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Report to the Ranking Minority Members, Subcommittees on Total Force and Readiness, Committee on Armed Services, House of Representatives

May 2003

MILITARY READINESS

Lingering Training and Equipment Issues Hamper Air Support of Ground Forces

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GAO-03-505

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Highlights

Highlights of GAO-03-505, a report to the Ranking Minority Members of the Subcommittees on Total Force and Readiness, House Committee on Armed Services

Why GAO Did This Study

Recent operations in Afghanistan demonstrated the dangers of providing air support close to troops on the ground. Such close air support requires timely, well-practiced procedures and communication between ground and air elements. While most close air support operations in Afghanistan were successful, "friendly fire" incidents have resulted from mistakes made while conducting the mission.

At the request of the Ranking Minority Members of the Subcommittees on Total Force and Readiness, House Committee on Armed Services, GAO reviewed Department of Defense (DOD) efforts to provide adequate close air support training, as well as efforts to enhance the equipment used to support this mission.

What GAO Recommends

GAO is recommending several initiatives to provide the leadership and accountability needed to resolve the lingering close air support training shortfalls. GAO is also recommending actions to achieve greater equipment interoperability among the services.

In commenting on a draft of this report, DOD concurred with the report's recommendations and is in the process of establishing specific completion dates for initiatives that will address the lingering training and equipment interoperability shortfalls.

www.gao.gov/cgi-bin/getrpt?GAO-03-505.

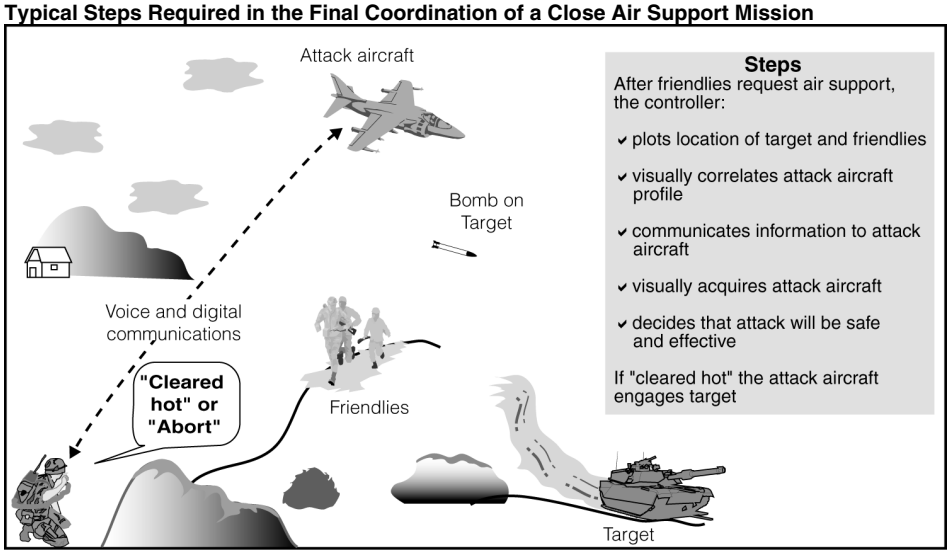
To view the full report, including the scope and methodology, click on the link above. For more information, contact Neal Curtin at (757) 552-8100 or curtinn@gao.gov.

What GAO Found

The Department of Defense has had limited success in overcoming the barriers that prevent troops from receiving the realistic, standardized close air support training necessary to prepare them for joint operations. This is the result of four interrelated factors: (1) ground and air forces have limited opportunities to train together in a joint environment; (2) home station training is often restricted and thus does not always provide realistic training to prepare troops to perform the mission; (3) the services use different training standards and certification requirements for personnel responsible for coordinating close air support; and (4) within the individual services, joint close air support training is often a lower priority than other missions. While the department recognizes the need to improve the training for the mission, progress has been slow on many of the issues because the services have been unable to agree on joint solutions. In the interim, U.S. troops engaged in joint close air support missions are forced to conduct last-minute training or create ad hoc procedures on the battlefield.

Efforts to enhance the capabilities of the equipment used to perform the joint close air support mission have not kept pace with precision weapons capabilities and as a result do not achieve DOD's goals for interoperability and cost-effectiveness. Advanced systems improve the accuracy of battlefield information and can speed the transmission of information from the troops on the ground to attacking aircraft. However, the services have acquired equipment that is not able to communicate across the services, a key requirement in joint operations. Moreover, the services are procuring equipment independently to meet individual service needs, thereby missing opportunities to achieve cost benefits from joint service purchases.

Typical Steps Required in the Final Coordination of a Close Air Support Mission



Source: GAO.

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United States General Accounting Office
Washington, DC 20548

May 2, 2003

The Honorable Vic Snyder
Ranking Minority Member
Subcommittee on Total Force
Committee on Armed Services
House of Representatives

The Honorable Solomon P. Ortiz
Ranking Minority Member
Subcommittee on Readiness
Committee on Armed Services
House of Representatives

The success or failure of our military forces in combat is directly linked to the realism and thoroughness of their training beforehand. This axiom is especially true when aircraft are needed to deliver bombs on targets close to troops on the ground. Such close air support requires painstaking coordination between air and ground elements. Timely, well-practiced procedures and communication are essential because close air support on the battlefield often has to happen fast to achieve its objective. Failure to respond to a call for air support can leave troops exposed to enemy fire; however, mistakes in communications and targeting can result in fatalities among friendly forces. In Afghanistan, close air support became particularly critical because light forces were introduced into battle without artillery, leaving air power as their sole means of fire support. Though we completed our work before hostilities began in Iraq, this operation also showed the increased importance of integrating air power into the ground fight. While most recent close air support operations have been successful, "friendly fire" incidents tragically illustrated the dangers of the mission. Even before the war in Afghanistan, the Department of Defense (DOD) had begun looking for solutions to long-standing problems facing the close air support mission. Because joint close air support is—by its nature—a joint mission that transcends any single military service, DOD has formed steering groups and other interservice task forces to examine the mission area. The working groups have addressed a myriad of issues, but their primary focus has been on improving training and

equipment interoperability[1] across the services in both the active and reserve components.

Because of concerns about such unfortunate "friendly fire" occurrences, you requested that we review close air support training and doctrine to ensure that the U.S. military is prepared for future conflicts. You asked that we recommend any actions that DOD and the services could take to improve close air support effectiveness while simultaneously reducing risk to friendly forces. Thus, our objectives were to assess efforts by DOD and the military services to (1) provide adequate training for joint close air support missions and (2) enhance the capabilities of the equipment used to support this mission. A detailed description of our scope and methodology is included in appendix I.

Results in Brief

DOD has had limited success in overcoming the barriers that prevent troops from receiving the realistic, standardized training that is needed to prepare them for joint operations. In discussions with military officials and during our visits to training sites, we found that adequate realistic training[2] is often not available because of four lingering problems: (1) Ground and air forces have limited opportunities to train together in a joint environment. When such joint training does occur, according to DOD reports and unit officials, it is often ineffective. Data from national training centers show that joint close air support training seldom meets the expectations and needs of the ground commander. (2) Similarly, the training that troops receive at their home stations is usually unrealistic because of range restrictions; moreover, it lacks variety—for example, pilots often receive rote, repetitive training because of limited air space and other restrictions. (3) The services train their aircraft controllers, who are the linchpin for close air support coordination, to different standards. The lack of universal standards hampers the ability of these controllers to perform in a joint operation. (4) Finally, within individual military services, the training for close air support missions is often given a lower priority—in doctrine, school curriculum, and training exercises—than other missions. For example, the Air Force focuses more on deep strike and air-to-air employment during large force exercises, while the Army places

[1] Interoperability refers to the ability of one system to provide and accept information from another system.

[2] Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support*, December 1995 (currently being revised).

more emphasis on training for artillery and the use of its own fire support. While DOD has recognized the need to improve the effectiveness of training the mission,[3] the steering committee tasked to implement the action plan has been unable to resolve most of the plan's 15 action items because of the time and effort required to solve the issues and the services' inability to reach agreement on them. DOD changed the responsibility for chairing the executive steering committee to Joint Forces Command in hopes of resolving the lingering interservice issues. Until these problems are resolved, U.S. troops engaged in joint close air support missions will be forced to conduct last-minute training or create ad hoc procedures on the battlefield—practices that reduce the effectiveness of the mission and increase the risk of injury or death to friendly forces.

Efforts to enhance the capabilities of the equipment used in joint close air support have not kept pace with precision weapons capabilities and, as a result, do not achieve DOD's goals for ensuring interoperability and cost-effectiveness. The services have acquired digital transmission systems that are used to share information instantly between airborne and ground personnel. However, these systems are not yet interoperable across the services, potentially hampering their effectiveness in joint operations. While the services have recognized the need for such a system and have plans to field one by 2007, the absence of an interoperable system in the near term limits the ability of air and ground forces to coordinate air attacks efficiently and under all conditions. Moreover, the services have acquired a variety of ground-targeting systems, which allow ground controllers to accurately locate targets for attacking aircraft, but they are not purchasing these systems cost-effectively. Although DOD has tasked the services to develop joint requirements for ground-targeting equipment, they have not yet completed them. As a result, the services are procuring a variety of systems independently and may be missing opportunities to achieve cost benefits from joint purchases.

