



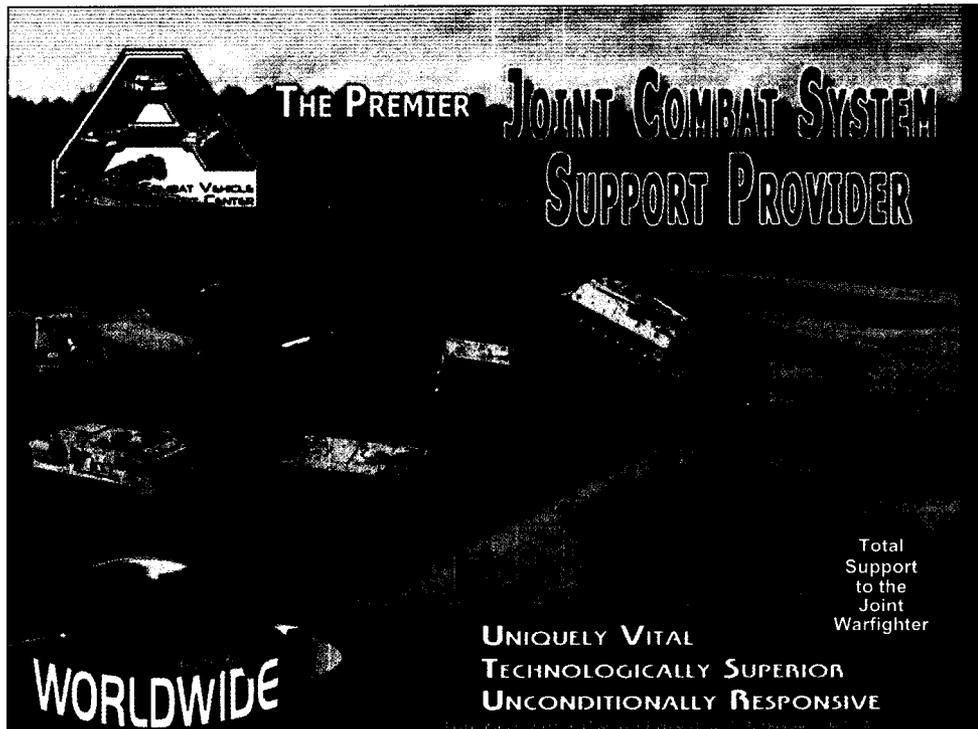
# **Joint Work**

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**Research and Development Efforts**

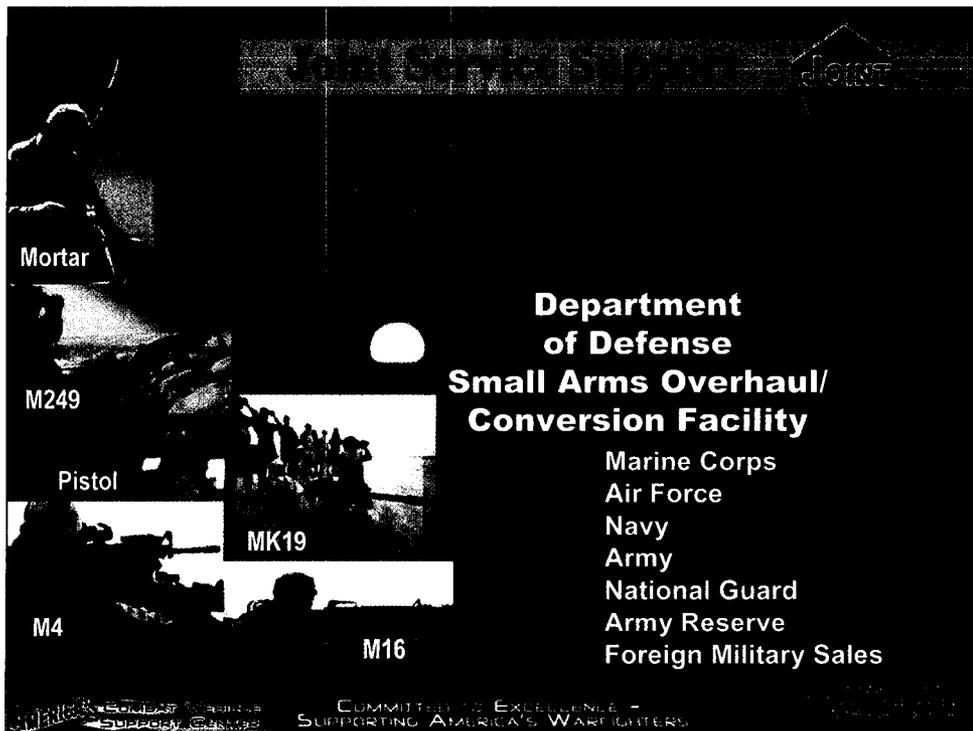
**Defense Non-Tactical Generator and Rail Equipment Center (DGRC)**





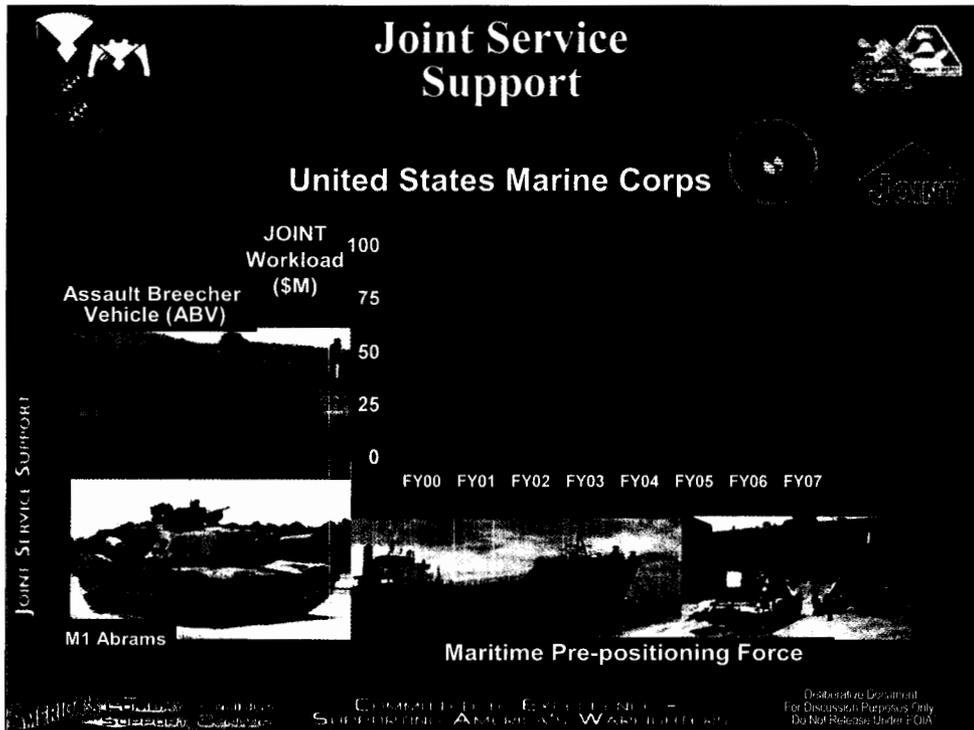
As stated earlier, our Future Focus is to be the Premier Joint Combat System Support Provider Worldwide.

Pictured here are many of the weapon systems that we support. As you will see later, Anniston already supports all combat vehicles in the DOD arsenal. The only current exceptions are the Army's Bradley Fighting Vehicle System, Multiple Launched Rocket System, and the Marine Corps' Amphibious Assault Family of Vehicles.



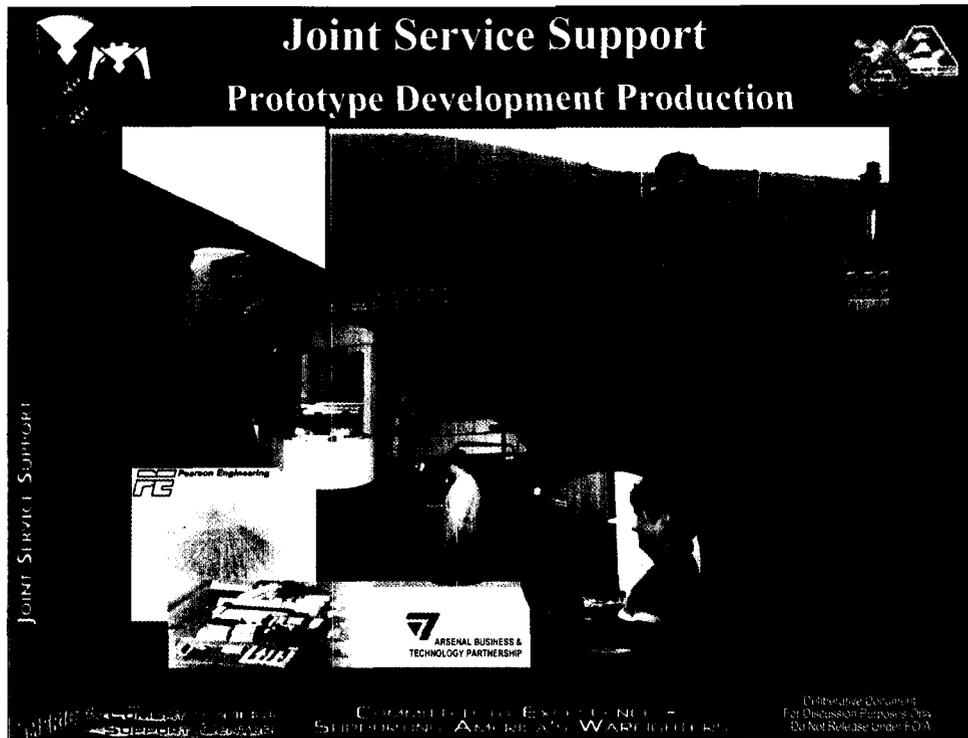
Our Department of Defense Small Arms Maintenance Facility is used to rebuild and provide small arms to the Marine Corps, Air Force, Navy, Army, and Reserve Components, as well as our Worldwide Allies.

Within a maintenance facility normally work loaded at a fraction of maximum capacity, a wide range of small arms can be overhauled to new condition and tested indoors using modern computer controlled targeting equipment.



Anniston is currently overhauling Marine Corp M1 tanks and meeting the demanding shipping schedules required by the Maritime Pre-positioning Force.

Starting with a test quantity, Anniston proved its ability to produce a quality product within cost and on schedule, which has led to an annual Marine Corp production requirement of 69 tanks per year.



Another joint effort accomplished at Anniston is the prototype development of Combat Vehicles. Anniston has developed many prototype vehicles and continues to work with all services to design and develop new and future combat vehicles.

One such recent development was designing and prototyping the Marine Corp Assault Breacher Vehicle.....which is a remote controlled mine plow on an M1 chassis.

Integrating the efforts of Benet Labs, and the industry partners responsible for the mine plow and remote control systems, Anniston has completed prototype testing and begun low rate production. Last month after testing of the prototype at Aberdeen Proving Ground, we received an email from the Marine Corps Command that stated "Your hard work and dedication paid off with stunning success and proved the Benet design and Anniston Army Depot fabrication to be of superior quality".

Discussions with our Marine Corps customers have indicated that our support may be soon expanding to other combat vehicles as well.



## CLASS 70 BRIDGE CONVERSION

A partnership program between ANAD, TACOM, and Belvoir Labs

### Objective:

1. Develop a program to convert class 60 bridges to class 70 or 70 ton capacity bridges for the new M1A1 vehicle.
2. Provide testing of alternate method of bridge construction/repair with the use of "Huck" type fasteners rather than hot rivets.

### Requirements:

1. Fabricate initial production bridges to be used for testing and at the same time identify TDP errors and discrepancies.
2. Fabricate production bridges and spare components using "Huck" fasteners.



### Results:

1. Test bridges fabricated and tested with satisfactory results.
  2. TDP discrepancies documented and reported to Belvoir/TACOM.
  3. Production completed.
- 



# LONG WALL MINING PAN PRODUCTION

## A Joint Production Program of Commercial Coal Mining Equipment Between ANAD and United Defense Commercial Products

### Objective:

A program designed to measure the performance of a military industrial operations facility when used to apply its resources toward producing commercial products during times of low military activity.

### Requirements:

1. Weld assemblies per customer TDP commercial long wall mining conveyor components.
2. Some parts of the welded assembly require machining and paint is required after assembly.
3. Fixturing is required to hold tight assembly tolerance required for the conveyor components to work in unison at the coal mine.
4. Some of the welded components were prehardened requiring special machining techniques and welding methods.



### Results:

Assembles produced on schedule and exceeded quality requirements.





# M1 PANTHER

M1 Chassis with "hull cap" that provides a commanders station

Objective:

Develop an M1 chassis modification which when applied would provide an M1 chassis with commanders station, communication equipment, and a weapon mount.

Requirements:

1. Overhaul M1 chassis, apply modifications to support a commanders station complete with weapon mount.
2. Design and fabricate floor system and hull cap or cover to support commanders weapon system.
3. Install M1A2 series armor junction box and harness to support operation of current fielded counter mine roller and plow.



Results:

6 Proof of principle vehicles have been produced, some have been fielded with counter mine rollers and remote control capability. At least one vehicle has remained at Aberdeen Proving Ground for test and evaluation.





## M551 SUSPENSION TEST BED

A vehicle modified to be used to perform suspension test

### Objective:

Provide a highly modified chassis for suspension testing.

### Requirements:

1. Overhaul M551 chassis and perform modifications to allow suspension testing.
2. Install power pack with increased horse power for high speed testing of suspension.

### Results:



The vehicle was fielded results of the test have been documented.



# M551 SHERIDAN TURRET DRIVE IMPROVEMET

A partnership program between ANAD, Bene't Labs, and General Electric

## Objective:

Provide the National Training Center (NTC), Ft. Erwin, CA, opposing forces, with a reliable improvement to the existing standard M551 electronic turret drive system. The existing turret drive system is difficult to maintain and not supported with replacement parts.

## Requirements:

1. Overhaul M551 chassis and configure to latest TDP requirements for use at The National Training Center, Ft. Erin CA.
2. Modify, assemble and test turret to prototype turret design developed by Bene't Labs and General Electric, (Now General Dynamics). The finished vehicle will incorporates a tank thermal sight, and a M2 Bradley electronic turret drive system.
3. Perform initial testing, data gathering, and adjustment on the turret stand and on the test track.
4. Field the vehicle and monitor performance over a three-year period.

## Results:

The vehicle exceeded the expectations of the opposing force troupes and performed almost entirely trouble free for three years while in operation.

# M58 SMOKE TURBINE ENCLOSURE IMPROVEMENT

A proposed product improvement by ANAD Production Engineering

## Objective:

Improve process flow for the conversion of M113 A2 chassis to the M58 vehicle by providing optional fabrication and installation of the turbine engine enclosure.

## Requirements:

1. Current TDP requires machining of openings in the M113 A2 chassis at specific close tolerance locations. The turbine enclosure is then fabricated by attachment of special fixtures to these machined surfaces and building the enclosure piece by piece inside the hull.
2. A prototype turbine enclosure was designed, fabricated, and installed which would allow the unitized construction on the turbine enclosure before installation in the hull. The openings in the hull would then be located from the turbine enclosure insuring proper function without having to pre machine the vehicle hull.
3. A worthy production cycle timesaving would be realized with this construction method.

## Results:

1. Rough draft drawings were made and a prototype box has been fabricated.
2. A scrap hull was modified with the new concept turbine enclosure.
3. TACOM and PM Smoke have been invited to come review the installation and provide comments before an ECP is initiated.
4. Proposed changes were adopted by PM Smoke.



## OSV (Opposing Forces Surrogate Vehicle)

A partnership program with STRICOM (Simulation Training and Instrumentation Command), United Defense Land Products, Bene't Labs, and Rock Island Arsenal

### Objective:

Provide the National Training Center (NTC), Ft. Erwin, CA, opposing forces with a reliable training vehicle which emulates the profile and performance of a Soviet BMP II.

### Requirements:

- 
1. Produce BMP II replica hull from M901 excess assets and the use of draft STRICOM TDP.
  2. Mark up rough draft TDP and provide input to STRICOM necessary to finalize TDP.
  3. Prototype components and assemblies, provide prototype sketches for improvement to the existing system configuration.
  4. Assemble, and test turret from components fabricated at Rock Island Arsenal, purchased M2 Bradley components, and excess M60 sight systems.
  5. Assemble completed vehicle, test and deliver to NTC.

### Results:

- 
1. Initial fielding completed with 10 vehicles.
  2. TDP still in developmental stage.
  3. Minor improvements being developed biased on initial fielding.



## M60 AVLB IMPROVEMENT “RAZORBACK” PROGRAM

A partnership program involving TARDEC, Allison Transmission, Nimda, General Dynamics, Teledyne Vehicle Systems, and ANAD

### Objective:

Develop and field a prototype M60 AVLB test bed for demonstration of improved powerpack, chassis and hydraulic systems.

### Requirements:

1. Disassemble, overhaul, and modify M60 AVLB chassis in accordance with prototype TDP.
  2. Reassemble with new prototype powerpack, suspension, and hydraulic system.
  3. Improvements include 1200 HP engine, X1100 transmission, Hydropneumatic suspension, and variable displacement hydraulic pump.
  4. Provide system support during first year at performance demonstrations.
- 

### Results:

Vehicle was produced as required, performed above expectations and has been demonstrated on several occasions.



## SCN-93-601-15

A partnership program between ANAD and Bene't Labs

### Objective:

Demonstrate the ability to upgrade the M1A1 turret by installation of the XM291 gun system.

### Requirements:

1. Disassemble and modify M1A1 turret with preliminary drawings to accept XM291 gun system.
2. For the most part is modification involved removal of the original gun trunnions and fabrication and installation of the prototype components.
3. Assemble and test the turret.

### Results:

Turret modified, assembled, program currently on hold.



# SOVIET SIMULATOR VEHICLE

A partnership program between ANAD, STRCOM (Simulation Training and Instrumentation Command), and Georgia Tech University

## Objective:

1. Field two Soviet type anti-aircraft vehicles which physically resemble and perform like actual Soviet made anti-aircraft vehicles.
2. These vehicles will be used in the evaluation of a millimeter wave radar system requiring them to reflect the proper radar signature and emit tracking signals.

## Requirements:

1. Fabricate two turret structures from aluminum. Ship the turrets to Georgia Tech where technicians will install turret drives and radar equipment.
  2. Disassemble and modify XM247 Sargent York chassis to accept vismods which will make the chassis appear like a Soviet Chassis.
  3. Fabricate and install vismod on XM247 chassis and deliver to Georgia Tech.
- 

## Results:

1. Turret structures fabricated and delivered as required.
  2. Chassis vismod modification fell behind schedule due to conflicts with other production at ANAD. STRICOM eventually procured Soviet type chassis and turrets were installed, tested, and fielded as required.
- 



# SOVIET TARGET VEHICLE

A partnership program between ANAD and STRICON (Simulation Training and Instrumentation Command)

Objective:

Fabricate and field two target vehicles for test evaluation of Maverick missiles which use the millimeter wave guidance system.

Requirements:

1. From a photograph develop a facade constructed of steel plate components proportionally scaled to fit on an M60 chassis.
2. Develop drive system for fake acquisition radar to allow it to rotate at a speed similar to the actual simulated vehicle.
3. Provide plan for disassembly and re-assembly of façade to facilitate transportation on highways.



Results:

1. Vehicles fabricated on schedule as required and delivered to test sight where ANAD engineer supervised assembly and operation.
  2. Radar drive system fabricated from code F turret drive components which saved program funds.
- 



# SURVEILLANCE PROTOTYPES

A partnership program with SRICOM

## Objective:

Fabricate and field track vehicle with surveillance radar equipment.

## Requirements:

1. By using preliminary sketches extensively modify Marine Corp. LPT7 vehicles to accommodate missile surveillance equipment. The modifications to the aluminum hulls of the vehicles included increasing the lengthening of the hull and radical changes to the roof configuration.
2. Add leveling equipment to accommodate proper operation of radar.

## Results:

Vehicles completed as required.





# THUMPER

A partnership program with Bene't Labs

Objective:

Fabricate a test bed vehicle which utilizes an M1 A2 chassis and a prototype turret which will allow testing and demonstration of the XM 291 gun system, autoloader and M1 A2 fire control.

Requirements:

1. Fabricate turret by preliminary TDP developed by Bene't Labs. Install XM291 gun system and prototype autoloader system. Assemble turret using M1 A2 turret fire control components. Mark up preliminary TDP during assembly.
2. Test turret on turret stand and install on M1 A2 chassis.
3. Deliver vehicle to Aberdeen Proving Grounds for additional testing and feasibility demonstrations.



Results:

Vehicle completed, test at Aberdeen document successful performance.



Date: 6 April 2004

Subject: Assault Breacher Program (ABV)

The Assault Breacher Program is designed to provide the USMC a vehicle capable of breaching and providing a clear lane through enemy mine fields, the vehicle must be light enough to be transported from ship to shore by amphibious transport vessel. Under the current direction of this program, the ABV platform will be based on the legacy M1 vehicle chassis with a mounted full width mine plow and a fabricated turret, which will replace the traditional turret. The turret will contain the vehicle commander with controls for operation of a lane marking system and a linear demolition charge in addition to the standard M1 commanders weapon station. The chassis will contain the driver in the traditional location of the M1, the driver will have additional controls for operation of a mine plow. The requirement for breaching became apparent in Operation Desert Storm when the USMC had to call on the British to breach mine fields before they could begin to carry out their mission. Since that time there has been attempts made to fulfill this role by defense contractors. The most recent was the United Defense "Grizzly". The ABV program has provided a concept vehicle which assembled at ANAD and shipped to Aberdeen Test Center, December 2002. This vehicle was subjected to various breaching type testing at ATC and other locations. Three additional vehicles have been produced and shipped March 2004 to ATC. These vehicles have refinements which are a result of testing done on the first vehicle. The test plan for the three vehicles is to further refine the vehicle configuration based on limited user operation. The production vehicles will reflect changes defined by the user interface. Anniston Army Depot's role in this program will be that of R&D engineering, provided by Process Engineering, DP, teamed with TARDEC, Benet' Labs, under the direction of USMC, TACOM and Pearson Engineering. ANAD will be heavily involved in fabrication, overhaul, assembly, and testing during the prototype phases of this program. Production is planned to be performed at ANAD in the future.

Memorandum For Tank Automotive Command Engineering  
PM 70 Bridge Office Attn: Greg Updike, DSN 786-7397

March 21, 2000

Subject: Bridge Hardware

During conversion of 60/70 ton bridges it has been reported by mechanics that some of the pin rivet fasteners are "popping" before the proper tension is achieved and the collar is properly swaged in place. Indications are that other vendors are manufacturing pin rivets that may not meet the requirements necessary to perform properly with the hydraulic Huck installation tools.

Currently mechanics visually inspect the installation of the pin rivet fasteners to assure proper installation.

Pin rivets that have to be removed because of improper installation must be destroyed to be removed. The cost of the failed pin rivets, collars, and the time to remove the failed fastener effects the overall cost of executing the program depending upon the frequency of failure.

Request that sample pin rivet testing plan be developed jointly between the ANAD materials lab and TACOM engineering. This plan would be used to assure conformance to the Huck pin rivet installation system requirements. These requirements should be used since Huck equipment is used for installation. Cost of testing would depending on the frequency and detail of test performed. These issues need to be determined jointly by TACOM and ANAD engineering.

Thank You,

Brian Anderson  
Process Engineer

## ➤ Mine Countermeasures:... through the Beach and Beyond

### **DISCUSSION**

Once ashore, naval expeditionary forces must be capable of detecting, breaching, clearing, proofing, and marking mines and obstacles, as well as disseminating mine data. The Marine Corps' current inventory of MCM systems includes the AN/PSS-12 Mine Detector (a metal detector) and explosive breaching systems (consisting of Assault Amphibian Vehicles equipped with Mk154 Triple-Shot Line Charges, Mk155 Line Charges, and Anti-Personnel Obstacle Breaching System). The inventory also contains mechanical breaching, clearing, and proofing systems, specifically the M1 tank with Track-Width Mine Plow and the Armored D-7 Dozer. Overall, these systems do not meet the detection, speed, and responsiveness requirements of the modern battlefield.

Three acquisition programs promise to significantly improve Marine Corps MCM capabilities:

The **Advanced Mine Detector (AMD)** will combine multiple sensing technologies to detect explosives in anti-personnel and anti-tank mines, a key capability due to the worldwide proliferation of low- and non-metallic mines. Initial operational capability is scheduled for FY 2008 and full operational capability for FY 2009.

The **Coastal Battlefield Reconnaissance and Analysis (COBRA) System** is a remote, multi-spectral minefield sensor that may be flown on manned or unmanned aviation platforms. Initially, COBRA will offer standoff detection of surface minefields and obstacles and provide beach and inland area intelligence data. After subsequent develop-

ment, COBRA will be enhanced to detect mines and obstacles in the surf zone and beyond the beach as well.

The **Assault Breacher Vehicle (ABV)** will be a single-platform, minefield breaching, clearing, proofing, and marking system that possesses the same speed and mobility as modern mechanized forces. Combining two Mk155 Line Charges, a Full-Width Mine Plow, and a breached lane marking system on an M1 tank chassis, the ABV will offer deliberate and in-stride breaching capabilities. Initial operational capability is scheduled for FY 2006 and full operational capability for FY 2007.



### **MARINE CORPS POSITION**

Current Marine Corps MCM systems do not provide naval expeditionary force commanders with adequate capability to achieve and maintain momentum in a full-spectrum anti-access environment. The Marine Corps will shortly implement a MCM Master Plan designed to fix mine countermeasure deficiencies in the Marine Corps.



## **A quality called 'jointness' could be a plus for Anniston Army Depot**

**By Matthew Korade**  
**Star Senior Writer**  
**01-25-2004**

It's called "jointness," a word for the amount of work a military installation does for other branches of service.

The more "jointness" the better, as far as the Department of Defense is concerned. It is what Secretary of Defense Donald Rumsfeld wants for his new military — a high amount of cross-training and efficiency.

"Jointness" will spell life or death for the nation's bases in the upcoming round of base closings, according to recently released criteria.

How much jointness does the Anniston Army Depot have?

Quite a bit, local officials say.



"The bottom line is, we're hoping that our joint operations that we have in different services will be a plus for us in this base realignment," said Nathan Hill, military liaison for the Calhoun County Chamber of Commerce.

The depot refurbishes tanks and cannons for the Marines and National Guard. It rebuilds small arms for the Navy and Air Force. Troop transports, bridge launchers — the depot can do it all and more.

It can even take an old tank and turn it into a remote-controlled mine plow. The Marine Corps prototype is going to Aberdeen Proving Ground, Md.

Since October, The Anniston Army Depot has performed \$70 million in work for the Guard and other services, and in fiscal 2003 it churned out \$83 million worth. Before then, it was running in the \$30-\$40 million range, according to depot officials.

Much of the increase has to do with Marine Corps tanks coming back from Iraq, said Paul Harper, the depot's general manager for operations. Before the war, the number of tanks they were fixing stood in the teens. Afterward, it hit 100 and climbing. The depot did 70 in the last three months alone.

The order for more was based on the quality of the work, Harper said.



All of this is expected to help the depot when it comes time to cut bases in 2005. The Department of Defense is planning to make the largest number of base closings since World War II.



## **A quality called 'jointness' could be a plus for Anniston Army Depot - Continued**

Once gainfully employed, many of the Pentagon's Cold War bases are of little use now. So they're rolling the tanks and aircraft through the doors one last time. In BRAC 2005, the DOD will slice away a quarter of its infrastructure.

Closings and realignments have taken place four times since 1988. One ended in the loss of Fort McClellan. But not all of those rounds were bad for Calhoun County. Some meant the depot got more work. Now, whenever men in safety glasses test-shoot Air Force pistols or Guard rifles, or women in blue jumpsuits rebuild Marine Corps howitzers, or workers dismantle missiles for recycling, "jointness" is at work.

The depot manages the former rail shop at Hill Air Force Base, Utah. Now called the Defense Non-Tactical Generator and Rail Equipment Center, it is the only facility of its kind in the Department of Defense, the only place that does all levels of locomotive and rail maintenance, the only place that overhauls electric generators.

In this sense, it is similar to the work done by the depot's small arms shop, which is the only facility in the DOD to overhaul hand-held weaponry. That is right here in Anniston.

Installations other than the depot also do joint activity, but many don't do as much, Hill said.



A former deputy commander of the depot for 15 years until retiring in 1999, Hill said he did what the current deputy commander is doing — giving the services that little extra quality measure that keeps them coming back. It has worked.

"Customer service has been the No. 1 priority for everything the depot works on," Hill said.





## **Joint operations will be key point in upcoming base cuts**

**By Matthew Korade  
Star Senior Writer  
02-03-2004**

One criteria the Department of Defense will use in making recommendations for base cuts in 2005 is an installation's joint operations.

With regard to this one issue, the Anniston Army Depot's contribution to the National Guard Training Center is tremendous, said Col. David McPherson, the training center's manager.

The depot assists the federal employees assigned to the training center with legal and Equal Employment Opportunity services, worker's compensation and quality-of-life improvements.

The depot also helps with ammunition supply on Pelham Range, including the provision of three-igloos for ammunition storage, Guard officials said.

Its ordnance engineers also respond when unexploded shells are discovered on Pelham. In addition, it provides the Guard and other agencies with a means of disposing of hazardous materials.

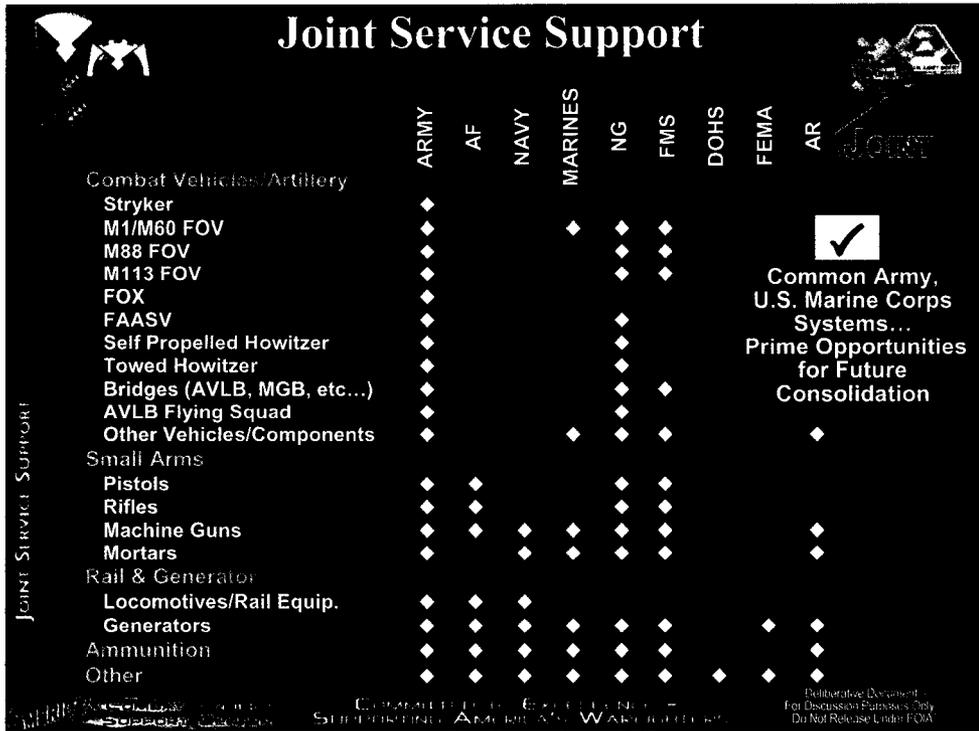


In past years, the Guard and reserves have benefited from the depot's missions. Ammunition and maintenance units would often stay at the training center's garrisons while attending annual training at the depot, center officials said.

Since Sept. 11, 2001, the depot has provided services to Guard and Reserve members and their families through its Army Community Service Center. The center assists military members and their families with preparations for deployment, financial education and employment for family members.

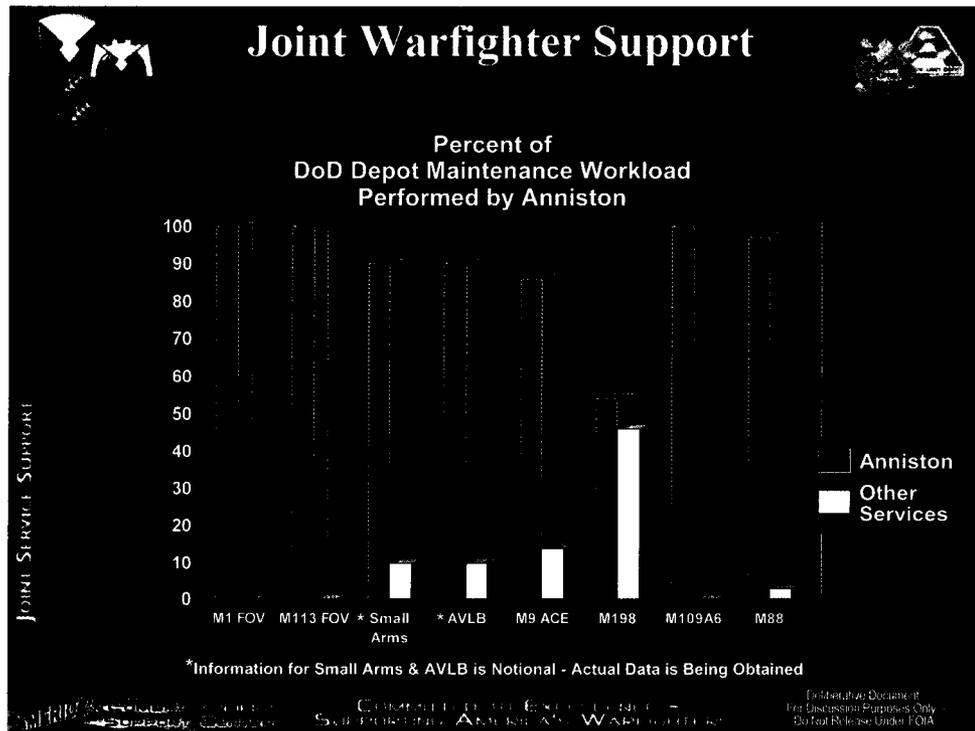
In short, officials said, the depot and National Guard Training Center not only share a common border on Pelham Range, but also share common interests in supporting each other.





As you can see on the chart.... Anniston provides support to all services for Combat Vehicles, Artillery, Small Arms, Rail & Generators, Ammunition, and others.

It's also obvious that, provided the opportunity, Anniston could provide even greater support to the Marine Corps on systems common to the Army and Marine Corps such as M88 Tank Recovery Vehicles, Towed Artillery, M60 Armored Bridge Launchers, Bridges, and Small Arms.



As evidenced by this chart, the majority of all DoD combat vehicle, small arms, and artillery work is already performed at Anniston.

Designating Anniston as the DoD site for joint support of these commodities is an imperative step, not a high risk venture.



# Joint Service Support

**Generator**



**Defense Generator & Rail Center (DGRC)**

Only facility of its kind in Department of Defense

- Only organization that performs all levels of rail equipment maintenance
- Only facility that provides overhaul & modification of non-tactical generators

**Physically Located at Hill Air Force Base**

JOINT SERVICE SUPPORT

- Marine Corps
- Air Force
- Navy
- Army
- Foreign Military Sales
- Homeland Security/ Federal
- Emergency Management Agency



**Locomotive**

COMMITTED TO EXCELLENCE - SUPPORTING THE AMERICAN WARFIGHTER

Dissemination Document For Discussion Purposes Only Do Not Release Under FOIA

Anniston Army Depot is also responsible for the Defense Generator and Rail Center (DGRC) which, is physically located at Hill Air Force Base in Ogden, Utah.

DGRC is AMC's only agent providing field and depot maintenance to the joint services Rail Fleet. And the only agent providing depot support to the Corps of Engineers Prime Power Program.

Future initiatives include joint agency efforts to field equipment with reduced emissions and improved fuel economy through hybrid powered locomotives.

MEMORANDUM OF AGREEMENT

between the

U.S. Army Tank-automotive and Armaments Command (TACOM),

U.S. Army Industrial Operations Command (IOC),

Tooele Army Depot (TEAD),

Anniston Army Depot (ANAD),

and the

Defense Non-Tactical Generator & Rail Equipment Center  
(DGRC)

SUBJECT: Transfer of Operational Control of the DGRC to  
TACOM and ANAD

1. PURPOSE: The purpose of this Memorandum of Agreement (MOA) is to define the operational concept and working relationships for the realignment of the Defense Non-Tactical Generator & Rail Equipment Center (DGRC) from TEAD and IOC, to the ANAD and TACOM.

2. EFFECTIVE DATES: The transfer of operational control (OPCON) of DGRC has been directed by the Commanding General, U.S. Army Materiel Command (AMC). This MOA will be effective when signed by all parties and will remain in effect until formal transfer of command and control on 1 Oct 00. In addition, an abbreviated concept plan was developed and approved on 5 November 1998. The concept plan is intended to provide for transition of command and control on 1 October 2000. This concept plan (Attachment 1) is incorporated by reference herein and made a part of this MOA between the parties.

3. METHODOLOGY: The commencement of OPCON will be 1 October 1999, with a final transfer date for command and control of 1 October 2000. From inception of OPCON, the Director, DGRC, through ANAD and TACOM, is responsible for mission accomplishment and decision making at DGRC.

4. SCOPE: The element transferring to ANAD and TACOM is DGRC. Processes to be transferred will be addressed in activity checklists. The lead POC for each process will be responsible for completion of checklists. Checklists will include the process description, actions necessary to effect transfer, issues, lessons learned, and POCs at each affected installation. Checklists will state whether activity will be complete for OPCON, or be deferred until transfer of command and control.

5. ORGANIZATIONAL STRUCTURE: The DGRC and associated depot maintenance missions will be organizationally realigned under the ANAD and TACOM. Upon commencement of OPCON, the Director, DGRC, will report to the ANAD Director of Production and will be senior rated by the General Manager for Production Operations, ANAD.

6. PERSONNEL: During OPCON, TACOM Civilian Personnel Advisory Center (CPAC), in conjunction with the TEAD Civilian Personnel Advisory Center (CPAC), and the West Civilian Personnel Operation Center (CPOC) (Fort Huachuca), will identify all personnel for transfer to TACOM (ANAD). TACOM CPAC will provide personnel staff advice in all personnel functional areas as necessary. TACOM CPAC will coordinate the preparation and tracking of "Request for Personnel Actions" relating to the transfer.

7. FUNDING: Resource management officials will agree on the amount, type, and flow of funds that will transfer to TACOM from IOC. The OPCON period will be used to address, document, and resolve any financial issues where adjustments may be required.

8. PROVISIONS:

a. MISSION: OPCON, as defined by JCS Publication 1-02, Field Manual 100-5, and AMC Regulation 10-1, will be effected IAW the methodology outlined in paragraph 3 above. TACOM will assume authority for headquarters oversight of DGRC.

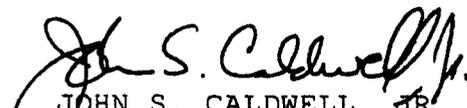
b. Any equipment or facilities projects in execution, or the budget, will continue to be supported by the IOC until transferred to TACOM at command and control.

9. LEGAL:

a. Responsibility for awards, claims, disputes, and settlements arising out of matters (contractual and otherwise) will transfer with funds management, regardless of when the incident occurred or when litigation begins. Exceptions will be made only by the TACOM Chief Counsel after consultation with, and agreement by the IOC Chief Counsel.

b. All intellectual property rights including patents, trademarks, copyright and rights in trade secrets, generated by, or belonging to DGRC, will become the property of TACOM upon commencement of OPCON. All royalty payments related to intellectual property which are owed, such as a depot element, shall also become the property of TACOM upon the commencement of OPCON. All technical data and computer software belonging to DGRC will become the property of TACOM upon the commencement of Command and Control.

c. Equal Employment Opportunity: TEAD will retain liability and responsibility for litigation, claims, or settlements arising out of complaints until transfer of funds management as called out in para 9.a. Exceptions will be made only by the TACOM Chief Counsel after consultation with, and agreement by the IOC Chief Counsel.

  
JOHN S. CALDWELL, JR.  
Major General, USA  
Commanding  
TACOM

20 DEC 1999

  
JOSEPH ARBUCKLE  
Major General, USA  
Commanding  
IOC

02 FEB 2000

## **Defense Generator and Rail Center**

Physically located at Hill Air Force Base in Ogden, Utah, Anniston Army Depot is also responsible for the Defense Generator and Rail Center (DGRC) that provides both large generator and locomotive overhaul and field support to Army, Navy, Air Force, USMC, and the Corp of Engineers.

- DGRC is AMC's only agent providing field and depot maintenance to the joint services Rail Fleet. And the only agent providing depot support to the Corp of Engineers Prime Power Program.
- Mission was established in 1942. Anniston Army Depot assumed command & control from Tooele Army Depot in 2000.
- DGRC executes the rail fleet regulatory inspections and maintenance in compliance with defense regulations and Code of Federal Regulations, Title 49 and Association of American Railroad (AAR) requirements. DGRC is a committee member of the Inter-Service Locomotive Management Steering Group (ILMSG) conducting fleet reviews and coordinating distribution plans for joint services.
- DGRC works closely with the 249th Prime Power Engineering Battalion, FMS, and the Air Force in overhauling 500KW and above power distribution systems. Backup fielding and maintenance support is also provided.
- Future Initiatives include joint agency efforts to field equipment with reduced emissions and improved fuel economy through hybrid powered locomotives. Battery-electric and fuel cell technology systems are being investigated in a joint effort with the Inter-Service Locomotive Management Steering Group, US Army Research, Development and Engineering Command, and Industry.

## POINT PAPER

SUBJECT: Defense NonTactical Generator & Rail Equipment Center (DGRC) Overview

1. PURPOSE: To provide information on the organizational structure and missions of the Defense NonTactical Generator & Rail Equipment Center

2. FACTS:

a. Mission

(1) The mission of the Rail Center is to provide maintenance support, ensuring readiness of DoD's locomotive fleet, rail cars, and non-tactical generators to effectively accomplish DoD peacetime mission and support to the Army's Power Projection Platform, while providing the same level of support to joint service agencies. Other customers include Air Force, Navy, Marines, SDDC, Foreign Military Sales, Corp of Engineers, Bureau of Broadcasting (Voice of America).

