STRATEGY RESEARCH PROJECT

GROUND COMBAT IDENTIFICATION OPTIONS FOR THE U.S. ARMY ACQUISITION CORPS

BY

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ABSTRACT

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As the name implies, this project paper addresses acquisition options for the U.S. Army Ground Combat Identification program. The paper portrays options that the Army acquisition leadership should consider as it moves into the 21st century with transformation. After reviewing the strategic implication of historical high fratricide rates and ten years of failing Combat Identification acquisition history, it is apparent that the Army must reform this program or terminate it altogether. The advantages and disadvantages of each option discussed are compared to the current acquisition strategy. After analysis of these options, a recommendation for acceleration of the program is drawn as the preferred solution.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

GROUND COMBAT IDENTIFICATION OPTIONSFOR THE U.S. ARMY ACQUISITION CORPS

PURPOSE:

Materiel and non-materiel solutions provide the Army with numerous opportunities to resolve longstanding fratricide issues. However, given the current world environment and complexities of the 21st century battlespace, it is essential that the Army Acquisition community re-evaluate the ground Combat Identification (ID) strategy. This paper will present four options for consideration regarding the Army Battlefield Combat Identification System (BCIS). The options discussed will include:

1. Stay the Course
2. Accelerate the System
3. Form a Joint Program Office (JPO) with the USMC
4. Terminate the Program

SYSTEM DESCRIPTION:

As illustrated in figure 1 (below), the BCIS is a millimeter wave, through-the-sight combat identification system that enables friendly ground combat vehicles to identify each other on the battlefield without the gunner having to take his eyes off the target. This millimeter wave system uses a question and answer approach capable of identifying friendly ground combat vehicles at ranges of 150-5500 meters. The BCIS interrogation (query) is triggered automatically by activation of the shooter platform's laser range finder.

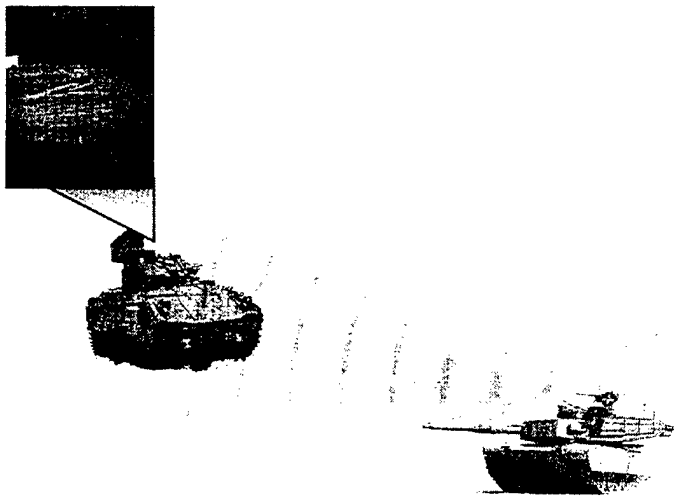

FIGURE 1

This action sends an encrypted, directional query message to the targeted vehicle. If the targeted vehicle is equipped with a transponder, it answers with an encrypted, omni-directional friend message (response). A friend light is illuminated in the gunner's sight, supplemented by voice confirmation. The target identification process is completed in less than a second. As a Horizontal Technology Integration (HTI) system, BCIS is designed to be used on combat, combat support, and combat service support vehicles that operate in the forward battle area. Figure 2 (below) illustrates the four sub-components of the system.

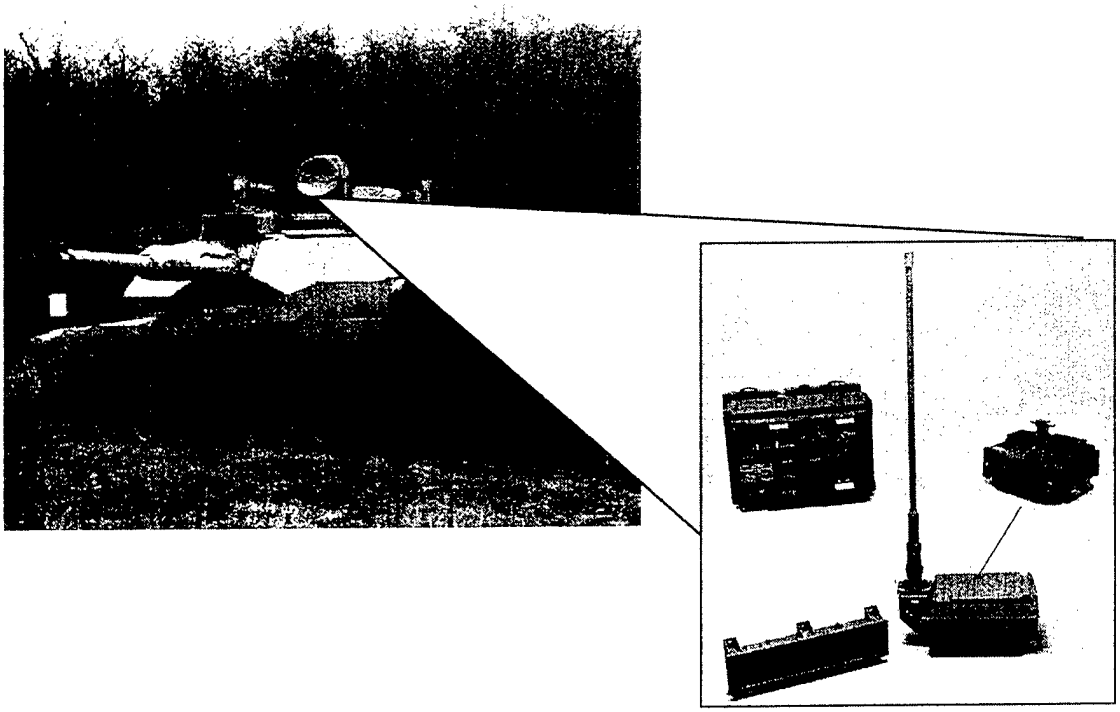

FIGURE 2

BCIS supports the Chief of Staff's vision in the area of survivability by protecting the force against fratricide and in the area of full spectrum dominance by its capability to support land forces in joint, combined and multinational operations.