We are making several recommendations to help resolve DOD's lingering close air support training shortcomings and ensure that equipment procured for this mission is interoperable and meets interservice requirements. In written comments on a draft of this report, the Department of Defense stated that it concurred with our recommendations and is in the process of establishing specific completion

[3] Joint Close Air Support Action Plan, November 2001.

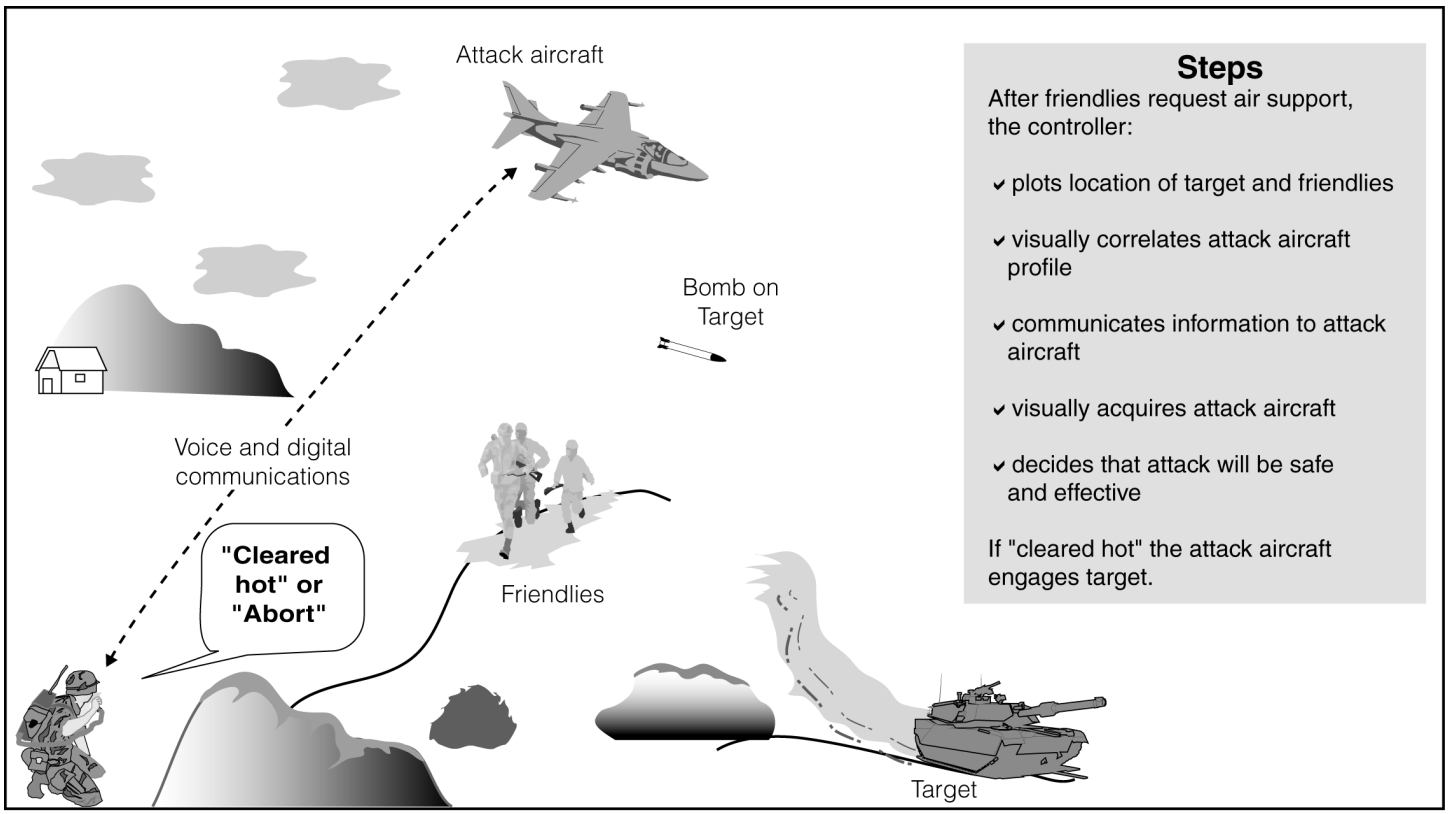
dates for each of the issues identified in the 2003 Joint Close Air Support Action Plan.

Background

Close air support is an air action by either fixed and rotary wing aircraft against hostile targets which are near friendly forces and which require detailed integration of each air mission with the fire and maneuver of those forces. Several different types of aircraft are assigned the close air support mission; examples are described in appendix II. To be successful, this type of combat mission requires detailed integration and close coordination between air and ground forces.[4] Air is only one type of fire support available to ground forces—other forms include artillery, mortars, and naval surface fires. Ideally, these fires will be integrated to achieve the intended effect on the target. The controller plays the key role in coordinating the close air support mission. The controller is often located on the ground alongside maneuver forces; however, airborne controllers may also control attacks. The controller is responsible for ensuring that aircraft strike the target accurately while avoiding hitting friendly troops. During battle, when a ground commander needs air support, this specially trained controller initiates a call, using voice or digital communications, to the aircraft. The controller provides the attacking aircraft with the location of the target as well as the position of any friendly troops in the area. Based on this information, the aircraft's crew directs the plane's bombs to the target. Figure 1 depicts a typical mission.

[4] Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support*, December 1995 (currently being revised).

Figure 1. Typical Steps Required in the Final Coordination of a Close Air Support Mission



Source: GAO.

Note: GAO analysis of DOD documents.

DOD is in the process of developing technologically advanced equipment to improve the military's ability to conduct close air support missions under all types of conditions. Historically, such missions were conducted during the day under favorable weather conditions. This allowed both aircrews and ground controllers to visually acquire and attack ground targets. Today, these missions are typically undertaken at night or under poor visibility conditions. In addition, because the rules of engagement have placed strict limits on collateral damage, the aircraft need to deliver munitions precisely. For example, the use of bombers flying at high altitudes to perform close air support in recent operations in Afghanistan shows how the mission has evolved. Bombers carried out missions using precision weapons from altitudes that prevented aircrews from visually acquiring targets. The use of these weapons required controllers to provide more accurate target information to the attacking aircraft. In

addition, technological advancements in equipment continue to improve the accuracy by which aircraft can strike their targets. For example, equipment such as laser rangefinders and systems that allow controllers to transmit information digitally improve accuracy and help mitigate the risk of human error.

Significant differences exist in the services' approaches to close air support. Controllers from the Air Force, Marine Corps, and special operations forces attend different schools to learn the basics of controlling attack aircraft. To support Army ground units, the Air Force incorporates officers and enlisted controllers into Army units. These Air Force personnel live and work with the Army and are intended to become an integral part of the unit's fire support staff. The Army must rely on aircraft from other services during training or combat. In contrast, the Marine Corps uses its own aviators—on a rotational assignment with ground forces—to control aircraft. The Marine Corps' attack aircraft squadrons are attached to Marine expeditionary forces, and their primary mission is to support ground forces. Day to day, this means that Marine Corps ground commanders have attack aircraft at their disposal, allowing them to more easily incorporate close air support into their training events. The inherently joint nature of the mission requires that all the services train together to be adequately prepared. Training is fundamental, according to a DOD assessment of the mission area, because technological advancements are "meaningless if not supported by training."

Despite DOD's Efforts, Joint Close Air Support Training Deficiencies Remain

DOD has had limited success in overcoming the barriers that prevent troops from receiving the realistic, standardized training that is needed to prepare them for joint operations. These lingering problems include few opportunities for ground and air forces to train together in a joint environment, a lack of realistic training opportunities at troops' home stations, differences in the training standards for aircraft controllers, and the low priority placed on joint close air support training in the services' school curriculum and exercises. While DOD has acknowledged the need for more effective training in its 2001 Joint Close Air Support Action Plan, it has been unable to resolve most of the plan's action items because of the time and effort required to resolve the issues and disagreement among the services.

Close Air Support Training Barriers Continue to Linger

According to joint doctrine, training must be habitually emphasized in a joint training environment, and proficiency can only be obtained though dedicated, realistic joint training.[5] Historical experience shows that realistic training is critical to success in combat. Realistic training is particularly important in the close air support mission where detailed coordination is required to effectively deliver bombs close to friendly forces. However, DOD has acknowledged that joint close air support mission deficiencies have existed for many years. We reviewed documents from the mid-1990s that showed that shortfalls in close air support procedures have led to decreased mission effectiveness and a greater chance of fratricide. Recent operations in Afghanistan have demonstrated that the military is placing an increased emphasis on joint close air support, but some serious challenges remain. Many of the soldiers, pilots, and aircraft controllers who are asked to perform this mission in combat told us that they feel ill prepared to do so. Service personnel told us that it was common for both pilots and ground controllers to be forced to learn new procedures "on the fly" during actual combat operations. During our unit visits, personnel from all services expressed concerns over their ability to perform the joint close air support mission. These concerns revolve around four interrelated factors, discussed below, which adversely affect training.