(2) The Rail fleet is stationed throughout CONUS, it is essential to daily loading operations and for deployments at Forts, Ammunition Plants, Ocean Terminals and Depots for movement to the point of debarkation. Rail remains essential to installation operations and is the lowest cost alternative for deployment. The generators are deployed CONUS and OCONUS in support of Installations and Defense operations in war zones.

(3) Portions of DGRC's mission are validated by DoD 4140.50-R, Management and Standards of DoD locomotives. This regulation assigns TACOM as the focal point for maintenance support of locomotive equipment to include mobile inspection certifications and maintenance services as well as depot overhaul. DGRC is TACOM only agent providing these services. Management of Army Rail Equipment (AR56-3) identifies policies and command responsibilities delegated to DGRC. The Prime Power Program, (AR 700-128) assigns AMC as the Focal point for overhaul of Prime Power Program equipment. DGRC is AMC's only agent providing these services.

b. History:

The maintenance mission located at Hill Air Force base was established in 1942 under Ogden Arsenal. In 1944 the mission was transferred to the Transportation Corps and expanded to all DoD rail equipment. The mission transferred again in 1956 to Utah General Depot and in 1964 to Tooele Army Depot. In the early 1970's the mission was expanded to include non-tactical generators. In 2000 the mission was transferred to its current headquarters, Anniston Army Depot. The operation resides at its original location on Hill AF Base on 28 acres with 6 major maintenance structures encompassing 55,243 square feet of production space.

## c. Current:

(1) DoD fleet support is accomplished by performing Regulatory Inspections, Unit and DS/GS maintenance support via mobile maintenance teams deployed to equipment locations. Depot level support is performed at the base location at Hill AF Base. DGRC is the only organization that performs all levels of rail equipment maintenance and overhaul/modification of non-tactical generators.

(2) DGRC is a committee member of the U.S. Army Inter-Service Locomotive Management Steering Group (ILMSG). The group objective is to conduct locomotive management reviews and coordinate distribution plans as well as to facilitate integrated management for joint services through exchange of expert advice.

## d. Future Initiatives:

(1) DGRC is collaborating in a joint effort with the Air Force for maintenance support to the Deployable Power Generation & Distribution System. This generator system rated at 960KW is currently being fielded to the Army and Air Force to provide an airlift deployable, logistically affordable, electrical power system of minimum size, weight, and fuel usage.

(2) In an effort to reduce emissions and improve fuel economy the U.S. Army Inter-Service Locomotive Management Steering Group (ILMSG) of which DGRC is a member, is researching potential purchase and follow-on maintenance of a hybrid-powered locomotive. This locomotive will be diesel/battery-electric and meets current and known future environmental emission limitations.

(3) DGRC is a member of an international consortium in development through to demonstration and commercialization of the world's largest fuel cell vehicle, a 109 metric ton, 1.2 MW locomotive for DoD and commercial railway applications. This project is funded by the US Army Research, Development, and Engineering Command's National Automotive Center (NAC). This project promotes a leading edge in increased energy efficiency and reducing dependency on oil. This project is currently in phase one of a three-phase process.



# **Innovative Business Practices (Balanced and Integrated Partnering)**

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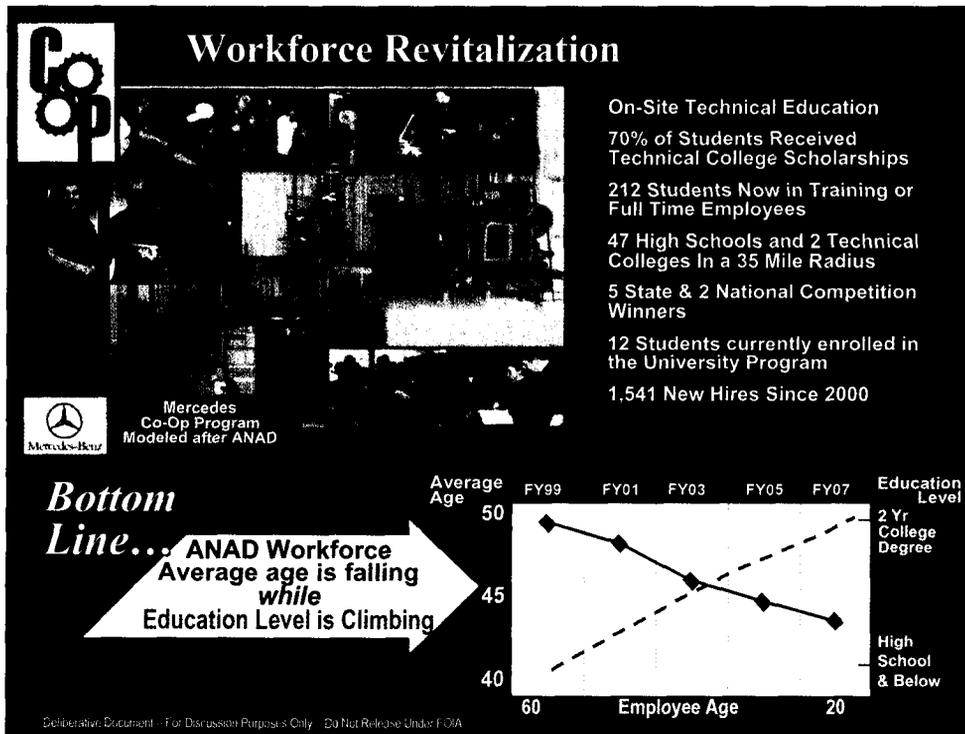
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ANAD's innovative business practices are the model for DoD. Our partnering concept is sound.... Both the public and private industrial partners join forces, dividing work along core competency lines to produce a product better and cheaper than if either had tried to accomplish the work individually.... And both the public and private defense industrial bases are exercised and warm in case of wartime when a surge of support is needed.



As you can see on the chart our average workforce age for FY04 is 46 years old. That number will continue to fall yearly as we recruit and hire students and new employees. We are proud of our state accredited technical co-op education facility....the first in the DoD system....and the positive impact it is having on revitalizing our workforce and training our future workers. Anniston journeymen teach high school students from 47 schools in a 35 mile radius how to become mechanics, machinist, and welders on the same products they will be working when they become a full time, highly skilled technician. Bottom Line ..... through our Co-Op Program the ANAD workforce is getting younger and smarter.



## POINT PAPER

AMSTA-AN-BMO

18 March 2004

SUBJECT: Public-Private Partnering Initiatives

PURPOSE: Provide Information for Public-Private Initiatives

FACTS:

- o Authority 10 U.S.C. 2474 designates depot maintenance activities as Centers of Industrial and Technical Excellence (CITES), which allows for greater flexibility for Public-Private Partnering. Anniston Army Depot (ANAD) has been designated CITE for Combat Vehicles (except Bradley), artillery and small caliber weapons.
- o GAO Report to Congressional Requesters, May 1998, stated ANAD managed 7 of 13 Public-Private Partnering Initiatives listed.
- o Office of the Secretary of Defense, Public-Private Partnerships for Depot Level Maintenance Report, July 2001, states "Of the 16 depot level maintenance activities (DMAs), ANAD accounts for over 24 % of the reported partnering arrangements".
- o GAO-03-423, April 2003 stated:
  - (1) 42 total Army Partnerships – 33% ANAD
  - (2) 88% of total private sector investment at ANAD
  - (3) Highest percentage of partnership workload – ANAD 25.96%
  - (4) AIM XXI Program – recognized for significant new workload (model for Army Recap Program)
  - (5) AGT 1500 Recuperator Program – Identified as Partnership achieving positive results
  - (6) ANAD selected as initial study site due to extensive partnering experience
- o 1996 Direct Sales Partnering Programs total dollars - \$285K
- o FY 04 Direct Sales Partnering Programs total dollars - \$7M
- o 1996 Workshare Partnering Programs total dollars - \$4M
- o FY 04 Workshare Partnering Programs total dollars - \$46M
- o 1996 Facility Use Partnering Programs total dollars - \$38K
- o FY 04 Facility Use Partnering Programs total dollars - \$1M
- o A total of 41 Public-Private Partnering Programs have been initiated at ANAD since 1996. These programs have generated a total of 4.4M man-hours; 548M dollars generated and 216K square footage utilized (facility). Workforce sustainment – no involuntary separations; 260 partnering local hires; sustain local plant of 125.



## STRATEGIC OBJECTIVES:

- (1) Augment depot army workload
- (2) Maintain skill base
- (3) Protect core capabilities (facilities, equipment, skills)
- (4) Initiate facility capitalization by industry
- (5) Increase depot capacity utilization
- (6) Reduce overall industrial base infrastructure
- (7) Create new mission

## PUBLIC-PRIVATE PARTNERING OBJECTIVES:

- (1) Support the soldier with a reliable product, in a timely manner
- (2) Sustain core capability
- (3) Reduce Cost
- (4) Improve and sustain manufacturing and repair capabilities
- (5) Leverage private sector investments, such as facilities and equipment
- (6) Contribute to re-capitalization of depot maintenance activities
- (7) Promote suitable private sector ventures
- (8) Expand cooperation between DOD and private industry

## SUMMATION:



o An example of ANAD's flexibility is demonstrated in the STRYKER program. This program was able to move from contract to full-rate production in 3 months – program began Sep 01. ANAD and General Dynamics (GD) employees performed assembly operations on the same assembly line (facility contract) from Sep 01 until Jan 04. Due to ANAD's increased organic workload, ANAD's employees were moved back into normal production areas in Jan 04. ANAD and GD continue to have a partnership contract wherein ANAD performs final paint operation on the STRYKER.

o ANAD continues to enjoy its reputation as Public-Private Partnering Leader, not only in the Army, but also throughout DoD. Current partnership programs include work with GDLS, GM, Honeywell, and UDLP. Future plans include researching possible partnering initiatives with other military organizations to include Marine Corps, Air Force. Our plans also include researching private corporations such as heavy equipment and automobile companies. In order to enhance Homeland Security, we are actively researching organizations affiliated with this program. We are initiating possible partnering with federal law enforcement agencies for small arms repair. Our marketing strategy is designed to target Future Combat Systems as well as sustain our legacy and interim systems. We will continue to increase awareness through trade show and conference attendance, company brochures and publication in trade and industry magazines.





## **Partnering**

Prior to "Government Reinvention", few opportunities existed for defense agencies like Anniston Army Depot to enter into business relationships with private industry. Today, however, Anniston is now an established leader in public-private partnering, with over 30 partnerships and teaming arrangements successfully established and executed. These partnerships create win/win opportunities for both the public and private sectors by capitalizing on the strengths and efficiencies of each.

Our unique skills, equipment, and facilities, coupled with our diversity, have made Anniston Army Depot a prime target for teaming and partnership arrangements for defense and non-defense related items. We have a full time staff dedicated solely to marketing and managing these arrangements with local, regional, and global public and private businesses. We seek and encourage all opportunities to partner with industry, allowing each to contribute in areas of excellence. The opportunities are obvious...the possibilities are endless!

Partnering opportunities include:



**Workshare Programs** – Co-production of defense programs between Anniston Army Depot and industry wherein each partner contributes, independently, a pre-determined amount of resources (skills, manpower, facilities, equipment) to the program.



## **Partnering - Facility Use**

***Partnering agreements wherein public & private entities use ANAD facilities available as underutilized by ANAD operations under the authority of federal acquisition regulation (FAR) Subpart 45 and the army's supplement to the FAR.***

<b>PROJECT</b>	<b>MECHANISM</b>	<b>PARTNER</b>
<b>Gunner's Primary Sight (GPS)</b>	<b>ISSA - PM Abrams</b>	<b>GDLS</b>
<b>Fox Vehicle Maintenance</b>	<b>ISSA - ACALA</b>	<b>GDLS</b>
<b>Fox Vehicle Upgrade</b>	<b>ISSA - PM NBCDS</b>	<b>GDLS</b>
<b>Longbow Missile Launcher</b>	<b>ISSA - PM Air-to-Missile Systems</b>	<b>Boeing North America</b>
<b>M113 - Test Track</b>	<b>10 US Code 2208 (j)</b>	<b>UDLP</b>
<b>Recuperator</b>	<b>10 US Code 4543</b>	<b>Honeywell</b>
<b>Amphibious Assault Vehicle</b>	<b>10 US Code 4543</b>	<b>UDLP</b>
<b>PROSE</b>	<b>ISSA - PM Abrams</b>	<b>Honeywell</b>
<b>Brigade Combat Team</b>	<b>10 US Code 2208 (j)</b>	<b>GDLS</b>

## **Partnering - Workshare**

*Co-production efforts wherein Anniston Army Depot & the industry partner each contribute, independently, a pre-determined amount of resources (skills, manpower, facilities, equipment, etc.) to a program.*

<b>PROJECT</b>	<b>MECHANISM</b>	<b>PARTNER</b>
<b>M1/M1A2 Upgrade</b>	<b>Depot - Army Program GDLS - PM Contract</b>	<b>GDLS</b>
<b>M113 FOV O/H &amp; Conversion</b>	<b>Depot - Army Program GDLP - PM Contract</b>	<b>UDLP</b>
<b>Abrams Integrated Management (AIM XXI)</b>	<b>Depot - Army Program GDLS - PM Contract</b>	<b>GDLS</b>
<b>Paladin</b>	<b>Depot - Army Program GDLP - PM Contract</b>	<b>UDLP</b>
<b>HERCULES</b>	<b>Depot - Army Program GDLP - PM Contract</b>	<b>UDLP</b>
<b>Heavy Assault Bridge (Wolverine)</b>	<b>Depot - Army Program GDLS - PM Contract</b>	<b>GDLS</b>
<b>Breacher (Grizzly)</b>	<b>Depot - Army Program GDLP - PM Contract</b>	<b>UDLP</b>

As part of Government reinvention, the Anniston Army Depot (ANAD) is partnering with the private sector. Partnering at ANAD involves business relationships with the private sector to enhance system efficiencies and increase capabilities of both sectors by working together through formal partnerships.

The Combat Vehicle Industrial Base is composed of the private sector which includes Original Equipment Manufacturers (OEMs), such as General Dynamics Land Systems Division and United Defense Limited Partnership, who produce defense vehicle systems; and the public sector, which includes depots and arsenals that have the responsibility for sustaining the OEM-produced vehicle systems through repair, overhaul, modifications, and upgrades.

The Combat Vehicle Industrial Base of the past reflects a private sector and public sector operating separately and independently, which produced an atmosphere where each sector competed for, rather than shared, the workload. Because of continually shrinking defense dollars, under-utilization of resources, and privatization, both sectors realized that continuing to function separately, independently, and to compete for the same workload were no longer options. Thus, changes and new business relationships were required to remedy the problems of a past environment.

ANAD established 41 working partnerships of the following three types:

**Workshare (or direct funded):**

Co-production efforts where ANAD and the industry partner each independently contribute a pre-determined amount of resources (e.g., skills, manpower, equipment, facilities) to a program. Terms are arranged between the two partners and the Program Manager. The Program Manager directs funding to the Depot and the private partner through a contract.

**Direct Sales (or behave like a subcontractor):**

Partnering agreements where ANAD performs services for private industry as a subcontractor under the authority of various sections under Title 10. The majority of ANADs direct sales are authorized under 10 USC 4543 which specifies that the service cannot be commercially available in the United States. The Program Manager awards a contract to private industry; private industry contracts with ANAD.

**Facility Use:**

Partnering agreements where public and private entities use underutilized ANAD facilities available under the authority of the Federal Acquisition Regulation (FAR) Sub-part 45 and the Armys Supplement to the FAR, or through an inter-service support agreement with a Program Manager or with a major subordinate command. The private entity pays for all utilities and costs incurred. ANAD reassumes the facility when the private entity is finished with the facility.

As a result of these new partnership opportunities, the private sector established operations within the Depot fences in under-utilized facilities, employing under-utilized resources from both sectors. This reduced the overall industrial base infrastructure and maintained a skill base in both sectors. As a result of partnering, ANAD retained revenues of \$548 million and 4.4 million man hours; increased facility utilization by 16% avoiding costs of \$7 million; and avoided involuntary workforce separations.

ANADs business management office is responsible for marketing, researching, initiating partnership opportunities with the local, regional, and global public and private businesses; actively researching companies in order to enhance Homeland Security.

## Anniston Army Depot Anniston, Alabama

In 1993, Anniston Army Depot (ANAD) with the help of our command organization, Depot Systems Command, and the Industrial Operations Command (IOC), now the Tank-Automotive & Armaments Command (TACOM), developed a plan designed to integrate the public/private entities of the Heavy Tracked Combat Vehicle industrial base into an industrial sector of cooperation instead of confrontation. Taking its cue from the changes in business infrastructures in the commercial market, ANAD recognized that business alliances, rather than competition, with its strategic partners was key to maintaining a healthy industrial base.

The initial step was to meet with the Original Equipment Manufacturers (OEMs) most involved in our industrial sector, General Dynamics Land Systems Division (GDLS), United Defense, L.P. (UDLP), and Allied Signal Corporation -- all significant contributors to the design, development, and production of major tracked combat vehicles such as the M1 Abrams Tank, M88 Recovery Vehicle, and combat vehicle turbine engines, respectively. The initial meetings were used to air problems that each faced in light of diminishing DoD budgets. It was apparent to all corporations that ANAD had maintenance capacities and capabilities that complimented their engineering and manufacturing expertise. Future meetings and dialogues set the stage for joint development of new maintenance and production approaches that would leverage our combined infrastructure assets and core strengths in a manner that would make better use of DoD's dollars and, therefore, the taxpayers' dollars.

While ANAD has always been a leader in the overhaul and repair of heavy tracked combat vehicles, we like to think of ourselves as a leader in initiating diversification in the defense industrial base. Outlined below are several initiatives that we see as the corner stone toward building a new *"joint integrated/blended defense industrial base."* The initiatives were developed in the spirit of bringing alternatives to the way this particular defense industrial sector operates, and most importantly, support the National Military Strategy and ultimately the soldier.

In pursuing these initiatives ANAD has the support and cooperation of the TACOM, the Program Managers (PMs), and the OEMs. ANAD has been successful in initiating a new integrated industrial base because it makes good business sense.

## SECTION II – INITIATIVES

### **A. USE OF GOVERNMENT TEST TRACK AND RELATED SERVICES**

In August of 1994, UDLP-SPD requested use of the combat vehicle test track facilities at ANAD to support their contract to convert M113 Armored Personnel Carriers to the A3 configuration. UDLP-SPD's original intent was to build a test track at a facility in close proximity to ANAD. Building of this test track would have resulted in dual defense capabilities in a small geographical area. A new test track would also require the spending of defense dollars to duplicate a resource already available at ANAD. By providing the test track and related services to UDLP-SPD, ANAD is able to save DoD dollars by offsetting overhead with income from UDLP-SPD for the use of the track.

At the time of the request, authority for providing testing services to private industry existed under 10 U. S. Code §4508, and its implementing guidance, DARCOM-R 70-20, but the 1995 DoD Authorization Act rescinded this statute replacing it with 10 U.S.C §2539(a) (formerly known as §2541). Because DoD did not implement the statute until June 1995, ANAD could not use the rescinded or new testing statute to allow UDLPSPD to utilize the ANAD test track facility and related services.

However, the solicitation upon which the contract to UDLP-SPD was awarded was open to public to private competition. After coordinating with higher headquarters and the Army Material Command (AMC) it was determined that ANAD could provide the services related to use of the test track under the working capital fund statute, 10 U.S.C. §2208(j). An agreement was finalized in March 1995 between ANAD and UDLP-SPD in which ANAD receives \$35,060.00 in return for providing the test track and related services to UDLP-SPD.

### **B. M1 ABRAMS INTEGRATED MANAGEMENT PROGRAM - AIM XXI**

GDLS and ANAD entered into a Memorandum of Agreement in which each agreed to work together to develop a work share for the sustainment of the M1 A1 fleet to include restoration, field support, and information management. GDLS and ANAD have developed such a plan, with ANAD primarily responsible for the disassembly and companion restoration, and GDLS primarily responsible for the assembly, system integration, and testing. Field support and information management will be a joint effort.

The AIM XXI concept features three major elements:

1. The formation of a GDLS/ANAD partnership to recycle and refurbish the Abrams M1A1 platform in an effort to sustain a "ready to fight" fleet.
2. Provide enhanced forward maintenance and maintenance training (based on user needs) thereby fulfilling the industrial base responsibility to support the soldier and the M1A1 platform.
3. Provide an integrated information management environment to facilitate configuration management, predictive maintenance, technology insertion, economic order purchasing, and improved parts inventory control.

AIM XXI provides the Army with a restored, sustainable fleet allowing for reduced maintenance costs, reduced inventory cost, technology insertion, one-time configuration update, increased soldier training time, improved "go to war" capability, and strong support by a public/private industrial base team.

The AIM program set the standard for what is now known as the Army's Recap Programs.

### **C. TURBINE ENGINE SERVICE LIFE EXTENSION (SLE) PROGRAM**

Honeywell Engines (formerly Textron Lycoming & AlliedSignal) and ANAD entered into a Memorandum of Agreement to develop work shares for the sustainment of the AGT 1500 Turbine Engine. Subsequently AlliedSignal Engines was awarded a sole source service life extension contract to improve the durability/life cycle of the AGT 1500 Turbine Engine. It needed certain component parts and originally proposed to the PM that these particular parts be government furnished. However, a determination was made to seek ANAD as a supplier for these parts under the authority of the direct sales statute, 10 U.S.C. §4543, as currently amended. As required by the statute, AlliedSignal needed to justify that the articles were not commercially available in the U.S. In its market research, AlliedSignal found that its first and second tier suppliers were shrinking and that ANAD's quoted price was 65% lower than it could find in the commercial market.

ANAD is finalizing its direct sales agreement with AlliedSignal which is estimated at \$638K. This work not only sustains the private industrial base for the AGT 1500, but also sustains the organic skills, improves readiness, and reduces operational costs at ANAD.

### **D. HONEYWELL (ALLIEDSIGNAL) RECUPERATOR OPERATIONS**

In July 1995, the BRAC commission voted to close Allied Signal's Tank Engine Plant in Stratford CT. While originally anticipating it would relocate its engine work to another AlliedSignal plant, AlliedSignal and the PM decided moving some operations to facilities at ANAD was in the best interest of the tax payer. Due to move from Stratford to Anniston, there has been a cost avoidance of \$1.5M per year. Allied hired 40 personnel from the local Anniston community to perform the work on this program.

The Recuperator Center Of Excellence began production at the Anniston Army Depot in January of 1998. The operation uses highly specialized equipment and processes to produce recuperator heat exchanger components for the U.S. Army's family of M1 Battle Tanks. The recuperator component is an integral part of the engine. It recovers waste heat, reduces exhaust temperature and muffles exhaust noise.

The recuperator is a critical part of an Army "Go-To-War" asset. "Go-To-War" assets are weapon systems each military service designates as essential to support any plans by the Joint Chiefs of Staff for military action. The Main Battle Tank is required by the Army to support these plans. Army plans show that the M1 family of tanks will be in front-line service for at least another 25 years. Spare recuperator parts will

continue to be needed throughout this period. The Recuperator Center Of Excellence facility is the only source of recuperator hardware for the M1 Tank Engine AGT-1500 in the world.

#### **E. GUNNER PRIMARY SIGHT MANUFACTURING OPERATIONS**

GDLS established its M1A2 Gunners Primary Sight (GPS) manufacturing operations in facilities at ANAD. The facilities were available as a result of the 1993 BRAC decision to consolidate tactical missile systems at another depot location.

With the co-location of the manufacturer and maintenance support at one location, the Tank Automotive Command (TACOM) and the PM-Abrams estimate significant cost savings for the execution of the M1A2 upgrade program. Also, with the test measurement diagnostic equipment (TMDE) co-located, PM-Abrams plans to assign the government furnished equipment to ANAD after GDLS has completed the GPS contract, avoiding the purchase of duplicate TMDE for ANAD.

ANAD is reimbursed for the services it provides in conjunction with the use of the facilities (electricity, trash removal, water, base security etc.).

#### **F. FOX VEHICLE UPGRADE PROGRAM**

The Fox Vehicle Upgrade Program is a joint venture between ANAD and GDLS to upgrade the Army's entire fleet of 123 XM93 FOX Nuclear, Biological Chemical Reconnaissance System (NBCRS) vehicles.

A Justification and Approval (J&A) was signed by the Department of the Army for a sole source contract to GDLS for the Fox Upgrade based primarily on the fact that GDLS has an existing agreement and working relationship with Thyssen Henschel, the German manufacturer of the Fox vehicle.

GDLS, aware of ANAD's capacities and capabilities, approached ANAD in June 1994, for the purpose of developing a non-exclusive partnering arrangement to upgrade these vehicles. GDLS sought facilities at ANAD in order to upgrade at one fixed location and also looked to ANAD for providing teardown and refurbishing services.

The Major Subordinate Command (MSC) for the Fox Upgrade, the Chemical, Biological Defense Command (CBDCOM) and the PM-Fox approved a plan in which GDLS is the prime contractor and ANAD is its subcontractor. This results in less contract administration since only one-entity answers directly to the MSC and it also allows more flexibility for the work share between ANAD and GDLS throughout the life of the contract. Therefore, ANAD and GDLS entered into a facility use contract and a direct sales contract.

In order to achieve this, GDLS submitted required information stating why it was necessary to perform the work at ANAD and why it could not obtain the services elsewhere. GDLS stated that while several commercial vendors were capable of performing each of the required upgrade operations individually, ANAD was the only activity capable of providing an integrated skilled labor force and having adequate

facilities and equipment necessary to perform all of the services as a single-point service. A major investment in training and facilities were not be necessary and there was no disruption in the U.S. Army Fox Upgrade and fielding schedule.

This cooperative arrangement may have been the most difficult ANAD had attempted, as it raised all of the issues and problems similar programs have addressed individually. The program required two separate contracts: (1) a contract for the ANAD provided services in which ANAD performs a share of the actual upgrade work to include cleaning and finishing, welding, machining, and painting of the hull, as well as asbestos removal; and (2) a contract directly between ANAD and GDLS for the government facilities provided to GDLS. ANAD provides facilities to GDLS for its upgrade work and to its German subcontractor for its component repair/upgrade work. In addition, ANAD and GDLS had dual occupancy of facilities. The services contract is authorized under the direct sales statute, 10 U.S. Code §4543, and the facilities use contract is authorized under the FAR, Subpart 45 and the Defense and Army Supplements to Subpart 45.

Existing ANAD personnel will perform ANAD's portion of upgrade work. GDLS hired 20 personnel from the local Anniston community to perform the GDLS work share. Foreign and domestic subcontractors to GDLS will be on depot throughout the life of the program performing various parts of the upgrade work.

The Fox Upgrade Program provides ANAD with work that was solicited from the private sector for which it may not have otherwise been considered. In addition, it allows ANAD to reduce its overhead costs by utilizing its unutilized and under-utilized facilities. By allowing GDLS to utilize the ANAD facilities the DoD infrastructure is reduced (GDLS does not have to facilitate) and DoD realizes a reduction in the contract price. By providing services to GDLS, the ANAD workforce is able to supplement its core work and maintain the industrial base skills necessary to keep the organic industrial base healthy.

#### **G. INTERIM ARMORED VEHICLE (IRV) STRYKER**

In 2001, when GDLS and GM won a contract to jointly manufacture the Army's next generation combat vehicle, the contractors sought out a seasoned business partner to share the workload and help keep down production costs. After surveying the market and considering the costs of doing all the work themselves, the contractors selected ANAD.

As a result, contractor and federal employees worked side by side at the depot's facility and assembled the Stryker. This partnership marked the first time the Army has ever built its own combat vehicles, and it signaled a new era in the one distant relationship between Army depots and Defense contractors. With Defense dollars dwindling and the industrial base shrinking, both contractors and depots realize that forging partnerships is the way of the future. In addition, GDLS hired over 150 personnel from the local community.

ANAD's contract with GDLS and GM to jointly produce the brigade combat vehicles combines both leasing and subcontracting.

ANAD is reimbursed for the services it provides in conjunction with the use of the facilities (electricity, trash removal, water, base security etc.).

#### **H. Opposing Forces Surrogate Training System (OSTS) - Main Battle Tank (MBT)**

PEO-STRI awarded UDLP, Ground Systems Division, in Santa Clara, CA, a \$127M contract for the system technical support and production of Opposing Forces Surrogate Training System (OSTS) - Main Battle Tank (MBT) vehicles. The contract calls for design, manufacture and test of a prototype vehicle and production of seven vehicles in mid-2004 with options for up to 137 additional vehicles. If options are exercised, the contract could be up to \$136.8M.

Vehicle production will be completed at UDLP, Steel Products Division, in Anniston, AL, in partnership with Anniston Army Depot (ANAD) and Rock Island Arsenal (RIA).

ANAD serves as the primary subcontractor performing partial vehicle disassembly, hull overhaul, repair and modification, component repair, sight repair, fabrication of OSTS-unique parts, and turret assembly and integration. UDLP-SPD performs partial vehicle disassembly, paint, vehicle assembly, and systems integration and testing. RIA performs fabrication of turrets, rotors and baskets.

#### **I. SERVICE CONTRACTING FOR ABOVE CORE OPERATIONS**

ANAD has begun "contracting in" direct labor for performance of above core missions and operations and for areas that have high organic personnel shortfalls. ANAD utilizes contracting-in as a flexible tool to accomplish mission requirements without adding additional personnel to the government payroll. Contractors utilized to augment the existing workforce usually hire from the local area which adds to the local economy. These contractors provide the skills needed to perform selected functions and the government provides all facilities, equipment, and any special tools necessary to meet job requirements.

Here at Anniston, we believe our initiatives are the catalyst for changing the way public and private industry work together. We have torn down a few walls during our march down this new path. Still, there are many more to be dismantled before a truly integrated defense industrial base emerges. DoD can maximize the investment in its many defense installations by emphasizing partnerships among OEMs and the public depots.

## **PARTNERSHIP DATA**

Updated 19 Mar 04

### **DIRECT SALES PARTNERSHIP**

#### **FOX VEHICLE UPGRADE (M901 FOX NBCRS):**

##### **ANAD PERFORMS:**

Vehicle Hull Upgrade  
Vehicle NBC tail Upgrade  
Vehicle Hull and Tail Prime Paint  
Vehicle Final Paint and Camouflage Application  
Engine Disassembly  
Asbestos Removal

##### **GENERAL DYNAMICS PERFORMS:**

Vehicle Disassembly  
Subassembly/Component Rework  
Vehicle Reassembly  
Systems Integration and Test

#### **FOX LOGISTICS SUPPORT (GDLS)**

##### **ANAD PERFORMS:**

Miscellaneous Logistics/Base Operations Support  
Weld Up Grade on Hull  
Spend Blast Hull  
Prime Paint  
Final Paint  
Remove Engines

##### **GENERAL DYNAMICS PERFORMS:**

Vehicle Assembly  
Vehicle Test and Acceptance  
Supply of all Parts and Materials

#### **STRYKER (GDLS):**

##### **ANAD PERFORMS:**

Vehicle Final Paint  
Miscellaneous Production Services (POL, Paint, Hazardous Waste)  
Miscellaneous Other Work as Requested (Slat Armor Installation, Vehicle Assembly, etc)

##### **GENERAL DYNAMICS PERFORMS:**

Vehicle Assembly  
Vehicle Test and Acceptance  
Supply of all Parts and Materials

## **PARTNERSHIP DATA**

**Updated 19 Mar 04**

### **STRYKER (GDLS)**

#### **ANAD PERFORMS:**

Hull Modification and Repair  
Component Modification and Repair

#### **GDLS PERFORMS:**

Vehicle Assembly  
Vehicle Test and Acceptance  
Supply of all Parts and Material

### **ISRAELI M1064A3 MORTAR CARRIERS (UDLP-SPD)**

#### **ANAD PERFORMS:**

Grit Blasting of Hulls

### **OPPOSING FORCES SURROGATE TRAINING SYSTEM – MAIN BATTLE TANK (OSTS-MBT) (UDLP-GSD)**

#### **ANAD PERFORMS:**

Partial Vehicle Disassembly  
Hull Overhaul, Repair and Modification  
Component Repair  
Sight Repair  
Fabrication of OSTs Unique Parts  
Turret Assembly and Integration

#### **UDLP-SPD PERFORMS:**

Partial Vehicle Disassembly  
Paint  
Vehicle Assembly  
Systems Integration and Testing

#### **RIA PERFORMS**

Fabrication of Turrets, Rotors and Baskets

## **PARTNERSHIP DATA**

Updated 19 Mar 04

### **DEPOT SERVICE INC:**

#### **ANAD PERFORMS:**

Fabrication of Wing Lug Fixture  
Packaging and Shipment of Fixture

#### **DSI PERFORMS:**

Broker of Services between the Navy and ANAD

### **RECUPERATOR (AGT 1500)**

#### **ANAD PERFORMS:**

Material Handling  
Material Movement

#### **HONEYWELL PERFORMS:**

Manufacture of Recuperator Pair Plates

### **JORDANIAN TRAINING:**

#### **ANAD PERFORMS:**

Refresher training to UDLP FSR on the Overhaul of 3 Major M113 FOV  
Subassemblies:  
Transfer Gear Case  
Differential  
TX100-1 Transmission  
Provide In-Country Technical Support During Pilot Program

### **MINING EQUIPMENT:**

Welding of Long Wall Mining Conveyor Pans - UDLP

### **SLE – TURBINE ENGINE**

Overhaul Turbine Engine Component Parts - ALLIED SIGNAL

### **AMPHIBIOUS ASSAULT VEHICLE**

Paint and Non-Skid Application - UDLP

### **M88 HERCULES:**

Appurtenance Removal - UDLP  
Sand Blast - UDLP

## **PARTNERSHIP DATA**

Updated 19 Mar 04

### **M113 FOV OVERHAUL & CONVERSION:**

Disassembly  
Hull Structure Work  
Overhaul Subassemblies and Components  
Kitting  
Ship to UDLP Anniston, AL – UDLP

### **M113 GRIT BLAST:**

ANAD performs Grit Blasting of M113 Hulls

### **SHELTER PAINT**

Final Paint Communication Shelter Exterior - IEI

### **IMPROVED RIBBON BRIDGE**

Manufacture 211 Interior Bays and 82 Ramp Bays  
In Support of EWK for the IRB  
EWK

### **M1 ENGINE OIL PUMP**

LSI

#### **ANAD PERFORMS:**

Touch Labor to Overhaul Oil Pumps

#### **LSI PERFORMS:**

Provides Oil Pumps and Repair Parts

### **MOROCCAN REPAIR FACILITY**

GDLS

ANAD provides mortality data for M60A1 Vehicle Engines, Transmissions, Final Drives, and Fire Control and M48A5 Vehicle Engines, Transmissions and Fire Control

### **AGT 1500 TURBINE ENGINE**

GDLS

ANAD performs Engine Overhaul in Support of GDLS' contract with Kuwait for M1 Vehicles

## **PARTNERSHIP DATA**

Updated 19 Mar 04

### **PALADIN TESTING (UDLP)**

#### **ANAD PERFORMS**

Vehicle Control and Lab Testing

## **WORKSHARE PARTNERSHIP**

### **M1/M1A2 UPGRADE:**

#### **ANAD PERFORMS:**

Vehicle Receipt  
Complete Vehicle Disassembly  
Vehicle Hull Rework and Upgrade  
Demil of Turret  
Overhaul of Major Subassemblies  
Overhaul of Components  
Shipment of Vehicle to Lima Army Tank Plant, OH - GDLS

#### **GENERAL DYNAMICS PERFORMS:**

Vehicle Reassembly  
Installation of New Turret  
Systems Test and Integration

### **AIM XX1:**

#### **ANAD PERFORMS:**

Vehicle Receipt  
Complete Vehicle Disassembly  
Vehicle Hull Overhaul  
Vehicle Turret Overhaul  
Overhaul of Major Subassemblies  
Overhaul of Components  
Shipment of Vehicle to Lima Army Tank Plant, OH - GDLS

#### **GENERAL DYNAMICS PERFORMS:**

Vehicle Reassembly  
Systems Test and Integration

## **PARTNERSHIP DATA**

**Updated 19 Mar 04**

### **M113 FOV OVERHAUL & CONVERSION:**

#### **ANAD PERFORMS:**

Vehicle Disassembly  
Hull Overhaul and Conversion  
Dismate Powerpack  
Ship to UDLP Anniston, AL – UDLP

#### **UDLP PERFORMS:**

Overhaul of Subassemblies and Components  
RISE Modification  
Vehicle Assembly  
Systems Integration and Test  
Final Paint

### **HAB/WOLVERINE (M1):**

#### **ANAD PERFORMS:**

Vehicle Disassembly  
Hull Structure Rework  
Demil Turrets  
Overhaul Major Subassemblies  
Overhaul Components  
Shipment of Vehicle to Lima Army Tank Plant, OH – GDLS

#### **GENERAL DYNAMICS PERFORMS:**

Chassis Assembly  
Procure and Install Bridge  
Inspect and Test

### **M88 HERCULES:**

#### **ANAD PERFORMS:**

Vehicle Disassembly  
Hull Structural Repair  
Front Blade Assembly Repair  
Ship to York, PA - UDLP

#### **UDLP PERFORMS:**

Vehicle Modification  
Vehicle Reassembly  
Systems Test & Integration

## **PARTNERSHIP DATA**

**Updated 19 Mar 04**

### **PALADIN:**

#### **ANAD PERFORMS:**

Overhaul and Conversion of Chassis Assembly (VEH 950 Pilot)  
Overhaul and Conversion of Armament System  
Provide Components of Turret Kit  
Shipment to UDLP, LEAD – UDLP

#### **UDLP PERFORMS:**

Fabricate and Assemble New Cab  
Vehicle Reassembly  
Systems Test and Integration

### **BREACHER/GRIZZLY:**

Complete Disassembly  
Modify Hull  
Overhaul Turbine Engine  
Overhaul Common Chassis Components  
Declassify Turrets  
Ship to York, PA – UDLP

### **OSV (OPPOSING FORCES SURROGATE VEHICLE) (M113):**

#### **ANAD PERFORMS:**

Fabricate OSV Unique Parts and Spares  
Partial Vehicle Disassembly  
Abrasive Clean Hull  
Hull Machine and Repair  
Component Repair and Conversion  
Component Paint  
Turret Assembly  
Turret Integration  
Program Management

#### **UDLP PERFORMS:**

Overhaul of Subassemblies and Components  
RISE Modification  
Vehicle Assembly  
Systems Integration and Test  
Final Paint

#### **ROCK ISLAND PERFORMS:**

Fabricate Turrets, Rotors and Baskets  
Provide Bradley Kit Components

**PARTNERSHIP DATA**

Updated 19 Mar 04

**FACILITIES PARTNERSHIP – ISSA**

**\*Current Programs**

**\* GUNNER'S PRIMARY SIGHT (GPS) MANUFACTURING:**

ANAD SERVICES:

Provides Use of Under Utilized Facility To General Dynamics

GDLS PERFORMS:

Manufacture New GPS

**\* FOX VEHICLE MAINTENANCE:**

ANAD SERVICES:

Provides Use of Under Utilized Facility to General Dynamics

GDLS PERFORMS:

Receipt, Storage and Issue of FOX Vehicle Subassemblies, Components and Parts for Fielded Vehicles

**\* FOX VEHICLE UPGRADE:**

ANAD SERVICES:

Provides Use of Under Utilized Facility to General Dynamics

GDLS PERFORMS:

FOX Upgrade

**\* M113 TEST TRACK:  
(FY 97-99 DS) FY 00-03 ISSA**

Use of ANAD Test Track and Adjacent Facility  
UDLP

**PROSE:**

ANAD SERVICES:

Provides Use of Under Utilized Facility to Honeywell

HONEYWELL PERFORMS:

Supply of Quality Parts and Material in Timeframes to Effectively Support ANAD's Turbine Engine Repair/Overhaul Programs

## **PARTNERSHIP DATA**

Updated 19 Mar 04

### **LONGBOW MISSILE LAUNCHER:**

Longbow Conversion  
BOEING NORTH AMERICA

## **FACILITIES PARTNERSHIP – DS**

### **\*Current Programs**

#### **\*STRYKER:**

##### **ANAD SERVICES:**

Provides Use of Under Utilized Facility to GDLS

##### **GENERAL DYNAMICS PERFORMS:**

STRYKER Assembly/Test and Acceptance

#### **\*RECUPERATOR:**

##### **ANAD SERVICES:**

Provides Use of Under Utilized Facility to Honeywell

##### **HONEYWELL PERFORMS:**

Manufacture of Pair Plates

#### **\*AMPHIBIOUS ASSAULT VEHICLE:**

Final Repair  
UDLP

INFORMATION PAPER

AMSTA-AN-CTPC

UNCLASSIFIED

17 Feb 2004

SUBJECT: Support Agreements/MOAs and Tenants at Anniston Army Depot (ANAD)

CURRENT STATUS:

1. Nineteen (19) tenants with about 1,600 employees reside at ANAD and receive base operations support. ANAD also provides support to 12 off-depot customers. Estimated recurring reimbursement from support agreements, MOAs, and direct sales tenants is approximately \$28M with more funds received for special projects, work orders and construction.
2. ANAD receives support from 14 agencies and pays approximately \$5M for the support. SBCCOM funds an additional \$1M for base ops support to the Chemical Defense Force soldiers.
3. Support agreement management is being realigned from DOC to DRM.
4. Below is a summary of tenants, other customers and support providers.