Current plans call for several Pre-Planned Product Improvements (P^3Is) to be implemented soon after Full Rate Production (FRP). One P3I will incorporate a digital data link (DDL) into the BCIS system. This feature will provide connectivity of BCIS to the Force XXI Battle Command Brigade and Below (FBCB2) system. DDL enables vehicles operating within 1-2 kilometers of each other to exchange local situational awareness (SA) updates (friend identification, GPS location, and unit identification) in near real time. BCIS SA information is then sent via the Tactical Internet (TI) to update the FBCB2 database.

THE NATIONAL LINKAGE:

However, there are national considerations to incorporate as well. The vital U.S. national interest is concerned with the physical security of American territory and the safety of citizens at home and abroad, coupled with the important national interest of a stable global security environment with no major hostile hegemon anywhere in the world. These could lead our nation into another war.[1] This next war continues to have the potential of conventional forces fighting a heavy armor threat.

The national policy cited in the 2002 Quadrennial Defense Review (QDR) retains the concept of strategic dominance across the entire spectrum by stating the requirement to conduct major operations in two theaters of operations in overlapping time frames.[2] This uncertain future may again find the U.S. in a conflict in which there is a requirement for a near real time, point-of-engagement, anti-fratricide system. Thus, the Combat ID technology may be more critical than many other technologies, given the proliferation of former threat armor platforms to allies and the new asymmetric nature of warfare that has evolved over the past ten years since Desert Storm. Therefore, the relevance for ground Combat ID to the warfighter has become more critical than ever.

BACKGROUND:

It is important to note that directly following Desert Storm, many congressional leaders, as well as the service Chiefs and their Acquisition Executives aggressively explored emerging Combat ID technologies, in an attempt to mitigate future fratricide incidents. In the 1990s, as an example, the Joint Requirement Oversight Committee approved a Mission Need Statement (MNS), established Combat ID as a priority in Defense Planning Guidance, and the approved Army Operational Requirement Document (ORD) as the Army began development of the Battlefield Combat Identification System (BCIS). The Vice-Chairman of the Joint Chiefs of Staff, memorandum of 24 August 1998, tasked the United States Joint Forces Command with determining requirements for combat identification. The capstone requirements document (CRD) responds to that tasking and the mission need statement for combat identification approved by the Joint Requirements Oversight Council on 13 April 1992, and reviewed by the Joint Staff, Commanders in Chief and Services during 1998.

As stated in the mission need statement, "A significant aspect of U.S. military strategy is the reliance on technologically superior weapon systems to achieve military objectives. Reliable identification of potential targets is critical to achieving these goals."[3] Combat identification systems "must provide an accurate identification in sufficient time to allow employment of

weapons at maximum ranges to maintain maximum force effectiveness and minimize fratricide."[4] Recent military operations highlight the additional importance of minimizing collateral damage to neutral forces and non-combatants.

The needed capabilities outlined in the mission need statements are positive, timely, and reliable identification of hostiles (for weapons release); positive, timely, and reliable identification of friendlies and neutrals (for initial sorting in adverse environment); classification of foes by platform, (for target prioritization); and friend-from-friend discrimination (for command and control of forces and military air traffic control). The mission need statement states, "...an urgent need exists to substantially improve the combat identification capabilities of U.S. forces." The mission need statement further concludes, "...there are no non-materiel alternatives that can be used or modified to completely correct the combat identification deficiencies."[5] Accordingly, the CDR capabilities require that the materiel solution correct the shortcomings identified in the MNS.[6]

Over the last eight years, BCIS has received over $120M from the Army. The BCIS thus demonstrates the technical solution set required to satisfy and resolve the current fratricide issues. The system has been tested many times in a Limited Users Test (LUT) at the Army Warfigthing Experiment (AWE), in Regression & Production Qualification Testing (R/PQT), in Force Protection Exercises (FPE), in several Modeling and Simulation (M&S) exercises, in Production Qualification Test (PVT), in an Initial Operational Test and Evaluation (IOT&E) and several other user tests. As indicated in the figure below provided by PM Combat ID, each test event has contributed to the successful trends seen throughout the last five years. The LUT was a test event with Abrams or Bradley qualified crews. In figure 3 below, the phrases above the boxes were the limitations from the event. The phrases beneath the boxes were the successes.

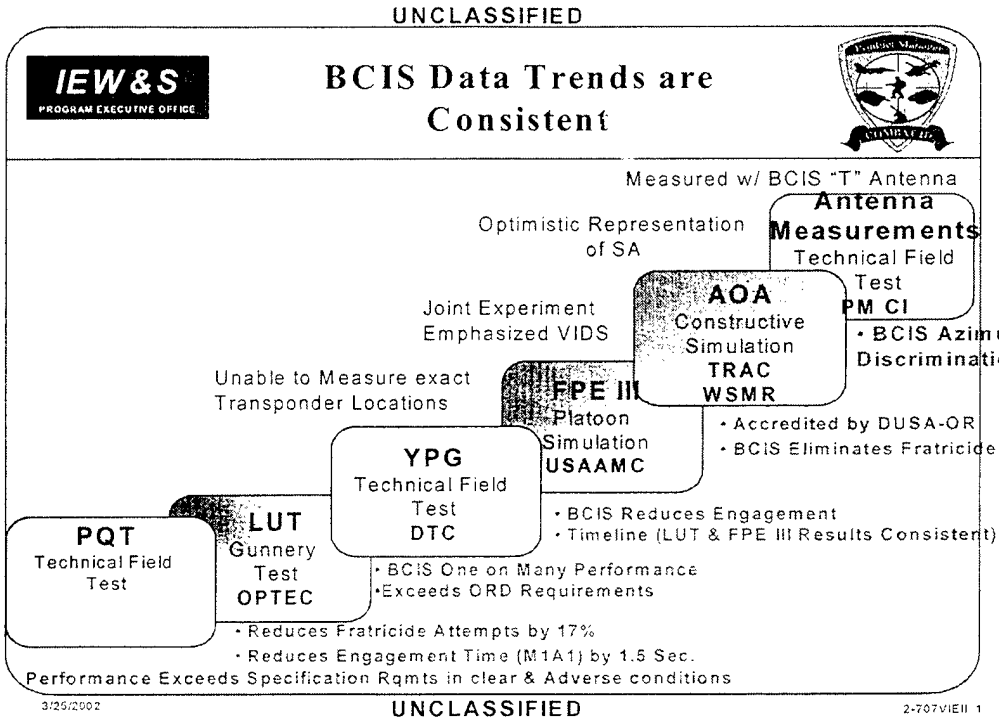

FIGURE 3

Despite the Army's fiscal support for development of the system, congressional interest and successful testing, the acquisition process, that will eventually field the system to the user, is in an eight-year bureaucratic quagmire[7]. Recent congressional language reflects some of the frustrations of the political leadership: [8]

> FY 96 Defense Authorization Act Conference Report:
> Encourage the secretary of the Army to aggressively pursue the BCIS
>
> FY 97 Defense Authorization Act HNSC Report:
> Found it difficult to understand the Army's delay in initiating procurement beyond those units identified for Force XXI AWE... Urges the Secretary of the Army to raise the priority of procurement and fielding of the BCIS system so that fielding g can begin FY 98.
>
> FY 98 Defense Authorization Act HNSC Report:
> Urges the Secretary of the Army to maintain the HIGH priority placed on development and procurement of a BCIS.