Joint Training Opportunities Are Infrequent and Ineffective

Pilots, controllers, and ground commanders from the services that are involved in joint close air support need to train together frequently in order to develop confidence in one another and become familiar with one another's procedures. Without such regular exercises, pilots are not willing to fully trust the instructions they receive from controllers, and ground commanders are not confident that the air support will be timely and accurate.

However, opportunities for the services to train together to prepare for the joint close air support mission are infrequent. Within the United States, there are primarily three training facilities that have the necessary maneuver and air space to adequately train close air support with both ground forces and attacking aircraft. These are the Army's National Training Center at Fort Irwin, California; the Army's Joint Readiness Training Center at Fort Polk, Louisiana; and the Marine Corps' Air Ground Combat Center at Twenty-nine Palms, California. These training centers

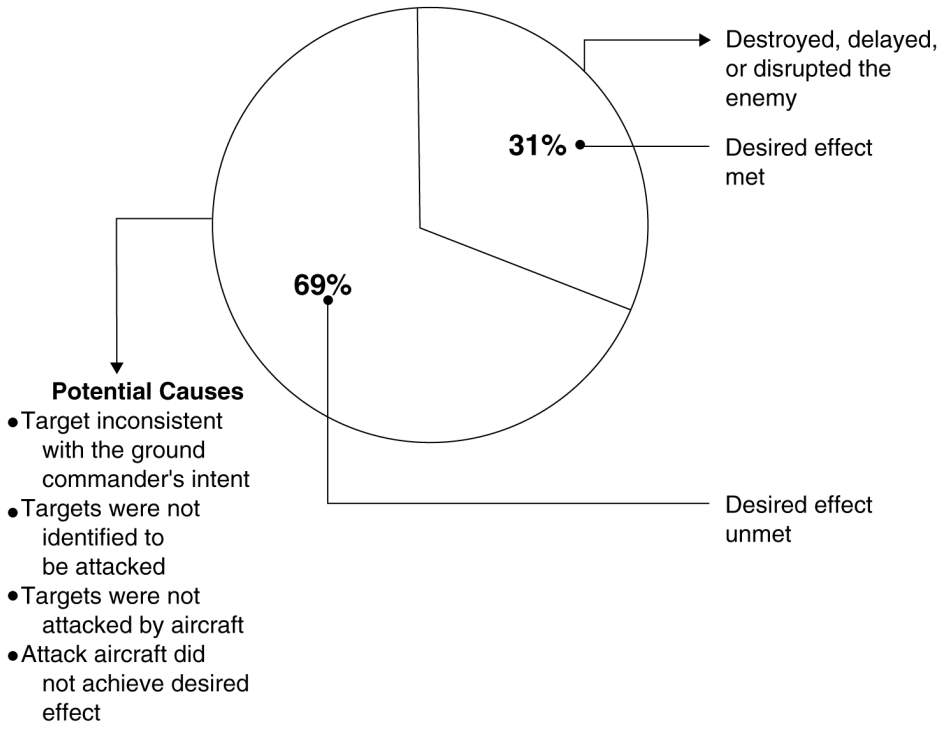
[5] Joint Publication 3-09.3, *Joint Tactics, Techniques, and Procedures for Close Air Support*, December 1995 (currently being revised).

provide the maneuver space, airspace, and live ordnance delivery freedom to train for this mission under simulated combat conditions that are not available at home station training ranges. The centers are designed to offer the most realistic and challenging battlefield experiences available; however, units normally train at one of these locations only once every 12 to 18 months and for only 3 weeks at a time.

Information collected from training exercises at the Army's National Training Center has pointed to the need for more training in joint close air support procedures. The Center for Army Lessons Learned, which collects and consolidates data from operations and training events, identified several long-standing problems associated with the execution of close air support during these exercises. For example, in 1995 it reported that the full effects of the mission are rarely achieved during training, and in 1998 it found that integration issues between Army and Air Force personnel continued to hamper the execution of the mission and may contribute to fratricides.

Observations made by the Secretary of Defense's Joint Close Air Support Joint Test and Evaluation task force further confirmed that significant problems exist. Chartered in 1998, the task force has collected and analyzed a large quantity of data from the Army's National Training Center. By early 2001, it had observed 22 simulated battles that included more than 200 close air support sorties. One of the key conclusions from its study is that close air support seldom achieved the outcome sought by the ground commander during such training exercises. As figure 2 shows, close air support operations met the ground commander's intent—that is, they destroyed or otherwise disrupted enemy troops—less than one-third of the time. More often than not, close air support failed to meet the ground commander's needs.

Figure 2. Percentage of Time That Close Air Support Operations Met Ground Commander's Intent at Army's National Training Center (Calendar Years1998-2000)



Source: DOD.

The task force attributed this low success rate to several factors, in particular the lack of integration between the Air Force controllers and Army fire support teams, whose mission is to coordinate different types of firepower. Ideally, air power would be employed seamlessly along with artillery and other fire support. We heard frequently about this issue from the commanders of Army units we visited in the United States, Germany, and Korea. They told us that Army teams did not view assigned aircraft controllers as a part of their teams and, thus, were not as comfortable relying on the controllers to provide support as they were with their own unit personnel. Army unit personnel work with the controllers only a few times a month or during field training exercises. Consequently, a deployed Army team may have to rely on controllers with whom they have not worked during training and in whom they have not developed confidence. On the other hand, Air Force controllers who are trying to integrate themselves into the Army structure must still report to Air Force leadership, and thus they have to satisfy the needs of two different commanders. Perhaps most telling, the task force observers also noted

that integrating close air support was often an "afterthought" during ground maneuver exercises. Some participants they interviewed expressed concerns about how well they were prepared for the mission. Air Force participants, for example, noted they did not get enough practice with the Army's teams, and Army participants pointed out that training for this mission was often overlooked and underemphasized.

In addition to infrequent training opportunities, many of the unit leaders and soldiers we interviewed expressed disappointment with the effectiveness of the close air support training they received at the Army's training centers. Pilots told us that because training scenarios at the centers are scripted to maximize training benefits for maneuver forces, ground commanders fail to use aircrews effectively. In short, available aircraft are underutilized, thus limiting the training pilots receive. In the United States, personnel from the 18th Air Support Operations Group told us that because the Army runs the training events, nearly all of the training time at the centers is devoted to Army maneuver tasks rather than to joint close air support. As a result, ground controllers are often not included in the planning and execution of missions. In Europe, personnel from the 4th Air Support Operations Group told us that the Army limits their controller training to an hour a day at the Army's Combined Training Center at Grafenwoehr, Germany. On the other hand, aircraft availability is sometimes a problem. According to military officials, joint close air support is planned into all exercises, but in many cases the aircraft do not arrive for a variety of reasons, such as weather conditions and mechanical problems. One brigade official told us that during his unit's last training center rotation in Germany, 12 sorties were planned, but none was actually undertaken.

While the Marines are widely considered to be proficient at integrated close air support training, the training they provide at the Twenty-nine Palms training center, for example, is typically not joint. Marines supply their own attack aircraft and ground controller assets to train for close air support missions. Overall, the task force concluded that Marine Corps ground controllers figure prominently in the development of offensive and defensive operational plans and that the mission was generally well planned and executed. However, the training center presents its own challenges. The aircraft maneuver space is restrictive, a simulated enemy rather than a well-trained opposing force is used, and the exercises focus more on training than on evaluating capabilities.

Combined training events between U.S. and coalition forces are also infrequent. For example, U.S. officials in Korea told us that Army and Air

Force personnel rarely practice close air support with South Korean ground controllers or aircrews. In addition, U.S. ground controllers and pilots stationed in Korea and Germany said that barriers such as accents and the use of nonstandard phraseology by foreign aircrews impact the effectiveness of combined training. Dutch military officials told us that it is difficult to train with U.S. personnel. While two combined training exercises promote close air support training—Clean Hunter and Flying Rhino—Dutch officials stated that U.S. ground controllers have not participated. Furthermore, these officials said that while A-10s from the 81st Fighter Squadron support Dutch ground controller training, this relationship is informal and they cannot rely on U.S. support. U.S. officials stated there are opportunities to train with coalition military personnel. For example, Navy officials said that they schedule combined training with British forces as part of their Joint Maritime Course. Moreover, they told us that because the Navy does not own training ranges in the European theater, it schedules training events with host nations to gain access to live-fire ranges. In addition, U.S. Air Force officials in Korea told us that they are planning to combine ground controller training for both U.S. and South Korean personnel.