TENANTS	TENANT PROGRAM	BLDGS
<b>Contractors</b>		
General Dynamics Land Systems (GDLS) -		
Support agreement with PM, NBCDS	Fox Vehicle Upgrade	414
Support agreement with PM, NBCDS	Fox Vehicle Maint	134
Support agreement with PM, ABRAMS	Gunner's Primary Site (GPS)	105
Direct sales contract	Stryker	105, 134, 414
Honeywell -		
Support agreement with PM, ABRAMS	PROSE	128, 133
Direct sales contract	Recuperator	134
United Defense Limited Partnership (UDLP)		
Support agreement with PM, M113	M113 Family of Vehicles	418
Direct sales contract	OSTS Main Battle Tank	418
Direct sales contract - ** Ends 30 Sep 2004	Israeli Mortar Carriers	418
Lockheed Martin - spt agreement w/AMCOM	Hellfire Missile maint & mods	680-688
Corporation for the Promotion of Rifle Practice and Firearms Safety **Moving 9/30/2004	Civilian Marksmanship Program Storage	110
<b>Government Agencies</b>		
Anniston Munitions Center (ANMC)	Ammunition Mission	HQ - 7 + others
Anniston Chemical Activity (ANCA)	Chemical Storage Mission	HQ - 363 + others
Anniston Chemical Disposal Facility (ANCDF) for PM, Chemical Demilitarization (PMCD)	Disposal of Chemical Munitions	Morrisville Rd
722d Ordnance Company (EOD)	EOD Mission	202
Defense Distribution Depot - Anniston (DDAA)	DLA Supply Mission	HQ - 362 + others
Defense Reutilization & Marketing Office (DRMO)	Disposal Mission	HQ - 282 + others
Corps of Engineers - Mobile (COE-M)	District Engineering	152
Army Recruiters - under COE-M	HQ Office	7
Test, Measurement, & Diagnostic Equipment (TMDE)	Calibration	118
Dear Clinic - MEDDAC - Ft Benning	Industrial Hygiene and Occupational Health Svcs	52
Center for Military History (CMH)	Historical Clearinghouse	201, 53, 288, 17
Army Air Force Exchange Service (AAFES)	Px Branch	219
Defense Threat Reduction Agency (DTRA)	Monitoring Chem Demil	Demil Site
AL Army National Guard	Ammo Storage	3 Igloos

\*Funds are received through AMC for these non-AMC OMA funded tenants.

SUBJECT: Support Agreements/MOAs and Tenants at Anniston Army Depot (ANAD)

OFF-SITE CUSTOMERS	SUPPORT PROVIDED
AMC Security Support Activity	Managerial Accounting
Pine Bluff Arsenal (PBA)	**Computer Support (AMCISS, SIFS, ATAAPS)
Watervliet Arsenal (WVA)	" " "
Bluegrass Army Depot (BGAD)	Computer Support (AMCISS, SIFS, ATAAPS)+ St. Louis Megacenter spt
Rock Island Arsenal (RIA)	" " "
Defense Finance and Accounting (DFAS) - Indianapolis	SIFS Support only
Soldier & Biological Chemical Command (SBCCOM)	ATAAPS Support only
Tri-State Fleet Management Center	GSA vehicle fuel
TACOM-Warren & AL Army National Guard - FT McClellan (Civilians assigned to TACOM's TDA, but working for AL ARNG)	Base Ops for Title V Civilians at Ft McClellan

\*\*AMCISS = AMC Industrial Supply System. SIFS = Standard Industrial Fund System.  
ATAAPS = Automated Time and Attendance Production System.

CUSTOMERS OF THE DEFENSE NON-TACTICAL GENERATOR AND RAIL CENTER (DGRC)	SUPPORT PROVIDED
78 ABW/XPRC (Robins AFB)	Rail Equipment Maintenance
Military Traffic Management Command	Repair/modification of rail cars
Dugway Proving Grounds	Power Plant Maintenance

AGENCIES THAT SUPPORT ANAD VIA SUPPORT AGREEMENTS	SUPPORT PROVIDED
ANMC	Explosive Ord Support and Transportation
DDAA	Receipt, issue & storage of hazardous material, misc tasks - Packaging/marketing, box/pallet fabrication, and transportation
MEDDAC - Ft. Benning (Dear Clinic)	Occupational Health Svcs and Industrial Hygiene
Tri-State Fleet Management	GSA Vehicles and Maintenance
TMDE	Calibration
<b>Supporting DGRC</b>	
MEDDAC - Ft. Carson	Occupational Health and Industrial Hygiene
TMDE	Calibration
Ft. Knox	Staging Station for maintenance trailers for DGRC work in that region
Red River Army Depot (RRAD)	" " " "
Tooele Army Depot (TEAD)	Civilian Personnel and limited Base Ops Spt
Hill AFB	Base Ops Host
<b>Supporting Troops</b>	
Installation Morale, Welfare, and Relief Fund (IMWRF)	Food/Gym Passes For Chemical Defense Force (SBCCOM) For Installation Defense Force (TACOM)
AL Army National Guard Training Center	Food/Housing For Chemical Defense Force (SBCCOM) For Installation Defense Force (TACOM)
AL Army National Guard Surface Maintenance Management	Vehicle Maintenance (for Chemical Defense Force) (SBCCOM)



SECRETARY OF THE ARMY  
WASHINGTON

AUG 21 2001

MEMORANDUM THROUGH DIRECTOR OF THE ARMY STAFF  
FOR COMMANDER, U.S. ARMY MATERIEL COMMAND, 5001  
EISENHOWER AVENUE, ALEXANDRIA, VIRGINIA 22333-0001  
SUBJECT: Designation of Centers of Industrial and Technical Excellence

Based on authority of Title 10, United States Code (U.S.C.), Section 2474,  
I designate the following depot maintenance activities as Centers of Industrial  
and Technical Excellence (CITEs):

- Anniston Army Depot* for combat vehicles (except Bradley),  
artillery, and small caliber weapons.
- Corpus Christi Army Depot* for rotary wing aircraft (less avionics).
- Letterkenny Army Depot* for air defense and tactical missile ground  
support equipment - (less missile guidance and control).
- Red River Army Depot* for the Bradley Fighting Vehicle series, Multiple  
Launch Rocket System chassis, Patriot Missile recertifications, and  
rubber products necessary for depot maintenance missions.
- Tobyhanna Army Depot* for communications and electronics, avionics,  
and missile guidance and control.

I authorize and encourage each CITE to enter into public-private  
cooperative arrangements referred to in the statute as "public private  
partnerships" to perform work related to the depot maintenance core  
competencies of the particular CITE. Depot operations will comply with all  
applicable law, to include 10 U.S.C. Section 2208 and 22 U.S.C. Section 2770.  
Further, depots will make their respective capabilities available to all interested  
contractors to avoid even the perception of exclusive teaming arrangements.

Section 2474(b)(3) requires a report to Congress evaluating the need for  
loan guarantee authority, similar to our loan guarantee program under 10  
U.S.C. Section 4555, to facilitate the establishment of public-private  
partnerships and the achievement of the objectives set forth in Section 2474.  
Accordingly, the Commander, U.S. Army Materiel Command will take the lead  
in preparing and submitting a report to the Assistant Secretary of the Army for  
Acquisition, Logistics and Technology by August 31, 2001.

The Commander, U.S. Army Materiel Command will submit written notification of all public-private arrangements to the Assistant Secretary of the Army for Acquisition, Logistics and Technology.

A handwritten signature in black ink that reads "Thomas E. White". The signature is written in a cursive style with a long horizontal stroke at the beginning.

Thomas E. White

**CONTRACTOR STRENGTH:****30-Mar-05**

MTS - Phones	13
Gen Dyna World Wide Telecomm Div	1
DOIM Contractors	7
Environmental (ONYX)	6
Environmental (ORISE)	1
Engineering (ORISE)	0
Engineering (CH2MHill)	1
Forestry	6
Facilities to include JOC	130
Custodian/Janitorial	36
LOCKHEED/MARTIN	12
ISSOP (DRMO)	3
WESTINGHOUSE	691
Program & Integration Spt (SAIC)	14
GENERAL DYNAMICS	128
ROBBINS GIOIA	10
CAMBER	1
UNITED DEFENSE	3
HONEYWELL	46
SHOPPETTE	2
AOD CREDIT UNION	3
CLEARING HOUSE-Contractors	3
Military History - Contractors	3
LESCO	110
RECRUITING OFC-Contractors	1
SUB AB/PREV	1
COOP COORD	1
TMDE Contractor	2
AKAL	45
Elite Technologies	51
Raytheon	10
Defense Supply Center-Philadelphia	3
LOGVALUE	1
JacobsSverdrup	3
<b>TOTAL</b>	<b>1348</b>

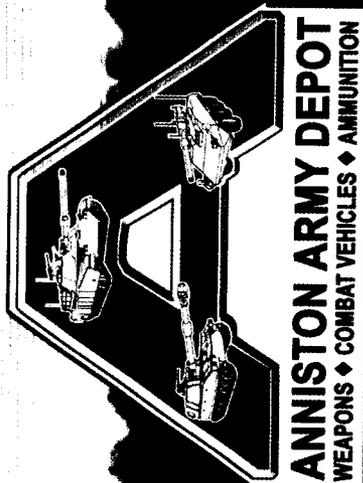
# PUBLIC - PRIVATE PARTNERSHIP



America's  
Combat Vehicle  
Support Center



TO PLAN, COORDINATE AND IMPLEMENT  
MARKETING AND BUSINESS STRATEGIES  
TARGETED AT PRIVATE INDUSTRY,  
MAJOR COMMANDS AND OTHER SERVICES



# THE PREMIER **COMBAT SYSTEM** **SUPPORT PROVIDER**

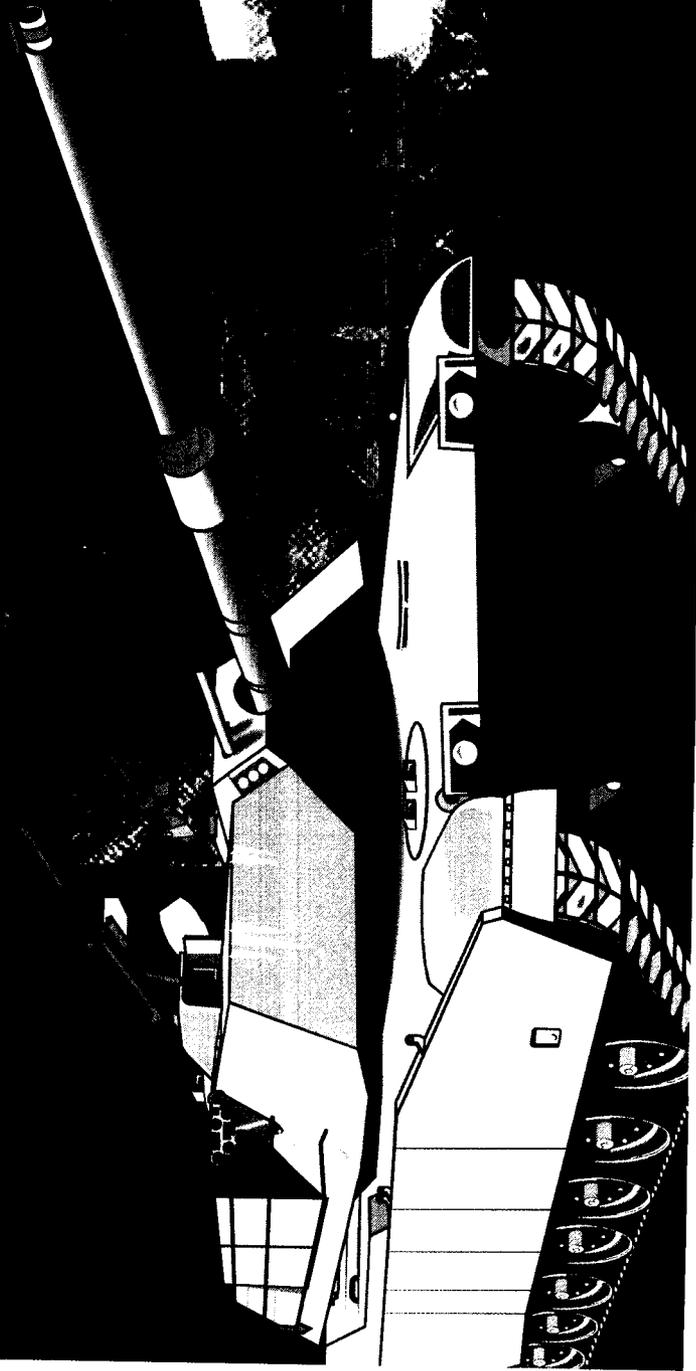


# WORLDWIDE

**UNIQUELY VITAL  
TECHNOLOGICALLY SUPERIOR  
UNCONDITIONALLY RESPONSIVE**

Reshaping  
the  
Combat Vehicle  
Industrial Base

*In A  
Transforming  
Army*



# Environment - *Past & Present*

Independent



Public  
VS  
Private

OEM

ANAD

Best of  
Both  
Worlds

OEM

Common  
Fence  
Line

Encompasses  
Primary Elements  
of Combat Vehicle  
Industrial Base

Competitive  
VS  
Cooperative

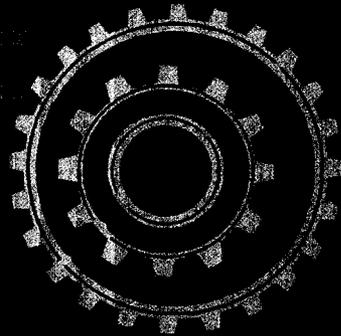
Service  
Contractor

OEM

Protects  
Organic/Private  
Sector Core  
Capabilities

Virtual  
Business  
Relationships

Reduction of  
Total Combat  
Vehicle  
Infrastructure



## SUPPORTS **ARMY TRANSFORMATION**

# Public-Private Partnering WORKSHARE

Co-production efforts wherein Anniston Army Depot & the Industry Partner each contribute, independently, a pre-determined amount of resources (skills, manpower, facilities, equipment, etc.) to a program

Project	Mechanism	Partner
*M1A2 SEP Retrofit	Depot - Army Program GDLS - PM Contract	GDLS
*Abrams Integrated Management (AIM XXI)	Depot - Army Program GDLS - PM Contract	GDLS
M113 FOV O/H & Conversion	Depot - Army Program UDLP - PM Contract	UDLP
*HERCULES	Depot - Army Program UDLP - PM Contract	UDLP
Paladin	Depot - Army Program UDLP - PM Contract	UDLP
Heavy Assault Bridge (Wolverine)	Depot - Army Program GDLS - PM Contract	GDLS
Breacher (Grizzly)	Depot - Army Program UDLP - PM Contract	UDLP
OSV	Depot - Army Program UDLP - PM Contract	UDLP
*M1/M1A2 Upgrade	Depot - Army Program GDLS - PM Contract	GDLS

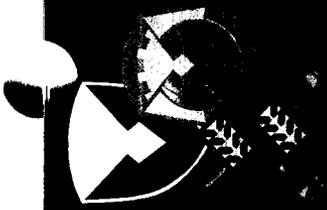
**\* CURRENT**

# Public-Private Partnering DIRECT SALES

Partnering agreements wherein ANAD performs services for private industry as a sub-contractor under the authority of various sections under Title 10

Project	Mechanism	Partner
*Fox Logistics Support	10 US Code 4543	GDLS
*Israeli Mortar Carrier	10 US Code 2474	UDLP
*Stryker Vehicle-2	10 US Code 2208(j)	GM Defense
*Recuperator	10 US Code 2474	Honeywell
*Stryker Vehicle-1	10 US Code 2208(j)	GDLS
*Main Battle Tank	10 US Code 2474 & 4543	UDLP
*M2A2 Aiming Circle	10 US Code 2474	Seiler
Fox Vehicle Upgrade	10 US Code 4543	GDLS
Mining Equipment	10 US Code 4543	UDLP
SLE - Turbine Engine	10 US Code 4543	AlliedSignal
HERCULES	10 US Code 4543	UDLP
Shelter Exterior Repair and Paint	10 US Code 4543	International Enterprise, Inc.
Base Ops/Base Logistics Support	10 US Code 4543	GDLS & Honeywell
M1 Engine Oil Pump Repair	10 US Code 4543	Lear Siegler
Moroccan Vehicle Repair Facility	10 US Code 4543	GDLS
Misc. Machining/Fabrication	10 US Code 4543	Depot Services Inc.
AGT 1500 Turbine Engine Kuwait	10 US Code 4543	GDLS
Improved Ribbon Bridge	10 US Code 2208(j)	EWK
Generator - On Site Maintenance	10 US Code 4543	Noresco, LLC
Jordanian M113 Training	10 US Code 2474	UDLP
Paladin	10 US Code 2474	UDLP

**\* CURRENT**



# Public-Private Partnering FACILITY USE

Partnering agreements wherein public & private entities use ANAD facilities available as underutilized by ANAD operations under the authority of Federal Acquisition Regulation (FAR) Sub-part 45 & the Army's Supplement to the FAR

Project	Mechanism	Partner	Location
*Gunner's Primary Sight (GPS)	ISSA - PM Abrams	GDLS	105
*Fox Vehicle Maint.	ISSA - ACALA	GDLS	134
*OSTS-Main Battle Tank	10 US Code 4543 & 2474	UDLP	418
*M113 - Test Track	10 US Code 2208(j) & ISSA	UDLP	418
*Recuperator	10 US Code 4543	Honeywell	134
*PROSE	ISSA - PM Abrams	Honeywell	128, 133
*Stryker	10 US Code 2208 (j)/ 2474	GDLS	105, 134, 414
*Israeli Mortar Carrier	10 US Code 2474	UDLP	418
Fox Vehicle Upgrade	ISSA - PM NBCDS	GDLS	414
Longbow Missile Launcher	ISSA-PM Air-to-Ground	Boeing N American	105

**\* CURRENT**

# **Viabie Alternative**

Available Depot Resources  
are Utilized to Augment  
Defense Contract Programs  
for a Specified Timeframe

Following Program Completion,  
Resources are Again Available  
for Other Program Workload

*Without...*

# Associated Risk Factors

Production & Test Equip  
Procurement  
Operation & Maintenance

Chemical  
Demil

Diversity of  
Weapons Systems  
Supported

Maintain  
Infrastructure

Environmental  
Issues

Ammunition  
Operations

Tenant  
Activities

3,000+  
Civilian  
Workforce

# Contractor Benefits



COMPETITIVE  
PRICES

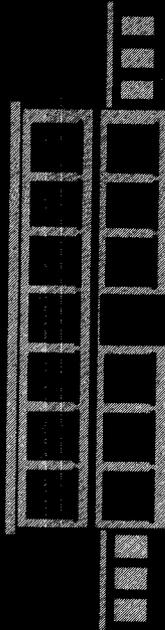
FACILITIES

EQUIPMENT

**PARTNERING + BUDGET = SUSTAINED CORE**

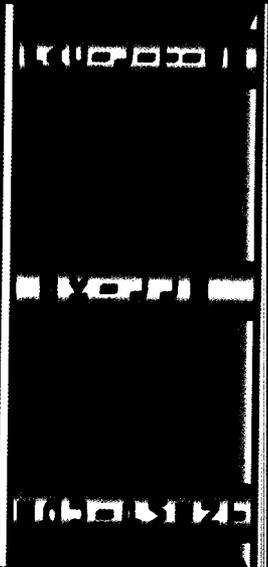


**Facility Utilization**  
216K Sq. Ft.



**COST AVOIDANCE \$7M**

**SUSTAINSCORE**

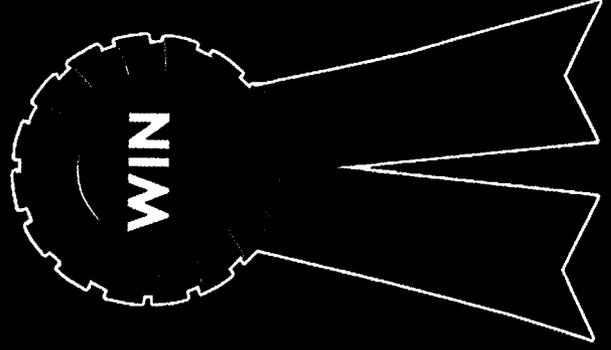


**CAPABILITIES**

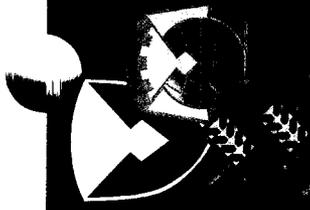
**Government & Contractors provide jobs for the area**

# Bottom Line Public/Private Partnering

**PROGRAMS \$548 M**  
**MANHOURS 4.4 M**



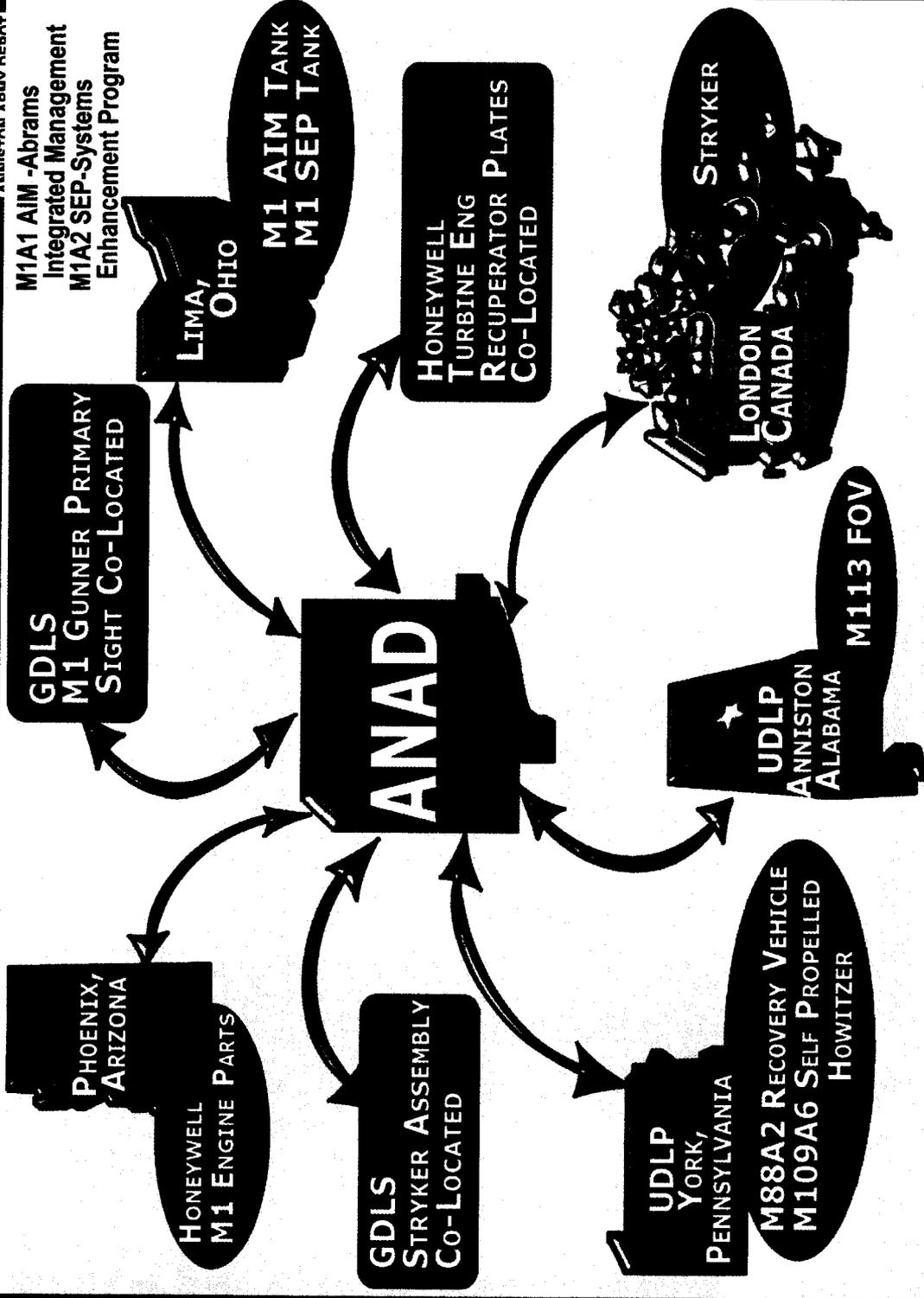
*Moving With The Army's Transformation*



# Partners



M1A1 AIM -Abrams  
Integrated Management  
M1A2 SEP-Systems  
Enhancement Program



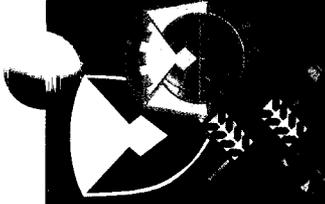
“Annis Army Depot...  
a key and critical asset”  
(GDLS)

“Annis Army Depot  
and UDLP complement  
each other”  
(UDLP-Annis)

“This Success Is  
Directly Related to  
Our Co-location with  
Our Army Customer”  
(Honeywell Anniston  
FY03-Top Performing Site)

*Recognized as the  
Department of Defense  
Leader in Partnering...  
Annis is the  
Hub of the  
Public – Private  
Industrial Network  
that Supports...  
AMERICA’S COMBAT  
VEHICLES*

“Annis Army Depot is the DoD Leader in Partnerships”  
GAO-03-423 Defense Depot Maintenance Report



# Government Accountability Office Reports



**42 Total Army Partnerships**

**33% ANAD**

**88% of Total Private Sector Investment at ANAD**

**Highest Percentage of Partnership Workload**

**AIM XXI Program**

**Recognized for Significant New Workload**

**AGT 1500 Recuperator Program**

**Identified As Partnership Achieving Positive  
Results**

**ANAD Selected As Initial Study Site Due to  
Extensive Partnering Experience**

---GAO-03-423, April 2003

# BMO Projects/Tasks

Industry Trade Shows

Initiate Business Opportunities

Marketing Plan

Strategic Plan

Commander's Off-site

Recruit for Co-Op Academy

Depot Tours

Articles, Brochures, Pamphlets

Acquisition Training, et al.

Army Transformation



# 2004 Conferences/Symposiums

Tactical Ground Vehicle Forum	Arlington, VA
Artillery Conference	Parsippany, NJ
Annual AUSA	Washington, D.C.
Armor Conference	Ft. Knox, KY
TACOM Logistics Symposium	Dearborn, MI
Tactical Wheeled Vehicle	Monterey, CA
Gulf Coast Military Expo	New Orleans, LA
DoD Maintenance Conference/Expo	Houston, TX
Defense Manufacturing Conference	Las Vegas, NV
Force Projection Symposium	Norfolk, VA
AUSA Logistics Symposium/Expo	Richmond, VA
39 <sup>th</sup> Guns and Ammo Conference	Baltimore, MD
Marine Military Expo	Quantico, VA
TACOM APBI	Dearborn, MI
Naval Logistics	Washington, DC
Winter AUSA	Ft. Lauderdale, FL
International Small Arms	Las Vegas, NV



# Business Development Process

## Private Industry Interface BMO

## DETERMINATION PHASE



MOU/Non-disclosure Agreement  
BMO/Legal

Legal Determination of Project Scope  
BMO/Legal

ANAD Command Staff Approve/Disapprove  
BMO

## ADMINISTRATION

Contract File Documentation  
CS

Ensure Contract Terms and Conditions Compliance  
CS/PM

Contract Requirements Resolutions  
CS/PM

Contract Close-Out  
CS/PM

Hold/Chair Project/Performance IPR's  
PM/CS

Negotiate/Develop Contract Modifications  
CS/PM

## PLANNING PHASE

Organize IPT  
BMO

Finalize Project Scope IPT  
BMO \*(CS)

Develop Project Schedule  
BMO \*(CS)

Develop Project Estimate DMPO/DR/IRAC  
BMO \*(CS)

Complete Risk Assessment  
BMO

"Draft" Contract Review with Industry  
CS \*(BMO)

"Draft" Contract Review  
CS

Draft SOW  
BMO  
Draft Contract  
CS

TACOM Approval  
BMO

Develop/Maintain Project Contract File  
BMO/CS

Negotiate Contract with Private Industry  
CS \*(BMO)

Develop Final Contract  
CS

Staff Review of Contract  
CS

Private Industry Contract Signature  
CS

Contract Payment Receipt  
CS

Performance Communications with Industry  
PM/CS

Schedule Management  
PM/CS

Start-To-Work Meeting Industry  
PM, CS, BMO

Establish Local PRON  
CS/PM

DOC Signature  
CS

**Secretary of Defense Maintenance Awards Program**

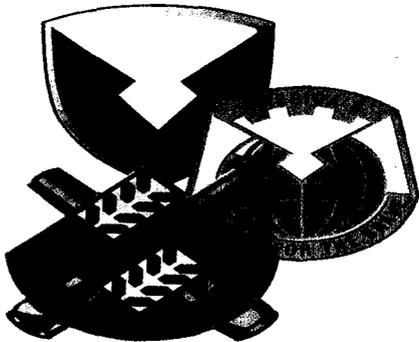
**Robert T. Mason Award for Depot Maintenance  
Excellence**

**Anniston Army Depot Submission  
For**

**Public/Private Partnership Programs with Emphasis on  
Abrams M1 Combat Vehicle Partnerships**

U.S. Army (TACOM)  
Anniston Army Depot  
Depot-Level Maintenance Award

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PERFORMANCE PERIOD: 1 OCT 03 – 30 SEP 04

SUBMISSION DATE: MARCH 2005

# PUBLIC - PRIVATE PARTNERSHIPS



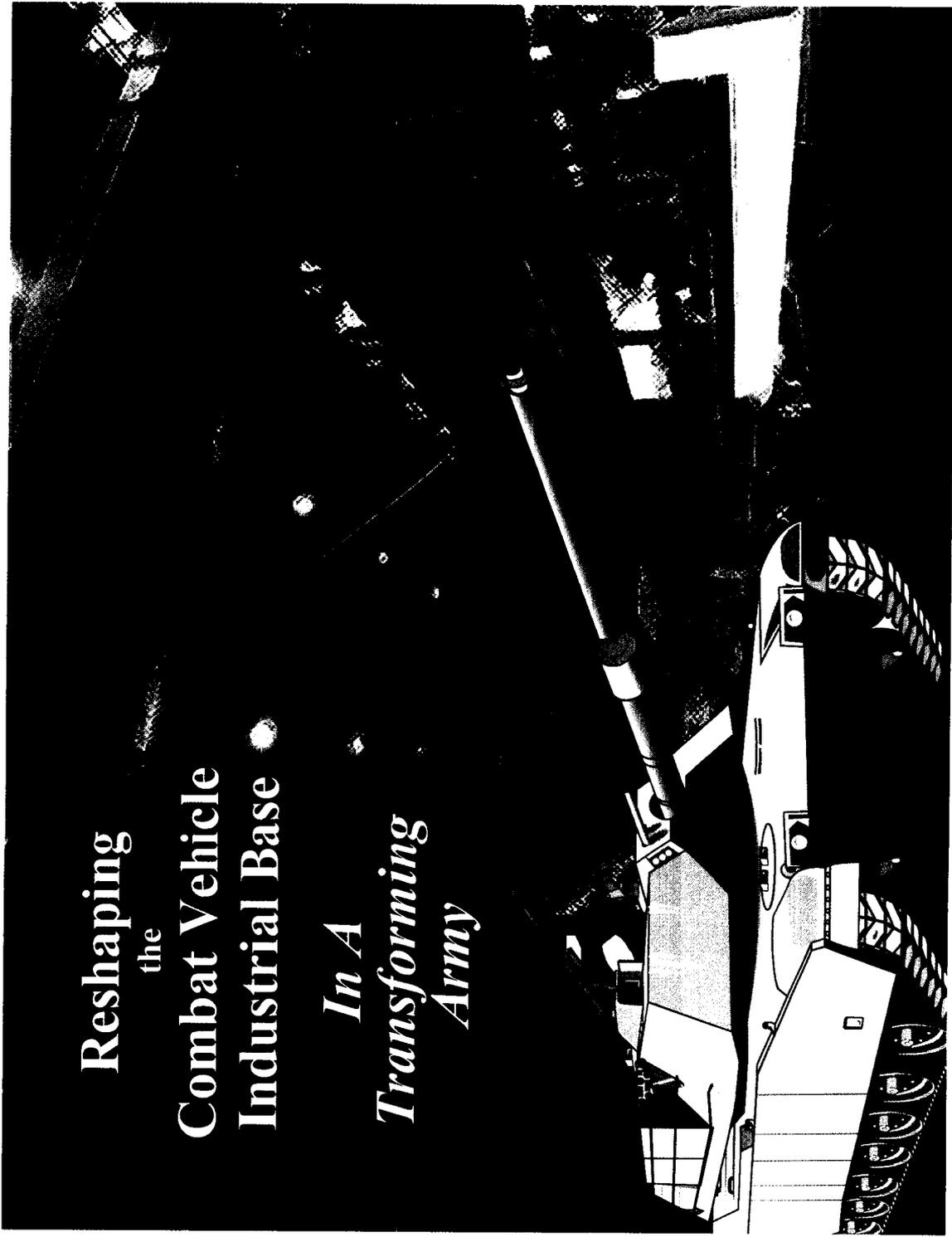
America's  
Combat Vehicle  
Support Center



To PLAN, COORDINATE AND IMPLEMENT  
MARKETING AND BUSINESS STRATEGIES  
TARGETED AT PRIVATE INDUSTRY,  
MAJOR COMMANDS AND OTHER SERVICES

Reshaping  
the  
Combat Vehicle  
Industrial Base

*In A  
Transforming  
Army*



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SECTION I  
GENERAL INFORMATION

## SECTION I

### GENERAL INFORMATION

1. Military Service and/or Command: Department of the Army, U.S. Army Materiel Command, U.S. Army Tank-automotive-Armaments Command, Anniston Army Depot
2. Depot Maintenance Facility Responsible for Nominated Program: Anniston Army Depot
3. Identification of Nominated Program: Public/Private Partnership Program with Specific Emphasis on the Abrams M1 Combat Vehicle Partnership
4. Depot Facility Commander's Name and Nominee's Mailing Address: Alexander B. Raulerson, Colonel, OD, 7 Frankford Avenue, Anniston, AL 36201-4199
5. Point of Contact:

Primary

Name: Gilda Knighton

Program role: Deputy Director Mission  
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Facsimile: (256) 235-7234

Alternate

Name: Judy Ivey

Program role: Awards  
Coordinator

Email: judy.ivey@us.army.mil

Phone (com'l): (256) 235-6124

DSN: 571-6124

Facsimile: (256) 235-4764

6. Message Address: CDRANAD ANNISTON AL//AMSTA-AN//  
CDRTACOM, AMSTA-CS-P
7. Background Information: See attached pages 8 thru 16.
8. Program size: Government Civilian 400, Contractor 250, Military \_\_\_\_, and Other \_\_\_\_.
9. Mission Statement for Program:

Public Private Partnership Program: To plan, coordinate, and implement marketing and business strategies targeted at private industry, major commands, and other services in order to become the provider of choice for combat vehicles, artillery, and small caliber weapons.

Abrams M1 Combat Vehicle Partnerships: To work diligently with private industry partners to provide the U.S. Armed Forces with the latest technologies in the highest quality products, and the lowest cost to the government, and thus the taxpayer. To assure, to the maximum extent, the lethality of the weapon systems produced, and most importantly, the survivability of the soldier.

## SECTION I

### GENERAL INFORMATION

#### BACKGROUND INFORMATION

Anniston Army Depot is the Secretary of the Army's designated Center of Industrial and Technical Excellence (CITE) for combat vehicles (except Bradley), artillery, and small caliber weapons.

#### **PUBLIC PRIVATE PARTNERSHIP PROGRAM**

As background, Anniston Army Depot (ANAD) initiated its public/private partnering program in the early 90's immediately following Desert Shield/Desert Storm. As we examined our then current state, and developed a strategy for the future, we analyzed changes in our environment, to include downsizing of the Army and the resulting downsizing of the number of weapon systems to be produced and maintained, as well as other factors to include base realignment and closure (BRAC) and shrinking defense budgets. These factors would necessitate a change in the way the depot would do business in the future. Depot leadership also recognized that original equipment manufacturers (OEMs) would soon step up to the plate to vie for a share of depot maintenance.

Our strategy was to transition the Combat Vehicle Industrial Base from an environment of public vs. private to a new environment that would foster a public/private cooperation rather than competition. This strategy would simultaneously provide for the protection of the core capabilities (skills, equipment, and facilities) of the Industrial Base.

Invitations and acceptance for site visits, round table discussions, and earnest endeavors to work cooperatively with industry partners proved successful, and Anniston launched the first public/private partnership program in 1994 with the M1 A2 Upgrade Program, a joint Anniston Army Depot/General Dynamics Land Systems (GLDS) partnership, which took a basic Abrams M1 vehicle to the latest M1A2 configuration. The ANAD/GLDS partnership continued to produce additional programs to include the Fox Vehicle Upgrade Program - performed totally inside the depot's fences by a joint ANAD/GLDS team, and the manufacture of Gunner's Primary Sights (GPS) by General Dynamics utilizing Anniston facilities.

Anniston and GLDS capitalized on the synergy of our relationship and jointly developed a solution for the Army's question of how to sustain its Abrams M1A1 fleet of vehicles. We began researching the M1A1 fleet and found only limited A2 upgrades and a few Reliability Centered Inspect and Repair Only as Necessary (RC-IRONS) programs. Data from the National Training Center at Ft. Irwin, CA, revealed skyrocketing operating and supply costs (O&S costs) for these vehicles. Therefore, Anniston and GLDS jointly

birthed the Abrams Integrated Management for the Twenty-First Century or AIM XXI Program. Under this program concept, the Anniston and GDLS partnership would bring the vehicle to a zero hour-zero mile configuration - an overhaul "plus" program. This scope of work was later to be entitled RECAP by the Army and applied to other TACOM combat vehicle programs.

As the result of the partnership effort, program funding was obtained for a pilot program of 18 vehicles. These vehicles were completed in FY 96 and were tested at the National Training Center where the Army Material Systems Analysis Activity (AMSAA) performed independent data collection, which proved the AIM XXI as a viable and cost effective program for the sustainment of the M1A1 fleet.

In 2001 Anniston and General Dynamics formalized the partnership for the Stryker Vehicle, wherein seventy-five percent of the Stryker vehicles would be built at Anniston. Certainly, the success of GDLS and the program's ability to move from contract award to first brigade production of approximately 300 vehicles in under two years was directly attributable to GDLS' use of Anniston Army Depot as an industrial hot bed. This program brought a new mission dimension to Anniston - that of new vehicle build - and engaged the depot in the life cycle process earlier than ever previously experienced. Additionally, this was the first DoD program wherein U.S. Army civilian employees and contractor (GDLS) employees worked side-by-side in the production of a weapon system.

Anniston simultaneously launched partnerships with other OEMs, which, through the competition period, include United Defense Limited Partnership programs for the M113 Family of Vehicles overhaul and conversion, M88 Hercules, M109 Paladin, Opposition Surrogate Vehicle (OSV), and Main Battle Tanks; partnerships with Honeywell on the AGT 1500 Turbine Engine, which include the Recuperator and Program for Reduced O&S Cost-Engine (PROSE) directly supporting the M1 Family of Vehicle depot and partnership programs; and additional partnerships with various contractors for a variety of miscellaneous efforts.

Through 30 September 2004, Anniston Army Depot had either completed or had in progress a total of 39 partnership programs. These programs netted an additional \$548M of revenue for the depot (1994-2004) and 4.4M additional man-hours of workload. Additional benefits include the use of 272K square feet of maintenance industrial space by our industry partners, equating to a cost avoidance of over \$7M of fixed cost to the depot, thereby keeping our rates at competitive levels. Additionally, the partnerships brought over 230 contractor jobs inside the depot fences.

In 2004, Anniston's Public-Private Partnership Program had culminated, and Anniston had, with certainty, executed its planned strategy through the completed transition of the Combat Vehicle Industrial Base into an integrated environment wherein private industry establishes operations inside the depot fences, utilizing available facilities,

manpower, equipment, and other resources of both sectors. As a result, on a daily basis, Anniston and its industry partners share information, ideas, and knowledge. This results in increased capabilities of both sectors, increased and enhanced capabilities and efficiencies, and even allows for improved system design capabilities. This is a win/win situation for Anniston Army Depot, private industry, the Combat Vehicle Industrial Base, the Army, and Department of Defense.

Anniston has assisted other Army installations, as well as the Department of the Air Force, Navy, Marine Corps and Coast Guard in establishing Public/Private Partnering Programs within their agencies and installations.

During the period 1 Oct 2003 through 30 Sep 2004 (competition period), Anniston had 20 ongoing partnership programs at a total program value of \$112,455,860, 620,000 man-hours of direct labor, and utilized 272,000 square feet of Anniston's industrial complex.

### **ABRAMS M1 COMBAT VEHICLE PARTNERSHIPS**

Anniston Army Depot submits the following Abrams M1 combat vehicle partnership programs as clear emphasis of the benefits of the depot's partnership programs to the soldier, the Army, and DoD as outlined above.

**M1/M1A2 UPGRADE.** This program, an Anniston/GDLS partnership, began in 1994. The program entails the upgrade of the basic M1 vehicle to the M1A2 configuration, which produces the Army's first fully digital ground combat system. The program consists of induction of a basic M1 tank at Anniston Army Depot. The depot receipts the basic M1, performs complete vehicle disassembly, vehicle hull rework and upgrade, turret demil, overhaul of major subassemblies to include the AGT 1500 Turbine Engine, overhaul of components, and shipment of hull, assemblies, and components to the Lima Army Tank Plant (recently renamed the Joint Systems Manufacturing Center (JSMC), but hereafter still referred to as Lima. At Lima, GDLS performs vehicle reassembly, installation of new turret to include the digital suite, systems test and integration, and the M1A2 vehicle is complete and ready for joint fielding. Anniston and GDLS upgraded an average of 120 vehicles per year from 1994 through 2004. The program was completed in 2004.