Throughout history, fratricide rates have been between 10-15%. In addition, recent studies of fratricide rates include:

New Georgia Burma	14%
Bouganville	12%
World War II	15%
Grenada	13%
Panama	12%
Desert Storm	17%
NTC	15%

Of the 613 U.S. military battle casualties in Desert Storm, 146 were killed in action, including 35 (24 percent) killed by friendly fire. Of the 467 wounded in Desert Storm, 72 (15 percent) were by fratricide, for an overall average of 17 percent. A full 77 percent of all combat vehicles lost or destroyed were by friendly fire. This was in spite of comprehensive training in the desert prior to the onset of the war, extensive and repeated operational rehearsals, and the use of Fire Support Coordination Lines (FSCL), combat identification markers on vehicles, high-tech navigational systems, and extensive liaison networks to integrate different ground and air elements.[9]

At the end of a much-debated BCIS Army System Acquisition Review Council (ASARC) in the summer of 1999, BCIS entered into Low Rate Initial Production (LRIP), resulting in the authority to produce 1200 systems at the minimal sustainment rate of 20 per month for the Initial Operational Test and Evaluation (IOT&E). According to the Product Manager (PM), the IOT&E had positive emerging results.[10]

Just before the In Progress Review (IPR) for the final phase of Low Rate Initial Production (LRIP), the system was put under DoD oversight, which nearly slowed BCIS to a halt due to the requirement of "System of System testing". This discussion added two more years to Full Rate Production (FRP) and the subsequent full fielding decision of BCIS. A conditional fielding to 4th Infantry Division (ID) will be the next decision point for the system. Following that checkpoint, the system will undergo a force-on-force (FoF) test at the request of the testers. A FRP decision will follow in FY04.

THREATS AND OPPORTUNITIES:

Mis-identification of former threat ground platforms, now with our allies, and asymmetric battlefields increase the likelihood that U.S. forces may commit more, rather than less, fratricide in the next conflict.

Nonetheless, the Army has been delaying ground Combat ID systems for many reasons. These delays give the international impression that the U.S. ground Combat ID situation is in a

backsliding state - particularly since NATO, as of spring of 2001, made Combat ID a Defense Initiative and has committed to Millimeter Wave (MmW) as its technology for ground-to-ground Combat ID. In April - June 1997, NATO conducted a four nation, international demonstration of different combat ID technologies/systems. The four nations were France, UK, Italy, and the U.S. It was followed in January 1998 by a four Nation Agreement on Millimeter Wave (MmW) as well as Question and Answer (Q&A) technology selection for NATO Interoperable Combat ID. This event led to a NATO Staff Requirement (NSR) for Ground-to-Ground Combat ID, which was completed Dec 98 and endorsed by NATO. Soon after, a four Nation Standardization Agreement (STANAG) was developed for a ground-mounted Target ID Device (TID). This STANAG was forwarded in December 1999 to the NATO Army Armaments Group, Land Group 6 (LG6), for Ratification and Implementation. This year, the DoD ratified the NATO Standard Agreement (STANAG) and committed the U.S. to a MmW solution for interoperatability with NATO.

In addition, affordability has been cited as an issue for years. The total estimated cost for the active U.S. force is approximately $2 billion. The Combat ID Program Management Office (PMO) implemented an aggressive cost reduction program that significantly reduced its cost over the last six years. This cost reduction is comparable or better than other typical systems. The Air Force Identification Friend or Foe (IFF) system costs nearly $500,000 per system to integrate into an F-16 to protect 1 pilot and one platform. The comparable ground system, BCIS, will cost less than one-tenth of this amount (under $50,000) to protect a Bradley Fighting Vehicle (BFV) and a crew of nine once the Army gets to FRP and an efficient economy order quantity. Figure 4 below indicates some examples of comparable Full Rate Production (FRP) Unit Procurement Cost (UPC) of systems.