Range Restrictions Limit Home Station Training

Air Force and Navy units also have limited opportunities for realistic joint training for air support missions at their home stations, primarily because of various air space and range restrictions.[6] For example, Air Force officials in South Korea said that their pilots experience numerous airspace restrictions near the demilitarized zone separating North and South Korea. Because of such restrictions, the Air Force rarely synchronizes its training with the U.S. Army or South Korean forces. This impedes the Air Force's ability to train all the integrated elements they would need to have in combat. Moreover, Air Force officials told us that because of live ordnance limitations during training, fighter pilots may employ live munitions for the first time in combat, under hostile conditions, and close to friendly forces. Because range limitations often force units to perform air attacks from the same direction and oriented on the same targets, training officials frequently refer to this limited training as "range close air support," which means that it is done in a specific way because of range restrictions rather than as it would be carried out in

[6] Such range limitations have been the subject of related GAO work, including, *Military Training: Limitations Exist Overseas but Are Not Reflected in Readiness Reporting*, GAO-02-525 (Washington, D.C.: Apr. 30, 2002) and *Military Training: DOD Lacks a Comprehensive Plan to Manage Encroachment on Training Ranges*, GAO-02-614 (Washington, D.C.: June 11, 2002).

actual combat. In short, the training is not realistic, and its value is diminished because trainees become familiar with the terrain and target. The following are other additional examples of restricted training environments:

- The Fort Bragg, North Carolina, range used by the 23rd Fighter Group has altitude and laser restrictions and prohibits the use of tactical rockets. As a result, close air support cannot be realistically practiced.

- The ground controllers from the 25th Air Support Operations Squadron in Hawaii are not able to maintain their currency requirements[7] at their home stations because there are no close air support aircraft available to train them; thus, they must return to the mainland periodically to train.

- Airspace restrictions in Germany force A-10 pilots from the 81st Fighter Squadron to train at altitudes of 17,000 to 20,000 feet rather than 5,000 feet, where the A-10was designed to operate.

- About 10 percent of last year's planned close air support missions for the 31st Fighter Wing in Italy were executed. In addition, the squadron does not have a range where close air support can be undertaken with a ground controller or where units can train at night.

Likewise, home station training for Navy pilots is limited not only because of range restrictions but also because of the Navy's 18-month deployment cycles. Before they are deployed, Navy pilots are sent to the Naval Strike Air Warfare Center at Fallon Naval Air Station, Nevada, for 4 weeks of training. The proficiency pilots gain at Fallon, however, erodes during their 18-month deployment cycle because they have access to few ranges, many of which may be inadequate. A second challenge comes after deployment, when the pilots return to their home stations. According to Navy personnel, the pilots' mission skills continue to erode because they have limited access to aircraft and equipment, and they are restricted to using only local ranges for training that they feel is inadequate. Marine

[7] A currency requirement is the frequency with which a skill needs to be practiced during a given period of time.

Corps pilots at units we visited echoed the concerns voiced about range restrictions and the lack of varied training opportunities. For example:

- Dare County Bomb Range, North Carolina, has only a 7-mile range when 30 miles is necessary for the F/A-18 to effectively employ air-to-ground weapons for close air support training.[8]

- One range attached to the Cherry Point Marine Corps Air Station, North Carolina, is not much larger than the Dare County range and is considered inadequate for effective close air support training. Another range near the air station prohibits the use of live ordnance.

While range restrictions curtail realistic home station training opportunities, Air Force and Marine Corps personnel told us that a close air support simulator device could provide a mechanism to augment live training opportunities. For example, officials said that the development of a ground controller simulated training device, linked to an attack aircraft simulator, would provide valuable training for both controllers and pilots. DOD recognizes that simulators can enhance the planning, preparation, and training for close air support. According to its capstone requirements document, simulators enable units to practice the communication and coordination procedures associated with the close air support mission when constraints prohibit live-fire training. However, the United States does not currently own any close air support simulated training devices.[9] In Europe, the Air Force has arranged to lease simulator time from the Dutch military. We visited the training facility in the Netherlands and observed controllers using the device to practice simulated close air support missions. Both Dutch and U.S. officials believe such a simulator provides the capability to train close air support effectively in a safe environment.

Inconsistent Controller Training Hampers Joint Operations

The individual services and the special operations communities do not use common certification or currency requirements to train their aircraft controllers. For initial certification, the Air Force, Navy, and Marine Corps operate formal schools that have curriculums based on the individual

[8] The 30-mile standard is documented in the Navy's Top Gun manual, Volume IV – Employment/Tactics, May 2002.

[9] After completion of our audit work, Air Force officials indicated that they have incorporated extremely limited simulated close air support training devices in their Joint Firepower Course.

services' interpretation of DOD's Joint Publication 3-09.3, *Joint Tactics Techniques and Procedures for Close Air Support* (1995). Overall, this initial instruction is fairly common among the schools, and the Navy and Marine Corps schools have the same requirements. The Air Force and the Navy/Marine Corps curriculums cover such topics as intelligence, equipment operation, integration of close air support with other fires, and battle damage assessments. However, the time devoted to each topic, as well as the specific instructional material presented, varies among the services. Two notable differences exist in initial certification requirements between the Navy/Marine Corps and the Air Force programs. The Navy/Marine Corps program requires its controllers to practice close air support with a variety of aircraft, including helicopters. The Air Force does not require helicopter practice because it does not have combat helicopters in its conventional force, and the Army does not use its helicopters in a close air support role. A second difference is that the Navy/Marine Corps requires its controllers to practice coordinating live indirect fire support, such as artillery. The Air Force does not require practice with live artillery for its initial certification. Usually, the Army coordinates the use of indirect fires on the battlefield. The controller certification debate is further complicated by the fact that NATO certification requirements are more demanding and comprehensive in some areas than those for U.S. personnel. For example, NATO standards require controllers to have 12 successful low-level controls, controlling close air support attacking aircraft at altitudes below 500 feet, to be qualified. No such standard exists for U.S. controllers.

Once schooling is complete and controllers are sent back to their units, they are required to maintain a level of proficiency throughout the year. These annual currency requirements vary by service. (See table 1.) For example, the Marine Corps and Air Force require controllers to practice 12 times a year to remain current, while NATO controllers need 24 practices.

Table 1. Number of Practices Required Annually by Ground Controllers to Maintain Currency

	Total number of practices	Number of daylight practices	Number of nighttime practices
Marine Corps	12	8	4
Air Force	12	10	2
NATO	24	20	4

Source: DOD and NATO.

Note: GAO analysis of DOD and NATO training publications.[10]

Likewise, currency requirements for controllers in the special operations community differ among the Air Force, Navy, and Army because they are required to meet their service-directed requirements. Special operations controllers receive their initial certification by attending one of the service schools. However, the services have different requirements for maintaining their controllers' status. In fact, only Air Force special operations controllers have a specific annual currency requirement to maintain. Because of this situation, some personnel we interviewed told us that during operations in Afghanistan, ground commanders were hesitant to have non-Air Force personnel directing close air support missions, and, in most cases, asked to have Air Force ground controllers attached to their special operations teams. In addition, it was not clear how recently non-Air Force special operations controllers had practiced this skill, adding to the ground commanders' reluctance to use them.

In interviews, controllers from conventional forces told us that while they have currency standards to maintain, it is difficult to meet them. According to Air Force officials, 50 percent of the assigned Air Force ground controllers in Europe are not current in nighttime or live ordnance controls. One contributing factor is that Air Force pilots can meet all of their close air support training requirements using an airborne controller, thus negating the need to provide air support for ground controller training. For example, according to personnel from the 81st Fighter Squadron in Germany, less than 20 percent of their close air support

[10] The publications are as follows: Marine Corps order P3500.37, Aviation Training and Readiness Manual vol. 9 Tactical Air Control Party Officer, dated May 8, 2001; Air Force Instruction 13-102, Air Support Operations Center and Tactical Air Control Party Training and Evaluation Procedures, dated September 1, 1996; Minimum Qualifications for Forward Air Controllers, North Atlantic Treaty Organization Standardization Agreement #3797, dated February 26, 1979.

training sorties involve the use of a ground controller. Recognizing this shortage, Air Force officials have requested funding for a simulator to help train their ground controllers stationed in Europe.

Beyond certification and currency standards, some stark differences exist in the procedures that U.S. and NATO forces use to pass target information from ground controllers to attacking aircraft. U.S. controllers are trained to use a standardized 9-linebriefing format, while NATO troops use a 15-line briefing. This lack of commonality creates a potentially hazardous battlefield situation in operations involving U.S. military allies.

Some Services Give Low Priority to Joint Close Air Support Training

One of the primary reasons the services do not provide the training needed to adequately prepare U.S. forces to plan and execute the joint close air support missions is the low priority they give to this mission in comparison with other training requirements. This lack of emphasis is apparent in operational doctrine, school instruction, and the number of pilot sorties devoted to close air support, all of which prevent aircrews and controllers from developing their mission skills.