**M1A2 SYSTEMS ENHANCEMENT PACKAGE (SEP).** This partnership is the successor/continuation of the M1/M1A2 Program. The program inducts the M1A2 configuration vehicle and converts it to the M1A2 SEP configuration. This involves an overall enhancement to the electronic system to include a comprehensive diagnostics package, improved microprocessors, color flat panel displays, increased memory capacity, and a new operating system designed to run the Army's Common Operating Environment (ACOE) software. Both the gunner's primary sight and the commander's independent thermal viewer include the improved thermal imaging capabilities of the

new 2nd generation Forward-Looking Infra-Red (FLIR) technology. The first program began in August 2004. The depot receipts the vehicle, performs overhaul of major subassemblies to include the AGT 1500 Turbine Engine, overhaul of components, turret disassembly and prep, and shipment of hull, turret, subassemblies and components to the Lima Army Tank Plant. GDLS, at Lima, performs hull reassembly, turret modification to accept new electronic upgrades, turret reassembly, vehicle test and integration, and the M1A2 SEP vehicle is complete and ready for joint fielding. ANAD/GDLS completed the 2004 program for 29 vehicles and is executing a follow-on program for 160 vehicles, with an anticipated outyear average of approximately 100 vehicles per year through 2010. In this program, the partnership has improved the logistics aspect of the program in that repair parts are provisioned and provided to the depot by GDLS.

ABRAMS INTEGRATED MANAGEMENT FOR THE TWENTY-FIRST CENTURY (AIM XXI). As outlined above, this program was developed by the ANAD/GDLS partnership effort and is a sustainment program for the Army's Abrams M1A1 fleet. The partnership performs an overhaul plus program that entails a basic overhaul with the addition of 25 mandatory replacement parts. The partnership further produces a zero-hour, zero-mile vehicle by incorporating ECPs and assuring the addition, demodification, and/or correction of major modifications introduced to the system since year of production. This concept proved to be the model for the Army's recapitalization programs. The proof of principle program for 18 vehicles completed in 1996, with follow-on sustained yearly program of 125 vehicles per year through 2004 and anticipated continued rates through 2013. In this program, also, the partnership has improved the logistics aspect of the program in that repair parts are provisioned and provided to the depot by GDLS.

PARTNERSHIP FOR REDUCED OPERATING AND SUPPLY (O&S) COST-ENGINE (PROSE). This is an AGT 1500 Turbine Engine program - the engine for all Abrams M1 vehicles. This program is a partnership between Anniston and Honeywell (formerly AlliedSignal), and is a three-fold mechanism to enhance production and performance of the AGT 1500. Honeywell provides on-site engineering and technical assistance to the Anniston turbine engine overhaul facility and production line, as well as providing all repair parts to support the M1A2 Upgrade and M1A2 SEP vehicle engines. The improvements to the processes in the overhaul line lengthen the service life of the engine from the original 750 hours to 1,000 hours. The provisioning of repair parts by Honeywell to support the Anniston overhaul line results in the right part available at the right time, and the right quality, which ultimately increases productivity and throughput.

TOTAL INTEGRATED ENGINE REVITALIZATION PROGRAM (TIGER). This Anniston/PM Ground Combat Systems/Honeywell partnership proposal came under development in 2004 as a means to expand the PROSE program (above) to include the provisioning of parts by Honeywell for all AGT 1500 Turbine Engine overhauls at

Anniston for all vehicles as well as return-to-stock programs. As with the PROSE program, this assures the right part is available at the right time, and the right quality to effect an increased production posture and improved engine durability and reliability. Additionally, proposed new engineering and design changes will increase the service life from the PROSE engine of 1,000 hours to 1,200 hours in phase one, and 1,400 hours in phase two. Additionally the partnership will provide joint ANAD/Honeywell field service representative teams that will be used to perform warranty repairs and collect field data needed to improve engine design and Anniston's process lines, and to conduct fact based maintenance repairs.

RECUPERATOR PAIR PLATE MANUFACTURING. The 1993 Base Realignment and Closure (BRAC) process closed the Stratford, CT, Turbine Engine plant. As a result, the manufacture of recuperator pair plates required transitioning to another location. The recuperator pair plates (250 pair) make up the actual recuperator, a component of the AGT 1500 Turbine Engine that performs the function of heating the air being combusted to generate energy for power and also performs as the exhaust mechanism. Anniston requested the recuperator pair plate manufacturing operation be relocated to the depot. That action took place in 1998, and provided complete AGT 1500 Turbine capability within our fences. Additionally, having the operation located at Anniston provides for immediate reach-back capability and the ability to surge requirements when required.

UNITED STATES MARINE CORPS (USMC) M1A1 OVERHAUL. Anniston Army Depot and the USMC have entered into a partnership through which Anniston is the provider of choice for the overhaul of the Marine Corps' M1A1 tanks. The USMC decision, based on cost, schedule and quality, brought this work to Anniston in 2003 with an initial program quantity of 46 vehicles. The follow-on 2004 program is for 56 vehicles, the 2005 program for 76, and out-year programs will produce 79 each in 2006 and 2007. Additionally, the USMC selected Anniston as the preferred provider for prototype build programs for their Assault Breacher Vehicle, an M1 vehicle chassis with a remote control mine plow. Anniston prototyped three vehicles in 2004 that are now at Aberdeen Proving Ground for test, nearing Milestone C. Anniston will produce one additional vehicle in 2005 and full production will begin in 2006. In 2004, the USMC approached Anniston in regard to another prototype vehicle, the Expeditionary Assault Vehicle, an M1 vehicle chassis with bridge launcher to replace the obsolete M60 Armored Vehicular Launched Bridge (AVLB). Anniston began preliminary prototype efforts in 2004, and will complete one vehicle in 2005. The Army has expressed keen interest in this vehicle as well.

SECTION II  
EVALUATION FACTORS

## SECTION II EVALUATION FACTORS

### 1. Mission Accomplishments (6.8.2.1.):

Public-Private Partnering. Mission accomplishment was achieved through:

a. As a result of Anniston's Public-Private Partnership Program, the core capabilities (core skills, equipment, facilities, etc.) of the depot and the private sector were maintained and readily available to meet the workload requirements of the Global War on Terrorism (GWOT) and Operation Iraqi Freedom (OIF) to include the ability to surge. During the competition period, Anniston executed workload on a total of 20 partnership programs for a total program value of \$112,455,860 and 1,038,000 man-hours of direct labor. Additionally, Anniston partners occupied 272,000 square feet of facilities in the depot's industrial area supporting these partnership programs. The synergy built between the depot's partners has allowed for greater flexibility and agility in meeting the demands placed on both the public and private sectors in today's environment in support of GWOT and OIF efforts - a direct by-product of 10 years of partnership efforts.

b. Anniston's Abrams M1 Combat Vehicle Partnerships as outlined herein - M1/M1A2 Upgrade, M1A2 SEP, AIM XXI, PROSE, Recuperator, and Marine Corps Programs - comprised \$99,344,702 of the 2004 total dollars and 915,268 of the 1,038,00 man-hours above. Additionally, in the performance period, 65 M1/M1A2 Upgrade vehicles (program completion), 29 each M1A2 SEPs, 125 AIM vehicles, 94 PROSE AGT 1500 turbine engines, 420,000 recuperator pair plates, and 58 each Marine Corps M1A1 overhauls were completed. These M1 vehicle partnership accomplishments provided the highest quality, technologically superior tank to the soldier for use in Operation Iraqi Freedom and for training exercises/maneuvers at home. Additionally, these vehicles have directly supported the fielding and Reset efforts of deploying units. The M1 vehicles used in OIF have far exceeded the OP TEMPO of any vehicles fielded for decades and, from all reports, continue to surpass all operational requirements. The PROSE engines have produced the desired result of increased mean time between failures. The vehicles, overall, have proven to be lethal in the fight against the enemy and have provided the highest level of survivability of U.S. soldiers. The cost to the government and American taxpayer is reduced in these partnerships as each of the partners provides those services, which are most efficient and cost effective.

### 2. Effective Support to War Fighters (6.8.2.2.):

M1 Family of Combat Vehicles produced at Anniston is, certainly, in direct support of the war fighter. All vehicles are fielded to both deploying units as well as training units at home.

a. Extraordinary Support to Operational Forces (6.8.2.2.1.):

The impact of the upgrade of the M1 to M1A2 configuration provides the war fighter the first fully digital ground combat system that has proven to increase lethality as well as survivability. The M1A2 SEP provides the latest electronic technological advancements to include a comprehensive diagnostics package, improved microprocessors, color flat panel displays, increased memory capacity, and a new operating system designed to run the Army's Common Operating Environment (ACOE) software. Both the gunner's primary sight and the commander's independent thermal viewer include the improved thermal imaging capabilities of the new 2nd generation FLIR technology. The AIM XXI program provides an overhauled plus zero hours - zero miles vehicle through the process of the Anniston/GDLS formulated recapitalization (RECAP) concept. This concept has been used as the basis for recapitalization programs to all major combat vehicle weapons systems. The PROSE engine has reduced meantime between failures for the M1 vehicle engines; thereby allowing the continued high OP TEMPO the vehicles are experiencing in support of OIF. For the overhauled Marine Corp M1A1 vehicles produced by Anniston, in every instance, production has met the USMC's deployment and fielding schedules. Anniston Army Depot has been selected as the provider of choice by the Marine Corp for their M1A1 vehicle overhaul.

b. Impact on Operational Force Availability, Materiel Readiness, and Sustainability Metrics (6.8.2.2.2.):

The M1 partnership programs at Anniston have produced positive impacts in these areas. All partnership programs have been produced on or ahead of schedule, thereby providing the M1 vehicles to the units and soldiers when and where they are required and with the highest standard of built-in quality. Due to this high quality of the partnership-produced vehicles, they have met and withstood the OP TEMPO of OIF with excellent records of lethality and survivability and sustainability, surpassing expected metrics for performance. The extraordinary benefit of the ANAD/GDLS M1 partnership for Abrams M1 programs to operational force availability is illustrated by the joint ANAD/GDLS effort to return M1 tanks brought into Kuwait from Korea to 10/20 standards. This work was performed in theater with a lead time of days from requirement to teams on the ground. In relation to sustainability the PROSE partnership provides a performance specific warranty on engines overhauled at Anniston thereby contributing greatly to the long-term sustainment of the Abrams M1 Tank.

c. Response to Unforeseen Demands (6.8.2.2.3.):

With certainty, the Anniston Public-Private Partnership Program overall and the specific Abrams M1 Combat Vehicle Partnership Programs have experienced unforeseen program demands via the required surge of operations to support GWOT and OIF

requirements. Vehicle program quantities have increased, production schedules have been accelerated, and met; and the partnerships have utilized their flexibility of transferring work between the partners to effect timely completion of schedules, requirements, and demands. The Anniston Army Depot workload increased by 25 percent during the competition performance period. All additional requirements were met.

d. Innovative Solutions (6.8.2.2.4):

The Anniston partnership programs and partners have sought and continue to seek innovative solutions to a wide range of issues, problems, and concerns not only connected to the individual partnership programs, but that also arise from being partners in the industrial base. Truly, the formulation of the AIM XXI program by the ANAD/GDLS partnership to provide the Army with a sustainment solution for the M1A1 fleet and the resulting identification of that concept as the model for all Army recapitalization programs illustrate the innovative solutions. Specific additional examples include the shared use of equipment as a result of co-location of public and private programs within the fences at Anniston, resulting in reduced cost to the Army by not duplicating equipment at two sites, the ability and common practice of the partners to fabricate items not available in the supply system or with long lead times, and most significantly, the formulation of public-private partnerships from inception to the state of the integrated Anniston Army Depot of today. In regard to the M1 AGT 1500 Turbine Engine partnerships, Anniston has been able to lower operational costs while increasing production through innovative reclamation processes developed at ANAD. An example is the reclamation of 4<sup>th</sup> stage nozzles. Anniston's ability to reclaim rather than purchase adds strength and stability to the process while saving \$7,000 per nozzle. The on-year savings during the competition period offset the cost of the equipment required for reclamation.

3. Logistics Process Innovation (6.8.2.3):

Maintenance related logistics systems innovation is at the forefront of all partnership programs, specifically the Abrams M1 partnership programs.

a. Reliability, Maintainability, and Supportability Improvements(6.8.2.3.1):

Non-M1-related partnership programs contribute significantly in regard to these areas. As an example, the Fox Upgrade program reduced the crew size from four to three personnel, and added a system of systems of nuclear, chemical, and biological detection and analytical equipment. These same improvement elements are readily seen in the M1A2 Upgrade Program that produced the Army's first fully digital ground combat system; in the M1A2 SEP Program that provides an overall enhancement to the electronic system to include a comprehensive diagnostics package, improved

microprocessors, color flat panel displays, increased memory capacity, and a new operating system designed to run the Army's Common Operating Environment (ACOE) software. Both the gunner's primary sight and the commander's independent thermal viewer include the improved thermal imaging capabilities of the new 2nd generation Forward-Looking Infra-Red (FLIR) technology. The AIM XXI program through its recapitalization concept of zero-hours, zero-miles significantly enhances reliability as a result of the overhaul plus scope of work. The PROSE and proposed TIGER partnerships with Honeywell are designed specifically to improve reliability and maintainability through improved processes that extend the service life of the engine and increase meantime between failures.

b. Cost Avoidance and Resource Use Improvements(6.8.2.3.2):

These elements are at the very heart of Anniston's strategy for its Public-Private Partnership Program. The foundation of all partnerships is to capitalize on the strengths of both sectors comprising the industrial base as well as to sustain the core capabilities of each in terms of resources, i.e., skills, facilities, equipment. Certainly, our partnership program has achieved these strategic goals. Partnerships as outlined herein established private industry operations inside the fences of Anniston, providing a solution for the underutilized skill base of both sectors and underutilized facilities at the depot. During the competition period, 20 partnerships provided for the utilization of Anniston's skill base, utilization of 272,000 square feet of space in the depot's industrial complex, and the associated cost avoidance to the depot's fixed cost for all base operations costs associated with those facilities. These partnerships enabled the retention of the core capability of the entire industrial base to meet the requirements that we are now experiencing with the GWOT and OIF.

c. Cycle Time Improvements (6.8.2.3.3):

Improvements in cycle time have been realized in our partnership programs. Since the first Marine Corps M1A1 overhaul to the end of the competition period, the repair cycle time has been reduced by an average of five to ten days per vehicle. This reduction resulted from process improvements, process efficiencies, and a streamlining of the assembly operations in addition to the opportunity/availability to run the additional partnership vehicles on the established Anniston M1 lines.

d. Effective Technology Insertion in Processes and Products(6.8.2.3.4):

Technical insertion is evident in the fully digitized M1A2 vehicle as a direct result of the M1A2 Upgrade Program, and the enhanced electronics package embedded in the M1A2 SEP vehicles.

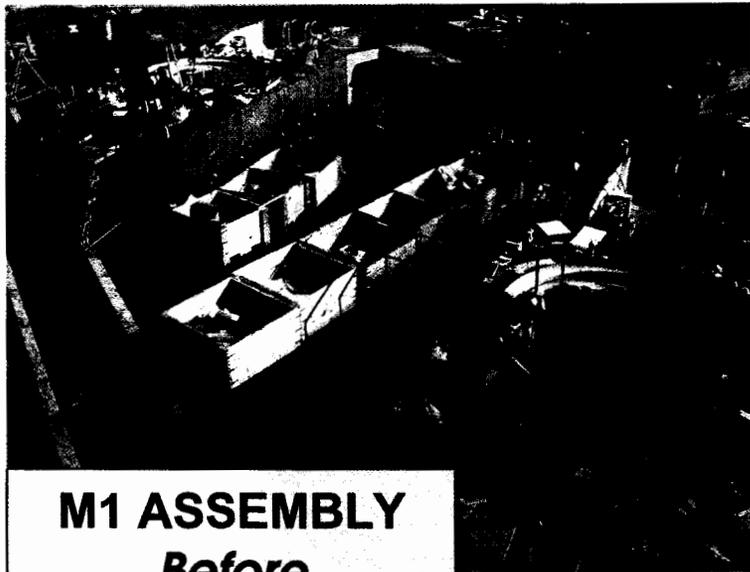
e. Maintenance Concept or Process Improvement Implementation(6.8.2.3.5):



Anniston's Lean Six Sigma Initiative was launched in 2002 with the highest level of emphasis by the depot's higher headquarters, depot commander, all levels of depot management and supervision, and the workforce. The initiative has effected elimination of waste and thereby reduced cycle times, improved processes, and increased throughput. A sustained focus has been maintained through the initiative's life with lean events, e.g., value stream analyses (VSA) and rapid improvement events (RIE) continuing on a most regular basis. During the competition period 23 lean events were conducted on M1 related processes to include M1 Disassembly, M1 Assembly, M1 Transmission, hydraulics, and special concentration on the M1 AGT 1500 Turbine Engine, with an associated \$4.2M savings across M1 vehicle and subassembly programs. Examples of Lean Six Sigma Events are depicted in the following slides:

# ANAD Lean Six Sigma Success Story – M1 Assembly

- Lean event transformed Bay Style Operation to Balance One Piece Flow
- Throughput time decreased from 4.5 days to 2 days – *56% Improvement*



**M1 ASSEMBLY**  
*Before*

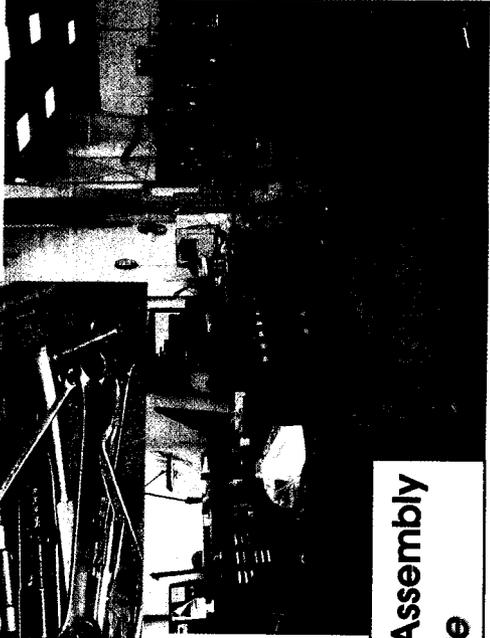


**M1 ASSEMBLY**  
*After*

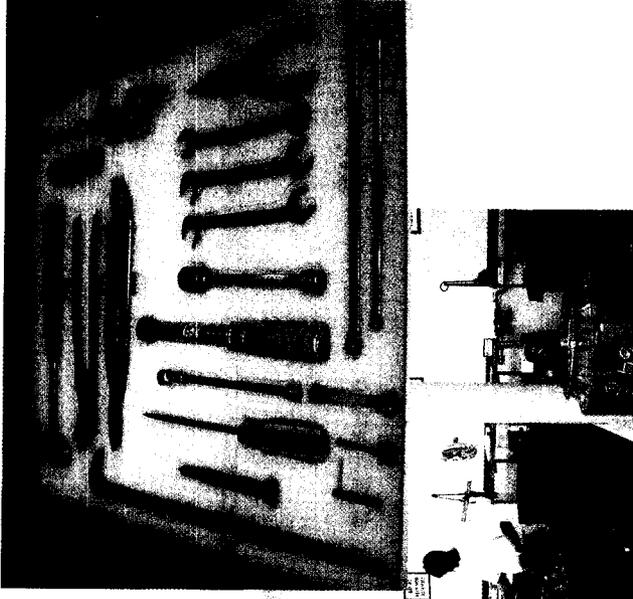
- Established Standard Work Cells
- Realigned Work Area
  - Hoist Relocation Reduced Rear Module Assembly  $\approx$  2.2 MH
- Instituted Inspection & Routing to Repair Prior to Routing to Assembly



**Rear Module Assembly  
Before**



**Rear Module Assembly  
After**



SECTION III  
PROPOSED CITATION

## SECTION III

### PROPOSED CITATION

The first Secretary of Defense maintenance award named the *Robert T. Mason Award for Depot Maintenance Excellence* is awarded to Anniston Army Depot, the Army's designated Center of Industrial and Technical Excellence for combat vehicles, artillery, and small caliber weapons.

Anniston Army Depot has achieved unparalleled accomplishments in the Public-Private Partnering arena within DoD, setting the pace and the standard for Public-Private Partnering and contributing significantly to the development of implementing policy.

Anniston has an unprecedented record of 45 total partnership programs with original equipment manufacturers, support contractors and other services. The Anniston partnership initiative is directly responsible for the overall sustainment of the Combat Vehicle Industrial Base, securing core capabilities in terms of skills, equipment, and facilities, during years of low-volume workload requirements, protecting the future of the industrial base for periods of conflict and war as experienced today. This strategy has provided the capability to surge to meet the Army's, the Nation's, and most importantly, the U.S. soldiers' requirements.

Anniston's numerous partnerships related to the Abrams M1 Family of Vehicles has for over a decade provided soldiers with the highest quality, technologically advanced combat vehicle, ensuring lethality as well as survivability, at an effective cost to the American taxpayer.

Anniston has been proactive in promoting Public-Private Partnering throughout DoD, and has readily assisted other Army installations, the Air Force, the Navy and Marine Corps as well as the Coast Guard in partnership endeavors.

SECTION IV  
ENDORSEMENTS

## SECTION IV

### ENDORSEMENTS

Army Times, March 14, 2005, "*Making the best tank better*" by Susan D. Naylor, Times Staff Writer. Quote: "Fighting in conditions far removed from the north European plains for which it was designed, the Abrams tank has proven its value in the war in Iraq . . ." Not a single tanker has been killed by a conventional antitank weapon . . ." The few fatalities suffered aboard tanks have been caused by roadside bombs or small arms . . ."

GAO Report, GAO-03-423, April 2003, cited 42 each Total Army partnerships, 33 each or 79 percent were Anniston partnerships. By chart, report depicted 88 percent of total private sector investment as a result of public-private partnering was made at Anniston. Further, the report, by chart, depicted Anniston as having the highest percentage of partnership workload to total workload - 25.96 percent. The AIM XXI program was recognized for significant new workload and the model for Army Recapitalization programs and also identified the AGT 1500 Recuperator Program as a partnership achieving positive results.

DoD IG Discussion Draft - March 20, 2003, Recommended the Department of Army "Examine alternative methods for increasing the use of Army industrial facilities . . . used at Anniston Army Depot".

Office of the Secretary of Defense "*Public-Private Partnerships for Depot-Level Maintenance*", September 1999, Prepared by the Deputy Under Secretary of Defense (Logistics), cites 25 Anniston partnership programs out of a total of 54 implemented programs across all of DoD. Cited partnerships include the M1A2 Upgrade, AIM XXI, Service Life Extension Turbine Engine, and Recuperator.

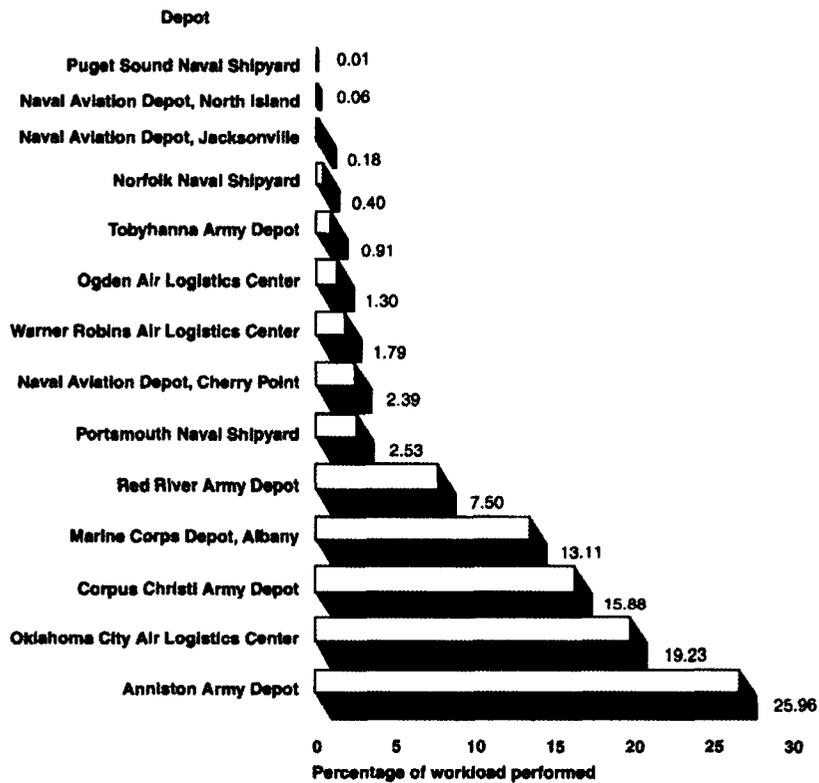
United States General Accounting Office Report to Congressional Requesters, May 1998, "*Defense Depot Maintenance – Use of Public-Private Partnering Arrangements*", provides specific and detailed information in regard to Anniston's partnerships for the Fox and the M113 vehicles, and the AIM XXI program. The report additionally cites seven Anniston partnerships out of a total of 14 for the Army.

## GAO Excerpt

The following is an excerpt from GAO Report to the Subcommittee on Readiness, Committee on Armed Services, House of Representatives. April 2003, DEPOT MAINTENANCE, Public-Private Partnerships Have Increased, but Long-Term Growth and Results Are Uncertain.

Furthermore, in fiscal year 2002, the total of all depots' partnership workload was 4.6 percent of DOD's total military depot workload. However, as indicated by figure 2, the partnerships' workload at the 14 service depots we visited varied widely from 0.01 percent to nearly 26.0 percent.

**Figure 2: Percentage of Workload Performed under Partnerships in Fiscal Year 2002 at 14 Depots That GAO Visited**



Source: DOD (data), GAO (analysis).

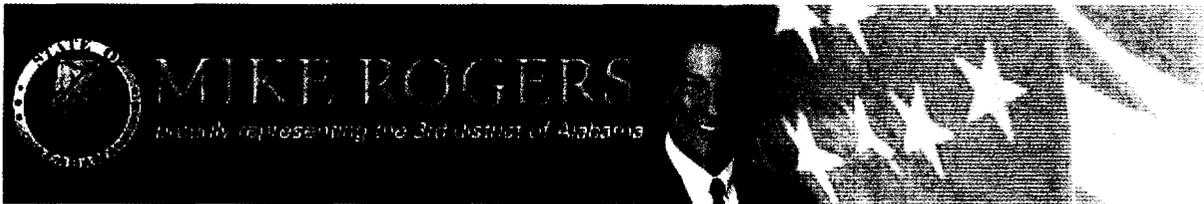
Partnerships at 9 of the 14 depots we visited—which have 59 partnerships in total—involved workload that ranged from 0.01 to 2.53 percent of the depot's total workload. In addition, while partnership activity at the other 5 depots we visited—which have 31 partnerships in total—ranged from 7.5 to 26.0 percent of the depots' workload, the partnerships themselves

## GAO Excerpt

were not always the reason why this workload was placed at the depots. According to depot officials, with two exceptions, the placement of most of the partnership workload at these depots was based on program managers' decisions that occurred prior to the formation of the associated partnership. The program managers' decisions were based on reasons such as maintaining repair capability in military depots, using the most cost-effective maintenance source, or sustaining the viability of the industrial base.

The two instances where partnerships resulted in significant new workloads for a depot were the Army's Abrams Integrated Management XXI partnership—which accounts for about half of the Anniston workload shown in figure 2—and the Air Force's Propulsion Business Area partnership—which accounts for most of the Oklahoma City workload shown in figure 2. The propulsion workload at the Oklahoma City depot resulted from the closure of a major Air Force depot, and according to DOD officials, this workload volume does not represent the typical workload that a depot can expect as a result of a partnership.

In addition, as of December 2002, 19—or 21 percent—of the 90 partnerships we reviewed had generated no workload for the depot. For example, seven partnerships at Tobyhanna Army Depot created from fiscal year 1999 and through fiscal year 2001 for the depot to repair electronic equipment for a contractor have not resulted in workload at the depot, although workload was expected. Other partnering efforts, such as the Air Force's Flexible Acquisition and Sustainment Tool partnership and the Army's H-60 Helicopter Engineering Logistical Services and Supplies partnership, are too new to have generated workload, but the depots anticipate that workload will be forthcoming.



For Immediate Release

June 26, 2003

Contact: Marshall Macomber or Rob Jesmer

(202) 225-3261

**Press Release**

## **Anniston Army Depot Gets Big Boost in Defense Approps Bill**

*Stryker Funding, Abrams Tank Rebuilds,  
New Missile Recycling Program Top List*

**Washington, DC** - A key subcommittee handed the Anniston Army Depot some big legislative victories today, funding key programs at or above levels that help strengthen the Depot's long-term future.

Congressman Mike Rogers (R-Saks) said the Army's Stryker combat vehicle, two-thirds of which are assembled at the Depot in partnership with General Dynamics and one-third in New London, Ontario, received \$955 million to build the Stryker's fourth brigade, for a total of 301 vehicles. Rogers also said the committee was considering advance appropriations for the Stryker's fifth and sixth brigades, but had not yet confirmed the specific dollar amounts.

"While the appropriations process is just beginning, the bottom line is these developments go a long way to help create jobs and ensure the Depot's future," Rogers said.

The Third District legislator also noted \$155 million to rebuild the Army's Abrams M1A2 tanks, a larger-than-expected sum originating from negotiations in the House Appropriations Subcommittee on Defense. A large portion of these funds will go to the Depot for overhauling and enhancing the tank's war fighting capabilities.

"I certainly appreciate the hard work and dedication of Congressman Rogers for bringing these initiatives to my attention. His advocacy and tenacity have been vital in securing Committee support for these items," added Subcommittee Chairman Jerry Lewis (R-Ca.).

Rogers also listed over \$4 million for the Depot's missile recycling program, a new Army initiative that brings both positive economic and environmental activity to northeast Alabama.

**From the Magazine**

October 1, 2001

**DEFENSE MANAGEMENT****Partners For Life**

By George Cahlink  
[gcahlink@govexec.com](mailto:gcahlink@govexec.com)

*The Army's Anniston depot and contractors have formed a variety of partnerships to make the most of limited defense dollars.*

**W**hen army tank builder General Dynamics Land Systems and auto-maker General Motors won a multibillion-dollar contract last year to jointly manufacture the Army's next generation combat vehicle, the contractors sought out a seasoned business partner to share the workload and help keep down production costs. After surveying the market and considering the costs of doing all the work themselves, the contractors made an unusual pick - the Army's Anniston, Ala., depot.

As a result, the tank of tomorrow will roll off the Anniston depot's production line in February, assembled by contractor and federal employees working side by side at the depot's Korean War-era facility. The partnership marks the first time the Army ever has built its own combat vehicles, and it signals a new era in the once distant relationship between Army depots and Defense contractors. With Defense dollars dwindling and the industrial base shrinking, both contractors and depots realize that forging partnerships is the only way they can stay in business in the 21st century.

Jesse Poor, deputy commander at Anniston, says the decision to build the new combat vehicles jointly with contractors was years in the making. "After the Berlin Wall fell, we realized we needed a strategy for our future," says Poor. "We could either build the fences higher and fight to keep what we had or figure out how to work with them." In the early 1990s depot managers decided to reach out by inviting General Dynamics executives to visit. Poor says neither the contractors nor the Army knew what to expect from the first meeting. "The senior vice presidents from General Dynamics flew in for the day, and they had

kind of a strange look on their faces when they got off the plane," he says.

For decades, the Army and its contractors had known exactly what to expect from each other - not much. The two had separate, and well-defined roles in building and maintaining the service's tanks and other tracked vehicles. Contractors, led by General Dynamics, manufactured the tanks and performed major overhauls, while Anniston was responsible for routine maintenance and smaller overhauls of the tanks and other weapon systems. Depot and contractor officials rarely talked, never visited each other's facilities and sometimes competed for the same repair jobs.

Mark Roualet, vice president of wheeled vehicle systems at General Dynamics Land Systems in Sterling Heights, Mich., remembers being surprised by Anniston's invitation to visit. But, he says, the contractor and Army quickly realized they could work together, because they each had unique and different manufacturing and refurbishment capabilities that were complementary. By the time General Dynamics executives boarded the plane to return to Michigan, the puzzled looks were gone and the seeds for partnership had been planted. Those early seeds blossomed into several robust partnerships between Anniston and General Dynamics and other contractors over the past decade. During that time, the two jointly overhauled combat vehicles and key weapon subsystems, contractors leased depot space and other equipment, and Anniston worked as a subcontractor for several companies. Ultimately, those partnerships led to the unprecedented \$7 billion deal between the depot and contractors to jointly produce at least two-thirds of the Army's next-generation armored vehicles - about 1,400 brigade combat team vehicles valued at about \$3 billion - at the Anniston depot over the next decade. "Opportunity beget opportunity," says Poor.

Anniston's deal with General Dynamics and General Motors to jointly produce the brigade combat team vehicles combines both leasing and subcontracting. The contractors will pay the Army to use Anniston's facilities for producing the vehicles while also hiring depot workers or contracting with the Anniston to perform specific production tasks. Depot and contractor employees will work side by side on the production line at the depot. "This is the first time we have ever had new manufacturing done at Anniston. You will not know who works for Anniston and who works for General Dynamics on the production line," says Gilda Knighton, who heads Anniston's business management office.

## Two Are Better Than One

The Army's depots - in-house mechanical shops for overhauling, repairing and upgrading the service's warfighting equipment - have had their budgets and workforces cut over the past 12 years. The Army spends about \$1.3 billion annually and employs about 9,500 civilians operating five depots in Anniston, Ala.: Red River, Texas; Corpus Christi, Texas; Letterkenny, Pa.; and Tobyhanna.

Pa. In 1988, the Army had 10 depots that employed about 18,000 civilian workers.

The Defense Department spends about \$15.8 billion to operate 19 Air Force, Army, Navy and Marine Corp depots across the country, employing 64,500 civilians. Unlike most military operations, depots do not have set annual budgets but receive their money in user fees paid by the military units who are having their equipment repaired or overhauled. Depots have often been the targets of budget cuts because of their high operating costs. Since 1987, the number of military depots, their workforces and their budgets have been cut by nearly 50 percent. As a result, depots have increasingly forged alliances with industry to save money and still meet readiness requirements.

Army Gen. John Coburn, who will retire this month as head of the Army Materiel Command, which oversees the depots, said in March testimony before the House Armed Services Committee that partnerships benefit both depots and contractors. "We get the best of both worlds with the [depots] supporting and being supported by industry. In the process we reduce costs for both depots and contractors," Coburn said, adding that government-owned depots are critical to military readiness because they can respond more quickly and offer more flexibility than industry in meeting warfighters' maintenance requirements.

All the military services are embracing partnerships to operate more efficiently and keep costs in check. "Depot maintenance is struggling to survive across all the services. Our survival comes with increased partnership," says Ester Griguhn, Anniston's director of mission plans and operations. Indeed, Anniston has been at the forefront of the partnership movement, forming 32 alliances with industry that have generated \$240 million in revenue through leasing, subcontracting and work-share agreements, and an additional year's worth of work for depot employees since the early 1990s.

Anniston's evolutionary path from no partnerships a decade ago to more than 30 today is a model other depots can pursue as they increasingly rely on alliances to survive in an era of downsizing and budget constraints. The Alabama depot's partnerships focus on unique facilities and capabilities at the depot, but any military depot could use the framework and the authorities Anniston used in creating those deals.

### Types of Partnerships

Knighton says the depot pursues three types of partnerships - sharing work, acting as a subcontractor, and leasing facilities and space to contractors. She says all partnerships share the common goal of reducing depot and contractor infrastructure without losing the industry or government skill base. "We have added workload through partnerships to keep the depots [in Alabama]," she says. Anniston most commonly crafts direct sales agreements for services or products

produced by depot employees. Under a typical agreement, a contractor will employ the depot as a subcontractor to perform specific tasks for an overhaul or production project.

General Dynamics has paid Anniston \$56 million as a subcontractor to help overhaul and upgrade the service's Fox nuclear, biological and chemical reconnaissance vehicles. The deal calls for the depot to remove asbestos from the vehicles, overhaul and paint them, while the contractor oversees assembly, disassembly and final testing. The depot has a similar deal with United Defense of Arlington, Va., for overhauling the Army's family of M113 combat vehicles. That arrangement calls for Anniston to disassemble the vehicles and repair the hulls, while United Defense makes other internal upgrades and oversees testing of the armored vehicles on Anniston's test track. Both the Fox and M113 upgrades took advantage of another form of partnership - renting space and equipment at Anniston to contractors. By leasing or sharing excess space, Knighton says, the depot has made up for lost workload, increasing use of its facilities by 16 percent and thus reducing its overhead costs. Additionally, she says, the depot has saved millions of dollars in shipping costs by encouraging key suppliers to locate manufacturing operations in excess facilities at Anniston. Richard Kaelin, General Dynamics' Anniston manager, says the company doesn't mind paying for depot space because it would have paid \$30 million to build its own facilities for the Fox. General Dynamics pays \$1.2 million a year for Fox upgrade facilities. In some instances, when Anniston is not a subcontractor, the depot allows contractors to use space rent-free (although they still pay for utilities), because having contractors on site allows the depot to operate more efficiently.

In the mid-1990s, Honeywell of Morristown, N.J., purchased Textron operations in Strafford, Conn., which manufactured cooling plates called "recuperators" used in Army tank engines. When Honeywell decided it wanted to close the facility and relocate, Anniston offered the company space in a vacant, dilapidated warehouse at the depot. "We offered them space because we were their customer," says Knighton.

Honeywell accepted the offer and then spent \$3 million turning the old warehouse into a modern-day manufacturing facility outfitted with laser cutting equipment and four hulking presses for forming and cutting the cooling plates. Today, 39 Honeywell employees operate the center and manufacture hundreds of recuperator plates, generating about \$21 million in annual revenue for the contractor. "You cannot overstate the value that results from co-location," says Scott Selle, Honeywell's director of manufacturing engines and systems at Anniston. "We get clear and open communication [with the Army] about what we are doing right and areas for improvement." Aside from improved communications, the Army saves \$1.3 million annually by eliminating shipping costs for recuperators, Knighton says. Honeywell no longer sends the components on costly cross-country shipments by truck. Instead, forklifts carry

the recuperators from Honeywell's depot manufacturing facility to a depot-operated building where tank engines are repaired.

Selle says the success of the initial partnership led the Army and Honeywell to form an additional alliance for managing spare parts for Abrams tank engines. In the past, Anniston ordered dozens of different parts from multiple vendors and could never be sure whether they would be available or meet quality standards. Under a partnership agreement, Honeywell now oversees spare parts ordering and stocks tank engine components in a once-empty warehouse at the depot. "Now, we have one vendor who manages all the parts and guarantees their quality," says David Sok, Anniston's turbine engine division chief.

General Dynamics also uses excess space at Anniston for manufacturing a key Abrams tank subsystem, the gunner's primary site, an optical lookout used by gunners inside the tank to track targets. The depot provides an old warehouse to the contractor rent free for manufacturing optics equipment. In return, the contractor paid the Army for renovations and still pays for production support services. General Dynamics' Kaelin says the arrangement has saved the contractor and depot as much as \$3 million by enabling them to share tools and testing equipment.

Another form of partnership - work-share agreements - could become the main source of income and work for the depot. Under work-share agreements the depot and contractors independently contribute facilities, equipment, skills or manpower to jointly create a final product. The arrangements are becoming more common as the number of contractors that can do the Army's work dwindles and the service seeks ways to make more efficient use of its facilities and equipment.

So far, most work-share arrangements at Anniston have focused on upgrading Abrams tanks. Under a multi-year deal valued at hundreds of millions of dollars, the Anniston depot and General Dynamics will split the work of upgrading the Army's M1A2 Abrams tank. The agreement calls for Anniston to disassemble the tanks, repair and upgrade the hulls and overhaul key subsystems and other components before they are sent to the General Dynamics-operated, government-owned Lima, Ohio, tank plant. There the new turrets will be installed, systems will be integrated and final assembly will be completed. The Army will pay the depot and General Dynamics separately for their work. "The partnership allows us to take advantage of the existing infrastructure at both locations. The depot's core work is to process [tanks] and make them look like new, and at Lima their forte is completely assembling like new," says Kaelin.

## Managing Partners

Poor says Anniston has developed a reputation as a solid partner and has no trouble attracting interested contractors, but the depot has limits on what it will undertake. "We are not going to go into the refrigerator-making business, but we

believe we can do some real creative things for the Army," says Poor, adding that the litmus test for any partnership is whether it benefits the Army. Knighton says Anniston initially viewed partnerships as a tool for reducing excess infrastructure among Defense contractors while generating enough work to keep skilled workforces employed at the depot. Partnerships have allowed the depot to avoid layoffs, though 14 percent of the workforce has been cut through attrition and early or normal retirement in the past decade. "If we had just sat here and been complacent, I guarantee people would have been let go," she says.

Charlotte Flowers, president of the American Federation of Government Employees local at Anniston, says depot workers realize that they must form partnerships with contractors if they want to keep their jobs. "If we didn't try to do something with contractors, at least one, maybe both of us, would be out of business," says Flowers, adding that a key to success has been management's inclusion of the union early on in partnership discussions.

Kaelin, General Dynamics' manager at Anniston, oversees about 50 of the company's employees at the depot and expects that number to grow to nearly 200 in the next six months, as production of the brigade combat vehicle begins. He says contractors were wary of Anniston before the alliances. "We were adversarial; we spent time and money developing resources and programs to compete with Anniston," he says. Both contractors and depot managers now realize they have a better chance of getting their programs funded by Congress if they work together, Kaelin adds.

When partnerships began, managers spent time reassuring employees that contractors were not there to take their jobs, says Anniston turbine engine division chief Sok. He says that had the depot not pursued partnerships and become more efficient, it likely would have been a victim of the last round of base closures in 1995. Instead, Anniston actually picked up work from the Army's Letterkenny depot, when work was moved from the downsized Pennsylvania depot.

## Uncertain Future

Though Anniston dodged the bullet in 1995, concerns about future base closures are never far from most employees' minds. When Anniston managers talk about partnership, they inevitably tout it as a key to avoiding closure. "Anniston's future is the continuation of these partnerships," says depot plans and operations chief Griguhn.

The Pentagon has asked Congress to approve more base closings in 2003, arguing that the Defense Department has 25 percent more infrastructure than it needs. Lawmakers are far from approving the plan, but that has not stopped employees at military bases across the country from speculating about their fate. Most Defense experts say depots once again will be targets for downsizing

because of high operating costs, aging and costly infrastructure, and hefty civilian payrolls.