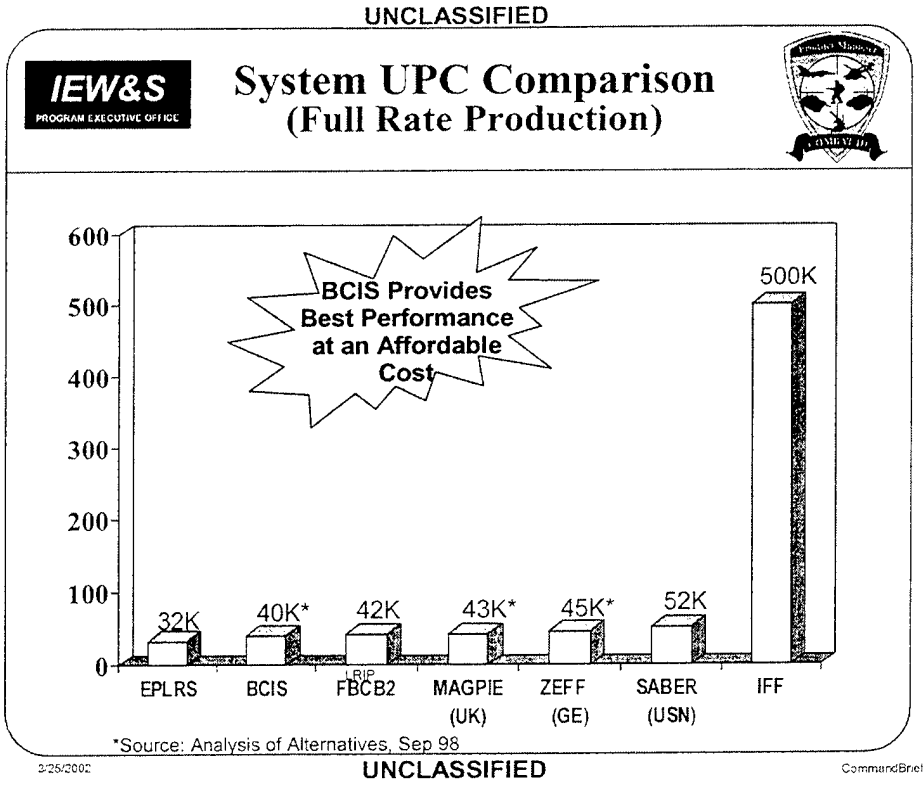

FIGURE 4

In addition to cost reduction considerations, reducing fratricide rates will provide a significant battlefield advantage for the American military. The impact of fratricide on combat power is geometric, not linear. Each fratricide incident represents one bomb, shell, or bullet that should have fallen on the enemy to reduce his combat power rather than our own. Any significant improvement in fratricide rate for our forces will put our foes at an additional disadvantage. And the advantage is not only on the combat end of the equation. Every friendly tank or vehicle spared the effects of friendly fire is one less that has to be "force projected." Our foes on the battlefield suffer as we do from reduction in baseline performance ability of weapon systems and the decline in human abilities related to the tempo of combat operations. [11]

Yet, fratricide prevention must have high priority because U.S. fratricide rates will become a serious political and ethical issue in future conflicts. Public outrage over continued high fratricide rates -- the ten to 15 percent suggested here -- could make it politically impossible to prosecute a war successfully. Because the country understands the meaning of fratricide, the public may well ask, why was this not fixed after Desert Storm? ... Even 2 percent of the nation's military in a given conflict is significant; and, thus, demands an extraordinary application of resources to avoid it. This is a question that must be answered at the highest policy levels. With evidence to suggest that rates may be at least five times that high, we should give full

attention and additional funding to fratricide prevention. We cannot repeat the Gulf War fratricide rates in a future conflict.[12]

OPTIONS

COA 1, STAY THE COURSE:

Although, the option of staying the course hasn't really fielded a Combat ID system in 11 years, this concept is still moving forward at a slow, but constant pace. The current acquisition strategy as briefly described above will eventually get the system into the hands of the soldiers. The advantage to this conservative approach is that it is moving forward and gives the Army just enough momentum to begin fielding within the next couple of years. This approach also keeps congressional involvement at a minimum by answering the political questions and concerns stated in the congressional language above. On the other hand, it is slow to field due to testing challenges, and funding constraints; and there is no plan for a joint buy. Optimistically, this option may see unrestricted fielding (beginning in 2004) to the active force, but it could take to the end of 2020 to complete fielding to the active force.

The most significant disadvantage to this option is one of cost. The current acquisition strategy calls for a $30 million, recently added, Force-on-Force test (IOT&E phase II). This is going to be an Unfunded Requirement (UFR) that must be funded in FY03 to keep the program on track. One of the challenges for this is that the PM will not control the budget cycle. Instead this UFR must be sent up the Army Test and Evaluation Command (ATEC) Program Objective Memorandum (POM) submission process to the Deputy Chief of Staff for Operation (DCSOPS). Thus, it will compete with all the other Army requirements. This new $30M UFR cost (on top of the already inefficient production quantities) leaves this program in a very unstable financial state. This could be exploited as another reason to terminate the system to some.

Another major disadvantage to this option is the media and public opinion. The media is constantly reminding the Army that it is not moving fast enough on the matter of an anti-fratricide system. This issue will continue to plague the Army under the current acquisition strategy. Several newspapers and magazines have published articles similar to the one below[13]:

Friendly fire still a concern for Army

BY JON R. ANDERSON
Stars and Stripes

NEAR THE IRAQI BORDER, Kuwait – U.S. and Kuwaiti forces unleashed a fiery live-fire demonstration just 10 miles from the Iraqi border Sunday designed to send a message to Saddam Hussein that, at least here in Kuwait, the coalition remains strong.

But while troops appear as ready now as they were a decade ago to deliver a punishing answer to any Iraqi attack, what's not as certain is whether the military would be any better at preventing "friendly fire" deaths among its own ranks.

In fact, 10 years after the 1991 war with Iraq, the Army is still struggling to field "quick fix" gear designed to reduce fratricide. It wants to give soldiers high-tech equipment with the same capability that makes it virtually impossible for friendly jet aircraft to shoot each other down. But that is years behind schedule.

"I certainly wish we would have had something in the hands of soldiers by now," said Lt. Gen. Paul T. Mikolashek, the Army's top Middle East commander. "Unfortunately, it just has not happened."

In memory

A trinity of U.S. leadership during the Gulf War – former President George Bush, coalition commander Gen. H. Norman Schwartzkopf and then Joint Chiefs chairman Colin Powell – laid a wreath Monday at a memorial commemorating the some 300 troops killed in action during the conflict at the U.S Embassy in Kuwait City.

What went unsaid, however, was that one out of every four lost in combat was killed by friendly fire.

Despite all the high-tech weapons and six months of training leading up to the war, the death toll was higher than what military historians say is the typical rate in modern combat.

In the new age of cruise missiles and smart bombs, most Americans found it hard to believe that the only thing leaders could provide to help friendly units keep each other out of their own crosshairs was the decidedly low-tech upside down V's painted on all coalition vehicles.

While field commanders say the so-called "fog of war" will make it hard, if not impossible, to eliminate fratricide completely, the reduction of friendly fire casualties became a top priority for the military in the aftermath of the Gulf War.

Despite the focus, U.S. forces here in Kuwait are little better equipped to deal with the problem.

"I don't think there's a gadget out there that will fix that completely," said Lt. Col. J.D. Burton, who leads the 1st Cavalry Division's battalion of tanks and infantry now in Kuwait for four months of maneuvers. "Technologically, we're not that much farther along than we were during the Gulf War. But we mitigate that with a lot of good training."

ANDERSON/Stars and Stripes

Former President George Bush, flanked by Persian Gulf War generals H. Norman Schwarzkopf, on Bush's left, and current Secretary of State Colin Powell, extreme right, place a wreath at the U.S. Embassy memorial in Kuwait City, Kuwait, on Monday to commemorate U.S. service-members who died during the 1991 war to liberate the country.

"We know what the war plans are," he said, "we know where people are supposed to be and we train and rehearse constantly."