The Air Force has historically not placed a high priority on close air support in its doctrine. Service officials we interviewed stated that the Air Force tends to emphasize air-to-air and deep attack missions over close air support. In our review of Air Force doctrine, we found that the Air Force prioritizes air superiority, strategic attack, and air interdiction missions because it views such missions as a more effective and efficient use of its resources. While officials indicated that the Air Force would provide joint close air support when it was needed to support ground troops, they said that it is more efficient to use the aircraft to attack enemies before they come in contact with friendly forces.

Key Air Force and Navy pilot training schools also give a low priority to close air support training in their curriculums. At the Air Force weapons school, for example, only 13 percent of the F-16's flight syllabus is devoted to this mission. Moreover, for pilots of the A-10—an aircraft primarily designed to perform close air support—only 31 percent of Weapons School training sorties were for the mission. At the Navy's air warfare center, pilots receive 8 days of close air support training during their 4-week course. However, because of the number of pilots attending the course, the 8 days devoted to close air support only allow aircrews to fly two close air support missions.

Furthermore, some Air Force unit training programs place low emphasis on this mission. According to the Air Force, active duty F-16 squadrons

stationed in the United States devote only about 5 percent of their training sorties to close air support. In addition, an Air Force official in Europe stated that less than 10 percent of his F-16 squadron's training program is devoted to close air support, while 50 percent is for air-to-air missions. Given the difficult nature of the mission, many pilots believe that this level of training is not sufficient to develop adequate mission skills.

According to DOD's task force, the lack of integration between the Army's fire support elements and the Air Force's ground controller personnel is the top problem facing joint close air support training. Such poor integration is primarily the result of the services' low emphasis on joint training for this mission. We confirmed this conclusion during our visits to various units. For example, Army commanders have been trained to use direct and indirect fire, with joint close air support being used as a last resort. Joint close air support is only one of a myriad of support options available to ground force commanders that must be trained. Army units rarely integrate close air support into training exercises outside the training centers and, as a result, joint close air support integration training is often unrealistic. In addition, the Air Force's selection of air liaison officers, who provide ground commanders with expertise on the employment of joint close air support, shows a lack of Air Force commitment and has added to the lack of confidence on the part of the Army and the ground controllers. Both Army and Air Force personnel at several locations we visited raised concerns that this position has not been considered a career-enhancing position. These officers not only do not get a chance to fly but they also have to live in the "dirt" with Army forces during various maneuvers. According to personnel, the best personnel, or even those with extensive close air support training, have not filled this position. However, according to Air Force officials in Europe, beginning in 2000 the service implemented a change that elevates the selection of candidates for this position to the same level as picking candidates for flying and operational squadron support commands for their theater. This should produce higher-quality candidates for the position.

The Marine Corps emphasizes close air support in its training and considers integrating aviation with other supporting fires as a critical element because it lacks the amount of artillery available to Army commanders. However, Marine Corps training is usually limited to practicing close air support with its own air assets supporting its own ground forces. The Marines do not emphasize training these skills with other services. We found that the Marines rarely conduct joint training for this mission, which limits their ability to integrate on the battlefield when they are called upon to perform this mission with others. According to an

internal Operation Enduring Freedom after-action report, investigators found that Marine Corps ground controllers require more extensive joint training opportunities, particularly for controlling air support in joint operations.

DOD is Making Efforts to Resolve Training Deficiencies

Even before the extensive use of close air support in Afghanistan highlighted the potential dangers inherent in this mission, DOD had acknowledged that action was needed to improve its effectiveness. In an internal assessment, DOD concluded that current capabilities do not meet all present or projected needs and that the joint community faces a substantial challenge in attaining the new levels of capabilities required to support emerging war fighting concepts.[11]

In January 2000, the Joint Requirements Oversight Council chartered an executive steering committee to identify shortfalls across the mission area. The steering committee developed a Joint Close Air Support action plan to address a number of training and equipment interoperability issues. The training issues include such items as increasing joint training exercises; establishing joint integrated training plans; and creating a "joint terminal attack controller" with standardized certifications, which DOD says will improve joint operations and reduce the potential for accidents and fratricides. However, none of the action item target dates for completion were met on time. In fact, only 3 of the 15 action items have been completed to date, and the remaining 12 issues have rolled over into the updated 2003 plan. The complete list of issues contained in the action plan is included in appendix IV.

According to service personnel we interviewed, progress on resolving the training issues has been slow because of the joint nature of the mission. Getting agreement across the services is difficult because there are fundamental differences in how the individual services employ close air support. Moreover, no joint organization is responsible for overseeing the training and equipping of the mission. Individual service and joint staff representatives expressed frustration with the executive steering committee's inability to resolve the action items. The services have not been able to agree on several of them. For example, the services disagree on what to include in the joint terminal attack controller certification. The committee does not have the authority to require individual services to

[11] *Capstone Requirements Document for Close Air Support*, JROCM 067-02, May 6, 2002.

train jointly or to compromise by developing common training standards for their controllers. In October 2002, DOD changed the responsibility for chairing the Joint Close Air Support Executive Steering Committee to Joint Forces Command. Previously, the committee had been cochaired by the Air Force and the Marine Corps. According to DOD officials, this action was undertaken, at least in part, in hopes of resolving the interservice issues. At Joint Forces Command, the Joint Requirements and Integration Directorate (J8) serves as the lead joint integration expert, ensuring that the various services and defense agencies combine their capabilities into a single successful effort.

DOD has acknowledged that such deficiencies in joint training are not limited to the close air support mission. In March 2002, DOD announced a plan for transforming all of its training programs. This plan emphasizes the need to provide comprehensive and systematic joint training focused on the operational requirements of the combatant commanders. Furthermore, it acknowledges a need for increasing the use of live and virtual training in its training environment. According to DOD, a Joint National Training Capability would be established to provide training that is less service-focused and more reflective of how U.S. forces actually fight today. The first training event is scheduled for May 2003 and will focus on Army maneuver forces at Fort Irwin, California; however, the event will also include supporting forces at several locations across the United States.

Lack of Equipment Interoperability and Coordinated Purchases Hampers Effectiveness of Close Air Support Mission Programs

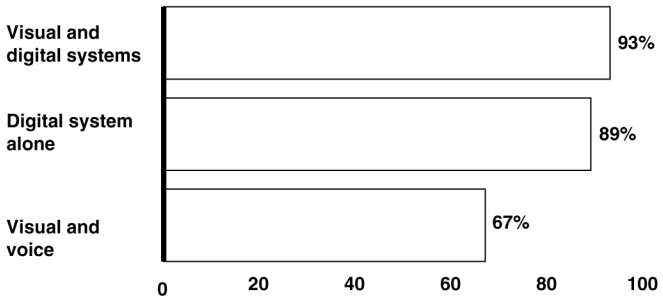
The military services have not yet achieved DOD's goals for ensuring that equipment acquired for close air support missions is interoperable and cost-effective. The digital transmission systems that the services procured to transmit information instantly between airborne and ground personnel are not interoperable across the services, and a common capability is not expected to be fielded until 2007. The lack of interoperability does not allow participants to take advantage of the increased effectiveness that digital transmissions add to the mission. In addition, the services' independent purchases of different kinds of ground-targeting equipment have precluded them from achieving potential cost savings from joint purchases.

Current Digital Transmission Systems Are Not Interoperable across the Services

Advanced technological systems that allow ground and air forces to transmit battlefield information digitally can greatly improve the effectiveness and timeliness of close air support missions. These systems are designed to allow a ground controller to input the information needed for a ground attack into a computer and transmit this information instantly

to a computer on board an aircraft. The use of digital communication has a number of advantages over visual or voice communication. Digital transmissions speed up the execution of a mission and can reduce transcription errors between the controllers and the pilots of attack aircraft. For example, Marine Corps officials told us that the amount of time required for transmitting and verifying coordinates could be reduced from about 7 minutes (the time needed for voice communication) to less than 1 minute for digital communication. Digital transmissions can also enhance the effectiveness of a mission during darkness, in inclement weather, or under other conditions when the ground controller may not be in position to observe the aircraft. In addition, digital transmission systems can transmit more detailed information, thereby improving the "situational awareness" of both ground and air forces. For example, digital systems can provide the ground controller's mission computer with detailed and constantly updated battlefield information, including the position of the attack aircraft, verification of target acquisition, and the location of friendly forces. According to tests performed at the Army's National Training Center during February 2002, the use of digitally transmitted communication significantly improved mission performance. As figure 3 shows, this equipment allowed ground controllers to provide the correct attack decision more often (89 to 93 percent of the time) than when they relied on only what they could see and communicate by voice to the attack aircraft (correct 67 percent of the time).

Figure 3. Percentage of Correct Attack Decisions for Combined Visual and Digital Systems, Digital Systems Alone, and Visual and Voice Communication



Source: Office of the Secretary of Defense.

