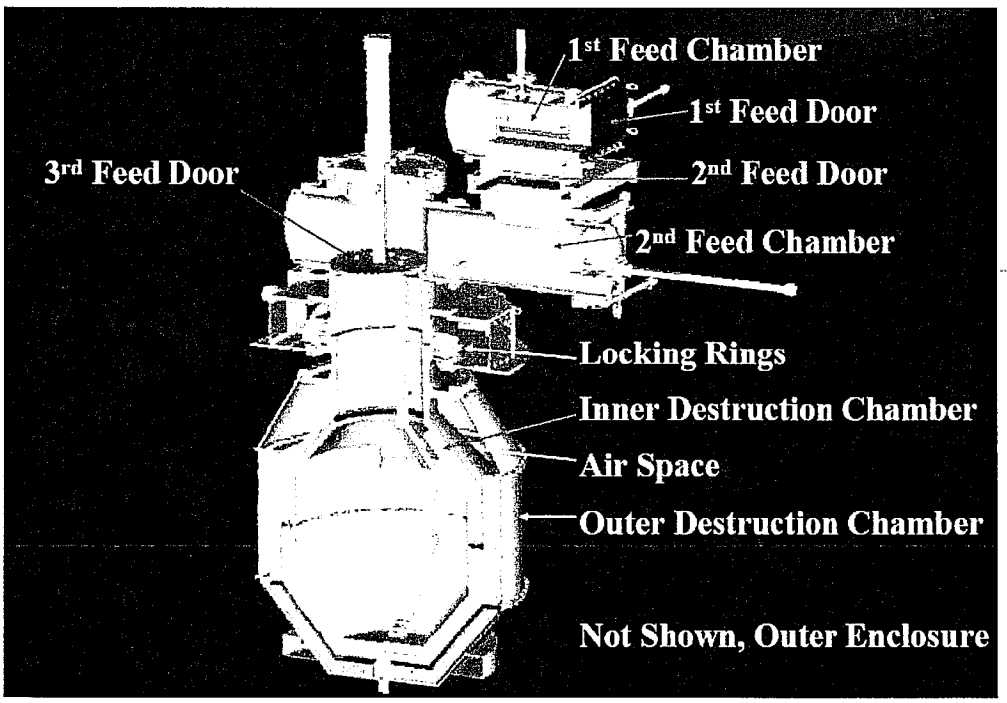

Figure 8: Cross section of the SDC

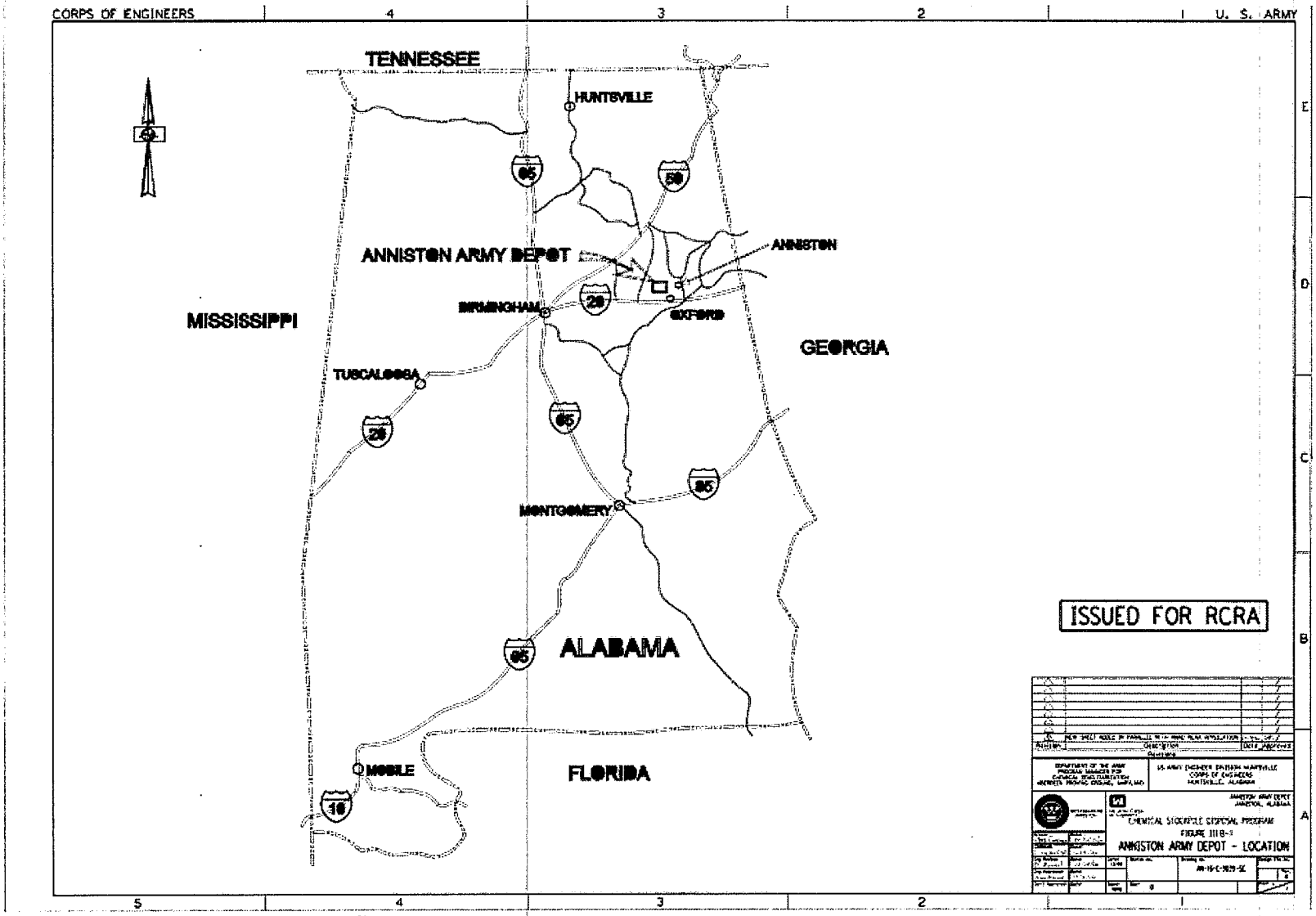

Figure 9: Location of Anniston Army Depot