Indeed, the Army has emphasized reduction of friendly fire everywhere. At the Army's National Training Center in California and the Combat Maneuver Training Center in Germany, efforts have reduced would-be "deaths" during war games to about 15 percent, officials say.

Complicating matters in places like Kuwait — where U.S. troops expect to fight alongside the Kuwaiti army if the border ever needs to be defended again — is identifying coalition units in the heat of battle.

While the Kuwaitis have bought more than 200 M1A2 Abrams tanks, they also have hundreds of other tanks and armored vehicles that are virtually identical to Iraqi forces.

Plus, war plans also call for reinforcements who have not be able to train and rehearse together for months on end to merge into the system on short notice.

"You push a couple hundred thousand people here to fight all of a sudden and that's when you'll wish you had some gadgets," Burton said.

And it's on the gadgets front that the Army has had the most problems addressing fratricide.

Not-so-quick fixes

Shortly after the Gulf War, the Army began issuing what officials dubbed "quick fix" technology until more advanced systems could be developed.

The first was special panel that glows when looked at through the types of infrared targeting scopes used by both U.S. tank and armored vehicle gunners and many strike fighters.

The second, dubbed "Budlite," is a small device that flashes with an infrared light and can be placed on tanks and even worn by troops.

So far, however, the Army has only been able to provide the equipment to four of its 10 divisions.

It will take the service another two years to outfit the rest of its units, said Lt Col. Jonathan Maddux, program manager for the Army's Combat Identification Program.

Each division is getting enough panels for 2,000 vehicles apiece, he said. Even then, that's only enough to outfit front-line forces such as tanks, fighting vehicles and battlefield repair units.

Both personally and professionally, Maddux said he's been frustrated with how long it's taken.

Regardless, he added, though, "while it may seem like it is going out slowly, it is going out."

Identify Friend or Foe

Also hitting a lull, there are the more high-tech solutions commanders want to see put in place.

The Army had hoped to already start fielding gear it has dubbed the Battlefield Combat Identification System. Similar to pilots' Identify Friend or Foe, or IFF, equipment aboard all U.S. warplanes, the designers say the BCIS will warn ground troops that they're about to shoot friendly forces before they pull the trigger.

"It's IFF for ground," said Maddux, explaining the gear emits a high frequency query at whatever a weapon is pointing at.

Friendly forces will be equipped with omni-directional transponders that will electronically tell the shooter to hold their fire within a second, literally.

"A voice says 'friend, friend, friend,' in the headset of the shooter and a red dot appears in his sight," Maddux said.

The program has not been fully funded, however, in part because of critical General Accounting Office reports. About $100 million has been invested in developing the equipment so far and Maddux says the Army will make a final decision on whether to field the equipment on tests this summer.

If given the green light, the 4th Infantry Division at Fort Hood, Texas, will be the first unit to harness the new technology at an initial cost of about $60 million with additional divisions outfitted for about $60 million each.

The Army is also working on a similar system for light infantry forces called the Individual Combat Identification System. The equipment will come in a "lighter and smaller package," Maddux said.

While VICS weighs anywhere from 50 to 70 pounds, the hoped-for equipment for light fighters would be carried on helmets and attached directly to rifles. About $20 million has been spent so far on research and development and another $50 million is planned for fielding across six divisions beginning in 2003.

During Desert Storm, 61 percent of all fratricides were blamed on ground-to-ground fire and officials hope these fixes will help alleviate that problem in America's next war. That still leaves the 39 percent that has been blamed on air-to-ground shootings. There is no solution on the horizon for that.

Powell: Quarrel isn't with the Iraqi people

KUWAIT CITY, Kuwait — Newly appointed Secretary of State and Gulf War general Colin Powell told a gathering of Kuwaiti dignitaries Monday that Iraq "stands alone, trapped in a prison of its own making."

On hand for the 10th anniversary of Kuwait's liberation from Iraq, Powell had little trouble finding agreement for those words here, but it remains to be seen what success he'll have convincing other Arab nations to shore up sanctions against the pariah nation in his four-day tour through the Middle East.

"We want the world to know that our quarrel is not with the Iraqi people," Powell said. "We look forward to the day when those people are free and that day will ultimately come."

There is a growing consensus in the Arab community that sanctions in place since Iraq's invasion of Kuwait are not working and do more to hurt the Iraqi people than hinder Saddam Hussein.

After visiting Egypt and Israel, Powell is now on his way to Saudi Arabia, the United States' strongest Arab ally during the Gulf War, but a country with flagging support more recently. Saudi officials refused to allow U.S. planes based there to launch strikes against Iraq two years ago in Operation Desert Fox and condemned the recent air strikes around Baghdad.

Also on Powell's itinerary is Syria, which opened a oil pipeline with Iraq in violation of United Nations sanctions.

Officially, Powell has been dispatched to listen to Arab leaders to see what ideas they have in containing Saddam, while still preventing harm to his people.

Senior U.S. military officials say they are comfortable with revising the restrictions, but one top commander speaking on condition of anonymity said he hopes that verifiable sanctions on technology used to develop weapons of mass destruction and military hardware remain firmly in place.

"We also still need to keep the no fly zones," that restrict Iraqi aircraft in both the north and south of the country, as well no drive zones for Iraqi military in the south, said the official, who oversees much of the U.S. military in the region.

—Jon Anderson

FIGURE 5

In addition, the Army accepted considerable risk in this program by not fully funding BCIS. Therefore, a major disadvantage is that it will likely be used as a bill payer until it is fully funded.

Yet Army leadership is addressing BCIS full funding issues. The Army Acquisition Executive (AAE) has stated, "After we learn from the modeling, testing, and experience with BCIS in the FDD, we will be in a much better position to decide on future procurement." The current Low Rate Initial Production (LRIP) program is fully funded.[14]

However, the current funding profile, which is constrained to one division over 3 years and to a production rate of 20 per month, makes the system very inefficient. At the current rate a brigade per year will be fielded. That equates to fielding the active component in a 20-year span. It is not funded in the current President's Budget (PB) to reach even its first rung of the EOQ ladder (100 per month), which is one shift, eight hours a day for five days a week.

According to the basic DoD Acquisition regulation (DoD 5000), the latest the Army can postpone fully funding any system is until the FRP decision. Most programs are fully funded prior to or at their LRIP decision. The Army has used one event after another to delay this funding decision. The trigger is now the Force-on-Force exercise that has been dictated by the Army Test & Evaluation Command (ATEC).