Digital transmission systems are currently available on only four types of aircraft. The Air Force has installed this equipment on less than three-quarters of its active-duty F-16 fighter aircraft[12] and has procured a limited number of portable systems for its B-52 bombers. The Marine Corps has installed similar equipment on roughly 95 percent of its AV-8Bs and on about 20 percent of its F/A-18s. Because of the limited number of aircraft with this equipment, ground controllers told us that they have had few opportunities to transmit information digitally to attack aircraft. Even when digital transmission equipment is available on board an aircraft, it may be incompatible with the equipment that is on the ground because the services use different systems. This lack of interoperability across the services reduces the equipment's effectiveness and limits its usefulness. Some ground controllers told us that they would hesitate to bring this equipment to the battlefield because they would not be able to control attack aircraft from another service. Figure 4 shows that only one (the AV-8B) of six aircraft that currently perform the close air support mission is fully capable of receiving digital transmissions from its own service controllers. However, none is capable of receiving such transmissions across service lines.

Figure 4: Digital Transmission Capabilities between Ground Controllers and Selected Aircraft

	B-1	B-52	A-10	F-16	F/A-18	AV-8B
Air Force Ground Controllers	○	◍	○	◍	○	○
Marine Corps Ground Controllers	○	○	○	○	◍	●

● Yes
○ No
◍ Partial

Source: GAO.

Note: GAO analysis of DOD data.

[12] In addition to the active duty Air Force effort to enhance digital transmission capabilities, the Air Force Reserve and Air National Guard have developed the Situational Awareness Data Link. However, primarily only Air Force Reserve and Air National Guard F-16s are equipped with this system.

Given the uncertainties surrounding equipment interoperability, ground troops and aircrews may have to resort to using multiple means of communication. In Afghanistan during Operation Enduring Freedom, for example, the primary means of passing targeting information from controllers to attack aircraft was by voice communication. Service personnel who took part in these operations stated that the use of multiple modes of communication was a cause of confusion on the battlefield.

Recognizing that it needs to improve the interoperability of digital transmission systems, DOD has developed a plan for the services to field an interoperable system by 2007. This system, commonly called "Link 16," would provide an integrated air and ground display of friendly and enemy battlefield positions. Link 16, as it is currently fielded, is limited to air-to-air missions, but DOD plans to expand its capabilities to include the air-to-ground mission. In the interim, the Air Force and Marine Corps are seeking ways to improve the interoperability of their current systems by developing common software applications. However, these efforts are in a preliminary stage and, according to DOD officials, it will be at least 2004 before the interim solutions are in place.

Services' Fielding of Multiple Ground-Targeting Systems Do Not Take Advantage of Possible Cost Savings

The services are independently procuring a wide variety of different ground-targeting systems to improve their execution of close air support missions. However, these service-specific purchases have not taken advantage of the benefits of buying common equipment that could reduce overall program costs.

The services are procuring new ground-targeting equipment to improve their ability to undertake close air support missions during night operations, in adverse weather conditions, and from increasingly higher altitudes. In Afghanistan, for example, U.S. forces delivered precision weapons from medium to high altitudes; this meant that ground controllers had to determine target coordinates with precision in order to maximize mission effectiveness and avoid fratricides. According to DOD officials, recent technological advancements in ground-targeting equipment are providing this needed precision. Figure 5 shows examples of the equipment the services are procuring to enhance ground-targeting capabilities.

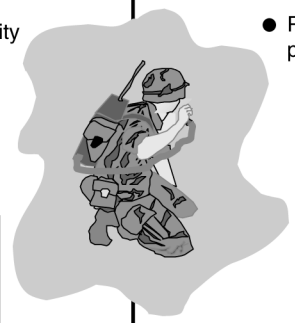
Figure 5: Selected New Ground-Targeting Equipment Procurements

Multi-band radio

- Provides "dismounted" capability for ground communications
- Provides enhanced voice and data communications

Laser rangefinder

- Provides capability to determine precise target coordinates



Laser target designator

- Provides laser designation capabilities to mark targets for precision-guided munitions

Mission computer

- Provides maps and navigation software for improving "situational awareness"
- Interfaces with radios for digital transmission capability

Source: GAO.

Note: GAO generated based on DOD documents.

Each service has established its own program to acquire more advanced systems to enhance the capabilities of its ground-targeting equipment. The Air Force and Marine Corps, for example, have initiated acquisition programs to buy equipment that will more precisely locate targets at all levels of visibility, mark targets for attack by precision weapons, and increase communication connectivity with all battlefield participants. Table 2 provides an overview of the Marine Corps and Air Force programs, which were initiated in 1997 and 1999, respectively.

Table 2: Air Force and Marine Corps Acquisitions Programs for Ground-Targeting Equipment

Dollars in millions

Service	Total program cost	Fiscal year 2004 budget request	Examples of ground-targeting equipment	Program fielding completion date
Marine Corps	$79.6	$29.8	• Laser rangefinder • GPS receiver • Laser target designator • Multiband radio • Mission computer	2005
Air Force	$344	$15.1	• Laser rangefinder • GPS receiver • Multiband radio • Mission computer • Infrared laser	2011

Source: GAO.

Note: GAO analysis of DOD data.

In addition, the Army, Navy, Air Force, and U.S. Special Operations Command have procured technologically advanced ground-targeting equipment for their special operations forces. This equipment was used during Operation Enduring Freedom and, according to after-action reports, it significantly enhanced the ground controllers' ability to identify ground targets for attack aircraft, thereby improving mission effectiveness.

Although this equipment can improve mission effectiveness, because of the lack of joint requirements, the services have fielded multiple types of equipment with similar capabilities. For example, Special Operations Command officials told us that U.S. forces used four different ground-targeting systems in Operation Enduring Freedom. An analysis of the services' procurement plans shows that a variety of similar ground targeting equipment will be fielded. For example, the services have programmed funding to procure at least six different laser rangefinders and four different laser target designators.

DOD has determined that equipment commonality for the mission could reduce overall program costs for the services. The Joint Close Air Support Executive Steering Committee, for example, recommended that the Air Force and Marine Corps identify opportunities for multiservice procurement of ground-targeting equipment to meet joint requirements. U.S. Central Command officials echoed the recommendation that U.S. forces should acquire a common set of ground-targeting equipment and

further emphasized that all forces should be trained in its use and characteristics. However, with the services continuing to pursue individual programs based on service-specific requirements, DOD cannot provide assurances that the services are acquiring the most cost-effective systems.

GAO has previously reported that DOD fails to consider joint solutions and broader mission requirements when proposing systems.[13] While the services conduct considerable analyses in justifying major acquisitions, these analyses can be narrowly focused and may not fully consider alternative solutions, such as joint acquisition of a system with other services. As a result, there is no assurance that DOD and the services are avoiding costly duplication of systems, investing in the most cost-effective and affordable solutions, and optimizing mission performance. Furthermore, because the services plan, acquire, and operate systems to meet their own operational concepts, not necessarily the requirements of joint operations, there is no guarantee that fielded systems will operate together effectively. A joint acquisition strategy, based on broader mission requirements, would provide assurances that the services are acquiring systems that are cost-effective and function together during joint operations.

Conclusions

DOD needs to provide better and more realistic training to prepare U.S. forces for joint close air support operations. With forces growing lighter, ground commanders may need to rely more heavily on close air support. Even a small mistake in conducting this mission can be deadly to friendly forces, a tragedy we witnessed in Afghanistan. While ineffective training is the fundamental problem facing close air support, technological advancements hold promise for enhancing battlefield information. However, the services have pursued solutions to meet their individual needs, and it will be years before DOD takes advantage of the enhancements on a wide scale. As a result, the services are spending millions of dollars on uncoordinated efforts to obtain equipment, and different types of systems are proliferating in the field.

DOD's efforts to improve close air support training have met with limited success. DOD's Joint Close Air Support action plan has hit several roadblocks—primarily because the services have been unable to agree on

[13] U.S. General Accounting Office, *Major Management Challenges and Program Risks, Department of Defense.* GAO-03-98 (Washington, D.C.: January 2003).

joint solutions. Thus, the solutions to long-standing problems will likely have to come from an organization such as the Joint Forces Command. DOD and the services understand the issues, but a strong commitment from senior leadership may help to implement pending action items and address lingering problems. Such problems may also be indicative of larger-scale training concerns in the department. DOD recognizes that significant challenges exist in delivering realistic joint training to prepare forces for a wide range of missions, not just close air support. DOD's plans to create a Joint National Training Capability could ultimately provide a venue for better joint training. Such training is certainly needed to prepare U.S. troops to conduct close air support missions.