Army Materiel Command leader Coburn says Army depots have already been cut enough, going from 10 to five over the past decade. "I think [base closings are] needed, but tremendous efficiencies have already been gleaned at the depots," says Coburn, adding that the Army cannot afford to lose another depot. If the Army were to lose depots, Anniston might be near the top of the list. Most observers do not expect the service to eliminate repair centers in Tobyhanna, Corpus Christi or Letterkenny because they already have been downsized, and each offers unique repair capabilities. But the Army's two combat vehicle repair facilities at Anniston and Red River have similar capabilities and could be candidates for consolidation.

In 1995, the Pentagon sought to close the Red River depot, but the base closure commission rejected that recommendation. Today, with former Texas Gov. George W. Bush in the White House, there is angst among Anniston workers that their depot will move to the top of the hit list and Red River will be protected because of its location in the President's home state. Coburn is aware of those concerns and recently told the Army's two depots that they should work together to produce efficiencies rather than competing for the same work. Griguhn says Anniston has become a mentor to other depots seeking partnerships and is more than willing to collaborate with them. "Depots have come to us to find out what we did and how to start. Our success has convinced other depots that need to get on this train and reap the benefits of the partnership world," she says.

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## Working side by side

**By Nathan Solheim**  
**Star Staff Writer**  
**08-17-2003**

The Stryker is a hulking, skulking rover that has the ability to save lives and to take them. It crawls across rough terrain unfit for the most ardent off-roader's four-wheel drive and zooms down dirt and asphalt roadways at speeds exceeding 50 mph.

As it moves down the assembly line at the Anniston Army Depot, workers affix huge wheels to its body. Throw in the huge engines that can drive the vehicle across just about anything, and it is one mean rover.

Other workers apply paint to the vehicle, giving the Army's future workhorse an ominous sheen.

The men and women who build Strykers come from two different worlds — private contractors and civilian military employees. It is a key partnership that local officials hope will provide ammunition for the depot in the future round of the base Re-Alignment and Closure Commission, set for 2005.

At stake are more than 2,800 jobs and a local economic impact measuring in the hundreds of millions of dollars.

Workers with the Stryker's private-sector defense contractor, General Dynamics, fill 164 jobs on the \$4 billion program. A quarter of that program's work, including final assembly, is done here. More than 2,000 Stryker vehicles will be assembled in Calhoun County.

*Civilian government employees will count themselves among the Stryker's work force as well.*

These government and private-contractor workers illustrate a marriage between the public and private sectors on a defense contract. Officials say such partnerships have been formed at the depot over the past decade to demonstrate its long-term viability and value to the Department of Defense and to show that the depot is able to work on the Army's future weapons programs.

"Tying ourselves to the private sector allows us to work with them," said Nathan Hill, who was hired by community leaders to organize local BRAC efforts. "Both General Dynamics and United Defense are designated as partners on a future combat system. It gives us a link to the future to stand with them and the technology that will be required."

The Anniston Army Depot has had 37 partnering arrangements with private companies since 1994. It has 16 current partnerships. Fortune 500 companies such as General Dynamics, United Defense, Honeywell and Raytheon all have joint efforts with the government.



**Workers David Payne, left, and Spud Curvin work on the assembly of one of the Army's Stryker vehicles at the Anniston Army Depot. Photo: Bill Wilson/The Anniston Star**



## Working side by side - Continued

Depot officials are quick to point out that the number of partnerships at the depot exceeds those at other installations and that 26 percent of the workload at the depot is handled through public-private partnerships. Some 260 jobs are generated through partnering, according to depot statistics.

Partnerships build some high-profile weapons systems, such as the Stryker. There's also the Paladin mobile howitzer, which saw a great amount of media coverage in the second Gulf War and is a United Defense product. Partnerships also produce the M1 Abrams tank, the longtime bread and butter of the depot work force.

"A successful partnership helps sustain the core capabilities of both sectors, so that those core capabilities remain intact and meet the need of the Department of Defense and the Army," said Gilda Knighton, the depot's deputy director of planning and materials.

Knighton has worked at the depot through every partnership with private industry and has arranged how the work on particular projects is divided between the sectors.

These core capabilities are split between the company and the government so that it's possible for public employees to work alongside private-sector employees or for private contractors to use government-owned facilities or locate operations on military installations, Knighton said.



When they can use existing facilities and skills at the depot, private companies can avoid the expense of building new infrastructure. In the case of the Stryker, officials with General Dynamics said, they use the depot's test track. Depot workers also paint the Stryker.

The arrangement saves money that then can be routed to other uses, such as adding always-advancing technologies to the vehicle, said Rick Kaelin, who heads General Dynamics in Anniston.

These arrangements enabled the Stryker program to start quickly at a reduced cost to the taxpayer, Kaelin said.

"We're trying to reduce startup from concept to reality," Kaelin said. "In order to do that, we're trying not to build new factories or procure new equipment. This reduces investment costs and the cost to the customer."

Kaelin said the Stryker's time from concept to rollout of 286 vehicles has been about two years — unheard of in defense industry. It was done, he said, through the public-private partnering arrangement General Dynamics has with the depot.

The Stryker is part of a direct-sales arrangement, one of three types of partnerships that have developed over the years.



Depot workers provide services to industry partners as a sub-contractor in a direct-sales partnership. Other programs are part of a work-share program, where government employees and private sector workers divide up certain jobs on a project, utilizing resources from each partner. A third type of arrangement allows private companies to use depot facilities through a lease agreement.



## **Working side by side - Continued**

"Every partnership is unique, it depends on what area it falls into," Knighton said.

Partnerships also allow more of the depot's facilities and workers to be utilized on various weapons programs. Knighton said more than 80 percent of the depot's capacity currently is utilized.

Hill says the benefits of the depot's public-private partnering arrangements give him a better chance to defend it from BRAC.

A recent report by the General Accounting Office lists the Anniston Army Depot as one of the defense department's leaders in public-private partnering, Hill said.

"The thrust has been to privatize, and on the other side there's been a movement to maintain core capabilities," Hill said. "Through partnering, we allow the Department of Defense to have both sides. "We allow sharing the workload, but we keep the core capability."



## **Public-private partnerships help Anniston depot**

**By Matthew Korade  
Star Senior Writer  
01-02-2004**

No one can guarantee a set of guidelines for surviving the upcoming round of base closures, but common sense dictates that the Anniston Army Depot will need to show that it is needed, and, that it is cheaper to operate than other facilities of its kind.

Here is where the depot's public-private partnerships come in.

Partnerships save on overhead costs, increase the availability of parts and reduce repair time — key factors the Department of Defense will consider when deciding which bases to keep. Partnerships also bring a shared vision and commitment between the post and its private contractors.

Anniston is a recognized leader in developing such partnerships.

The Depot has had nearly 37 partnerships in recent years, far exceeding the total for any other of the military's 20 depots, according to an April 2003 report of the General Accounting Office, the investigative agency of Congress. That office reported the number of partnerships military-wide went from 19 in 1998 to about 93 in 2002. Almost 42 were with the Army, and a large proportion at the Anniston Army Depot. Currently, there are about 16 active partnerships in Anniston.



The workload handled by private partners in Anniston is also far greater than that at other depots. The General Accounting Office reported the average workload handled by private industry was about 2.5 percent in 2002. At the Anniston Army Depot, it is 26 percent, according to Calhoun County Chamber of Commerce officials.

"That's a lot and that's what places it at the top of the DOD list," said Sherri Sumners, the chamber president.

Here, defense giants like United Defense, General Dynamics and Honeywell build and rebuild the tanks and vehicle parts that sustain the war against Iraq and terrorism. They provide about \$500 million in revenue to the Depot and about 260 jobs. There are 2,800 government employees at the Depot.

Partnerships decrease overhead and production costs and maximize a depot's production capacity, the GAO said. In Anniston, Depot and private employees share production, or companies lease space, or the Depot performs work that private industries cannot do themselves. For example, General Dynamics leases Depot buildings and United Defense tests its armored vehicles on the Depot test track.

Nathan Hill, a military consultant for the Chamber of Commerce, said the relationships take advantage of the core strengths of each. The Depot provides infrastructure, security and diverse know-how. Private companies can do work cheaper and don't have to duplicate investments.

"For BRAC, this is what the Department of Defense is trying to do," Hill said. "Privatize as much as possible, but retain core capabilities."



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The U.S. Army

## Professional Writing Collection

U.S. ARMY

### The Army's Organic Industrial Base: What is the Future for Depots and Arsenals?

**Myra McKittrick**[Lexington Institute](#)

Summary

It may come as a surprise to many Americans that the U.S. Army owns - and in some cases operates - a number of industrial facilities employing nearly 20,000 people. Largely a legacy of World War II, this industrial base includes several manufacturing arsenals that date back more than a hundred years. The number of these industrial facilities has declined dramatically over the last few decades, beginning with the end of the war in Vietnam and culminating with the last official round of base closures in 1995.

The remaining elements of this industrial base - often referred to as the "organic base" - consist of an assortment of arsenals, maintenance depots and ammunition factories. They are operated, funded and modernized as one of the Army's core activities, and governed by a series of legislative provisions beginning with the 1920 Arsenal Act.

Despite recent success in business management, such as adopting commercial practices and bringing in new tenants through partnerships with private companies, critics argue that by almost all accepted commercial standards these Army plants maintain too much capacity, inefficiency and overhead. Some argue for the wholesale privatization of the public base, turning over industrial functions entirely to the commercial marketplace where inefficiencies would soon be eliminated. This seems particularly attractive during periods when spending on weapons systems is stagnant or declining, putting public facilities in direct competition with private companies for scarce business.

The debate on the proper sizing and most efficient manner of operating the public facilities has been going on for decades. It involves a complex set of tradeoffs with implications that reach into the heart of America's ability to equip, sustain and support troops in contingency operations and times of war, mobilization and surge; implications that are not always apparent in peacetime. Many common criticisms of the organic base do not account for the unique requirements of operating military installations during war. Operations in Afghanistan and Iraq have tested the limits of some sectors of the commercial defense base and highlighted the value of the flexibility, responsiveness and dedication inherent in the organic base. These operations have also revealed the extent to which the Army's organic base has already evolved to suit the needs of a military operating in a new strategic environment, where maintenance, repair and upgrades are needed in real-time, in the theater of war.

The Defense Department, Congress and communities around the nation are preparing to debate the 2005 round of base closures (the Defense Secretary is required to submit a list of proposed closings to Congress in March 2005) that may include any of these Army industrial facilities. In this discussion over jobs, over-capacity and competition for defense resources, the overall objective of defining and preserving an industrial capability necessary for national defense must remain paramount.

The answer will not be found in black and white: private vs. public, arsenal vs. depot, over-capacity vs. efficiency, but rather in the continued evolution of the nation's industrial base toward an integration that balances the best of what commercial companies and Army installations have to offer. Partnerships between the public and private sector need to be expanded and encouraged to an extent that transforms both elements. This will not be an easy task. It will require a shift in thinking among industrial managers - both public and private, and policy makers as well as legislators. The business environment must allow a genuine balance between the interests of the partners, so that both sectors see tangible, long-term benefits from the relationship.

The advantages of industrial partnerships have already been proven in several cases where they have been tried, but more needs to be done to encourage such arrangements. Congress has helped to create a more hospitable atmosphere for partnering over the past decade by passing legislation removing some barriers to long-term business relationships between the government and private companies. Other obstacles remain, however, including an overall reluctance to change, and most importantly, share work.

The continuing viability of the organic base, and ultimately the effectiveness of America's defense industrial base as a whole, may well depend on whether these obstacles can be overcome. This is a challenge of transformation no less difficult and no less important than any other challenge facing the Army today.

## EVOLUTION OF THE ARMY "ORGANIC" BASE

The existence of an Army-owned manufacturing base is as old as the Army itself. When Congress created the Continental Army - the nation's first professional military - there was no commercial industrial base to arm the force. To meet its new need for small arms, artillery and ammunition, the Army created its own sources. Emerging as it did out of the unique circumstances of America's earliest days, this link between the Army and its in-house or "organic" industry is strongly engrained in the nation's military culture.<sup>1</sup>

### THE 19TH AND EARLY 20TH CENTURIES.

The organic industrial base slowly expanded over the decades following independence. The oldest arsenal still operating today - Watervliet - was established in 1813, primarily to manufacture the small articles supporting artillery, such as drag ropes, sponges, rammers and shot. By 1840 there were 22 arsenals supplying the U.S. Army with small arms and ammunition, and assembling and repairing artillery.

Meanwhile, a small private arms industry had begun to develop, encouraged by appropriations for long-term contracts that Congress began authorizing in 1808. This combination of public and private industries supplied the Army during the Mexican-American War, and for the first time American military units were adequately supplied with guns and ammunition during wartime.

In the latter decades of the 19th century a more robust commercial armaments base began to develop based on ongoing projects in ship building and coastal defenses. Army ordnance production and design, however, remained concentrated in the public arsenals, with the increasingly active support of the Congress. Army attempts to broaden sources of ordnance prior to World War I were blocked by legislation in 1915 and 1916. This concentration continued through the inter-war period, with what little activity there was taking place entirely at the Army's arsenals and proving grounds.<sup>2</sup>

### EMERGENCE OF THE MODERN ORGANIC BASE.

The mobilization of the American industry during World War II is legendary. In a few short years the United States equipped an Army of more than 8 million men, and manufactured 96,000 tanks, 78 billion rounds of small-arms ammunition and nearly 7 million tons of aircraft bombs. This massive effort yielded a strong new relationship between the Army and commercial industry at the same time as the Army's organic base was rapidly expanding.

One of the most notable results was the creation of a hybrid form of production designed to capture the strengths of both the commercial and organic bases: the government-owned, contractor-operated (GOCO) facility. There were 77 of these GOCOs in 26 states by 1942. Another was the emergence of large-scale maintenance depots where Army combat systems were maintained, repaired and upgraded. These, like the arsenals, were government-owned, government-operated (GOGO).

During the 1960s and 1970s - after the end of the Korean War and as the Vietnam War wound down - the Army's organic base gradually declined. In 1967 the nation's oldest manufacturing arsenal, the Springfield Armory, closed, followed within a decade by three others. By the mid-1970s, only 25 of the GOCOs and 10 maintenance depots remained.

### THE ORGANIC BASE TODAY.

The end of the Cold War and the accompanying rapid decline in defense spending left America with a defense industrial base far too large for its needs. Soon commercial defense companies were well on their way to a massive rationalization of the private sector, including a rash of mergers and acquisitions that concentrated defense business within a much smaller universe. But the organic base was bound by tradition, politics, and legislation: the Department of Defense (DoD) found it impossible to close excess facilities of any kind, including industrial.<sup>3</sup>

Nevertheless, something clearly had to be done. Congress and the Defense Department found the answer in the base closure and realignment (BRAC) process, a complex interaction between DoD, Congress, and an independent commission charged with making final closure and realignment recommendations.<sup>4</sup>

Four rounds of BRAC closures and realignments - in 1988, 1991, 1993 and 1995 - have yielded today's organic industrial base. These facilities are listed in the table above, according to categories assigned by the Army for budgeting purposes. The other military services also have some organic industrial capability, but the Army's is the largest and most complex.<sup>5</sup> Due to the range of capabilities that cut across so many technology areas and industrial processes, most of the Army depots do work for other Services to varying degrees. For example, Tobyhanna does all of the Air Force's ground-based communications and electronics repair. Letterkenny supports ground and air missile systems for the Navy, Air Force and Army. Anniston supports Marine Corps tracked vehicles.

None of the other services have arsenals or GOCOs, each of which is treated differently than depots and shipyards when it comes to legislation, planning, budgeting and acquisition regulation. This distinction - particularly in the case of depots and arsenals - is a continuing source of difficulty for Army managers. The table highlights in yellow the facilities that are the focus of our discussion - those that engage in "depot level maintenance," and major manufacturing of non-ammunition items. The ammunition base itself is the subject of a separate Lexington Institute White Paper.<sup>6</sup>

## LAWS GOVERNING DEPOTS AND ARSENALS

A series of acts and amendments to procurement law over the last 85 years governs the organic industrial base today. The following four are among the most important:

### **The Arsenal Act (1920).**

Intended by Congress to keep the public arsenals thriving, this act requires the Secretary of the Army to have "supplies needed by the Department of the Army" made in arsenals so long as the manufacturing is on "an economical basis." This law applies only to the Army, and only to arsenals and factories. The entire statute is only six lines long, and has been subject to numerous interpretations over the years. There is still debate on whether depots are considered to be "factories" under this act. (10 U.S.C. 4532)

### **Core Logistics (1984).**

This statute requires DoD to maintain a "core" organic industrial capability to provide depot-level maintenance and repair. "Core" is defined in the law as "capabilities that are necessary to maintain and repair the weapon systems and other military equipment...that are identified by the Secretary, in consultation with the Chairman of the Joint Chiefs of Staff, as necessary to enable the armed forces to fulfill the strategic and contingency plans..." (10 U.S.C. 2464)

### **Limitation on the Performance of Depot-Level Maintenance of Materiel (The 50/50 Rule) (1988).**

Under this law, at least 50 percent of funds appropriated for "depot-level maintenance and repair" in any fiscal year must be performed by employees of the federal government. Prior to the 1997 amendment the requirement was 60 percent. (10 U.S.C. 2466)

### **Definition of Depot-Level Maintenance and Repair (1997).**

This amendment to procurement law made clear that the definition of "depot-level" activities is not limited by source of funds or by location of the work. It is defined as "material maintenance or repair requiring the overhaul, upgrading, or rebuilding of parts, assemblies, or subassemblies..."<sup>7</sup> (10 U.S.C. 2460)

Taken together, these laws indicate a long-standing and consistent effort by Congress to sustain an organic national defense industrial base of significant capability. Legislators have consistently supported the Army's view that this base is unique; that it provides services and goods different from commercial industry, and that it deserves protection. Broad definitions of the requirements, along with a guaranteed workload, appear to support this goal even at the expense of competition and potential savings.

But the story of legislative support for a strong organic base does not stop with protective measures. In the last decade or so, and especially since the 1995 BRAC, a new series of legislation has been enacted to enhance the vitality of the organic base. These changes have enabled unprecedented cooperation between the public and private industrial bases, and in the process enhanced the effectiveness and efficiency of both.

## **KEY EXAMPLES INCLUDE:**

### **Working Capital Funds (Subcontracting) (1991).**

Allows facilities in the organic base to sell products or services to the private sector. (10 U.S.C. 2208(j))

### **Authority to Sell Outside the Department of Defense (1993).**

Permits depots and arsenals involved in the manufacture of certain items<sup>8</sup> to sell them outside the Department of Defense. The proceeds from such sales are returned to the Working Capital Fund rather than to the facility that made the sale. (10 U.S.C. 4543)

### **Centers of Industrial and Technical Excellence (CITE Statute) (1997).**

Grants authority to depots now designated "centers of industrial and technical excellence" (CITE) in their respective core competencies, to enter into partnerships with private industry. These partnerships offer unprecedented flexibility to the depots to perform subcontract work for private industry (and possibly vice versa), and for private companies to use facilities or equipment at the depots for either military or commercial purposes. (10 U.S.C. 2474)

### **Enhanced Use Leases (2000).**

Creates incentives for both organic facilities and the private sector to negotiate long-term leases of public property in return for cash or in-kind investments in the facilities. (10 U.S.C. 2667)

#### **Arsenal Support Program Initiative (2001).**

Permits arsenals to enter into cooperative agreements with private companies, in which the company may use arsenal facilities and/or equipment in exchange for investing in the maintenance or upgrade of arsenal property. Through annual appropriations, Congress provides funds for arsenals to renovate or adapt their unused facilities for potential users. (Public Law 106-398, Section 343)

#### **Cooperative Activities Pilot Program (2004).**

Authorizes all Army industrial facilities (arsenals, ammunition plants, depots or "a manufacturing plant") to enter into a variety of cooperative arrangements with "non-Army" entities. Cooperation can include direct sales or subcontracting by the Army facility, work share arrangements, and teaming to jointly bid on new federal contracts. The pilot program provides additional flexibility by allowing the Army facilities to enter into fixed-price and multi-year contracts to deliver goods and services, and allow the non-Army entity to make incremental and in-kind payments. This statute does not include any provisions for accounting for the proceeds of any of these cooperative arrangements. (10 U.S.C. 4544)

#### **THE COMPLICATIONS OF WAR**

Strong Congressional support for maintaining the organic base and the introduction of these more flexible business practices did provide for a fair degree of stability in the Army's industrial base during a time of turbulent restructuring within private industry. But, until September 11, 2001, downsizing and transforming the military were still the dominant themes, and most of the industrial policy and legislative initiatives of the 1990s were focused on reducing and reorienting the organic base to make it more efficient in the face of significantly reduced demand.

By the time of the September 2001 attacks, Army depots had reduced capacity by more than half since the beginning of the BRAC process, and were at 82 percent utilization. Furthermore, capabilities were consolidated so that all repair and overhauls of similar equipment were concentrated in one location.<sup>9</sup> Initially, the relatively limited scope of operations in Afghanistan suggested few new implications for the organic base. But this quickly changed with the war in Iraq and growing understanding of the long-term nature and intensity of the Global War on Terror. The new national security imperatives have changed the business and political environments and raised questions about efficiency versus effectiveness.

Since late 2001, the workload at Army depots and arsenals has grown by 25 to 40 percent, creating a new set of challenges. Additionally, the depot workload began to include a significant role in retrofitting equipment required by deploying troops. In many cases adding work shifts has provided the additional volume of production required where stockpiles were low and demand unexpectedly high, for example, small-arms ammunition and light illumination rounds.

In other cases, simple volume has not been the problem. Instead, for a few highly critical items such as M2 .50 caliber machine guns and armored HMMWVs, the Army had little or no production capability left after the downsizings of the 1990s. In both these examples, Army industrial managers have scrambled to accommodate unanticipated and urgent requirements from the field.

• The M2 machine gun went out of production in the 1970s, and by the early 1990s the capability to manufacture the machine gun barrel had virtually disappeared from the American industrial base. In addition to the modest complement of guns assigned to active and reserve components, the Army kept an inventory of 13,000 "unserviceable" guns that required some level of repair or maintenance before they could be used. Until recently, there were no plans to address this unserviceable stockpile. But when the Army identified a requirement for an additional 8,000 M2s,<sup>10</sup> the Anniston Depot quickly expanded its very small existing repair capability to process as many M2s as possible without new parts. During the summer of 2004, Anniston began to repair M2s at the rate of 100 per month, with plans to ramp up to 700 per month by early 2005, once new barrels and other parts become available from the private sector.

• Like machine guns, the demand for armored HMMWVs by units in Iraq was unexpected. Meeting the demands has posed a multi-layered challenge for both the organic and private industrial bases. The initial requirement in the forward area was for 600 uparmored vehicles - a special version of the HMMWV produced by one private company at a rate of about 15 per month. When the requirement for up-armored vehicles in theater escalated to more than 8,000, the company was able to bring its production up to 450 per month.

Meanwhile, another urgent requirement emerged for armoring other versions of the HMMWVs in Iraq. Steel purchased from private companies was sent to two arsenals, a GOGO ammunition plant and three depots. At these facilities the steel has been made into armor plates and assembled into kits, then sent on to the theater where they are applied to vehicles by depot teams.

Finally, with all these vehicles in a combat theater where they face constant and often harsh use, requirements for depot-level maintenance, repair and upgrades has increased dramatically. After the 1995 BRAC directed all Army wheeled vehicle repair to be concentrated at the Red River Depot as a matter of efficiency, the repair line at Letterkenny Depot was shut down. But the equipment at Letterkenny remained, and several years ago the depot began to work on small batches of specialized vehicles for non-Army military customers. Fortunately, this small capability at Letterkenny now provides a base for that depot to join Red River as they ramp up to overhaul an anticipated 4,600 HMMWVs in 2005, compared to a baseline of 200 just two years ago.

•Depots also played a major role in improving command and control capabilities for American warfighters. As the start of Operation Iraqi Freedom (OIF) approached, teams of civilian technicians from Tobyhanna Army Depot rushed to install the latest technology into HMMWVs and other vehicles around the globe. Blue Force Tracking (BFT) kits would guide units through blinding sandstorms and emerge as one of the technological superstars of the war. With BFT's communications network, commanders and troops received near real-time data on their locations, the location of allied forces, and the location of enemies - thus enhancing situational awareness and reducing "friendly fire" incidents.

One of the operational surprises of OIF has been the intensity of the threat from enemy mortar fire. In order to support the resulting, but unanticipated, requirements from the theater, Tobyhanna has also completely reorganized its capability to repair the Fire Finder radar. This is a 1970s vintage system that detects incoming mortar rounds. Before OIF about 10 radars a year went through the depot; in 2004 it will be close to 80.

One of the most important lessons learned from the industrial response to the war in Iraq is that the "depot" is not a site but rather a capability. The geographic home of each Army depot now provides a base for the deployment of the depot's capability to the operational theater where it is urgently needed, often located directly with combat units. This experience in turn serves as an incubator for the skills required by each depot.

This trend toward an "expeditionary" depot capability has developed most fully in the case of ground systems and communications and electronics system support. Tobyhanna Army Depot has nine communications and electronics support activities in Iraq and two in Afghanistan; this is in addition to their 16 other forward- deployed satellite locations throughout the world. These depot employees work directly with combat units to maintain critical systems such as Fire Finder and secure communications gear.

Most of the in-theater work on ground systems, including the armoring of HMMWVs, is being done by forward- deployed depot personnel. For example, there are five HMMWV service centers in Iraq, where all levels of maintenance and repair are available on an asneeded basis. These centers represent an innovative way to meet the immediate needs of operational units without red tape or delay.

In another innovation, the Army Materiel Command has sent a "Mobile Parts Hospital" or Rapid Manufacturing System (RMS) to Kuwait for forward repair support in Iraq. These units (manned by civilian contractors) are comprised of two 20-foot long trailers crammed with state-of-the-art manufacturing machinery. When one-of-a-kind or a small number of parts are needed for any purpose, the RMS can make them quickly based on electronic data packages received from a central data base, or by reverse engineering the part(s). Additional RMSs are scheduled to deploy to Southwest Asia by March 2005.

#### **RESETTING THE FORCE.**

Once the task of sustaining current operations begins to wind down, the capabilities of the industrial base will turn toward re-equipping the force for the next conflict. Current policy requires anything on the "critical items list" be replenished within three years of a major conflict. The Army's goal, however, is to return active units to their pre-deployment readiness within six to eight months and reserve units within one year.

Termed "resetting" the force, this goal will require new equipment as well as repair of damaged or worn equipment. The sheer volume and anticipated condition of material returning from Iraq suggest that the Army depots must be prepared to maintain a wartime work tempo for up to two years after actual Army operations in Iraq stabilize at a low level.

"The reset program will repair major items used in OIF and OEF...The workload for this comprehensive effort is immense: about 1,000 aviation systems; 124,400 communications and electronics systems; 5,700 combat/tracked vehicles; 45,700 wheeled vehicles; 1,400 missile systems; nine Patriot battalions; and approximately 232,200 items from various other systems." ~The Honorable R.L. Brownlee, Acting Secretary of the Army, the Army Posture Statement, February 2004

All this means that for the foreseeable future, the load of work for depot level maintenance and repair will continue to be unusually high. Of course, it will begin to moderate over time, but is unlikely to return to pre- 2001 levels for years. In the meantime, occasional spikes in workload, perhaps even on the order of the current one, should be expected as American military forces continue to wage the War on Terror.

#### **THE ARGUMENT FOR ENHANCED PUBLIC-PRIVATE PARTNERSHIPS**

The experiences of the organic industrial base during the past several years offer unique and invaluable insights. The unexpected scope and nature of the war in Iraq came immediately on the heels of a deliberate and significant downsizing of the industrial base. It has brought into sharp relief the consequences of decision making that placed a heavy emphasis on efficiency when risk appeared low.

But at the same time, the seeds of flexibility that were sown through innovative business practices and legislation of the post-1995 BRAC period have grown into their own under the stresses of wartime demand on the organic base. The performance of the organic base during Operation Iraqi Freedom has shown not only that it can provide goods and services when private industry cannot or will not, but that it can most effectively adjust to the work surge by working more closely with private industry to meet the demands of war. Among the lessons learned from surging workload requirements is the value of applying more aggressive partnering practices and temporary staffing tools to supplement personnel needs

during periods of increased demand for the depot services.

For example, private companies have more flexibility in hiring for surge requirements. They can take advantage of various hiring mechanisms, such as limited-term contract employment, and can circumvent time-consuming advertising and applications processes. They generally also have much more flexibility to downsize a workforce. On the other hand, the depots and arsenals are in a better position to send their employees directly to a conflict area to support operations. Public employees are trained and prepared for this possibility. Many private employers avoid or prohibit sending employees into combat areas. Costs of insurance and other support to such employees is high and difficult to predict in preparing bids and proposals.

Merging the hiring flexibility of the private base and the deployability of the public base has long-term advantages. Tobyhanna Army Depot is using private employees to meet surge demands for labor within its depot operation in the United States, while deploying organic personnel to support in-theater activities. There are about 500 contractor personnel, provided under a personnel services contract with Lockheed, at Tobyhanna working side-by-side with the government employees to complete the depot's wartime requirements.

In another example, the public base has proven more flexible in accepting work that is ill-defined, or subject to considerable change once underway. Contracts held by private industry must be pre-negotiated based on some set of assumptions about the scope and content of the work. Spontaneous changes to those assumptions often result in significant penalty fees or other premiums for the government. At the same time, if the assumptions change dramatically, private companies may not find the associated risk to profit to be acceptable. The organic facilities, however, are not bound by any obligation to shareholders. Additionally, given the large variety and volume of "legacy" systems still in active use within the Army, the organic industrial base is a guaranteed source of repair when original equipment manufacturers have moved on to other systems or gone out of business. Without the organic base, the cost in time and money of re-creating that full capability in the private sector would be significant.

Finally, public facilities often enjoy access to large tracts of land with extensive infrastructure. Activities on this public property are largely immune from real estate taxes and other burdens associated with private property. But they often also lack the modern processes and advanced technology of the private base where investment in new approaches and future capabilities has long been the only way to stay competitive.

#### **SUCCESSFUL PARTNERING.**

In practice, several of the Army's installations have experienced significant benefits from partnering with private industry. Private industry in turn has benefited as each partner exploits the advantages offered by the other.

The most notable examples of true integration of capabilities and work share arrangements involve the Anniston Army Depot, where some of the first public-private partnerships were crafted in the mid-1990s. As the Army's industrial center for heavy combat systems such as tanks and artillery, Anniston had long considered the private manufacturers of these systems to be competitors for increasingly scarce upgrade and modification work, and vice versa.

But, encouraged by the twin prospects of no new production of tanks and further rounds of base closures, Anniston and General Dynamics reached agreement in 1996 on a joint program to refurbish and upgrade tanks. That foundation grew to include United Defense L.P., with a joint program to upgrade the M-113 infantry fighting vehicle, and Honeywell, which is producing new parts for the tank's turbine engine in a building just a few doors down from where the depot's organic workforce is overhauling those engines.

Nearly 10 years after first discussing partnering possibilities with General Dynamics and continuous growth in the type and nature of partnering programs, the Anniston Depot has now embarked on an unprecedented partnership as a sub-contractor on that company's new production combat vehicle program, the Stryker. Together, the team was able to deliver new production vehicles within six months of the initial contract award, under an arrangement that included sharing infrastructure, resources and personnel. This example particularly illustrates how the availability of government industrial infrastructure can be an important element in the private sector's ability to be responsive in very short periods of time to new requirements. Today Anniston has more than 30 partnering and teaming arrangements including co-production, subcontracting and facility use.

In another key example, the Corpus Christi Army Depot has developed a partnership with General Electric focused on engineering support and logistics services. Through a direct contract negotiated in 2000, GE has provided technical and engineering assistance to substantially improve the performance of the T-700 helicopter engine overhaul line at the depot. Through the successful application of GE innovations, Corpus Christi can now rework an engine in about one-third the time it took four years ago.

Tobyhanna Army Depot has partnered with Engineering Professional Services, Inc., and several other private firms to upgrade the communications capabilities of the AN/PRC-112D, a survival radio critical to soldiers in Southwest Asia and other theaters. Through a combination of Tobyhanna's technical expertise with the entire family of PRC radios, and the private sector's accelerated supply chain, hundreds of radios were upgraded and delivered to troops on schedule and under cost. In this public-private partnership, Tobyhanna will provide repair services on these radios warranted for a ten-year period. Tobyhanna also provides warranted repair in combat zones for commercial computers in partnership with companies such as Dell. These partnerships allow the Army to enjoy the original warranty and companies to avoid sending technicians into harm's way. Letterkenny Army Depot was the site of the first successful public-private partnership

including depots. The program involved, Paladin, was moved as part of the BRAC transfer of artillery maintenance to Anniston, but Letterkenny is still engaged in several public-private partnerships which include depot maintenance subcontracting (to the Javelin Missile Joint Venture), and facility use agreements with various companies. Letterkenny also serves as a supplier, manufacturing UAV components for AAI Corp., and biological agent detection units for Lockheed Martin.<sup>11</sup>

At Red River Army Depot, several successful partnerships are ongoing. These include direct sales to Lockheed Martin for maintenance on the Multiple Launch Rocket System and components for the Patriot Missile System. Lear-Seigler and Stewart & Stevenson have also contracted to Red River to support maintenance of their production items. In each of these cases, the private companies have sought out the depot to provide unique capabilities. This, in turn, has provided additional work for key depot employees.

The sites that have moved towards more integration of the public and private sectors capabilities at the depot level have been able to provide to the DoD a capability that is more robust, responsive and deployable. It has enabled the Army to build capacity into its industrial operations by leveraging the capabilities offered by both sectors.

#### **STEPS TO MORE EFFECTIVE MANAGEMENT OF THE BASE**

Further integration of the organic and private industrial bases will provide the additional flexibility demanded by an uncertain future. By combining the best elements of each, a national industrial base can be created that is agile, responsive and efficient. But additional changes in the regulatory, policy and legislative environments are necessary to allow this to happen.

#### **FINANCIAL PRACTICES.**

Several current practices impose considerable inflexibility on the organic base. These include Congressionally mandated rules limiting "carry over," or what would generally be considered "work in progress" in private industry. Since depots and arsenals cannot carry over more than a moderate amount of work from one fiscal year to the next, they are faced with a quandary when unanticipated surge work is presented. Either the surge and planned workloads must be accomplished simultaneously, or the planned workload will be reprogrammed to another facility or contracted to private industry. In addition, carry over rules ignore the realities of acquisition lead times and the common practice among military customers of sending unanticipated workload to the depots just before the end of the fiscal year. These rules need to be adjusted so that industrial planners can make workloading decisions based on each particular situation rather than on an arbitrary time line.

Other financial reforms are needed to allow a more balanced flow of business in both directions, from public to private customers as well as private to public customers. Mechanisms for the efficient procurement by the government from private companies, such as multiyear procurements, variable pricing<sup>12</sup> and elimination of advance payments, need to be put in place to encourage private companies to buy from the public facilities. Without such mechanisms, direct contracting with the organic base is both costly and risky.

Finally, although procurement law allows the organic base to sell products to commercial and foreign military customers under certain circumstances, it does not allow the seller to keep any of the proceeds. This flaw in the system limits incentives to find new customers and, most importantly, fails to reward those facilities that are already operating both efficiently and effectively. In a similar manner, the existing Capital Investment Program gives control over the "profits" made by any organic facility to higher authorities, thus taking investment decisions out of the hands of those who best understand their customers and markets. The organic base certainly will not realize its full potential to support the military customer until financial incentives and investment controls are adjusted to reward the successful government managers.

#### **MANAGEMENT POLICIES.**

As the business environment for the depots and arsenals has changed, so too must the way these facilities are managed. Several important changes have been made in recent years, including shifting management responsibility of the depots from Headquarters, Army Materiel Command, to the individual industrial commands that serve as their customers.<sup>13</sup> Tank-automotive and Armament Command (TACOM), which manages the arsenals as well as the Anniston and Red River Depots, has taken this concept a step further and combined all its industrial activities into one organization to facilitate cooperation and coordination.<sup>14</sup>

Policy at the DoD level still limits what the Army can do with the arsenals, however. Beyond the legislative distinctions discussed below, policy tradition considers the arsenals as a separate category of industrial activity for purposes of budgeting, planning and oversight. While this has led to a certain measure of independence for the arsenals - for example, they can negotiate one-on-one with potential customers - neither do they have the benefit of workload planning that the depots enjoy. Most importantly, the institutional differences between depots and arsenals often prohibit rational work sharing and other forms of cooperation.

Changing the metrics for measuring the performance of the depots from labor hours to productivity is another way policy makers could encourage innovations that would ultimately lead to both effectiveness and efficiency. With the current emphasis on labor hours in all aspects of depot planning, budgeting and evaluation, depot workers receive a "mixed message" regarding the importance of maximizing production or output by finding ways to do the same amount of work in

less time.

There are long term advantages to be gained from applying more aggressive temporary staffing tools to supplement core staff levels. The tools can include enhanced partnerships with defense companies to supply contractor support teams on a broad and substantial scale to meet large surges in labor requirements within the depot community. These tools have been proven effective and should become a business strategy of choice within the Army depots.

Finally, it may be time for the Army to consider changing its traditional approach to leadership at its industrial facilities. Managing these complex sites, including labor requirements, infrastructure maintenance, capital planning, community relations and environmental stewardship requires the same leadership skills as running any large scale business. It also requires continuity. The current practice of rotating a military Commander in and out of the top leadership position - usually on a two-year cycle - compromises the long-term viability and strength of the local depot or arsenal, regardless of the strengths of any given Commander. Instead, the chief civilian executive, who now functions as the Commander's deputy and may stay in the job through the rotation of ten or more Commanders, could be given the Chief Operating Officer position. The deputy position would then be given to the military officer functioning primarily as liaison to the Army command structure. The importance of this liaison job will grow as organic sites evolve toward more "joint operations."

#### **LEGISLATIVE BARRIERS.**

One of the most important obstacles for efficient management of the Army's industrial base is the legislative distinction between depots and arsenals. With the exception of the Arsenal Act - which applies only to arsenals - the legislation outlined above applies only to depots. Thus, the definitions of "core", the workloading requirements, and the public-private partnership opportunities, exclude a significant portion of the Army's organic base.

The artificial distinction between depots and arsenals is a uniquely Army problem (because only the Army has arsenals), and is one that has proven expensive in peacetime and challenging in time of war. In theory, the arsenals engage in heavy manufacturing, while the depots perform systems-level maintenance. In practice, this distinction has blurred over time. But Congressional attention - and top-level DoD attention - has focused on the depots thus leaving the arsenals behind. This problem could be addressed substantially by integrating arsenals into key depot legislative provisions, such as the Core Logistics Statute.

#### **INTEGRATING INDUSTRIAL BASE PLANNING.**

While these changes would go a long way toward improving the effectiveness and efficiency of both the organic and private industrial bases, real transformation will require a management philosophy that considers these two bases as one. Enhanced public-private partnerships through the steps outlined here will encourage this way of thinking over time. But in the meantime, opportunities and capabilities will be lost. The most significant single set of decisions impending about the industrial base - the 2005 BRAC - will consider the organic base in almost total isolation from its private counterpart.

The Army should avoid making this mistake itself, and instead adopt its own successful approach to the ammunition base as a model for the other industrial sectors. For planning purposes, the ammunition base is considered an integrated whole of government-owned and operated facilities, government-owned and privately-operated facilities, and privately-owned and operated facilities. Integrated Program Teams that include representatives of both the public and private ammunition facilities meet each year to address critical issues facing them as a community.

This approach could be applied to other Army industrial sectors. With the depots identified as "Centers of Excellence" for their respective weapons systems, and reporting to their primary acquisition customers, the sector-oriented management infrastructure already exists. A more explicit consideration of private sector capabilities as well as limitations in planning public sector workloads can only improve the overall performance of the base. As is the case with ammunition, such considerations need to take place during the planning and development phases of new weapons programs, and not be limited to maintenance, repair or upgrade.

The Army will have the ideal opportunity to put these concepts into action while implementing the decisions of the next BRAC. The transition plan for the transfer or realignment of missions should include a strengthened emphasis on partnering and public and private integration.

#### **CONCLUSION**

Industrial efficiency is naturally a prime consideration of policy during peacetime, when the cost of national defense is measured primarily in dollars. But in wartime, when this cost expands to include many more complex factors, industrial effectiveness is essential. As America looks toward a future defined by a long period of undefined conflict in the Global War on Terror, it must be able to count on a defense industrial base that has both attributes.

The positive experience of industrial partnerships proves this is possible. A more aggressive policy to combine the core competencies of the organic base and private companies through an expanded set of partnerships can:

- Create efficiency by bringing in business to underutilized organic facilities;
- Enhance effectiveness by providing the means to maintain a critical skill base and infrastructure that might otherwise

atrophy; and

- Introduce flexibility through on-going contractual relationships with private companies that can be amended as needed.

The result can be an industrial base that is responsive to the needs of the warfighters and to the interests of the taxpayers.

#### NOTES

1 See Hix, et.al., Rethinking Governance of the Army's Arsenal and Ammunition Plants, RAND, 2003, Chapter Two, for a more complete history of the organic industrial base.

2 Aircraft were an exception. During the interwar periods the Army Air Corps developed a strong relationship with the private aviation industry, upon which it relied for modern designs.

3 A 1977 law required the Secretary of Defense to submit any requests for base closures to Congress for approval. As a consequence, no major closures occurred between 1977 and 1991.

4 For a discussion of the BRAC history and process, see Taxpayers for Common Sense, available at: [www.taxpayer.net/nationalsecurity/learnmore/BRAC](http://www.taxpayer.net/nationalsecurity/learnmore/BRAC); and the Department of Defense at: [www.defenselink.mil/BRAC](http://www.defenselink.mil/BRAC).

5 The Air Force operates three aviation depots and one aerospace depot; the Navy and Marine Corps operate three aviation depots, four shipyards and two Marine Corps depots. In 2003 the total U.S. Government-owned industrial base employed 77,000 people.

6 Lexington Institute, Supplying Ammunition: the Lifeblood of the Military, November 2004.

7 Exceptions are the procurement of major modifications or upgrades designed to improve program performance, or the nuclear refueling of aircraft carriers.