Another disadvantage to the current acquisition strategy is that it is taking too long to field it to the force and is potentially losing the support of the warfighter. As mentioned above, testing and funding challenges continue to plague the system. The Armor school under TRADOC is the proponent for the system. Three years ago, the schoolhouse was neutral on the system. This all changed when a new Commanding General (CG) came on board and wanted Combat ID even if it meant sacrificing part of the transformation of the Army. Recently, that CG moved on to another job and the new CG is not a champion of BCIS. It will take a significant effort to shape the opinions at Fort Knox. If the system acquisition process were moving faster perhaps, the schoolhouse would be more supportive of the program.

COA 2, ACCELERATE THE SYSTEM:

The greatest benefit of this option would be getting the system to the force as early as possible. BCIS could be a role model for acquisition reform in terms of testing. The challenge would be convincing the Army Test and Evaluation Command (ATEC) of its merits. The "System of System" testing approach that occurred complicates the timeline significantly. This concept could have resulted from a combination of personnel turnover, DoD oversight and an overreaction from a Draft DoD IG report or a GAO Audit report. These reports gave the impression that DoD was mismanaging the Combat ID efforts and will continue to delay the program unless some deliberate testing streamlining and associated acquisition reform processes are realized.

ATEC made the statement at the last ASARC that the hardware is ready to be tested, but it will have to consider how the soldier interfaces with other systems. The only near term interface requirement for the BCIS is the interface with the on board Global Positioning System (GPS) of the host platform. Yet ATEC is now trying to evaluate interfaces and linkages to such systems as Second Generation FLIR (Forward Looking Infra-red Radar) (SGF); Force XXI Command BDE and Below system (FBCB2); and the soldier's cognitive memory. The Army has been delaying ground Combat ID systems for many "good ideas" coming from leaders cycling through the operational, test and acquisition environments, but none of these reasons --

"system of systems testing", SA potential of fratricide reduction, to affordability, -- are worth keeping this critical lifesaving technology out of the hands of the warfigthers.

ATEC also wanted to correlate this testing in an extensive FoF exercise in the desert sometime in the future before it makes a full commitment to the system. If ATEC and DOT&E remove some of these testing roadblocks and support getting the system into a division where the user can judge the system, the funding issues would fall in line. Therefore, as a result, the lack of full funding and bill-payer BCIS would go away.

Another significant advantage is that this option would recognize total ownership cost savings. A multi-year contract could be awarded if additional funding were provided to accelerate the fielding to 4th ID and subsequent divisions so that one division per year could be fielded. Fielding to the active force would be complete by 2012. The contract could be structured so that every year an IPR could be held with the stakeholders having a vote on each decision to move forward; thereby, having veto authority over yearly buys. Some associated disadvantages would be the need for additional money and a termination liability fee that would cover contractor risk if they decided to buy up front.

COA 3, FORM A JOINT PROGRAM OFFICE (JPO) WITH THE USMC:

Since Combat ID is inherently a joint challenge; requirements and acquisition strategies for combat identification systems should reflect the needs of the joint warfighter. Currently the only ground Combat ID PMO is in the Army. The USMC has 3000 ground combat platforms targeted as candidates for a ground Combat ID system. There have been some U.S.M.C funds in the past dedicated to Combat ID studies, but today there is no funding in the Corps for a ground Combat ID procurement effort.

The USMC has been peripherally involved in Combat ID for many years from an acquisition perspective. The Marine Corps signed a Memorandum of Agreement (MOA) on Combat ID in January 1993 and agreed to joint service coordination/oversight of Army, Navy, Air Force and Marine Corps Combat ID requirements, policies, procedures, developments, and procurement programs, and related technology efforts pertaining to all Combat ID issues, and definition of management responsibilities.[15] The Marines also have been attending meetings at the service and joint level for nearly a decade. Recent activities include the agreement of the NATO STANAG and conclusion of an Analysis of Alternatives for Combat ID in all mission areas.

By agreeing to the NATO STANAG, the USMC acknowledges the requirement for the MmW ground Combat ID. It is also very interested in the U.S. Army's on-going Pre-Planned Production Improvement (P^3I) miniaturization effort.

Furthermore, the acquisition and requirements progress of the USMC lagged the Army's efforts by several years. The USMC followed the CI lead of other services (mostly the Army) for several years and in May 1997 the Marine Corps Systems Command (SYSCOM) established a fulltime position for a CID Project Officer with a goal of making CID an acquisition program. In October 1997, the USMC approved CI for Phase 0 and designated it as an Acquisition Category (ACAT) IV program, and it received some Research and Development funding as a result of reprogramming efforts through the Spring 1998 POM-00 process. In June 1999, the program was briefed to the SYSCOM Commander. After realizing the program's enormous scope, the Commander recommended that the program seek ACAT II status and that the Program Office plan on making a case for substantial funding in POM-02. Concurrently, the Marine Corps Requirements Division (MCCDC), working closely with SYSCOM, initiated an Analysis of Alternatives (AoA) to define the best CI technology solutions. The original goal was to have the AoA results completed before the POM-02 review (in March 2000); however, the AoA contract was delayed until September 1999 and at best, it would not be completed until July 2000 – well after the completion of the POM-02 effort. The Marine Corps was also getting a lot of political and fleet pressure to solve the CI problem and the perception was that very little progress had been made since the 1991 Gulf War. Taking everything in account, MCCDC made CID the #4 priority on a list of programs that needed to be funded in POM-02. In July 1998, MCCDC published a CI ORD. In early 2000, the Program Officer began to assemble the POM-02 input and used the information from the ORD. The AAO provided by MCCDC and used to develop the POM-02 CID program included 15,047 units to be installed on all aircraft, tanks, LAVs, AAAVs, and Crew Served Weapons for support vehicles. [16]

The USMC CI POM-02 was scheduled to be presented to the USMC POM Review Board in March 2000. The AoA was still in progress and not scheduled to be completed until August 2000. Moreover, preliminary results of the AoA were inconclusive and would not be available before the March POM presentation. The CI program was still considered an ambiguous area by the USMC budget personnel. Moreover, since CI covers four mission areas, there was confusion about who the real advocate was. The question of where it belonged, i.e. to the Ground Combat Element advocate or to the Air Combat Element advocate was not answered before the POM presentation. Everyone agreed that CID was important, but all sides pointed to the other when an advocate needed to be identified. When the time came to brief the POM