Recommendations for Executive Action

To resolve the lingering training and equipment close air support issues, we recommend that the Secretary of Defense give close air support priority when implementing the department's training transformation initiatives. Specifically, we recommend that the Secretary provide the Commander of the Joint Forces Command with the authority and resources, if necessary, to resolve the issues identified in the joint close air support action plan. The Command's actions should include

- emphasizing close air support as part of the department's new Joint National Training Capability to ensure that units receive realistic joint training;
- seeking ways to mitigate home station training limitations, including the use of simulation to augment live training; and
- preparing aircraft controllers to perform in a joint environment by standardizing training and certifications.

We further recommend that the Secretary of Defense, through the Joint Forces Command or other appropriate organizational entity, review the services' plans for procuring advanced close air support equipment to ensure that it is interoperable and meets valid joint requirements.

Matters for Congressional Consideration

Because of the long-standing nature of training and equipment issues associated with the joint close air support mission, Congress may wish to consider requiring the Secretary of Defense to report on the progress the department has made toward resolving the identified issues. Congress needs this information to ensure that U.S. forces are adequately prepared to perform the mission and that the department is making cost-effective

decisions in procuring equipment to enhance joint performance on the battlefield.

Agency Comments and Our Evaluation

In written comments on a draft of this report, DOD stated that it concurred with our recommendations and has tasked the U.S. Joint Forces Command with establishing specific completion dates for each of the issues identified in the 2003 Joint Close Air Support Action Plan and to fully implement them in a timely manner. DOD further stated that it would provide a copy of the timetable to GAO by May 30, 2003. DOD's comments are reprinted in their entirety in appendix V.

We are sending copies of this report to the Secretary of Defense, the Secretary of the Army, the Secretary of the Air force, the Secretary of the Navy, the Commandant of the Marine Corps, and the Director, Office of Management and Budget. We will also make copies available to others upon request.

If you have any questions, please call me on (757) 552-8100. Key contributors to this report were John Pendleton, Laura Durland, Vincent Balloon, Nancy Benco, Ray Carroll, Matthew Ullengren, and Lester Ward.

Neal P. Curtin
Director, Defense Capabilities and Management

Appendix I: Scope and Methodology

To determine what efforts the Department of Defense (DOD) and the services have made in providing adequate training for the joint close air support mission, we interviewed officials at all levels of DOD from the Office of the Secretary of Defense, Personnel and Readiness, and unit-level service representatives both within the United States and overseas. Specifically, we met with members of the Joint Close Air Support Executive Steering Committee to document the actions they had been able to accomplish in resolving the training shortcomings listed in their 2001 Joint Close Air Support Action Plan and to identify the reasons for their lack of progress. In addition, we gathered data from each service to determine, from the user's perspective, what barriers were preventing adequate training in close air support. We also obtained the training curriculum from each service's ground controller schools and analyzed these documents, looking for commonalities and inconsistencies. Table 3 lists all of the major units, commands, and training facilities that we visited or contacted to obtain our data.

To determine what efforts DOD has made to enhance the capabilities of the equipment used to support the joint close air support mission, we obtained the services' acquisition strategies for the specific equipment they were procuring to enhance mission effectiveness. We interviewed service personnel and obtained documentation to verify the value these procurements added and to determine any barriers that would limit their effectiveness. Once we determined that no joint requirement existed and that the services were procuring interoperable digital transmission devices and multiple variants of ground-targeting equipment, we obtained documentation on the potential solutions for obtaining interoperable common equipment.

Table 3. Units and Locations Included on This Assignment

Army	U.S. Army Safety Center, Fort Rucker, Ala.
	U.S. Army Aviation Center, Fort Rucker, Ala.
	Combined Arms Center, Fort Leavenworth, Kans.
	Center for Army Lessons Learned, Fort Leavenworth, Kans.
	101st Air Mobile Division, Fort Campbell, Ky.
	U.S. Army Artillery Training Command, Fort Sill, Okla.
	U.S. Army Headquarters Europe, Heidelberg, Germany
	Eighth U.S. Army, Yongsan Post, Republic of Korea
	2nd Infantry Division, Camp Casey, Republic of Korea
	2nd Infantry Division, 1st Brigade, Camp Casey, Republic of Korea
	25th Infantry Division, Schofield Barracks, Hawaii
Air Force	Air Combat Command, Langley Air Force Base, Va.
	U.S. Air Force Reserve Command, Warner-Robbins Air Force Base, Ga.
	U.S. Air Force Doctrine Center, Maxwell Air Force Base, Ala.
	Detachment 1, 334th Training Squadron, Hurlburt Field, Fla.
	23rd Fighter Group, Pope Air Force Base, N.C.
	18th Air Support Operations Group, Pope Air Force Base, N.C.
	19th Air Support Operations Center, Fort Campbell, Ky.
	U.S. Air Force Air Ground Operations School, Nellis Air Force Base, Nev.
	U.S. Air Force Weapons School, Nellis Air Force Base, Nev.
	6th Combat Training Squadron, Nellis Air Force Base, Nev.
	422nd Test and Evaluation Squadron, Nellis Air Force Base, Nev.
	Detachment 1, 28th Test Squadron, Nellis Air Force Base, Nev.
	2nd Operations Support Squadron, Barksdale Air Force Base, La.
	20th Bomber Squadron, Barksdale Air Force Base, La.
	93rd Bomber Squadron (AF Reserve), Barksdale Air Force Base, La.
	96th Bomber Squadron, Barksdale Air Force Base, La.
	548th Combat Training Squadron, Barksdale Air Force Base, La.
	303rd Fighter Squadron (AF Reserve), Whiteman Air Force Base, Mo.
	457th Fighter Squadron (AF Reserve), Naval Air Station Joint Reserve Base, Fort Worth, Tex.
	706th Fighter Squadron (AF Reserve), Joint Reserve Base, New Orleans, La.
	U.S. Air Force Europe, Ramstein Air Base, Germany
	81st Fighter Squadron, Spangdahlem Air Base, Germany
	555th Fighter Squadron, Aviano Air Base, Italy
	32nd Air Ground Operations School, Germany
	4th Air Support Operations Group, Germany
	1st Air Support Operations Squadron, Germany
	2nd Air Support Operations Squadron, Germany

	Headquarter Pacific Air Forces, Hickam Air Force Base, Hawaii
	7th Air Force, Osan Air Base, Republic of Korea
	51st Operations Support Squadron, Osan Air Base, Republic of Korea
	51st Fighter Wing, Osan Air Base, Republic of Korea
	25th Air Support Operations Squadron, Hickam Air Force Base, Hawaii
Navy	Naval Strike and Air Warfare Center, Naval Air Station Fallon, Nev.
	U.S. Naval Safety Center, Naval Air Reserve, Norfolk, Va.
	Naval Air Forces-Atlantic Fleet, Naval Air Station Norfolk, Va.
	Strike Fighter Wings Atlantic, Oceana Naval Air Station, Va.
	VFA-136, Naval Air Station Oceana, Va.
	VF-211, Naval Air Station Oceana, Va.
	Expeditionary Warfare Training Group Pacific, Naval Amphibious Base, Coronado, Calif.
	U.S. Navy Europe, London, England
Marine Corps	Marine Corps, Aviation Plans, Policy, and Budget Branch, Washington, D.C.
	Marine Corps, Plans, Policy, and Operations Department, Washington, D.C.
	Marine Corps Combat Development Command, Quantico, Va.
	Marine Corps Systems Command, Quantico, Va.
	Marine Corps Warfighting Lab, Quantico, Va.
	Marine Air Ground Task Force Training Command, Twenty-nine Palms, Calif.
	Marine Aviation Weapons and Tactics Squadron-One, Yuma Marine Corps Air Station, Ariz.
	2nd Marine Division, Camp Lejeune, N.C.
	2nd Marine Expeditionary Force, Camp Lejeune, N.C.
	Marine Air Group 14, Cherry Point Marine Corps Air Station, N.C.
	Marine Air Group 29, New River Marine Corps Air Station, N.C.
	Marine Air Group 31, Beaufort Marine Corps Air Station, S.C.
	Marine Forces Pacific Command, Hawaii
Special Operations	U.S. Army Special Operations Command, Fort Bragg, N.C.
	3rd Special Forces Group, Fort Bragg, N.C.
	5th Special Forces Group, Fort Campbell, Ky.
	720th Special Tactics Group, Hurlburt Field, Fla.
	19th Special Operations Squadron, Hurlburt Field, Fla.
	U.S. Special Operations Command, MacDill Air Force Base, Fla.
	U.S. Air Force Special Operations Command, Hurlburt Field, Fla.
Joint Organizations	Joint Combat Identification Evaluation Team, Eglin Air Force Base, Fla.
	Joint Close Air Support Joint Test & Evaluation Task Force, Eglin Air Force Base, Fla.
	The Office of the Secretary of Defense, Readiness and Training, Washington, D.C.

	The Joint Staff, Force Structure, Resources, and Assessments, Washington, D.C.
	U.S. Central Command, MacDill Air Force Base, Fla.
	U.S. Forces Korea, Seoul, Korea
	U.S. Joint Forces Command, Norfolk, Va.
	U.S. Pacific Command, Hawaii
Netherlands	Royal Netherlands Army Combat Maneuver Training Center, Netherlands

Source: DOD.