8 Large caliber cannons, gun mounts, recoil mechanisms, ammunition, munitions, or components thereof.

9 Helicopters: Corpus Christi; Combat vehicles, artillery and small arms: Anniston; Communications, electronics and tactical missile guidance/control: Tobyhanna; Bradley Fighting Vehicles and Multiple Launch Rocket Systems: Red River; Tactical missile ground support equipment: Letterkenny.

10 Requirement for fielding in fiscal year 2005.

11 These units, DFU1000A, successfully detected ricin in a U.S. Senate office building in February 2004. Letterkenny was immediately asked to produce 100 additional units, which they delivered in five days.

12 Variable pricing allows the producer to offer a product at its marginal cost without folding in a pro-rated share of overhead.

13 Operational command and control of the depots is now exercised by TACOM, Aviation and Missile Command, and the Communications-Electronics Command. These Commands are also responsible for developing and procuring weapons systems.

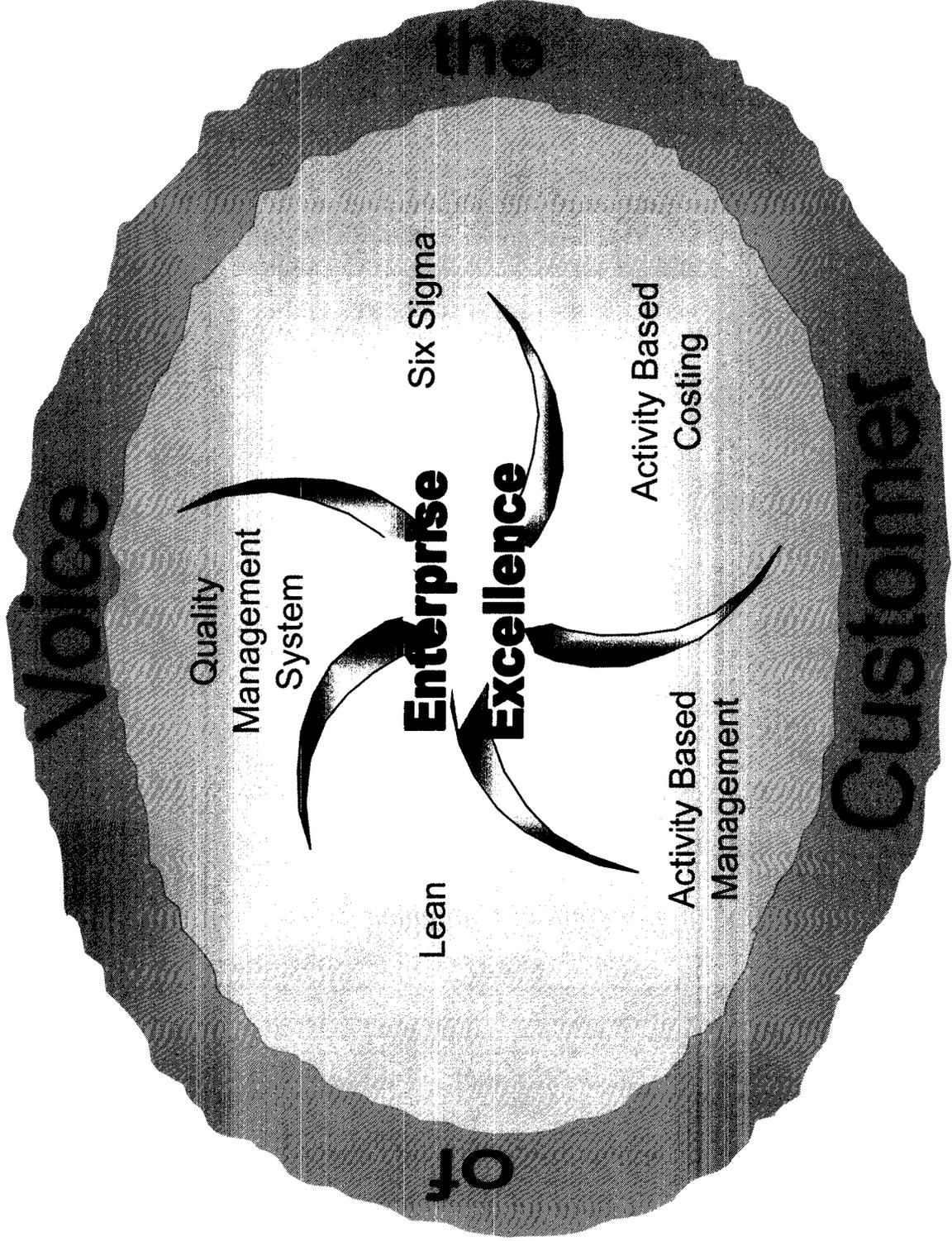
14 The organization is the Ground Systems Industrial Enterprise (GSIE)

Also available online at:

[http://www.lexingtoninstitute.org/defense/pdf/ARMYDEPOTS\\_Final.pdf](http://www.lexingtoninstitute.org/defense/pdf/ARMYDEPOTS_Final.pdf)



Anniston Army Depot  
Process Optimization Initiative (POI) Model



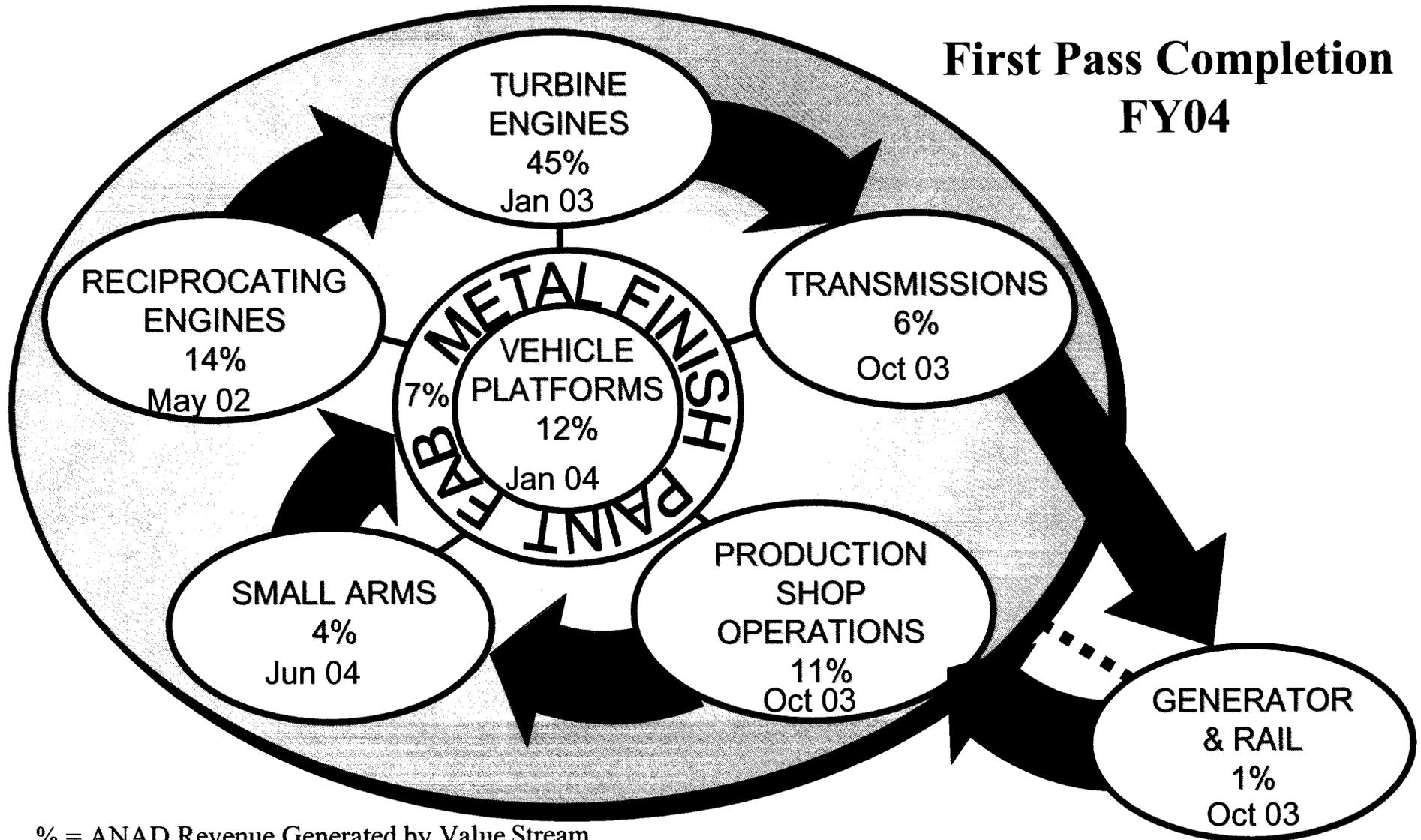
# *Process Optimization Initiative*

## *Degree of Achievable Benefits*

Required Outputs of Process Re-engineering Efforts	Activity Based Costing	Activity Based Mgt	ISO Quality System	Methods & Stds	Six Sigma	Process Optimization Initiative
Increase Throughput	1	4	1	7	4	9
+ Utilization of Direct Labor	7	4	1	7	7	9
Promotes Std Work	1	1	4	9	4	9
Eliminates Waste	1	9	1	7	7	9
Improvements in Prod Flow	1	1	1	7	4	9
Improvements in Methods	1	1	1	9	7	9
Focus on Process Cost	9	9	1	4	7	9
Increase Product Quality	1	1	7	7	9	9
Customer Focused	4	9	9	7	9	9
Material Quality	1	1	9	4	9	9
Quality Mgt System	1	1	9	4	9	9
Continuous Improvement	7	7	9	4	9	9
Improve Parts Availability	1	1	1	1	1	9
+ Utilization of Indirect Labor	7	9	4	1	7	9
	43	58	58	78	93	126

# Lean Improvement Strategy

First Pass Completion  
FY04



% = ANAD Revenue Generated by Value Stream  
Dates Indicated When Lean Efforts Began

# Process Optimization Initiative



**CERTIFIED**



## Bottom Line

**Mature Lean Value Stream**

### Improved Labor Efficiency

AGT 1500 Turbine Engine	14%
M1 Forward Module	27%
M1 Rear Module	11%

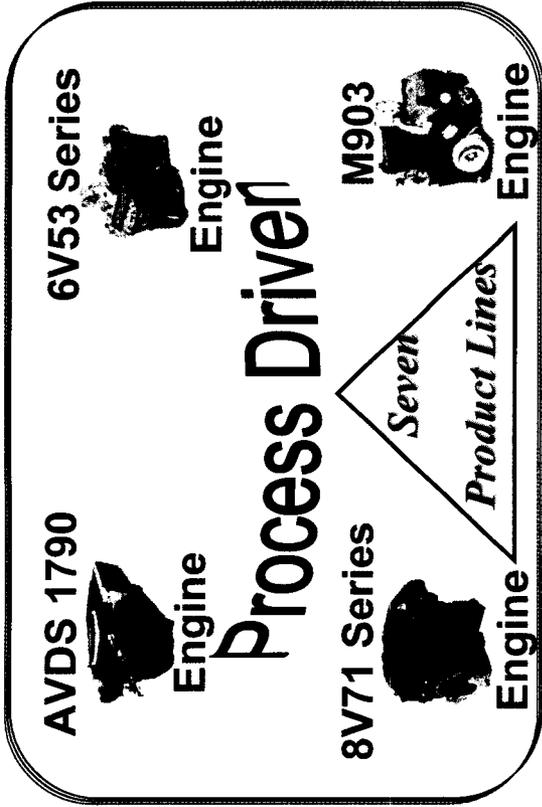
**Continuous Improvement**



## **Projected Customer Savings**

**FY05 -- \$8.8M    FY06-FY09 -- \$29M**

# Process Optimization Initiative



- ◆ Pilot Process
- ◆ Most Improved
- ◆ Template for Others
- ◆ First to embrace Lean – First to Realize Benefits

**CERTIFIED**



## Bottom Line

AVDS – 1790

Labor Efficiency

Pre-Lean  
518 Hours

Today  
360 Hours

31% Improvement

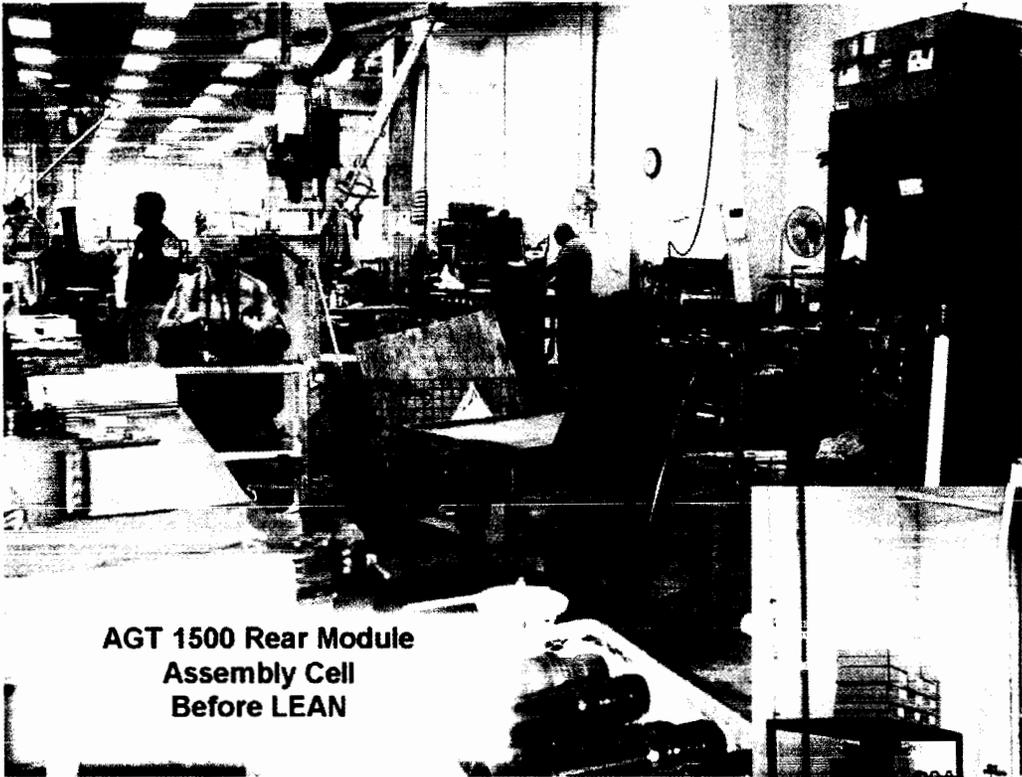
Continuous Improvement



**Performance-Based Cost Avoidance**

**FY04 -- \$5.8M**

# **RIE** Rapid Improvement Event



**AGT 1500 Rear Module  
Assembly Cell  
Before LEAN**

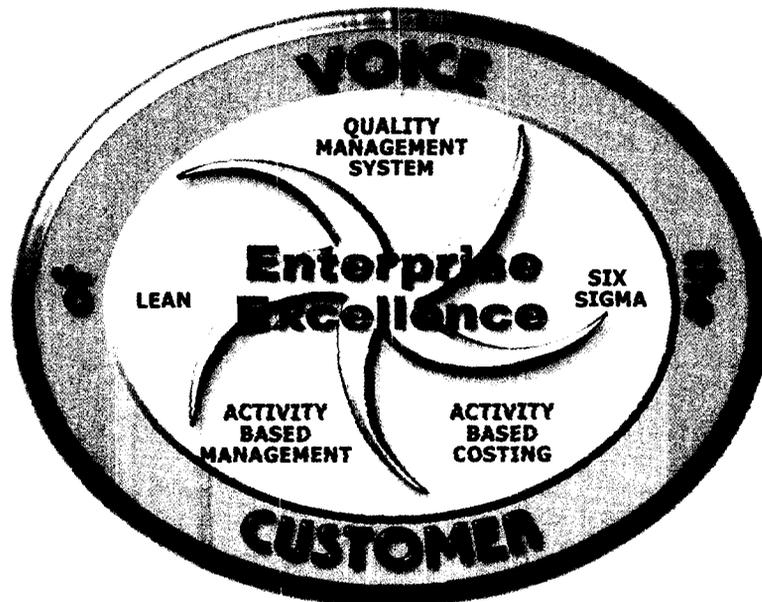
**A rapid improvement event was conducted that established one-piece flow, standard work, and instituted visual controls in the AGT 1500 Rear Module Assembly work cell. These changes increased productivity in this work cell by 20 %.**



**AGT 1500 Rear Module Assembly Cell  
After LEAN**

## ANNISTON ARMY DEPOT'S PROCESS OPTIMIZATION INITIATIVE

The following model is a holistic approach to improvement of all processes, production or administrative. The initial concept was developed to improve our business processes to ensure Anniston Army Depot remains viable and relevant in the future. Recognizing that major changes in our business processes would be necessary, our search for the right, single set of improvement processes commenced. In this search many well known and even practiced tools and methodologies were evaluated, to include work measurement studies, engineering standards, simple method improvements, cellular manufacturing, six sigma, lean manufacturing, value engineering, quality management systems (ISO), etc.



In the approach adopted, the “Voice of the Customer” is most important. The customer’s expectations are what we strive to exceed, primarily in cost, delivery and schedule. To reach our goals we view the use of the framework of five basic tools, principles, and improvement techniques:

- 1) The ISO 9000-2000 Quality standard serves as our overall management system for all of our business processes.
- 2) Lean manufacturing is our choice to improve efficiencies by establishing process flow and eliminating waste through removal of non-value added tasks.
- 3) Using the structured problem solving process and statistical tools contained in the six sigma methodology to improve the effectiveness of both products we produce and internal processes.
- 4) Employing techniques found in activity based costing to capture detailed cost of activities within processes, and
- 5) Developing “true total cost” of processes and/or product lines to shift to activity based management – targets of opportunity for cost reduction.



Our strategy is to selectively use the appropriate tool and/or principle that improves our business processes and products consistent with real time feedback of customers expectations. In using this process, we optimize all of our processes based on real value added results for our customers and truly achieve "Enterprise Excellence".

Anniston Army Depot's Process Optimization Initiative (POI) journey began with in-house efforts in our reciprocating engine remanufacturing facility, during the third quarter of 2002. Simpler, our lean consultant, began leading our efforts in the first quarter of 2003.

- Our first efforts were focused on the AVDS 1790 engine process. This process had been a poor performer in productivity and total cost in the Quarterly PRON Review.
- Through implementation of POI concepts for FY04, we are projecting a performance-based cost avoidance of \$5.8M.
- Lean manufacturing efforts in this process have already achieved a 31% improvement in labor efficiency.
- POI has since been incorporated into the remaining seven reciprocating engine lines.

Our most significant cost improvements have been in our AGT 1500 turbine engine process. These lean efforts began in the second quarter of 2003.

- 
- Improvements have enabled the depot to adjust FY05 fixed price submission. Based on our current year program quantities, these adjustments equate to an annual savings to our customers of \$8.8M.
  - Lean manufacturing efforts in this process have already achieved improvements in labor efficiency for the turbine engine of 14%, the forward module of 27%, and the rear module of 11%.

ANAD has implemented a new way of managing our processes by dividing our industrial operations into four separate value streams.

- In each we have developed and assigned a senior level manager, Process Optimization Manager, responsible for managing and leading these value streams in their daily activities and improvement. With these managers and continued strong commitment of senior leadership we will institutionalize continuous improvement of our operations.

Our POI implementation has been expanded to include all four value streams. While our implementation in the vehicle and support value streams are in the infancy stage, gains have already been made:

- The first pass yield on the M1 series driver's hatch was approximately 70%. During a lean event on this work cell, a fixture was installed that has improved the first pass yield to 100%.



We are including our administrative processes in our POI improvement strategy. Some of the achievements to date include:

- Reduced fabrication work order processing time by 95%.
- Established standard work for repair parts management to provide consistency across value streams.
- Reduced local purchase steps by 25%.
- Reduced quality audit process steps by 47%.

We have injected POI into the ANAD Pollution Prevention Program:

- Established Pollution Prevention Opportunity Assessment Teams. These teams are cross-functional and evaluate waste generation and management practices.
- Achieved paint operations improvements that established institutional controls ( i.e., paint gun nozzle reuse, air filter replacements, and improved paint gun technology).
- Improved material management by establishing institutional controls for hazardous materials.
- Anniston Munitions Center Missile Recycling Center began total resource recovery and recycling of demil of tactical missiles.
- Partwasher Solvent Recycling.



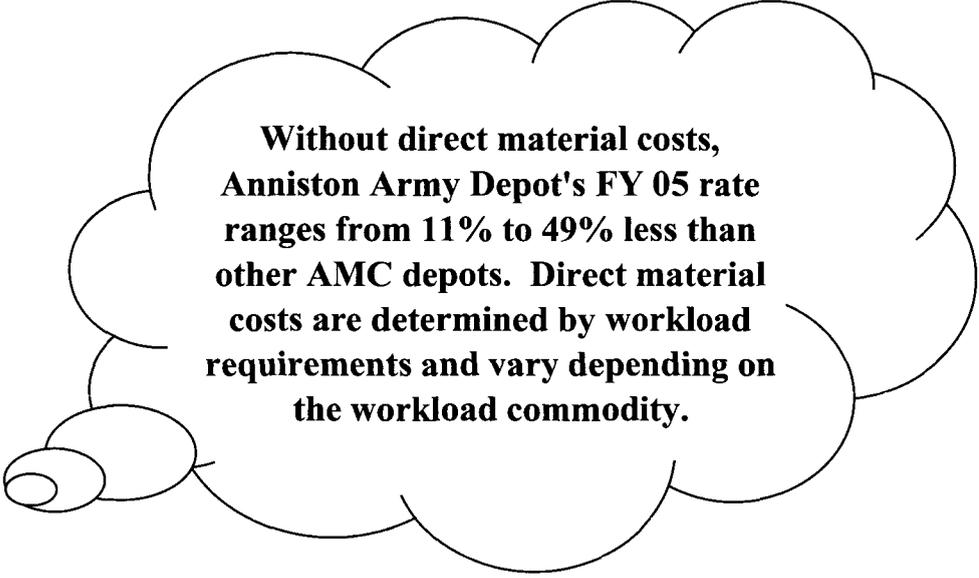
Anniston is fully engaging our workforce in our improvement strategy.

- To date we have chartered 114 teams with 606 team members. Approximately 1,182 employees have been touched by these efforts.
- Green belt level six sigma training has been provided to 20 employees.

Our plan is to continue to use our POI to implement lean principles for increased efficiency and six sigma to provide improvement in the effectiveness of processes. Using an aggressive approach within all of our production value streams and administrative areas we project seeing both additional cost avoidance and savings in all operations.

## Anniston Army Depot FY05 Rate Composition

<u>Component</u>	<u>Amount</u>
Direct Labor (1)	\$30.57
Direct Materials (2)	\$93.19
Direct Other (3)	\$2.84
Within Shop (4)	\$7.66
Above Shop (5)	\$29.56
BOCIE (6)	\$14.73
TOTAL EXPENSING RATE (7)	\$178.55
<b>AOR Adjustment (8)</b>	<b>-\$17.66</b>
<b>FINAL STABILIZED RATE (9)</b>	<b>\$160.89</b>
<b>RATE W/O DIRECT MATERIAL</b>	<b>\$67.70</b>



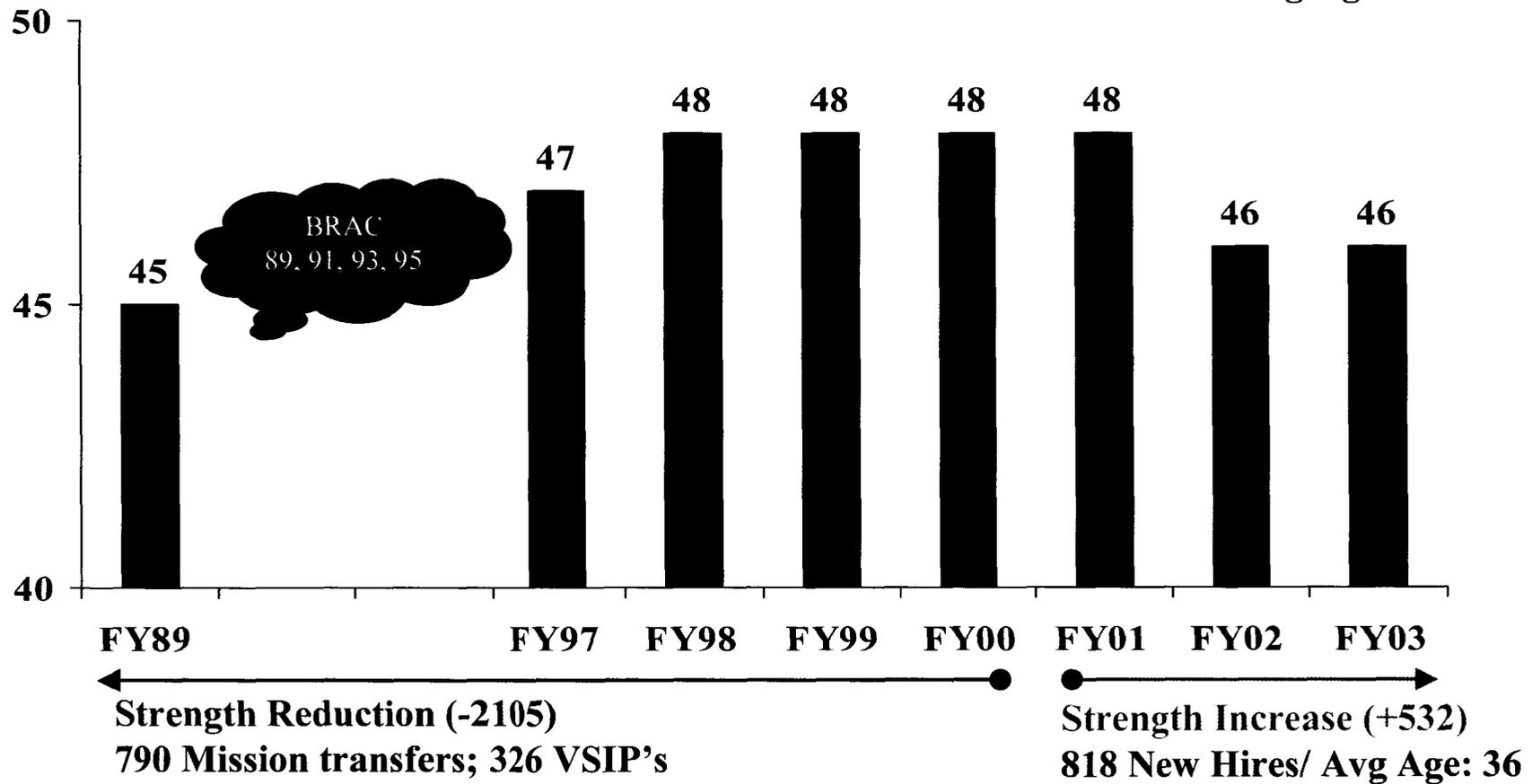
**Without direct material costs, Anniston Army Depot's FY 05 rate ranges from 11% to 49% less than other AMC depots. Direct material costs are determined by workload requirements and vary depending on the workload commodity.**

### NOTES:

- (1) Includes basic labor rate, plus leave and fringe benefits.
- (2) Includes direct material required to execute total workload by program and unit funded cost.
- (3) Includes contracts, travel, transportation, equipment that is directly attributable to a particular program.
- (4) This is a composite rate of all indirect expense identifiable to a specific productive cost center.
- (5) This is a composite rate of indirect expense outside a productive cost center (supervisors, CPOC bills, DFAS bills, Headquarters Assessment Fees, LMP processing fees, AWPS fees, etc.).
- (6) This is the BASOPS costs that is not reimbursed by tenants and is distributed to the Mission to recover through the rates.
- (7) The total expensing rate is based on total expenses required to execute the workload that is known at the time of the budget build for the pricing year (normally two years in advance, e.g., FY05 rate based on FY03 budget submission).
- (8) AOR Adjustment: This rate is applied to every direct labor hour to either recover losses in previous years or to return gains back to the customer, whatever is necessary to achieve a zero AOR in the pricing year.
- (9) The stabilized rate is the expensing rate plus or minus any AOR adjustment required to achieve a zero AOR in the budgeted year plus one. (Note: Includes \$2.654M for GSIE).

# ANAD Average Age History

Current DA Avg Age: 48



*Committed to Excellence*

POINT PAPER

AMSTA-AN-CO

UNCLASSIFIED

18 March 2004

SUBJECT: Cooperative Education (Co-op) Program at Anniston Army Depot

ISSUE: To provide information on subject program

BACKGROUND:

- o Workforce analysis conducted several years ago revealed that based on our projected retirements, neither our local recruitment area nor the local technical colleges would produce a sufficient number of qualified applicants in our skilled trades/crafts areas.
- o So, in FY99, our recruitment efforts in our existing Technical College Trades Co-op Program were expanded with a focus in the mechanics, machining, and welding areas. This increased demand for co-op students helped to increase the enrollment in our two local technical colleges, but not to the required level. In FY03 we added the skill areas of hydraulics/pneudraulic and electronics to our recruited skills. These efforts, however, were still not producing sufficient numbers of qualified applicants to address our projected hiring needs.
- o In FY00 the program was further expanded and a High School Co-op Program was instituted. This program was added with the hopes of increasing our applicant pool by influencing high school junior and senior students to consider skilled trades/crafts as a career choice. This non-traditional, first-of-it's-kind, co-op program was developed in partnership with the Alabama State Department of Education (ADSDE). The students earn high school credit toward graduation while they participate in the program.
- o These efforts have resulted in a three-phased program. Student can be recruited either through the High School Program (Phase 1) or directly through the Technical College Program (Phase 2). Once students have successfully completed their Technical College course of study they are eligible for non-competitive conversion to a permanent position based on space availability. The permanent positions are targeted to the journey level of their trade (Phase 3) non-competitively.
- o As of this year, the High School Co-op Program operates both a morning and afternoon session and has a capacity of 60 students annually. The current class has a total of 49 students, 43 seniors and 6 juniors. Since FY00, the program has had a total of 135 students, 65 have graduated from the program, and 63 of those have continued in the Technical College Program. Of the 63, 21 have graduated from college, been offered permanent positions, and are progressing to the journey level in their trade areas. The retention rate of the High School Program is 90%.

- o The High School Program currently focuses on the skilled trades areas of machining, mechanics, and welding. It provides an on-site Coordinated Studies Class along with paid on-the-job training (OJT). Depot skilled journey level employees are utilized as trainers to provide OJT. Students are recruited from 45 schools in 11 counties within a 35-mile radius of the Anniston Army Depot.
- o Since FY97, 212 students have been in the Technical College Program including 63 from the High School Program. This includes 81 students currently in the program, 100 graduates of the program, 64 in progression to journey level and 36 at journey level. Retention rate in the Technical College Program is 85.4%.
- o Anniston Army Depot funds the cost of the entire Co-op program. The High School Program expense is included as an overhead expense in Anniston Army Depot's AWCFF Budget. The initial start-up cost for the building and equipment was \$472,531.00. The cost per high school student in FY02 was \$22,560. The total FY 02 costs for the program were \$609,060.00 for 27 graduating students. The cost of the Technical College Co-op Program includes only tuition assistance and safety equipment costs. Students' salaries are direct labor hours.
- o Anniston Army Depot Co-op Program Highlights:
  - o High Visibility. The Anniston Army Depot High School Co-op Program has the visibility and complete support of Senators Shelby and Sessions, Congressman Rogers and Former Congressman and now Governor Riley. Governor Riley used the High School Co-op Program in his recent campaign as the model for industry and education working together to solve training and workforce revitalization issues.
  - o Partnership. The Anniston Army Depot High School Co-op Program was the first educational partnership in Alabama between the federal government, the State Department of Education and a local school system. State Superintendent of Education, Dr. Ed Richardson has praises the Anniston Army Depot program for its innovative approach to workforce revitalization.
  - o Improved Safety. All High School Co-op students are trained to operate in a safe manner. They are familiar with safety data sheets, hearing and eye protections, safety lockouts, etc. There have been no lost time accidents in the four high school classes.
  - o Increase in the Potential Applicant Pool. The High School Co-op Program provides welding, machining, and mechanics training to Co-op students who have no other exposure to these skills areas. This increases the skilled labor force available to Anniston Army Depot.

- o Employee Evaluation. The Co-op Program allows Anniston Army Depot to evaluate the employees before conversion to a permanent position. Anniston Army Depot has the option of not hiring any potential employee that has shown they are unsuitable. This option is easier than terminating a permanent employee.
- o Retention. Every student who was recruited at the technical college level and has successfully completed the program has been offered permanent employment at Anniston Army Depot.
- o Improved transition/Less Supervision. The program graduates are acclimated to Anniston Army Depot operations when they are converted to permanent positions and require less supervision and have a quicker adjustment time than a new employee hired from outside Anniston Army Depot.
- o Improved Morale. The program graduates have a better understanding of Anniston Army Depot and its operations and do not have the overwhelming confusion and stress of a new hire.

POINT PAPER

AMSTA-AN-CO

UNCLASSIFIED

1 April 2004

**SUBJECT:** SkillsUSA/VICA Competition from the Cooperative Education (Co-op) Program at Anniston Army Depot

**ISSUE:** To provide information on SkillsUSA/VICA competition

**BACKGROUND:**

- o SkillsUSA/VICA is a national organization serving more than 264,000 high school and college students and professional members enrolled in training programs in technical, skilled, and service occupations, including health occupations.
- o SkillsUSA/VICA is in high schools and college/technical schools. It has more than a quarter million student members annually, organized into 13,000 chapters and 54 state and territorial associations.
- o The purpose of SkillsUSA/VICA is to prepare America's high performance workers. It provides quality education experiences for students in leadership, teamwork, citizenship, and character development. It builds and reinforces self-confidence, work attitudes, and communications skills. It emphasizes total quality at work, high ethical standards, superior work skills, life-long education and pride in the dignity of work.
- o SkillsUSA/VICA programs include local, state, and national competitions in which students demonstrate occupational and leadership skills. Only the first place winner in the state competition can participate in the annual national-level competition. During the annual national-level SkillsUSA/VICA Championships, more than 4,100 students compete in 75 occupational and leadership skill areas. SkillsUSA/VICA program also help to establish industry standards for job skill training in the classroom.
- o The SkillsUSA/VICA Championships is the showcase for the best career and technical students in the nation. Contests begin locally and continue through the state national levels. The Championships is a multi-million dollar event that occupies a space equivalent to eight football fields. The philosophy of the Championships is to reward students for excellence, to involve industry in directly evaluating student performance, and to keep training relevant to employers' needs.

o Students in the Anniston Army Depot High School Industrial Cooperative Academy are required to participate in the SkillsUSA/VICA organization. The program chapter has had 100% participation since its inception in the 2001/2002 school year. Officers are elected from among the participating students and meetings are held on a monthly basis.

o Students in our Technical College Trades Co-op Program also participate in the post-secondary SkillsUSA/VICA Championships competition through their respective schools.

o Since the Anniston Army Depot Co-op Program has participated in The SkillsUSA/VICA Championships we have had several winners at both the local, state, and national levels:

o Danny Whitten competed at the High School level and placed 3<sup>rd</sup> in the Alabama State welding competition.

o Jeffrey Thompson competed at the High School level and placed 1<sup>st</sup> in the Alabama State machining competition. He then competed at the National level and placed 8<sup>th</sup>.

o Josh Adkins competed at the High School level and placed 3<sup>rd</sup> in the Alabama State machining competition.

o Wayne Hambrick competed at the post-secondary level and placed 1<sup>st</sup> in the Alabama State Industrial Motor Control competition. He then competed at the National level and placed 1<sup>st</sup>.

o Cameron Hitchcock competed at the post-secondary level and placed 1<sup>st</sup> in the Alabama State Electronic Technology competition. He then competed at the National level and placed 16<sup>th</sup>.

o The level of success that has been achieved in the short period that our co-op program students have been participating in these competitions is a strong indicator of the quality of our training program.



## **County teacher to direct co-op program at depot**

**By Jennifer Ginsberg**  
**Star Staff Writer**  
**03-02-2003**

A teacher from the Calhoun County school system will serve as coordinator for a co-op program at the Anniston Army Depot that allows selected students to receive hands-on training at the depot as part of their school day.

Superintendent Jacky Sparks told the county school board at its meeting Thursday night that the school system has received a one-year contract to coordinate the program, with the option to extend the contract for additional years.

Susan Hill, who currently works in the co-op program at the Calhoun County Career Technical Center, will coordinate the depot program. She will teach a one-hour course daily to students in the co-op program, as well as market the program and recruit high school students from within 35 miles of the depot.

Approximately 35 students from Cleburne and Calhoun counties participate in the program. They take their required academic courses at their high schools, then participate in hands-on training at the depot in the afternoon. Schools recommend students for the program, and the student also must apply for admission.



The county school system will receive \$57,155 from now to July 31 to cover Hill's salary, benefits, training and travel.



## Depot work force will expand

**By Jessica Centers**  
**Star Staff Writer**  
**09-04-2003**

The Anniston Army Depot will hire 126 new employees by the end of the month, Third District Congressman Mike Rogers announced Wednesday.

Rogers said the jobs are a direct result of increased defense spending and the war in Iraq. The new positions will be assigned to overhauling and repairing equipment returning from the Middle East.

"The single most important thing we must do to improve the economy is to help create good-paying jobs," Rogers, R-Saks, said in a prepared statement. "The depot is of great strategic importance to our nation's defense, and at the same time, has continued to provide a much-needed boost to our local economy."



**Gunney Waters uses an impact hammer to remove a track sprocket on an M1 tank at Anniston Army Depot. Photo: Kevin Qualls/The Anniston Star**

The jobs will fill 113 new positions and replace 13 employees who recently retired. The jobs are temporary, one-year positions, but could be extended if the workload is sustained.

Depot Spokeswoman Joan Gustafson said every vehicle that runs on a track, except for the Bradley tank, comes to Anniston if needed upgrades or repairs cannot be done in the field.

The Anniston Army Depot received a \$27 million funded order Tuesday in support of Operation Iraqi Freedom, and was recently advised that its direct-funded, or mission-related, workload would increase in fiscal 2004 as a result of the conflict in Iraq, Gustafson said.

Additional funds will be provided when the depot receives its work orders from the Army on how many vehicles and types of upgrades or repairs are required.

The depot originally projected 2.9 million labor hours would be required in 2004, but now anticipates an additional 600,000.

"It will be somewhat of a challenge to fill all these jobs in this short timeframe because any hiring effort requires the coordinated efforts of several staff organizations," Gustafson said.

It usually takes an average of 36.5 business days to fill a position, she said.

Using candidate referral lists from a previous hiring effort, 66 of the 126 positions already have been committed.

Gustafson said some positions are being filled by trainees, apprentices, interns and cooperative education students as part of the depot's effort to revitalize its aging work force.



## **Depot work force will expand - Continued**

Over the past three years, the Depot has hired 551 people to fill new positions, plus 342 replacements.

Those hires are attributed to an overall increased workload, including the Stryker program and other partnerships with private industry, Gustafson said.

She said it is too early to speculate about how the increased workload might position the depot for the 2005 Base Re-alignment and Closure process, because the criteria has not been released. It does highlight the services and support that the depot provides the military, she said.

The South Central Civilian Personnel Operations Center in Huntsville handles all the depot's recruiting and receives all applications. Vacancies are posted on the Office of Personnel management web site at [www.usajobs.opm.gov](http://www.usajobs.opm.gov).

The skills currently needed are heavy mobile equipment mechanics, machinists, welders, artillery repairers, pneudraulic system mechanics and small arms repairers.

## Help wanted: Officials hope to draw craftsmen to depot

**By Matthew Korade**  
**Star Senior Writer**  
**11-25-2003**

The ongoing military action in Iraq is expected to increase the workload at the Anniston Army Depot, heightening the need for skilled labor well into next year.

Officials hope to draw on the region's dedicated craftsmen, people with a fascination for electroplating or building turbine engines. The local state employment office keeps a vacancy list of depot jobs.

Officials see the news as positive for a workforce that steadily declined in the 1990s.

From 1989-2000, the depot lost 1,300 federal employees to military restructuring.

Since then, the numbers have crept up, said Billy Bickerstaff, director of resources at the depot.

Today, more than 4,000 federal workers from Calhoun and surrounding counties populate the depot, making it the largest employer in Calhoun County by far. This could increase significantly with the continued occupation of Iraq.

"There's hardly a week where a position isn't open," said Lynn Chapman, human resources officer at the depot.

In a typical year, attrition is about 5 percent, or 200 positions, officials said.

Around winter, after the fiscal year ends, the depot begins to hire anew, they said. It is the time of year that senior managers retire, creating a void down below when middle management is promoted into their positions.

Knowing this, the depot advertises for expected openings months in advance, officials said.

It just finished a hiring drive for about 80 temporary workers. If the need is still there after about a year, they will be hired on permanently.

A pool of temporary employees is kept because the workload is so fluid, bound to shifting priorities at the Pentagon, said Bickerstaff. If the work firms up, new personnel can stay on. "But there is no guarantee," he said.

About three-quarters of the work is in blue-collar fields, he said. More than 600 positions are in mechanics, the largest group, then machinists, then welders.



**Eric Hardy works on a turbine engine at Anniston Army Depot. Today, more than 4,000 federal workers from Calhoun and surrounding counties populate the depot, making it the largest employer in Calhoun County. Photo: Bill Wilson/The Anniston Star**



## **Help wanted: Officials hope to draw craftsmen to depot - Continued**

Salaries are competitive. Those who participate in the depot's high-school training program, for example, make about \$9 an hour.

Applicants will have to be fingerprinted, have a background check, and depending on the job, a security clearance or drug test, said Chapman.

The Office of Personnel Management, the government's human resources agency, requires all federal jobs to be posted on the Internet.

"People just need to check that Web site periodically," Bickerstaff said.