Working Group, the Project Office faced a big dilemma. The program was the #4 MCCDC priority, but because the AoA was not complete, it could not identify exactly what it was buying or what CID mission areas would be solved. The office was being directed to present the true cost of the program, which amounted to over a billion dollars, but because it was realistic in it's approach, several lower cost options were also prepared as backup plans. At the March 1998 POM brief, the program still lacked definition because of the incomplete AoA, the advocate support was not resolved, and the POM Review Group was confused as to what the real cost of the program was. As a result, CI the #4 MCCDC priority fell below the USMC funding line and received nothing for POM-02.[17]

The concept of a Joint Program Office has been briefed and is under consideration by the Office of the Secretary of Defense for Command, Control, Communication and Computers (OSD C^3I). The initial impression of that agency is that the effort may hold merit, but that OSD C^3I does not want to give a position on the matter.[18]

The obvious advantages to this option are potential economies of scale, ranging from the additional quantities to increased leverage for funding and international purposes. DoD could also claim credit for correcting some of the deficiencies cited in the GAO reports, and there would be the chance for the USMC to influence at least the P^3Is of the system. Finally, in terms of economies of scales, this option would force joint cooperation and standardization.[19]

The Army could also recognize synergy by starting common integration on the Light Armor Vehicle (LAV) that was chosen for the Interim Bde Combat Team (IBCT) platform. Some disadvantages may occur in the short term. However, considering the state of current affairs with the testing issues and funding constraints, this may be a time best suited for a consolidated effort. Disadvantages would include the possibility of "requirement creep", as the USMC may not be completely satisfied with the design of the current system.

Since the Army and the USMC would have the same system under this option, another advantage that a JPO could capitalize on is assisting to solidify the DoD Combat Identification architecture. The Army agrees to most of the allegations cited in a recent GAO, Draft Report to the Secretary of Defense entitled "Combat Identification Systems, Strengthened Management Efforts Needed to Ensure Required Capabilities". It states:

a. There is no unified DoD Combat ID architecture

b. The lack of a unified DoD Combat Identification architecture makes the Army CID attempts duplicative, non-interoperable, and unnecessarily costly to maintain and interface.[20]

"We agree that there should be a unified DoD CID architecture. We believe that any enterprise architecture approved by DoD should tie into the Army Combat ID Architecture, approved in 1994. The Army has been building and tying them together for the past seven years. The Battlefield Combat ID System (BCIS) was selected as the optimum solution for ground-to-ground CID. The Individual Combat ID System (ICIDS) is the dismounted solution for ground-to-ground CID. Air-to-ground solutions are currently being worked in Science and Test (S&T) to determine which is the best solution.[21]

We disagree, however, with the allegations of the Army CID Programs being duplicative, non-interoperable, and unnecessarily costly. The Army has a deliberate management system in place to manage Combat efforts. It has representatives from Deputy Chief of Staff for Programs (DCSPRO), the Assistant Secretary of the Army for Acquisition Logistics and Technology (ASA(ALT)), TRADOC HQ, the Infantry Center and the Armor Center... ...The Army Combat Identification Architecture has been briefed as high as the Chief of Staff level in Requirement Review Council... In summary, the Army has a strong management system, an approved and working Combat ID Architecture and many years of experience that should be leverage for any unified DoD enterprise architecture.[22]"

COA 4, TERMINATE THE PROGRAM:

Terminating the BCIS program may be viewed by some as the best option. There are some individuals who believe that training alone may solve the fratricide problems of the Army. This, coupled with FBCB2 and SGF technologies, may mitigate fratricide to an acceptable level, but there has not been any analysis that supports these assumptions. In fact, the BFV A3 Initial Operational Test and Evaluating (IOT&E) that was conducted last summer with SFG and FBCB2 still had numerous fratricides.

The short-term advantage to this option would be a savings in the POM of about $60M that could be put toward the transformation of the Army. In the current POM-to-BES budget cycle, the Army has zeroed out the Combat ID line from fiscal year 2004-2009. BCIS was one of the nineteen programs terminated for the transformation. There are several efforts being made to reverse this decision from CINC Joint Forces Command (JFCOM) and the Program Executive Office for Intelligence, Electronic Warfare and Sensors (PEO IEW&S), but thus far, no impact has been made. The Army has submitted the budget to the Office of the Secretary of Defense (OSD) for its consideration. There would also be a cost avoidance of approximately $30M from not having to conduct the Force on Force exercise.

Another advantage to this option would be the manpower savings that would be recognized from closing down the PMO and supporting staff at the Pentagon, TRADOC HQ,

and the schoolhouses. Total manpower savings would be approximately 20 government employees.

Yet, there would be several disadvantages. The most concerning disadvantage that cannot be quantified would be the possible loss of lives for not getting this system into the hands of the soldiers. The American people may lose faith in the military if a symmetric war produces the fratricide rates of Desert Storm. Bear in mind that the actual casualties were much less than the initial estimates. This is mostly due to the time to prepare the overwhelming force. In addition, NATO countries (as mentioned) above who put their stock in American technologies would be set back by the sudden loss of U.S participation in the former agreements and initiatives.

Some would argue that terminating this program will be mortgaging the lives of soldiers and potentially be an embarrassment to the Army and the Nation. The BCIS has a solid requirement, production processes in place, has enjoyed successful testing, has been accepted as a NATO Defense initiative, and it is supported by the Joint Staff, OSD and Congress.

Additionally, the disadvantage of closing down a proven production line has significant costs associated with it, not to mention the loss of faith of the Army's industry partners in this program. Two major defense contractors, TRW and Raytheon, have proven the production processes with Low Rate initial production. Competition for the BCIS program resulted in an award of the program to TRW in 1995.

Since that time, TRW executed the following: produced several prototypes, over one hundred Engineering, Manufacturing and Development (EMD) systems for testing, and has ramped up production facilities under a Low Rate Initial Production (LRIP) Contract to 20 systems per month. With one shift, TRW is prepared to go to 100 systems per month. Raytheon is a sub-contractor on this system. Both of these contractors have taken risks during the last seven years as they have incorporated changes as a result of testing. The Army entered into a multi-year contract in the summer of 2000 for the low rate initial production contract. This contract has a termination liability associated with it that will cost approximately $6 million to terminate this year.