# **Supporting A Transforming Force**

## **Table of Contents**

**Vehicle Engine Driven Electrical Power (VEDEP)**

**New Technology**



*Supporting a  
Transforming Force...*

COMBAT VEHICLE CENTER

SUPPORTING A TRANSFORMING FORCE

Future Combat System (FCS)

ANAD is Developing Expected FCS Technologies

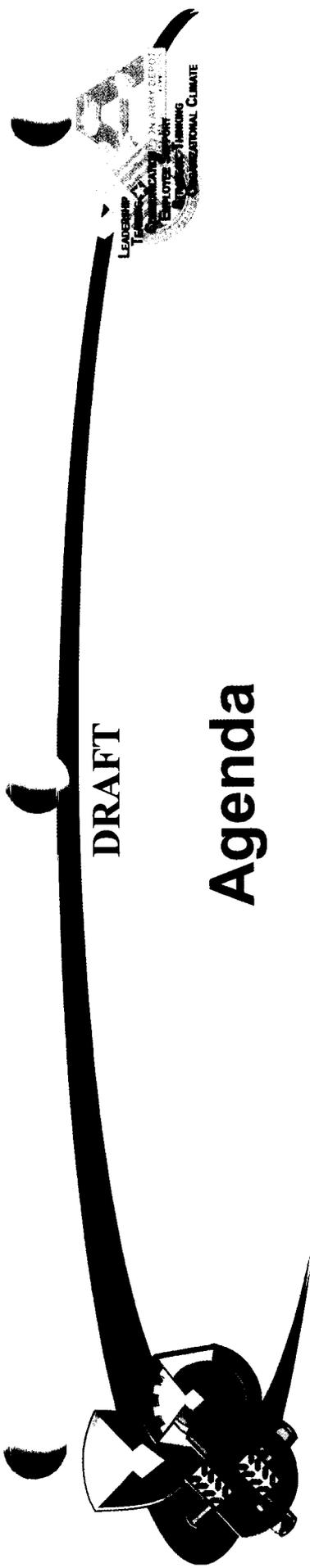
- Titanium Welding
- Composites Repair
- Hybrid - Electric
- Wireless Technology
- Condition Based Maintenance

ANAD COMBAT VEHICLE CENTER SUPPORTING AMERICAN WARFIGHTERS

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We are also positioning ourselves to be a part of the future combat systems by developing technologies that we expect the systems to use .....such as robotic titanium welding, composite repair and hybrid-electric drives.

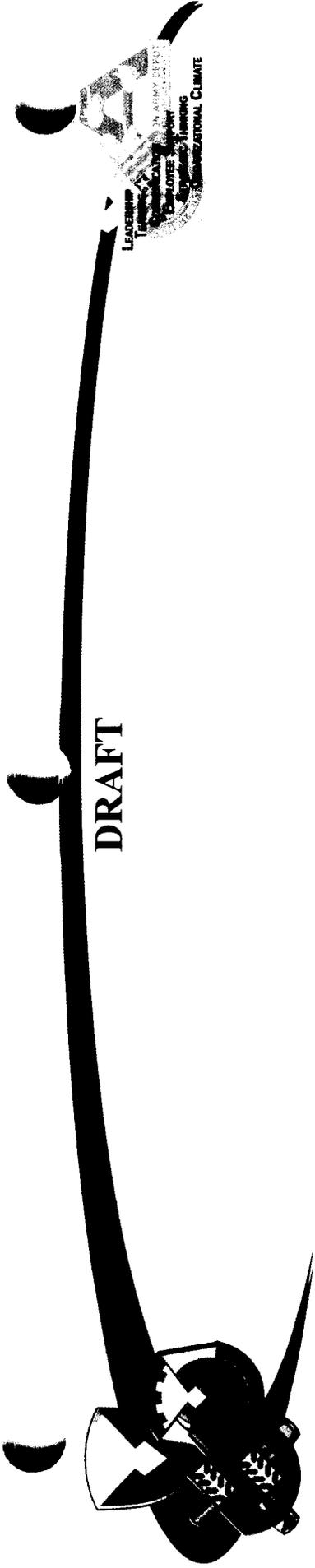
Anniston is also actively working with academia to develop concepts that are applicable to future production processes, business models, and vehicle technologies.



**DRAFT**

# Agenda

- Purpose of Meeting
- Vehicle Engine Driven Electric Power (VEDEP) Mission
- VEDEP Description
- VEDEP Benefits
- Technologies Areas
- Proposed Engineering Center
- ANAD Capabilities
- Conclusion



**DRAFT**

## **Purpose**

**To Propose Establishing a  
Vehicle Engine Driven Electric Power (VEDEP)  
Engineering Center At the Anniston Army Depot**



DRAFT

LEADERSHIP  
TRAINING  
EMPLOYEE SUPPORT  
ORGANIZATIONAL CLIMATE

## VEDEP Mission

To Develop On-Board Power Generation Systems to Meet the Growing Electrical Demands of Military Systems and to Facilitate Technology Transfer to Legacy and Future Combat Systems.

*VEDEP will Extend the Useful Military Life of Legacy Vehicles*

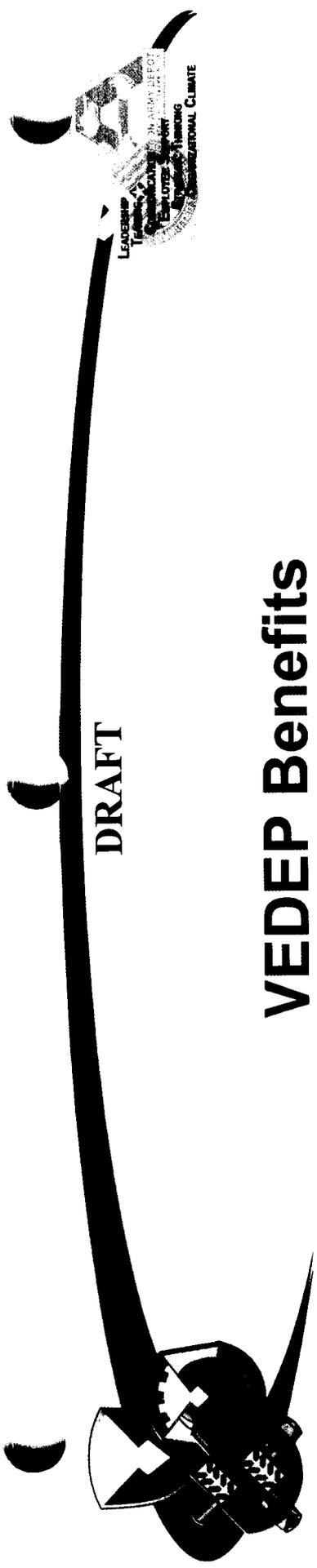


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## **VEDEP Description**

- VEDEP uses the Propulsion Power of a Vehicle Engine or Motor to Develop Electrical Power for On-board and Off-board applications. Power Output Scaled to On-Board Engine Size.**
- Electrical Power can be Produced Using Upgraded Alternators, Generators, and Hybrid Electric Technology.**
- VEDEP will Utilize a Closed Loop Electrical Feedback Circuitry to Best Match Power Demands to Power Production.**
- VEDEP will Produce a Range of Power Outputs using Power Electronics to Develop Selectable Frequencies 50Hz, 60Hz, 400Hz, DC; and Output Voltages, 3Ø208V, 1Ø120VAC; 28 VDC, 270 VDC.**
- VEDEP will also Permit the Networking of Vehicles to Form a Local Power Grid as well as the Ability to Interface with Commercial Power Grids World-Wide.**

**No Longer a Need for a Separate Diesel Engine Dedicated to Electric Power -  
A Single Engine can provide Both Vehicle Propulsion and Electric Power**



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# **VEDEP Benefits**

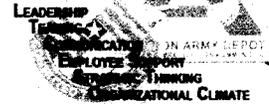
## **VEDEP can Significantly Reduce the Logistics Requirements of Military Systems**

- ◇ Reduction in Number of Battlefield Motor Generators
- ◇ Reduction in Trailers Required for Generators
- ◇ Reduced Spare Parts Required
- ◇ Reduced Fuel Requirements (Trailer Loads Require 17% More Fuel)
- ◇ Reduced Deployment Transport Requirements
- ◇ Reduce 'Wet Stacking' Problems with Diesel Electric Generators

## **VEDEP can Significantly Improve Military Systems Operational Capability**

- ◇ Reduction in Systems' Hardware Reduces Deployment Assets, Time & Costs
- ◇ Reduction in Operational Set Up and Tear Down Times
- ◇ Improve Roadworthiness & Speed of Systems Movement during Battlefield Operations
- ◇ Reduced Fuel Requirements

DRAFT



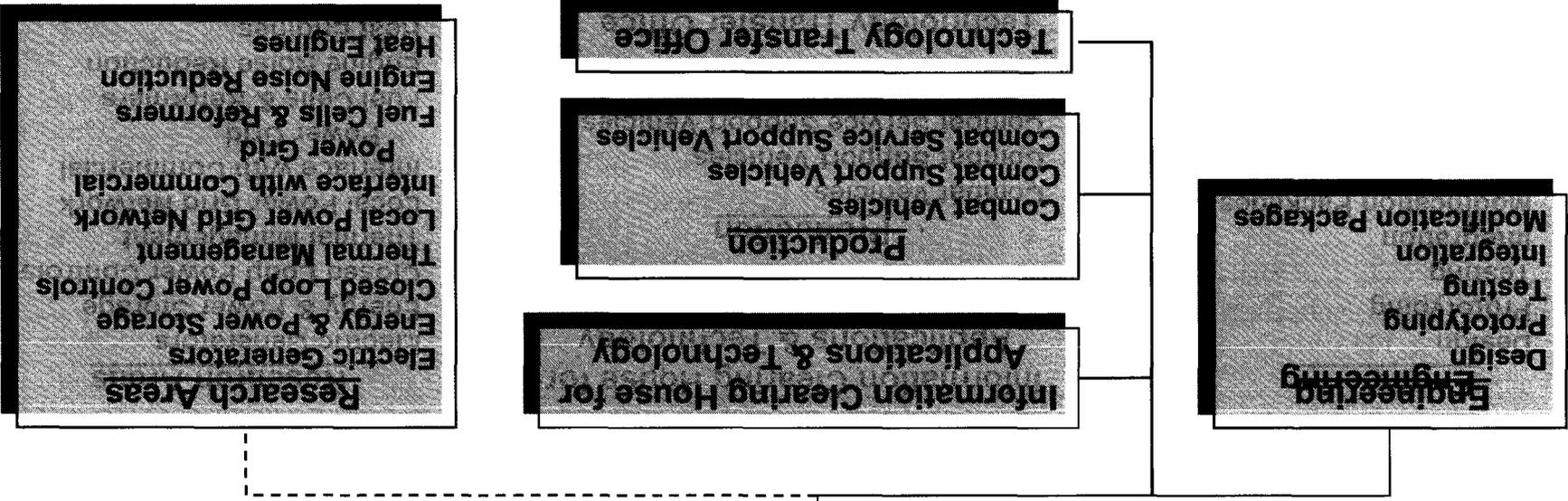
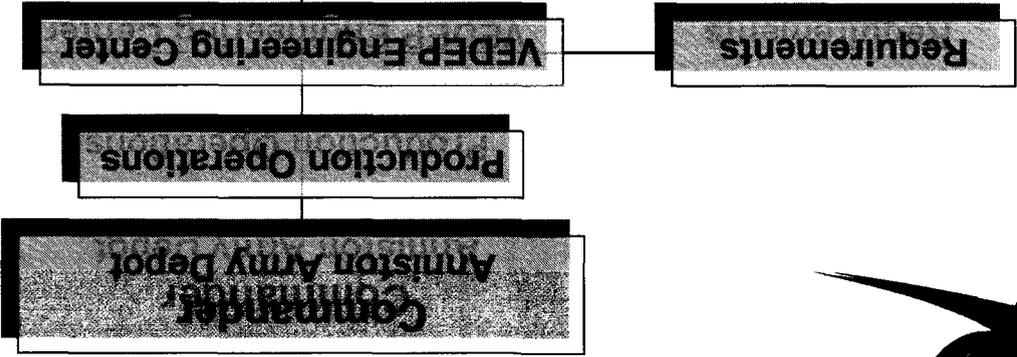
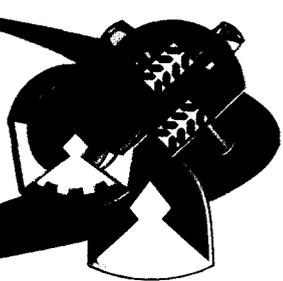
## VEDEP Technology Areas

- Heat Engines and Fuel Reformers/Cells
- Electric Generators
- Engine Noise Reduction
- Closed Loop Power Control
- Thermal Management
- Energy and Power Storage
- Local Power Grid Network
- Interface with Commercial Power Grid
- Militarization and Packaging
- Payload Integration

*Information Clearing House for On-Board Power Generation  
Applications and Technology in the Army*

# Proposed Engineering Center

DRAFT



Depot

University Support



DRAFT

# ANAD Capabilities

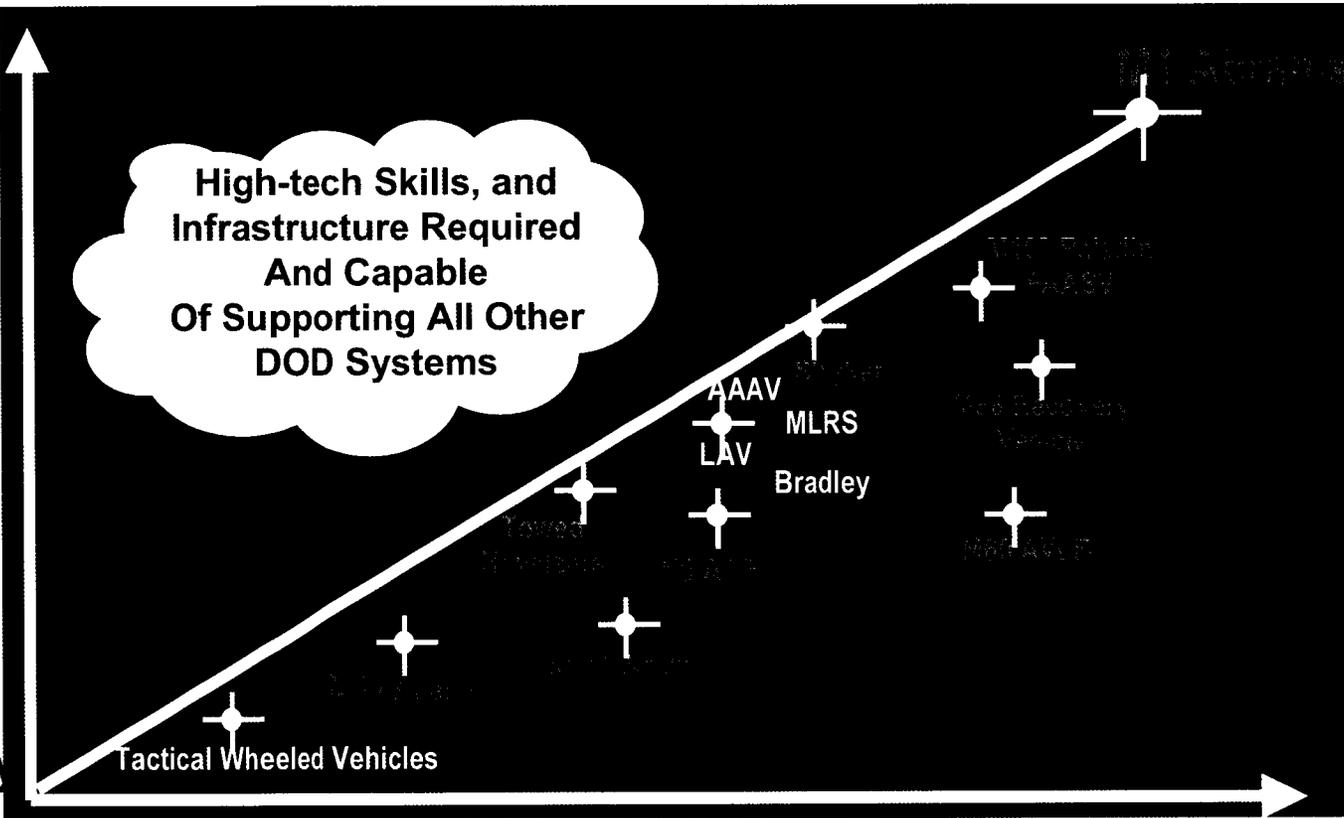
LEADERSHIP  
TEACHING  
COMMUNICATIONS  
EMPLOYEE SUPPORT  
RETHINKING  
ORGANIZATIONAL CLIMATE

High Technology

Complexity

Low Technology

High-tech Skills, and Infrastructure Required And Capable Of Supporting All Other DOD Systems



- \$ Support Infrastructure Requirements + \$\$\$\$

AAAV – Advanced Amphibious Assault Vehicle  
MLRS – Multiple Launch Rocket System  
AVLB – Armored Vehicle Launched Bridge

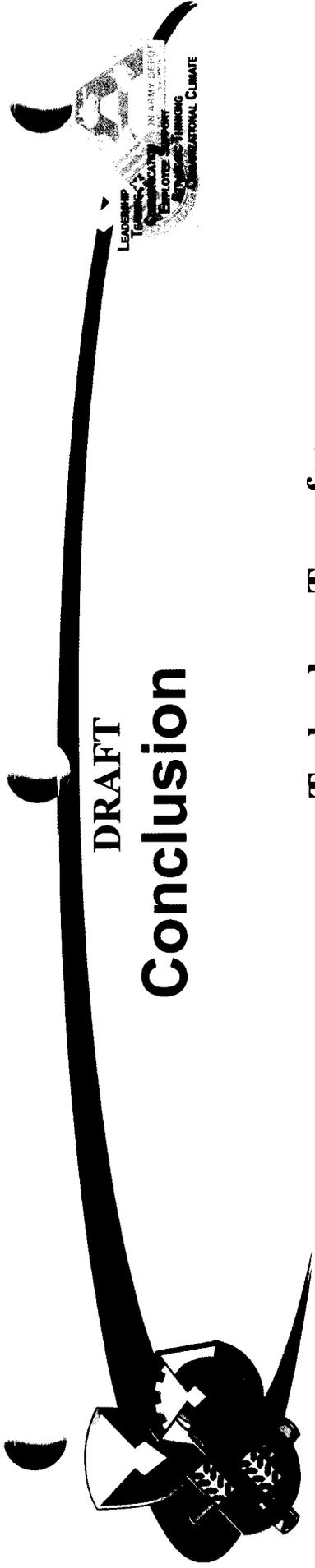
LAV – Light Armored Vehicle  
FAASV – Field Artillery Ammunition Supply Vehicle



**DRAFT**

# **ANAD Capabilities**

LEADERSHIP  
TRAINING  
TECHNOLOGY  
IN ARMY  
OPERATIONS  
EMPLOYEE  
SUPPORT  
IMPROVING  
ORGANIZATIONAL  
CLIMATE



# DRAFT Conclusion

Technology Transfer

Transforming Our:

Technologies

Capabilities

Processes

Skills

Infrastructure

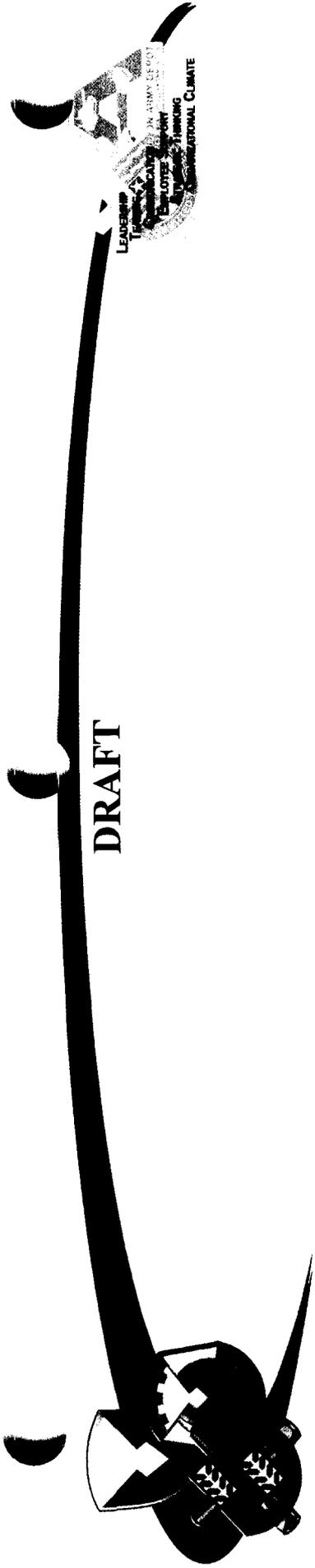
Stryker

M1A2

FCS

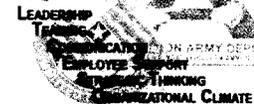
To Support... The Future Force

*VEDEP Supports ANAD's and the Army's Transformation Mission*



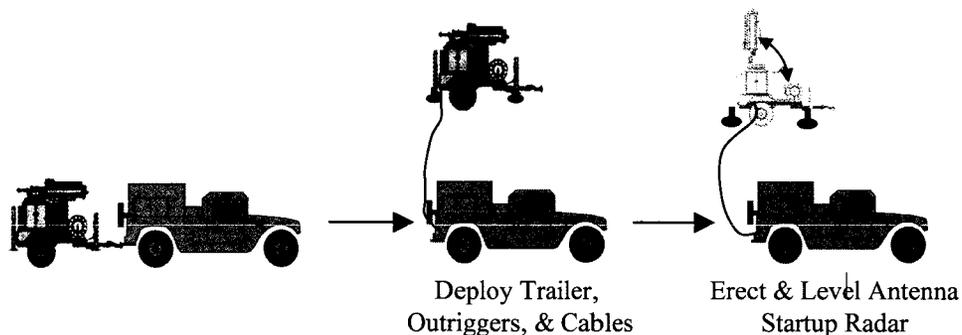
# Backup Charts

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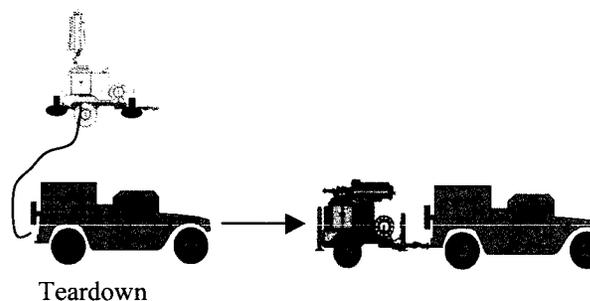


# Sentinel Radar Reduced Timelines

## Current



*Emplacement Time – 15 min*

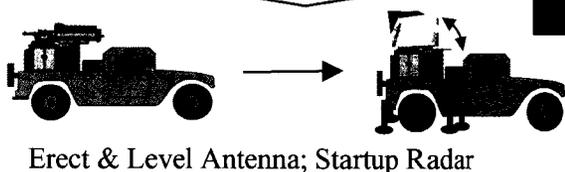


*March Order ~ 10 min*

### Key Technologies

- Hybrid Electric Power / Advanced Generator
  - Lightweight Power Conditioning
  - Active Stabilization and Leveling System

## Future



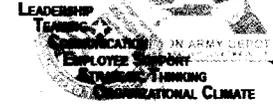
*Emplacement Time ~ 7 min*



*March Order ~ 3 min*

**Over 50% Reduction in Emplacement and March Order Timelines**

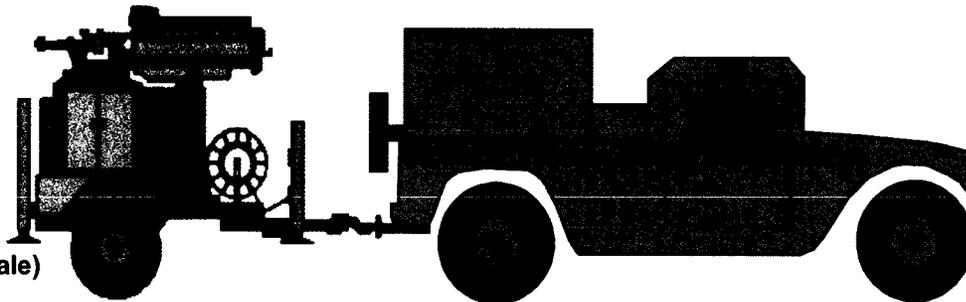
# DRAFT Sentinel Radar System Stowed Configurations



## Current Stowed Configuration

- System**
- 13,040 lbs
  - 1,546 cu ft

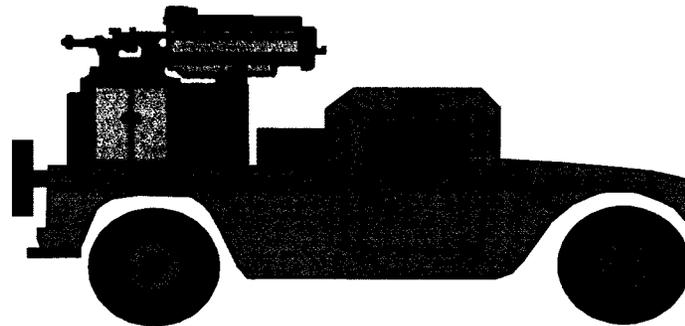
(Not to Scale)



## High Mobility Stowed Configuration

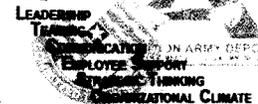
- System**
- 9,570 lbs
  - 944 cu ft

(Not to Scale)



*Systems Savings: 25% Reduced Mass, 40% Reduced Volume*

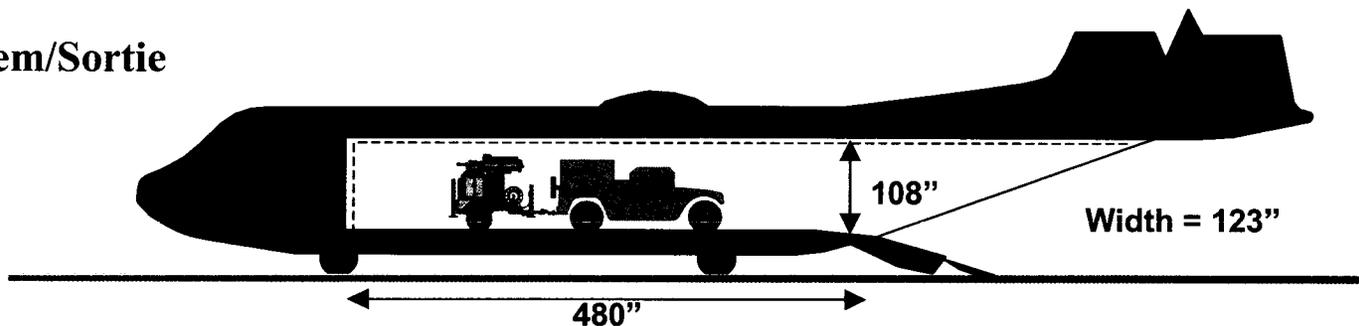
DRAFT



# Sentinel Radar System Transportability

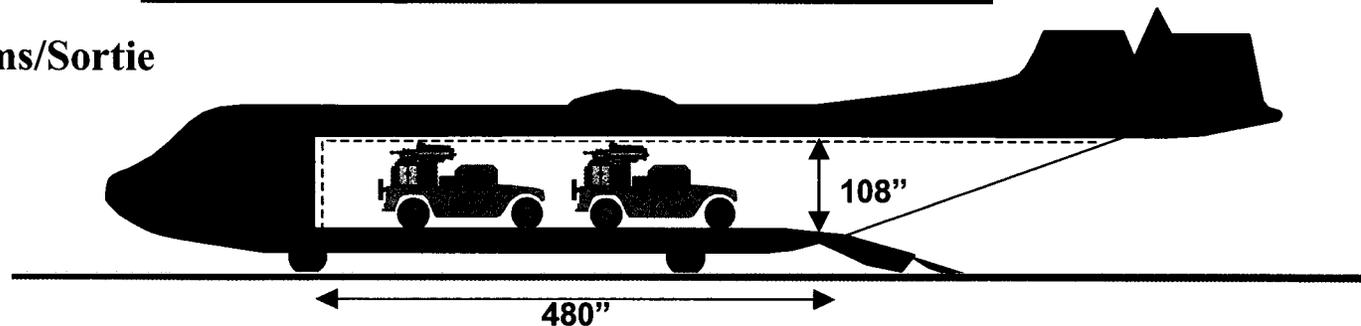
## C-130 Transport of Current System

One System/Sortie



## C-130 Transport of High Mobility System

Two Systems/Sortie



*VEDEP System Doubles C-130 Transport Capability*



**DRAFT**

LEADERSHIP  
TECHNICAL  
COMMUNICATIONS  
EMPLOYEE SUPPORT  
ORGANIZATIONAL THINKING  
ORGANIZATIONAL CLIMATE

## **VEDEP Mission**

**To re-power legacy vehicles/systems to meet growing electrical demands and to assist in technology development for the Future Combat Systems.**

- Develop, test, and produce electrical power kits to maintain currency and to extend the useful military life of legacy vehicles**
  
- Modify current vehicles to meet growing power needs versus developing or postponing introduction of a new generation of vehicles.**
  
- Provides platforms and expertise to conduct the engineering design, testing and integration of power systems required prior to fielding and to provide a technical facility to support research and development.**
  
- Support ARDEC power generation research efforts through technology insertion of VEDEP products.**

## **VEHICLE ENGINE DRIVEN ELECTRICAL POWER: ANNISTON'S CONTINUOUS COMMITMENT TO EXCELLENCE**

For soldiers on the battlefield, having reliable, on-demand electrical power is critical to mission success. The Army is evolving into a more technologically based force that will require increased electrical power to support the myriad of power electronics being introduced into vehicles. The focus of future Army vehicles will be smaller, lighter, and more mobile which will require a paradigm shift from the use of conventional battlefield generators. Many of the military's generators require their own trailers which restrict mobility, require additional logistics support in terms of mechanics, repair arts and fuel, and have a history of availability problems. Conventional military systems require two diesel engines; one engine is to propel the vehicle with a second to generate electrical power to operate the system. It is essential to develop alternative power generation capabilities to transform legacy vehicles to keep pace and ahead of the changing technology required of today's military vehicles.

Vehicle Engine Driven Electrical Power (VEDEP) is an initiative to develop on-board electrical power using the vehicle's propulsion system. VEDEP can be in the form of an upgraded alternator, an additional generator or a hybrid electric system. VEDEP will eliminate the need for an additional trailer to transport the additional generator by transforming the vehicle into a mobile power source. It is envisioned that VEDEP will provide the capability to provide a wide range of power options using the latest power electronics. Current mobile power generators are designed to support a single function while VEDEP will be designed to support multiple missions (e.g. 110/220 vdc and 50, 60, 400 Hz). The VEDEP system will also be able to be girded together to form a power network and to utilize plug or wall power (to make use of commercial power when available). This technology will allow systems to be placed in and taken out of operation much faster than conventional generator based systems. VEDEP technology will permit legacy vehicles to evolve with the ever increasing power demands placed on military vehicles and will extend their useful life.

While the ARDEC is pursuing similar technologies focused on power generation for future Army systems, ANAD will focus on developing this technology to upgrade current legacy systems. With the utilization of VEDEP on current systems, soldiers would experience reduced emplacement and march-order times, improved roadworthiness and speed of systems movement during battlefield operations, reduction in fuel requirements, increased operational availability and reduced spare parts required. In addition to better support to the soldier on the battlefield, VEDEP would also reduce the strategic deployment requirements; lower procurement costs (e.g. generators and trailers) and would allow for the better utilization of logistics personnel.

Anniston Army Depot's overall mission, infrastructure, technology, and workforce all validate the site as the ideal site for the VEDEP Center for Excellence. In fulfilling our mission to overhaul and repair heavy and light combat systems, we continue to look for innovative ways to improve the mobility and operability of current weapon systems. VEDEP would allow us to remain abreast of the latest technology while simultaneously extending the life of current weapon systems. Not only are Anniston's highly skilled technicians experts when it comes to the overhaul and repair of current weapon systems, they are consistently trained to use the most up-to-date [in some cases, one-of-a-kind] technology and equipment available. Additionally, Anniston is centrally located to research universities in the southeast that would support this mission.

VEDEP supports the Department of Defense's mission to continuously transform the force to a lighter, more sustainable force and Anniston boasts the resources to most successfully perform the task.

Anniston requests approval to proceed pursuing this initiative.

POINT PAPER

AMSTA-AN-PEIT

UNCLASSIFIED

17 March 2004

**SUBJECT:** CTMA/NCMS (Commercial Technologies for Maintenance Activities / National Center for Manufacturing Sciences)



**ISSUE:** Advancements in manufacturing technology and methodology are being introduced at an accelerated rate. In order for ANAD to keep its repair and overhaul missions as efficient and cost effective as possible the need to investigate these technologies is essential. CTMA/NCMS is one avenue available to facilitate this endeavor.

**BACKGROUND:** Participation in symposiums and conferences showcasing manufacturing and repair technologies are good starting points for the investigation of what repair and manufacturing technologies are available. Participation in programs like CTMA/NCMS provide communications between the repair depots, private industry, and academia to work together to solve problems encountered with depot level work.

**CURRENT STATUS:** ANAD is currently participating several active and proposed CTMA/NCMS projects:

- LENS – Laser Engineered Net Shaping
- Managing Product Characteristics In the Supply Chain
- LAV (Light Armored Vehicle) Life Cycle Logistics Support Tool
- Rapid Manufacturing for Forward Deployment and Maintenance

**RECOMMENDED ACTION:** Continue to actively participate in projects, conferences and meetings with CTMA/NCMS to continue researching technology and methodology for manufacturing and repair.

## POINT PAPER

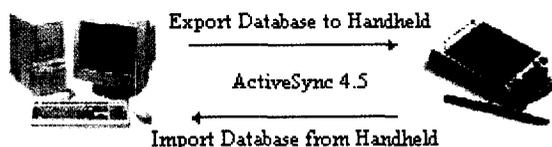
AMSTA-AN-PE

UNCLASSIFIED

14 MARCH 2004

**SUBJECT:** Wireless Technology Application

**ISSUE:** Support DGRC rail systems inspection process. Replace paper driven process with a wireless electronic system.



### BACKGROUND:

- o DGRC performs periodic on-site inspections of various railcars and engines throughout the United States. The results of these inspections were recorded on paper check sheets and later tabulated at the main office.
- o Two problems existed with the system. First, inspection scheduling was difficult given the number of cars and engines in the fleet. Second, the inspection results did not lend themselves to storage and analysis.

### CURRENT STATUS:

- o Purchased the LISS software system to handle inspection scheduling. Designed an electronic checklist that collects and transfers inspection results from a wireless handheld computer to LISS central database.
- o New system is currently being evaluated. New laptops and handheld computers have been purchased to support operation.

### RECOMMENDED ACTION:

- o Finalize implementation.
- o Design a dynamic web page that can display the overall status of the various rail systems based upon the inspection results.

POINT PAPER

AMSTA-AN-PEIT

UNCLASSIFIED

17 March 2004

**SUBJECT:** LAV (Light Armored Vehicle) Life Cycle Logistics Support Tool

**ISSUE:** The Department of Defense spends \$40 billion annually on weapons systems maintenance with continuing cost growth due to inflation and new acquisitions. These expanding costs create the need for new practices that increase the overall speed and quality of maintenance actions while integrating maintenance configuration management, and other logistic practices.

**BACKGROUND:** A number of new and emerging technologies including diagnostic sensors, knowledge management data accessibility, energy management systems, remote support-based telematics, secure communication, condition-based software algorithms, case based reasoning, browser based interfaces and web portal data delivery

**CURRENT STATUS:** ANAD is currently participating in a CTMA/NCMS (Commercial Technologies for Maintenance Activities / National Center for Manufacturing Sciences) Project funded by the DoD. The USMC LAV was chosen as the project vehicle. The LAV will have the following sensors installed:

- Oil Quality Sensor
- Fuel Level Sensor
- Battery Health Sensor
- GPS Location of vehicle
- Additional Sensors to be developed during project
  - Occupancy level
  - Cabin temperature
  - Roll over detection



These sensors will be linked, via secure satellite communications, back to a Depot Data Center. Monitoring of the sensors and the vehicle location will be displayed in theater, real-time, on mapping software with indications (Red, Yellow, Green) of its health. This data can also be sent via in range wireless LAN and Bluetooth communications devices.

**RECOMMENDED ACTION:** Continue to participate in the CTMA/NCMS LAV project. Predictive maintenance and life cycle cost reduction are some additional benefits. Project goals include future applications of the technology to Army vehicles.

POINT PAPER

AMSTA-AN-PEIT

UNCLASSIFIED

17 March 2004

**SUBJECT:** LENS – Laser Engineered Net Shaping, Phase 1 & 2

**ISSUE:** AGT1500 turbine engine components replacement parts are difficult to obtain, are no longer available, have extremely long procurement lead times and are expensive. Need to investigate new and emerging repair technologies and methodologies for possible application in repair of turbine engine components. Areas outside of the turbine engine repair realm could also benefit from these technologies.

**BACKGROUND:** The overhaul and repair of the AGT1500 turbine engine will remain a part of ANAD's mission as long as the M1 Abrams main battle tank is in service. Additionally, the reciprocating engine, transmission and final drive overhaul and repair have similar problems in obtaining replacement parts. A new powder metal deposition system originally developed by the Sandia National Laboratory trademarked as LENS can be applied to ANAD repair requirements. The LENS system uses a high-energy laser beam focused on the base metal to create a melt pool to which powdered metal is introduced. The powder metal fuses with the melt pool and adds material to the base metal. The process can be used to build up worn area on components.



**CURRENT STATUS:** ANAD is currently participating in a CTMA/NCMS (Commercial Technologies for Maintenance Activities / National Center for Manufacturing Sciences) Project funded by the DoD. The completed LENS Phase one project identified turbine engine components that could be repaired using this technology with an estimated savings of over \$6 million. LENS Phase two has identified an additional \$1.5 million in possible savings.

**RECOMMENDED ACTION:** Continue to participate in the CTMA/NCMS LENS project. Investigate additional applications for repair by LENS in other areas at ANAD

POINT PAPER

AMSTA-AN-PEIT

UNCLASSIFIED

17 March 2004

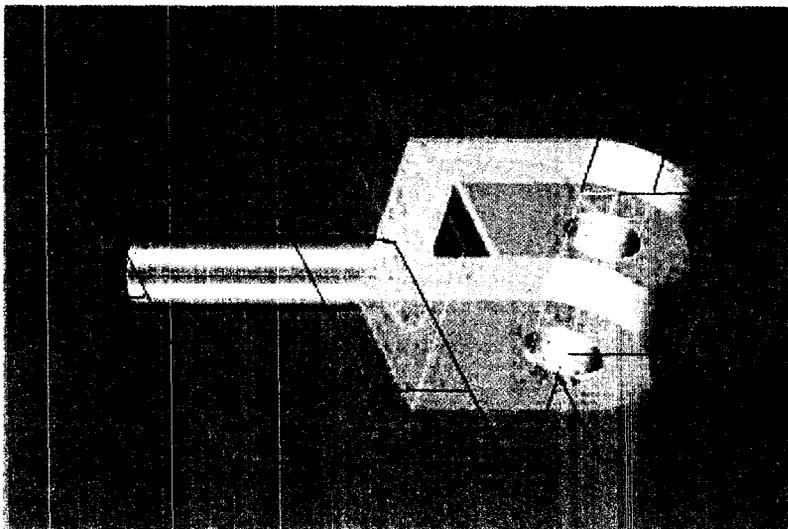
**SUBJECT:** N-STEP Project, National Automotive Center - Standardized Exchange of Product Data

**ISSUE:** The use and exchange of technical data today mainly involves the use of two dimensional paper drawings and documents to manufacture parts to support ANAD's repair mission. Some advances have been made to convert this data into electronic form. Drawings can be scanned to produce an electronic version that can be viewed and transferred. An example of this is JEDMICS (Joint Engineering Data Management Information Control System) currently used at ANAD. This electronic version is just as limited as the drawing because it is only a picture of the original drawing. The CAD/CAM systems in existence throughout industry are capable of producing a 3-dimensional (3-D) representation, or model, of a given part. The 3-D model can be manipulated for viewing from any vantage point. The model can also be modified and used for manufacturing purposes. One shortfall of the 3-D model is that it is not easily transferable between different brands of CAD/CAM systems. This ends up creating additional work to generate the 3-D model on another CAD/CAM system.

**BACKGROUND:** The use of 3-D data in manufacturing is becoming more common. The need for a neutral 3-D model format is needed to be able to freely exchange data between the many different CAD/CAM systems is becoming more essential. This is true for data exchange between ANAD entities as well as other Army and DoD entities. The need for this data exchange also extends to private industry as well.

**CURRENT STATUS:** ANAD is currently participating a National Automotive Center sponsored project titled N-STEP. The project is using the ISO (International Standards Organization) Standard 10303 for STEP (Standardized Exchange of Product Data) to develop a neutral technical data package containing not just the 3-D model data but all of the data need to produce the part. The package also contains a 2-D drawing that is associated to the 3-D model. The N-STEP project is in its second year and continues to demonstrate benefits for data exchange and manufacturing.

**RECOMMENDED ACTION:**  
Continue to participate in the N-STEP project to further the use of the internationally accepted STEP standard. Continue to develop methods for using this STEP model.



POINT PAPER

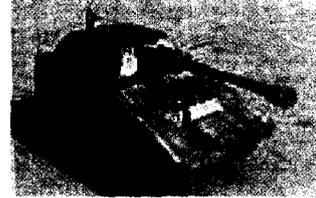
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UNCLASSIFIED

17 March 2004

**SUBJECT:** Titanium Fabrication/Welding and Composites Manufacture and Repair

**ISSUE:** FCS (Future Combat Systems) will need to be lighter and faster to keep pace with modern warfare. The new systems must be capable of being rapidly and effectively transported by air to the theater of operations. FCS will need to be just as lethal and provide similar protection for the warfighter as today's systems. The two major technologies available today to facilitate this are titanium and composite manufacturing.



**BACKGROUND:** Historically the technologies used to produce and field new weapon systems are introduced to the depots at the time they are fielded. This places the depot in catch-up mode for new technology applications. Having the depots involved during the development of new weapon systems keeps the depots maintenance abilities current. This allows the depots to respond rapidly to new maintenance and repair issues rather than spending valuable time learning new technologies. ANAD assisted ARDEC in construction of the Interim Hybrid Vehicle which combines titanium welding and composites for a lightweight combat vehicle hull. ANAD machined the weld joint for the welding of 1" thick titanium plates to support the construction of the I.H.S.