The BCIS has been through many tests and all of the critical acquisition milestones (MSs) to include: contractor testing, MS A, a Production Verification Test (PVT), developmental testing (DT), MS B, a Limited User Test (LUT), Advanced Warfighting Experiments (AWE), and an Initial Operation Test and Evaluation (IOT&E). Given that the Army has committed to the LRIP buy, the program has all the elements for successful fielding. Each of the tests has produced golden nuggets that have paid dividends during the development effort. Modeling and

Simulation (M&S) has also supported this system throughout its development process. Encouraging fratricide reduction statistics and several manprint issues were discovered and resolved due to M&S support. The BCIS team has used many events, which over time have built a strong case for a positive assessment of technological maturity and a 95% solution as it nears fielding.

It is also important to note that the loss of faith of a NATO partner is also a major disadvantage for this option. NATO has also been searching for a Battlefield Target Identification (BTID) system since Desert Storm. Four nations, one of which is the U.S., conducted an interoperatability demonstration and technology down select in 1995. France, U.K., and Germany were the other countries with systems to demonstrate. The chosen technology was Millimeter Wave (MmW). The BCIS system is a MmW system and was used as a baseline for the NATO Standardization Agreement (STANAG) that was ratified by NATO last year. The BCIS led the way in this standardization effort; and as a result, the other NATO countries are now building anti-fratricide systems that are intended to be compatible with the BCIS.

In addition, for more than eight years, the joint staff, OSD and Congress has supported the BCIS. It would be detrimental to the Army's relationships with these supporters to terminate the program. It would appear as if the Army is throwing away a good system for the sake of new ideas. The OSD staff has been tracking the lack of progress on Combat ID systems for years. Recently they have formed a Combat ID assessment team. During the last five years, they influenced the budget process several times with proposed Program Budget Directives (PBDs) that have directed the Army to fully fund the BCIS system. The OSD staff has also provided input to the Defense Planning Guidance (DPG). As cited above Congress and the Senate have been key players in the development of the BCIS. The FY 1997 Defense Authorization Act HNSC Report statement below re-emphasizes the congressional involvement:

> "Found it difficult to understand the Army's delay in initiating procurement beyond those units identified for Force XXI AWE"... Urges the Secretary of the Army to raise the priority of procurement and fielding of the BCIS system so that fielding can begin FY 98"[23]

CONCLUSIONS:

Making the right choice on this program will be a challenge since it is competing with scarce resources as the Army transforms. Terminating the program will be a grave mistake. It has many disadvantages; and if that event cannot be turned around, the Army will be potentially mortgaging the lives of our soldiers and may suffer in the long run by accepting the significant

risk of this pre-mature termination. Combat ID will make future systems more survivable. Survivability is paramount since we are already accepting risk in transforming to the less lethal and less survivable combat fighting system of the FSC and IAVs. With survivability of our IAVs and FCS as one of the transformation pillars and one of the tenets of the current Army Vision, it is paramount that the Army accelerates the Combat ID program.

In conclusion, the option of accelerating the BCIS acquisition program gives greater assurance that the fratricide rates that occurred in Desert Storm will not be repeated in future conflicts. An accelerated program fields the system sooner and saves the most money in the long run. The acquisition leadership must re-evaluate the combat ID acquisition strategy to ensure that all alternatives are covered to get this critical capability into the hands of the soldiers before it's too late. Staying the course on this program, or terminating it, is the equivalent of doing nothing. To quote the recent MILDEP to the Army Acquisition Executive, "We are very good at indecisiveness in the Pentagon. The worst thing we can do for Ground Combat ID is nothing".[24]

Word Count = 6063

ENDNOTES

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[2] Army Vision, 3rd paragraph & 2002 QDR, p.21

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[4] Ibid.

[5] Combat Identification Capstone Requirement Document, Classified Secret, July 2000

[6] Ibid.

[7] Richard Eastcoat, Combat ID analyst, OSD C3I, Telephonic interview, 11 Oct 2001 in reference to the JROC, and DPG language.

[8] Telephonic interview (5 Oct 2001) & Follow-on fax Slides obtained from the Dept. of the Army System Coordinator (DASC), ASA (AL&T), COL (RET) Chapin Horton.

[9] Kenneth K. Steinweg, Parameters, "Dealing Realistically with Fratricide," Spring 1995, Vol. XXV NO. 1, p.14 & 26.

[10] Doug Kuehl, LTC, USA, Telephonic interview w/ PM Combat ID, conducted o/a 2 Oct 2001.

[11] Kenneth K. Steinweg, Parameters, "Dealing Realistically with Fratricide," Spring 1995, Vol. XXV NO. 1, Ibid., p. 19.

[12] Ibid., p. 19.

[13] Stars and Stripes Newspaper, Europe, Feb 24, 2001.

[14] Army response to GAO, Draft Report to the Secretary of Defense entitled "Combat Identification Systems, Strengthened Management Efforts Needed to Ensure Required Capabilities" (GAO-01-632).

[15] USA/USN/USAF/USMC "Memorandum of Agreement of Combat Identification", dtd 14 Jan, 1993.

[16] Paper by Craig Pritzer, USMC MARCORSYSCOM, during APMC – Section F, MARCORSYSCOM, ltr 5000 PAE97872, MCCDC Memo POM-02 Priority List, 12 October 1999 and MCCDC Combat ID Operational Requirements Document, 12 July 1998

[17] Paper by Craig Pritzer, USMC MARCORSYSCOM, during APMC – Section F, MARCORSYSCOM, ltr 5000 PAE97872, p.3.

[18] Briefing comment from OSD C3I, Mr. Alan Lahoft, after receiving service Combat ID brief was received in summer of 2000.

[19] GAO, Reports to Congress, "Combat ID system, Changes needed in Management Plans and Structure", dtd, Sept., 1995, & "Operation Desert Strom, Investigation of a U.S. Army Fratricide Incident". dtd., April 1995.

[20] GAO, Draft Report to the Secretary of Defense entitled "Combat Identification Systems, Strengthened Management Efforts Needed to Ensure Required Capabilities" (GAO-01-632).

[21] Army response to GAO, Draft Report to the Secretary of Defense entitled "Combat Identification Systems, Strengthened Management Efforts Needed to Ensure Required Capabilities" (GAO-01-632).

[22] Ibid.

[23] Telephonic interview (5 Oct 2001) & Follow-on fax DCSOPS Slides obtained from the Dept. of the Army System Coordinator (DASC), ASA (AL&T), COL (RET) Chapin Horton.

[24] ASARC briefing to the MILDEP, LTG Kern, Oct 2000.

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