**CURRENT STATUS:** ANAD is actively pursuing cooperative associations with ARDEC and TARDEC for participation in titanium and composites manufacturing and repair as well as any other new technologies with possible application in the repair of weapon systems. A robotic welding cell is being developed at ANAD to prepare procedures for welding titanium.

We are also involved with the University of Delaware's Center for Composite Materials.

**RECOMMENDED ACTION:** Continue to actively pursue relationships with internal (Army) research, development and engineering centers and laboratories as well as other approved resources.



# **Expansion**

## **Table of Contents**

**Military Construction Appropriations (MCA)**

**Capital Investment Program (CIP)**

**Power Train Project**

**Opportunities for Consolidation**

**Benefits of Consolidation**

**Map**

**News Article**



# Industrial Expansion

*Mission Expansion  
Will Be Within a Superior Infrastructure...*

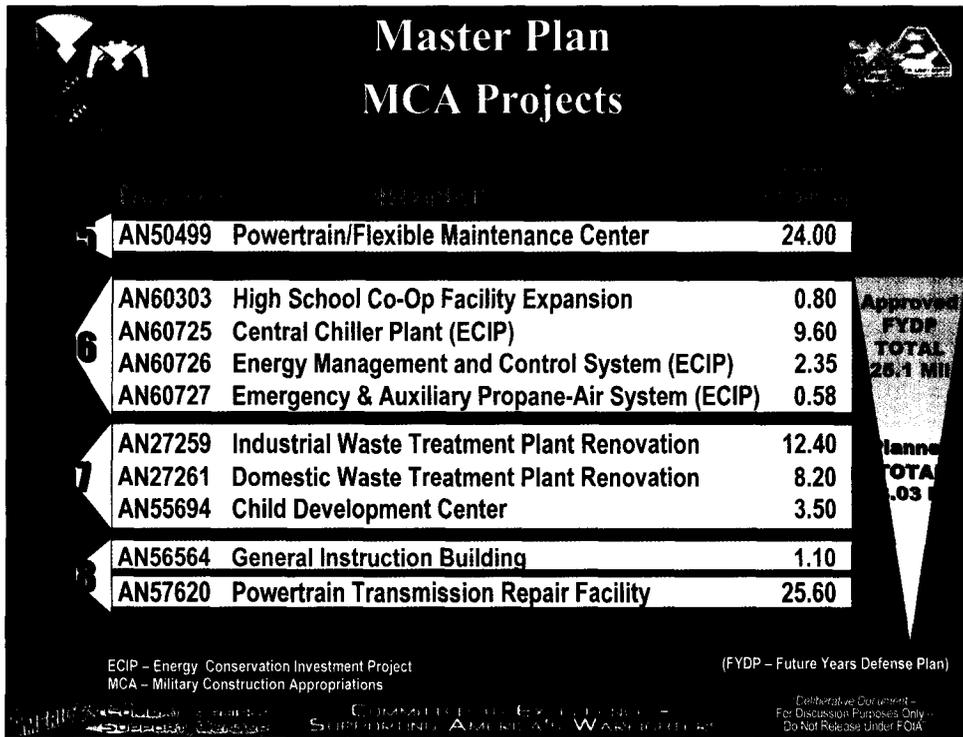
- 74 Miles Fiber Optic Cable
- 11.5 Miles Road Resurfaced
- 213 Pieces of Industrial Equipment >\$10k, at a Value of over \$28M
- 13 Buildings Resided
- 52 Buildings Roofing Replaced
- 50 Buildings Improved Lighting
- 354,475 Sq. Ft. New Buildings Constructed

Program: Mission Expansion Capacity: 100%

CHANGING THE EXPANSION  
 SUPPORTING THE AMERICAN WARRIOR

Deliberative Document -  
 For Discussion Purposes Only -  
 Do Not Release Under FOIA

ANAD has made significant improvements to our infrastructure over the past few years. These improvements range from 28 million dollars spent on industrial equipment to refurbishing numerous buildings, adding an additional 354,000 sq. ft in production capacity. ANAD is improving our infrastructure to support changing defense requirements.



As you can see from the chart, Anniston's Master Plan shows economical investments for both programmed and planned projects. In the not so distant future Anniston's MCA plan will include state-of-the-art projects ranging from energy conservation to production facilities, workforce revitalization, training, expansions, and other environmental improvements.



# ANNISTON ARMY DEPOT

FY05-09 MCA

FY	PROJECT #	PROJECT DESCRIPTION	Cost (In \$ million)
7	ANF0014	Turbine Engine Test Cell Replacement	12.00
7	ANF0025	Welding Facility	3.20
7	ANF0003	Industrial Area Steam Distribution System Improvements	1.50
7	ANF0008	Industrial Area Electrical System Upgrade	3.00
7	ANF0029	Small Arms Shop Modernization	1.50
7	ANF0010	Industrial Area Sanitary Sewer System Upgrades	3.50
7	ANF0009	Industrial Area Water System Upgrade	2.50
7	ANF0019	Industrial Area Storm Water Sewer Upgrades	2.00
8	AN60001	60001/Combat Vehicle Support Facility	7.80
8	ANT4250	Engineering Prototype Facility	25.00
8	ANF0037	Production Facility Insulation and Siding Replacement	2.50
8	ANT4252	Container Repair Facility	2.00
8	ANF0038	Industrial Area Electrical System Upgrade	3.00
8	ANF0039	Industrial Area Water System Upgrade	2.50
8	ANF0040	Industrial Area Steam Distribution System Improvements	1.50
9	ANF0026	Building 128 Renovation	3.40
9	ANF0027	Building 129 Renovation	4.50
9	ANF0047	Industrial Complex Expansion	7.30
9	ANF0048	Production Area Administrative Facility	4.70
9	ANF0049	Industrial Entrance Replacement	7.50
9	ANF0050	Industrial Area Electrical System Upgrade	3.00
9	ANF0051	Industrial Area Water System Upgrade	2.50
9	ANF0052	Industrial Area Parking Deck	7.20
9	ANF0054	Composite Armor Repair Facility	5.00
<b>LEGEND</b>			
<b>PROGRAMMING DOCUMENTS BEING PREPARED</b>			





<b>FY07</b>									
52C60	H307EQ010	1	LENS 850-R	New		10/28/2003	Jan-04	16.072	1,768,000
52B10	H307EQ009	2	Ingersol Machining Center (Upgrade)	G9225	1989	9/26/2003	Jan-04	2.93	238,000
52DB0	H307EQ006	3	Upgrade Metal Finish Operation and Add Anodize	?		11/02/2003	Jan-04	1.022	3,104,000
52C80	"			H1555	1987				
52C80	"			H1557	1987				
52C80	"			H1559	1965				
52C80	"			H2510					
52ED0	H307EQ004	4	Devlieg Horizontal Boring Mill	08728	1966	10/20/2003	Jan-04	0.225	484,000
	H307MC006	5	Aircompressor Upgrade			11/2/2003	Jan-04	2.78	598,000
52EB0	H307EQ024	6	Shear, 5/8" Thick Capacity, 12 ft.	08978	1982	10/27/2003	Jan-04	1.134	272,650
52EB0	H307EQ023	7	450 Ton Brake, 10 ft.	08971	1982	10/22/2003	Jan-04	0.788	246,000
52C80	H307EQ005	8	Dynamometer Test Stand, 5 each	H1552	1987	9/29/2003	Jan-04	1.202	4,035,000
52EE0	H307EQ028	9	Lathe, 156" X 30" Swing	8852	1939	10/21/2003	Jan-04	0.415	443,000
	H307MC004	10	Small Arms Upgrade, P/N08-07			11/7/2003	Jan-04	5.796	725,000
	H307MC005	11	Production Admin Facility, P/N 09-07			10/23/2003	Jan-04	1.412	703,000
	H307MC001		Composite Repair Facility, P/N 05-07			11/7/2003			
	H307MC002		Stryker Repair Facility, P/N 06-07			10/22/2003		1.54	
	H307MC003		Motor Generator Repair Facility, P/N 07-07			9/28/2003			
								<b>FY07 TOTAL</b>	<b>12,616,650</b>

## Industrial Expansion Capabilities

<b>Fiscal Year</b>	<b>FY05</b>
<b>Estimated Cost</b>	<b>\$56 Million</b>
	Facility - 24M
	Equipment - 32M
<b>Size</b>	<b>142,000 Sq Ft</b>
<b>Payback</b>	<b>6.6 Yrs</b>



DISASTERS TO THE EXTENT OF SUPPORTING AMERICAN WARFIGHTERS  
 Discretionary Document - For Discussion Purposes Only - Do Not Release Under FOIA

As seen on the previous chart ... The Powertrain facility is positioned within the President's budget for FY05. This state-of-the-art facility is expected to cost \$56 Million dollars and be 142,000 square feet in size. It will house all reciprocating engine operations within a single building that will be flexible to support current and future weapon systems. Upon completed construction, 103,000 Sq.Ft. of existing industrial space will be available to accommodate additional missions.

POINT PAPER

AMSTA-AN-PW

UNCLASSIFIED

16 March 2004

SUBJECT: TACOM National Automotive Center Assistance with Powertrain Project

1. PURPOSE. To provide information on Mr. Doug Miller's (TARDEC-NAC) assistance with ANAD's Powertrain project.

2. FACTS.

- o Mr. Doug Miller (TARDEC-NAC) has contracted with retired GM executives Ron Larose, and Dick Donnelly to assist as required for the Powertrain facility at ANAD.
- o Mr. Larose, Mr. Miller, and Mr. Donnelly have attended meetings, shared their ideas, and given feedback to our plans for the new facility.
- o ANAD will continue to keep them informed of our progress and receive feedback from this group.
- o At some point, Mr. Larose and Mr. Donnelly may be able to provide simulation of specific processes for evaluation of their effectiveness.
- o Mr. Miller has been instrumental in providing access to outstanding facilities for ANAD personnel to visit.

**Opportunities for Consolidation of  
Department of Defense Weapons Systems  
at  
Anniston Army Depot**

**TABLE OF CONTENTS**

Section I	Executive Summary
Section II	Existing Anniston Army Depot and Partnering Capabilities
Section III	Consolidation of Department of Defense Combat Vehicle, Artillery, and Small Arms Maintenance Missions at Anniston Army Depot
Section IV	Conclusion

## SECTION I.

### EXECUTIVE SUMMARY

Anniston Army Depot has been a critical part of the Department of Defense (DoD) industrial base for over 50 years. Anniston's extensive infrastructure, skills, and technologies can be readily adapted to support any model or series of tracked and wheeled combat vehicle or artillery system within the DoD inventory regardless of type, function, size, or propulsion.

In recent years Anniston has become the DoD leader in another area, public-private partnerships. Anniston's numerous partnerships with private industry have resulted in the formation of a public-private industrial base without equal anywhere in DoD. Private defense contractors such as General Dynamics Land Systems (GDLS), Honeywell and United Defense Limited Partnership (UDLP) have operations on Anniston Army Depot, working alongside Anniston employees.

One consideration of BRAC 2005 may be to consolidate support of all combat vehicles, artillery, and small arms weapons systems at one location to eliminate excess physical capacity and duplication of resources. Currently, support of these weapon systems is distributed among four DoD installations (Army and Marine Corps).

This document proposes opportunities for consolidation of DoD combat vehicles, artillery, and small arms weapons systems at Anniston Army Depot. Consolidation of these weapon systems at Anniston will eliminate duplication of resources and excess capacity, which is in direct agreement with the Secretary of Defense directives for BRAC 2005.

A tremendous public-private industrial base capable of accommodating and supporting this consolidated workload exists at Anniston Army Depot. Anniston Army Depot is the only facility within DoD that has the infrastructure, skills, and technologies to support consolidation of all DoD combat vehicle, artillery, and small arms workload. Anniston's capacity is flexible, readily adaptable to accommodate new system workload with minimal effort and cost.

Anniston Army Depot is the ideal public-private defense industrial center in the United States and the prime location for consolidation of DoD combat vehicle, artillery, and small arms weapon systems. The facilities, equipment, skills, and technologies required to support these weapon systems are jointly located, resulting in improved capabilities, efficiencies, and cost effectiveness for the Department of Defense and the warfighter.

## **SECTION II.**

### **EXISTING ANNISTON ARMY DEPOT & PARTNERING CAPABILITIES**

#### **Introduction**

A tremendous public-private industrial base exists in Anniston, Alabama. Anniston Army Depot, the premier joint combat system support provider in the Department of Defense, has a long history as a world-renowned source of weapon system support. In recent years, Anniston's value to the Department of Defense has increased further through the establishment of numerous public-private partnerships between Anniston Army Depot and private defense contractors. These partnerships have formed a public-private industrial base that is unequaled.

#### **Anniston Army Depot Capabilities**

Anniston Army Depot (ANAD) is the premiere joint combat system support provider in the world. For over 50 years, Anniston Army Depot's combat vehicle maintenance capabilities have been viable and critical entities within the Department of Defense (DoD) industrial base. Anniston is the only Department of Defense facility with the technology, skills, and infrastructure to support all combat vehicles from the heaviest to the lightest. In October 2002 Anniston was designated as the Army's Center of Industrial and Technical Excellence (CITE) for combat vehicles (except Bradley), artillery, and small caliber weapons. Anniston's extensive facilities, equipment, technologies, and skills, many of which are unique within the vast Department of Defense industrial base, can be readily adapted to support any model or series of tracked and wheeled vehicles within the DoD inventory regardless of type, function, size, or propulsion.

The weapon systems currently supported at Anniston represent a wide range within the DoD inventory. These systems include the M1A1 and M1A2 Abrams Battle Tanks, M88 Recovery Vehicle, M113A3 Armored Personnel Carrier, M109A6 Paladin Self-Propelled Howitzer, Field Artillery Ammunition Support Vehicle (FAASV), M9 Armored Combat Earthmover (ACE), Stryker Family of Vehicles, M93 Fox Nuclear, Biological, and Chemical Reconnaissance System (NBCRS), Towed Howitzers (M198, M119A1, and M102), and Bridge Systems (AVLB, MGB, and IRB). Anniston overhauls all major subassemblies of these weapons including engines, transmissions, final drives, recoils, gun mounts, hydraulic components, fire control, electronics, electro-optics, optics, and other components.

Anniston is the Army's sole Small Arms Maintenance/Storage depot and has the capability and capacity to become the same for the Department of Defense. In fact, Anniston currently performs maintenance on over 90% of DoD's small arms inventory supporting the Army, Navy, and Air Force. Anniston overhauls numerous weapons including the M16A2 rifle, M4 Carbine, MK19 40mm Grenade Launcher, M230 30mm Chain Gun, M2 .50-cal Machine Gun, M9 9mm Pistol, M249 Squad Automatic Weapon,

M134 7.62mm Gatling Machine Gun, M240 7.62mm Machine Gun, M60 Machine Gun, and 120mm and 80mm Mortars.

Anniston Army Depot's highly skilled workforce encompasses a broad diversity of skills. Anniston can deploy employees at a moment's notice to support the combat vehicle, artillery, and small arms weapon systems in the field. Anniston is dedicated to providing unsurpassed fielding operations and repair support both at home and abroad, in times of peace and conflict.

### **Inter-Relationship Of Anniston Army Depot And Private Partners**

Anniston Army Depot is the Department of Defense leader in development of public-private partnerships. Anniston's numerous partnerships with private industry have resulted in the formation of a public-private industrial base without equal anywhere in DoD. These partnerships create win/win opportunities for both the public and private sectors by capitalizing on the strengths and efficiencies of each. Private defense partners such as General Dynamics Land Systems (GDLS), Honeywell, and United Defense Limited Partnership (UDLP), all original equipment manufacturer (OEM) contractors for major DoD weapon systems and components, have extensive operations on Anniston Army Depot, working alongside Anniston employees. United Defense also operates its Steel Products Division facility in the Anniston area. These private contractors are all original equipment manufacturers (OEM's) of major weapon systems and are a viable source of surge capacity during mobilization workload requirements.

### **Summary**

The industrial base that exists at Anniston Army Depot is unmatched in the Department of Defense. Anniston's facilities, technologies, and skill base, augmented by those of jointly located private defense partners, is ready to meet the challenges of our nation's transforming defense force. Anniston Army Depot is the only installation capable of supporting a consolidated Department of Defense combat vehicles, artillery, and small arms weapons workload.

## **SECTION III.**

# **CONSOLIDATION OF DEPARTMENT OF DEFENSE COMBAT VEHICLE, ARTILLERY, AND SMALL ARMS MAINTENANCE MISSIONS AT ANNISTON ARMY DEPOT**

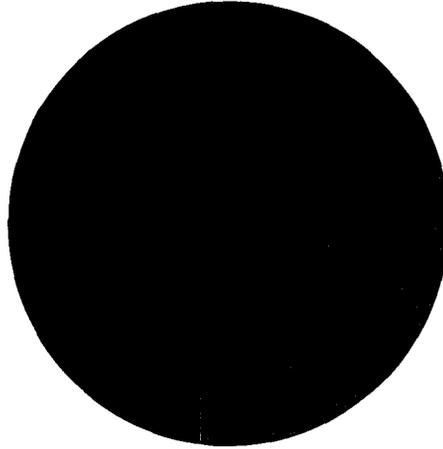
### **Introduction**

There are currently four Department of Defense installations (Army and Marine Corps) that support depot level maintenance of combat vehicles, artillery, and small arms weapons. Anniston Army Depot stands alone as the installation most poised and capable to support consolidation of these missions. No other DoD maintenance facility supports the wide range of combat vehicle, artillery, and small arms weapons systems found at Anniston Army Depot. Anniston is the Army's Center of Industrial and Technical Excellence (CITE) for all combat vehicles (except Bradley), artillery, and small caliber weapons. Anniston already supports all of the Army's combat vehicles except the Bradley Fighting Vehicle System (BFVS) and Multiple Launcher Rocket System (MLRS). The technologies and infrastructure Anniston possesses to support its current weapon systems, including technologically advanced systems such as the M1 Abrams Tank and the M109A6 Paladin Self-Propelled Howitzer, provides the capabilities needed to support additional combat vehicle, artillery, and small arms workload with minimal requirements other than specialized equipment required for those additional systems, which can be easily transferred. No other Department of Defense maintenance facility can compare to Anniston in this regard.

Anniston already performs 100% of the Marine Corps M1A1 Abrams tank depot overhaul workload. This equates to approximately 15% of the total workload at both Marine Corps Logistics Base (MCLB) Maintenance Centers combined. The two MCLB Maintenance Centers support many of the same weapons systems as Anniston, but on a much smaller scale. Anniston has the capacity, infrastructure, skills, and technologies to easily accommodate this additional work. Also, with the transfer of special test equipment, Anniston could accommodate and support the amphibious vehicle systems used by the Marine Corps such as the Amphibious Assault Vehicle (AAV), Light Armored Vehicle (LAV), and the Advanced Amphibious Assault Vehicle (AAAV), which will replace the AAV in the Marine Corps fleet.

### **Capacity Comparison**

A major consideration in consolidating weapon system maintenance missions must be the receiving installation's capacity to accommodate and support the work. Anniston Army Depot is the only Department of Defense maintenance facility with the capacity and infrastructure to accommodate and support a consolidated DoD combat vehicle, artillery, and small arms maintenance mission. Anniston's capacity is more than the combined capacities of the other three DoD installations that currently perform depot level maintenance on combat vehicles, artillery, and small arms weapons systems.



**Total Capacity Among DoD Installations Performing Combat Vehicle, Artillery,  
and Small Arms Maintenance Workload**

Furthermore, Anniston Army Depot's capacity will be increased with construction of the Powertrain Flexible Maintenance Facility in 2005. Anniston has additional industrial expansion capabilities that could increase capacity even further.

Based on the peacetime (prior to Operation Iraqi Freedom) workloads, Anniston can accommodate and support all Department of Defense combat vehicles (tracked or wheeled), artillery systems, and small arms workload within planned (funded) and available expansion facilities while staying within the goal of 85% capacity utilization. Anniston will have the capacity to increase first shift operations to support surges in workload. Additional shifts and/or overtime will provide even more capacity to support workload surges during mobilization. No other DoD installation can match Anniston in this regard.

**Transfer of Existing Public-Private Partnerships**

Existing public-private partnerships supporting weapons systems at other DoD locations can be transferred intact to Anniston Army Depot. Anniston's vast knowledge and experience in public-private partnering agreements will make these transitions seamless and prompt. As stated earlier in this document, Anniston Army Depot is the leader among DoD installations in partnering with private industry. General Dynamics Land Systems, United Defense, L.P. and Honeywell are current partners of Anniston on multiple agreements involving many weapon systems including the Stryker Vehicle, M1A1 Abrams Tank, M113 Family of Vehicles, M93 Fox NBCRS Vehicle, M109A6 Paladin Self-propelled Howitzer, M88A2 Hercules Recovery Vehicle, and the AGT1500 Turbine Engine (M1A1 Abrams Tank). These private contractors have operations on

Anniston Army Depot and are a true source of surge support through partnering, but unrecognized by Department of Defense methods of calculating capacity and capacity utilization.

### **Industrial Expansion Capabilities**

Anniston Army Depot has industrial expansion capabilities available to accommodate and support multiple weapon system platforms. The Industrial Expansion Complex at Anniston Army Depot will be a new state-of-the-art production facility, capable of supporting multiple weapon system platforms. The complex will be constructed in the location of four existing warehouses in Anniston's East Area Nichols Industrial Complex, encompassing the warehouses as well as the current outdoor space between. This complex will be a flexible maintenance facility, enabling Anniston to accommodate multiple weapon system platforms for the current, interim, and objective force.

### **Cost Considerations**

The cost to consolidate all Department of Defense combat vehicle, artillery, and small arms weapon systems at Anniston Army Depot is minimal when compared to the cost to consolidate this workload at any of the other installations that currently support these missions. Anniston has by far the largest infrastructure and most specialized equipment and facilities due to the wide range of weapons systems currently supported at Anniston. The cost to facilitate other installations, and transfer specialized equipment from Anniston, would be several times greater than the cost to consolidate the workload at Anniston.

### **Summary**

Assuming the transfer of specialized equipment, Anniston Army Depot has the infrastructure, equipment, technologies, and skills required to accommodate and support a consolidated Department of Defense combat vehicles, artillery, and small arms weapons maintenance mission. Anniston's maintenance capabilities and capacity are flexible and can support new weapon system workload with minimal effort.

Anniston Army Depot is the only installation that can accommodate all Department of Defense combat vehicles, artillery, and small arms workload within available expansion facilities while staying within the goal of 85% capacity utilization. Support from jointly located private defense partners will be available to help Anniston meet surges in workload requirements during wartime if needed. No other installation has the level of support from jointly located private defense partners as exists at Anniston.

## **SECTION IV.**

### **CONCLUSION**

It is clear that Anniston Army Depot is the *only* installation within the Department of Defense capable of supporting a consolidated combat vehicle, artillery, and small arms workload. Anniston's internal capabilities, along with those of jointly located private defense partners, makes Anniston a prime location for consolidation of DoD Combat Vehicles, Artillery, and Small Arms weapon systems.

- **Consolidation of DoD combat vehicle, artillery, and small arms workload at Anniston Army Depot is in direct agreement with the Secretary of Defense directives for BRAC 2005.**
- **Anniston Army Depot has the infrastructure, skills, and technologies needed to support all DoD combat vehicle, artillery, and small arms weapons systems.**
- **Anniston can accommodate all DoD combat vehicle, artillery, and small arms workload within available expansion facilities while staying within the goal of 85% capacity utilization.**
- **Anniston Army Depot is by far the least cost option for consolidation of DoD combat vehicle, artillery, and small arms maintenance missions.**

## Industrial Expansion Capabilities

Industrial Expansion Capabilities

- ◆ 597,766 Sq Ft
- ◆ Minimal Cost

ANAD Industrial Operations	<input type="checkbox"/>
DDAA Storage Facilities	<input type="checkbox"/>

COMMITTED TO EXCELLENCE - SUPPORTING AMERICA'S WARRIORS  
Operative Document - For Discussion Purposes Only  
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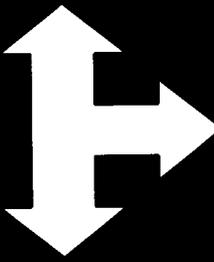
Also within the industrial complex are a number of DLA ground level warehouses that are ideally suited for conversion from storage warehouses....

... to an industrial complex with high rise connectors capable of supporting any type of combat or tactical vehicle workload within Anniston's industrial mission

**Benefits Resulting from  
the Consolidation of  
Depot Level Maintenance of  
Combat Vehicle, Artillery, &  
Small Arms Weapons Systems  
at Anniston Army Depot**

# **Benefits of Consolidating DoD Combat Vehicle, Artillery, and Small Arms Depot Level Maintenance at Anniston Army Depot:**

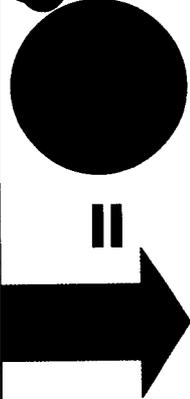
- ◆ Reductions of Excess Infrastructure and Costs
- ◆ Improved Operating Efficiencies and Reduced Costs

**Excess Capacity**  **Excess Infrastructure**

**Savings  
Associated With  
Reductions in  
Infrastructure by  
Consolidating  
Workload**

**EXCESSIVE COSTS!**

**Workload vs.  
Capacity**

TOTAL DOD COMBAT VEHICLE, ARTILLERY & SMALL ARMS	
ANAD CAPACITY	
WORKLOAD	

FY06      FY07      FY08      FY09

- Capacity and Workload Source: JDMAG
- Maximum Potential Capacity = Maximum Capacity a Depot Can Achieve on a 1-8-5 Workshift with No Restrictions on Equipment or Personnel

# Annual Cost Savings Resulting from Consolidation of Combat Vehicle, Artillery, & Small Arms Workload at Anniston Army Depot

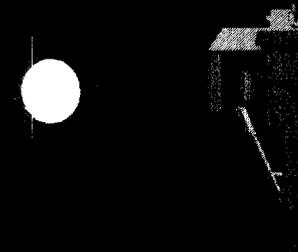
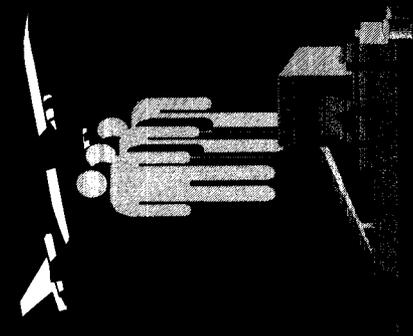
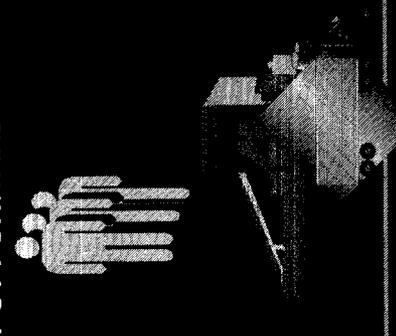
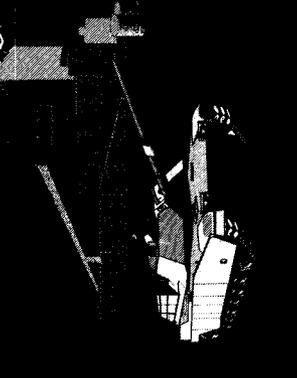
Cost of Performing Projected FY 07 ANAD Workload of 2.673 M DLHs

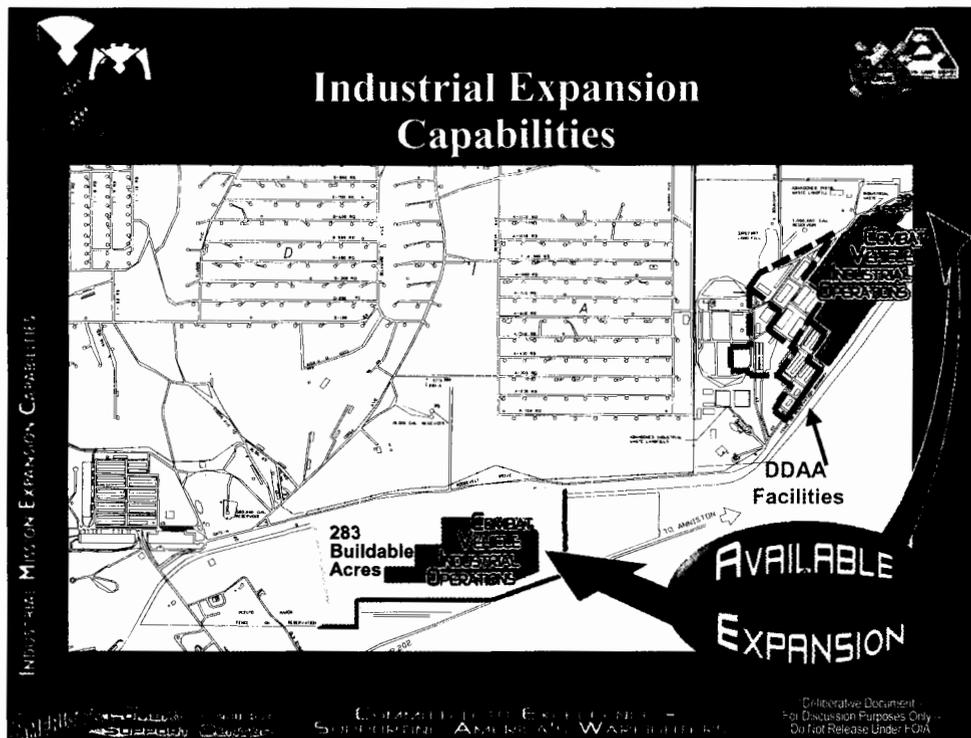
WHICH EQUATES TO...



Based On FY 07 Projected Workload (Source: JDMAG)

# Weapon System Readiness Improvements During Mobilization/Wartime

 <p><b>PEACETIME</b></p>		<p>DEPOT FORWARD</p> 	
<p><b>Consolidation = Improved Readiness</b></p>	<p><b>MOBILIZATION/ DEPLOYMENT</b></p> <p>Technicians w/ toolboxes provide quick support to field units preparing equipment/systems for deployment.</p>	<p><b>SUSTAINMENT</b></p> <p>Depot technicians &amp; craftsmen set up depot-forward in theater of operation. Depot produces components &amp; subassemblies for shipment to theater of operation.</p>	<p><b>RECONSTITUTION</b></p> <p>Weapon systems/end items process through depots in route to home station. (Not time sensitive)</p>



Real estate expansion is available through 283 buildable acres ... This area is slightly larger than the entire existing industrial complex... And lies within the depot's southern boundary – ideally located between the Norfolk Southern Railroad and the newly five-laned highway 202. Location to depot and industrial partners' operations, utilities, and transportation adds to the attractiveness of this valuable expansion property.



## **Depot receives \$1 million for factory design**

**By Matthew Korade**  
**Star Senior Writer**  
**11-16-2003**

The Anniston Army Depot has received \$1 million from Congress to build a central factory for repairing tank and armored vehicle engines.

The factory will combine many of the depot's engine repair shops under one roof, improving production and helping the depot meet expected workload increases from the war in Iraq. Currently, operations are scattered in 10 buildings.

The \$1 million, which will pay for the design of the factory, possibly paves the way for the depot to receive millions more for construction in 2005 – earlier than expected. The factory is expected to cost between \$25 and \$33 million to build, officials said.

The new facility would improve the depot's chances of surviving the upcoming round of base realignment and closures, officials said.

"This is one of the most exciting developments at the depot in over two decades and helps put us in a significantly more competitive position for the next 60 years," said Jesse Poor, deputy to the depot commander.



The money came from the Military Construction Appropriations Act of 2004, which passed the House and Senate Wednesday. The bill includes about \$60 million for construction projects in Alabama.

It now goes to President Bush for approval.

Officials, including Sen. Richard Shelby, R-Mobile, and 3rd District Congressman Mike Rogers, R-Anniston, said they were pleased the money was allocated. Last year, Congress appropriated \$600,000 for initial designs of the building.

"This will be helpful to our military, and I was glad to assist (the depot) in moving the project forward," Rogers said.





## **Two new roads will make depot more accessible**

**By Matthew Korade**  
**Star Senior Writer**  
**01-11-2004**

The state is building two four-lane roads to bring easier access to the Anniston Army Depot.

One, which Gov. Bob Riley announced on his visit to the depot Wednesday, will run about a mile from the depot's main gate to Alabama 202. The other, which was already planned, will pick up there and connect to the Western Bypass.

The wider route will allow depot trucks and armored vehicles to deploy quickly and bypass a pair of rickety bridges on Alabama 202.

Improving the infrastructure used by the depot is part of Riley's plan to protect the base from BRAC, or base realignment and closure, in 2005.

Wednesday, the governor asked the community how else the state could add to the depot's value. Local leaders asked for signs showing drivers the directions and distance to the depot.



"When you're looking at a major industrial operation in our area, you want to make sure everyone knows how to get there," said Nathan Hill, military liaison for the Calhoun County Chamber of Commerce.

Local residents were happy to hear the news of the new access road to the depot Wednesday, saying it will improve the base's chances in BRAC 2005.

Another highway that leads to former Fort McClellan is about half completed. Called the Eastern Parkway, it will ferry drivers from I-20 to U.S. 431, passing through McClellan along the way.

"I don't have anything against the bypass," local resident Joe Worsham said. "But I think you'll find that going out there toward the depot is just as important for the community."



## **Transforming Anniston's depot: President puts \$23.6 million for a new maintenance plant in fiscal 2005 budget**

**By Matthew Korade  
Star Senior Writer  
02-02-2004**

President Bush has put \$23.6 million for a new maintenance plant at the Anniston Army Depot in his fiscal 2005 budget. The money was moved forward from fiscal 2007 at 3rd District Congressman Mike Rogers' request.

If the budget item is passed into law, it will mean the transformation of the depot into a facility that is better than state-of-the-art, officials said. The fact that the money was moved forward also bodes well for the depot in the 2005 round of base cuts, they added.

"Obviously, I'm thrilled that we've got this in the budget," Rogers said. "It's a lot of money."

Rogers helped secure the money by getting \$1 million from the Secretary of the Army for the facility's design.

Once that was in hand, it was easier to persuade the Army to release the other \$23.6 million early, Rogers said.

The new, 150,000 square-foot factory will bring the depot's engine-rebuilding operations, now scattered in 10 buildings, under one roof. It will offer cutting-edge technology and room for growth.

Rogers and local officials said the depot would be poised not only to survive BRAC, or base realignment and closure, but also to absorb work from other installations that close. It would also be positioned to capture contracts for future weapons systems.

"It is going to be a pivotal time for us," Rogers said.

Originally, Pentagon officials told him it would be impossible to get the money early.

But in a Dec. 11 letter to Office of Management and Budget Director Joshua Bolton requesting the accelerated funding, Rogers explained the \$1 million in design money already had been received. The strategy worked.

"I'm proud of it, and I'm proud of our community," Rogers said. "This is just so important for all those families who are depending on the installation for their jobs."



**If President Bush's \$23.6 million budget item is passed into law, it will mean a new maintenance plant for Anniston Army Depot. Photo: Special to The Star**



## **Transforming Anniston's depot: President puts \$23.6 million for a new maintenance plant in fiscal 2005 budget - Continued**

It became his No. 1 priority after talking to depot officials, he said. They said the plant will be a marvel of technology and efficiency.

It is the first major construction project the depot has seen in 12 years, said Nathan Hill, the military liaison for the Calhoun County Chamber of Commerce.

It will be outfitted for new weapons systems, thus it will fit in with the Department of Defense's plans for a leaner, more lethal fighting force – and that is part of the BRAC criteria for estimating a facility's value, Hill said.

"It does do those things that they're looking for in the bases that they want to retain," he said.

Jesse Poor, the deputy to the depot commander, said he was surprised by the news that the funding had been advanced. The Army has not invested much in capital improvements in recent years, he said.

"To be able to pull in this size project at this point in time, it amazes me, and I've been in this business 35 years," Poor said.



It says a lot about the kind of support the depot has received from local congressmen, he said.

"It's quite a feat," he said.

The facility will mark a new industry standard, Poor said. It will be able to change from one type of production to another almost automatically.

For the depot, which does work on as many as 20 types of engines and transmissions, the efficiency gained will be phenomenal, Poor said:

"This is one leap ahead."



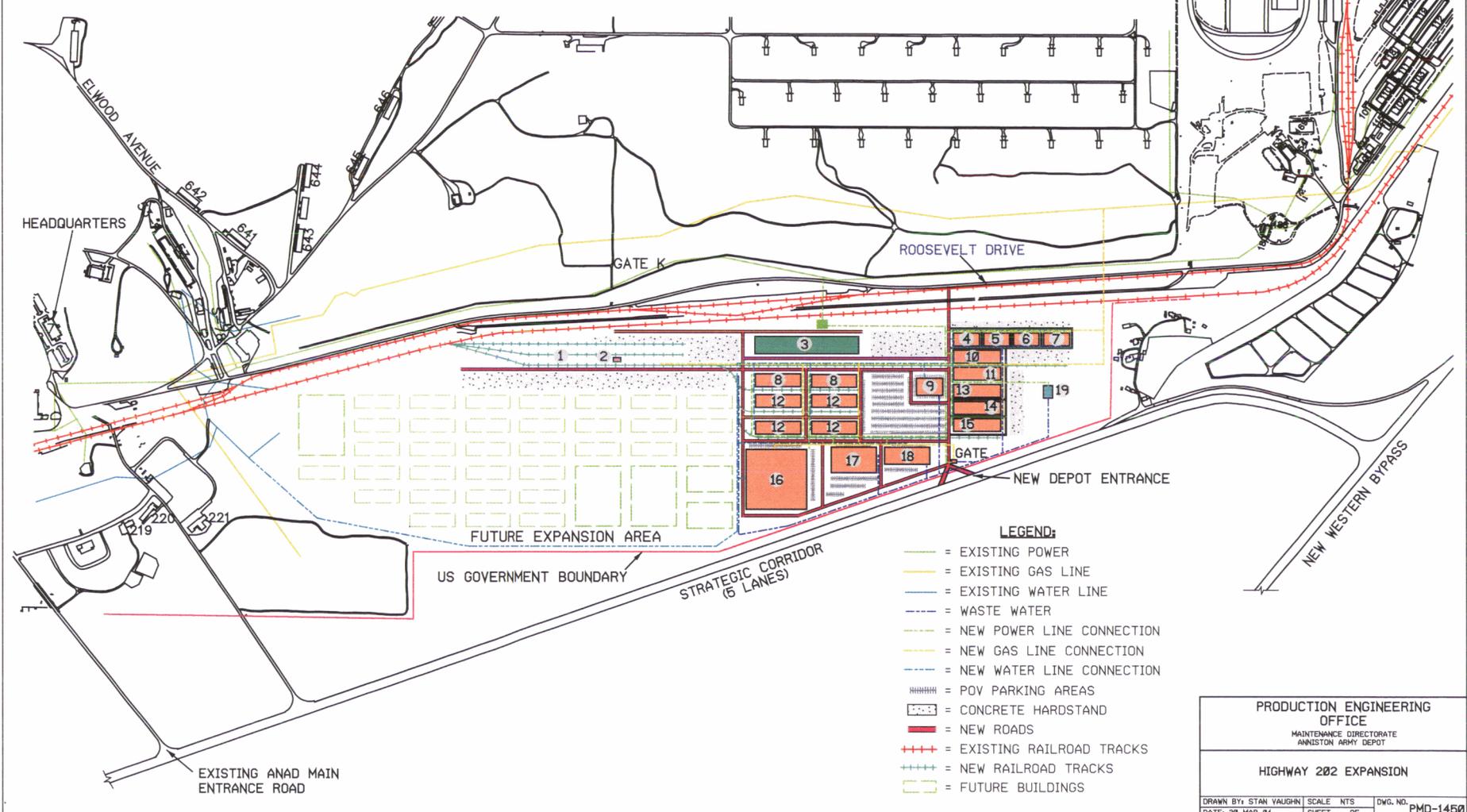
- 1 = NEW RAIL YARD
- 2 = 75 TON CRANE
- 3 = VEHICLE SWIM POND
- 4 = COMPOSITE REPAIR FACILITY
- 5 = MOTOR/GENERATOR REPAIR
- 6 = STRYKER REPAIR FACILITY
- 7 = FORGE/CASTING FACILITY

- 8 = COMPONENT STORAGE WAREHOUSE
- 9 = ANAD ADMINISTRATIVE FACILITY
- 10 = COMPONENT STORAGE WAREHOUSE
- 11 = FUTURE SMALL ARMS FACILITY
- 12 = VEHICLE STORAGE WAREHOUSE
- 13 = COMPONENT STORAGE WAREHOUSE
- 14 = ROBOTICS FACILITY

- 15 = ENGINEERING PROTOTYPE FACILITY
- 16 = FCS FACILITY
- 17 = INDUSTRIAL PARTNER FACILITY
- 18 = INDUSTRIAL PARTNER FACILITY
- 19 = NEW SEWAGE TREATMENT PLANT



NICHOL'S INDUSTRIAL COMPLEX (EAST AREA)



**LEGEND:**

- = EXISTING POWER
- = EXISTING GAS LINE
- = EXISTING WATER LINE
- = WASTE WATER
- = NEW POWER LINE CONNECTION
- = NEW GAS LINE CONNECTION
- = NEW WATER LINE CONNECTION
- = POV PARKING AREAS
- = CONCRETE HARDSTAND
- = NEW ROADS
- = EXISTING RAILROAD TRACKS
- = NEW RAILROAD TRACKS
- = FUTURE BUILDINGS

<b>PRODUCTION ENGINEERING OFFICE</b> MAINTENANCE DIRECTORATE ANNISTON ARMY DEPOT		
<b>HIGHWAY 202 EXPANSION</b>		
DRAWN BY: STAN VAUGHN DATE: 30 MAR 04	SCALE: NTS SHEET: OF	DWG. NO.: PMD-1450