We conducted our review from April 2002 through March 2003 in accordance with generally accepted government auditing standards.

Appendix II: Examples of DOD Aircraft that Perform Close Air Support

The services use many different aircraft to deliver close air support. Table 4 provides pictures and brief descriptions of these aircraft.

Table 4: Close Air Support Aircraft

	The A/OA-10 primarily serves as a close air support attack and forward air control platform. It is a single seat aircraft flown by the Air Force, Air Force Reserve and Air National Guard.
	The F-16 is a multirole aircraft that performs close air support. The aircraft has single seat and dual seat variants and is flown by aircrews from the Air Force, Air Force Reserve, and Air National Guard.
	The F-15E is a dual-role fighter aircraft. It primarily performs air-to-air and interdiction missions; however, in recent operations in Afghanistan it conducted close air support. The aircraft has a crew of two and is flown by the Air Force.
	The B-52 is a multirole, long-range heavy bomber. Flown by aircrews from the Air Force and the Air Force Reserve, the platform performed close air support in Vietnam and in recent operations in Afghanistan.
	The AC-130 gunship supports special operations forces by providing close air support, air interdiction and force protection. The Air Force Special Operations Command flies the AC-130.
	The AV-8B is a single seat attack aircraft flown by the Marine Corps. Its design enables the aircraft to take off vertically or on short surfaces. Its primary mission is close air support.

Table 4: Continued

	The F/A-18 is a multirole aircraft that performs close air support. Flown by both the Navy and the Marine Corps, the F/A-18 has both single seat and dual seat variants.
	The AH-1W is a dual-seat attack helicopter flown by the Marine Corps. Among its roles, the helicopter provides close air support to Marine Corps landing forces.
	The F-14 is a carrier-based multirole fighter. Its primary missions include fleet air defense and precision strike against ground targets. The F-14 has a crew of two and is flown by the Navy.

Source: DOD.

Appendix III: Joint Close Air Support Training and Friendly Fire Accidents

DOD and the services identified three close air support training mishaps that resulted in fatalities since the Persian Gulf War and three official joint close air support friendly fire events. Friendly fire is a circumstance in which members of a U.S. or friendly military force are mistakenly or accidentally killed or injured in action taken by U.S. or friendly forces actively engaged with an enemy or who are directing fire at a hostile force or what is thought to be a hostile force. According to DOD personnel and the conclusions reached in the investigations, these incidents have been caused by human error, by not following established standardized procedures, and by lack of experience and training. Two well-known events did not meet our criteria and are thus excluded. The April 17, 2002, incident where an Air National Guard F-16 bombed Canadian troops did not involve air support of ground forces, so it was not close air support. Secondly, the July 1, 2002, "wedding party" incident in which civilians were killed and injured is not by definition a friendly fire incident. Table 5 contains a description of the close air support friendly fire and training incidents and the status of the investigations.

Table 5. Training and Friendly Fire Incidents since the Persian Gulf War

Date	Location	Description of incident	Who was hurt	Status of incident report
Training Incidents				
July 18, 1995	Fort Sill, Oklahoma	An Air Force Reserve A-10 aircraft dropped a 500-pound bomb on a forward observation post.	One person was killed and 13 others injured.	Complete
April 19, 1999	Atlantic Fleet Weapons Training Facility, Vieques Island, Puerto Rico	A Marine FA-18C dropped two 500-pound bombs that impacted outside the live impact area but within the confines of the range.	One person was killed and 4 others injured.	Complete
March 12, 2001	Udairi Range, Kuwait	A Navy F/A-18C dropped three 500-pound bombs on an observation post during a night exercise.	Six people were killed and 11 others injured.	Complete
Friendly Fire Incidents				
November 26, 2001	Mazar-e Sharif, Afghanistan	A Navy F/A-18 aircraft dropped a joint direct attack munition that exploded near friendly forces.	No fatalities and 5 others injured.	Ongoing
December 5, 2001	Afghanistan	A B-52 bomber dropped a joint direct attack munition that exploded near friendly forces.	Three people were killed and 19 others injured.	Complete
March 2, 2002	Terghul Ghar, Afghanistan	During Operation Anaconda, an AC-130 engaged coalition forces, mistaking them for the enemy.	One person was killed and 3 others injured.	Complete

Source: DOD.

Appendix IV: 2001 Joint Close Air Support Action Plan

The 2001 Joint Close Air Support Action Plan contained 15 action items. All of the items originally had completion dates tasked within fiscal year 2002. However, 12 of them have not yet been completed, and the executive steering committee has recommended that they transition into the updated 2003 action plan. Table 6 lists the action items for 2001, their original estimated completion dates, and whether the action item has been completed.

Table 6. Status of Fiscal Year 2001 Action Items

Action items	Original date for completion	Completed
Standardize ground controller training.	Jan. 2002	
Standardize airborne controller training.	Mar. 2002	
Expand air liaison officer course.	Dec. 2001	
Expand fire support element curriculum.	Jan. 2002	
Produce joint mission essential task lists.	Feb. 2002	
Establish joint integrated training plans.	Jan. 2002	
Increase use of simulated training.	Jan. 2002	
Increase joint exercises.	Feb. 2002	
Include new concepts in joint publication 3-09.3.	Periodic	Yes
Update service tactic techniques and procedures to reflect joint publication 3-09.3 revisions.	Sep. 2002	
Develop new concepts experiments to validate systems and procedures.	Feb. 2002	
Publish a capstone requirements document.	Aug. 2002	Yes
Explore joint Air Force-Marine Corps ground controller equipment procurement.	May. 2002	
Standardize symbols and graphics.	Apr. 2002	
Coordinate with Combat Identification action plan team on overlapping issues.	Apr. 2002	Yes

Source: GAO.

Note: GAO analysis of DOD data.

In addition to the 12 remaining items, of which 2 have been combined, the executive steering committee has proposed adding 3 new items to the updated plan. These are the inclusion of unmanned aerial vehicles in joint close air support operations, an increased emphasis on precision targeting, and an increase in live sortie and artillery resources.

Appendix V: Comments from the Department of Defense

OFFICE OF THE UNDER SECRETARY OF DEFENSE
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WASHINGTON, D.C. 20301-4000

PERSONNEL AND READINESS

March 31, 2003

Mr. Neal P. Curtin
Director
Defense Capabilities and Management
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Curtin,

This is the Department of Defense (DoD) response to the GAO draft report, GAO-03-505, 'MILITARY READINESS: Lingering Training and Equipment Issues Hamper Air Support of Ground Forces', dated March 10, 2003 (GAO Code 350192). The Department appreciates the opportunity to comment on the recommendations contained in the report.

The Department concurs with the recommendations and is in the process of establishing specific completion dates for each of the issues identified in the 2003 Joint Close Air Support Action Plan. We will provide a copy of this timetable by May 30, 2003.

Paul W. Mayberry
Deputy Under Secretary of Defense
Readiness

Enclosures: a/s

GAO CODE 350192/GAO-03-505

"MILITARY READINESS: LINGERING TRAINING AND EQUIPMENT ISSUES HAMPER AIR SUPPORT OF GROUND FORCES"

DEPARTMENT OF DEFENSE COMMENTS ON THE RECOMMENDATIONS

RECOMMENDATION 1: The GAO recommended that the Secretary of Defense give close air support priority when implementing the Department's training transformation initiatives. (Page 26/Draft Report).

DoD RESPONSE: Concur. The Office of the Secretary of Defense will work closely with U.S. Joint Forces Command to fully implement the JCAS Action Plan in a timely manner and ensure that JCAS will be a priority joint tactical task in JNTC events.

RECOMMENDATION 2: The GAO recommended that the Secretary of Defense provide the Commander of the Joint Forces Command with the authority and resources, if necessary to resolve the issues identified in the joint close air support action plan. (Page 26/Draft Report).

DoD RESPONSE: Concur. As the lead agent for the JCAS Action Plan, U.S. Joint Force Command makes recommendations to the Services regarding JCAS and facilitates issue resolution. The Department is exploring alternatives to provide the necessary authority to direct the Department's efforts to improve joint close air support.

RECOMMENDATION 3: The GAO recommended that the Commander of the Joint Forces Command take action to resolve the issues identified in the joint close air support action plan that includes emphasizing close air support as part of the Department's new Joint National Training Capability to ensure that units receive realistic joint training. (Page 26/Draft Report).

DoD RESPONSE: Concur. U.S. Joint Forces Command, as the Chair of the JCAS Executive Steering Committee, will develop an implementation schedule for all issues detailed in the JCAS Action Plan to ensure timely completion of those issues.

RECOMMENDATION 4: The GAO recommended that the Commander of the Joint Forces Command take action to resolve the issues identified in the joint close air support action plan that includes seeking ways to mitigate home station training limitations, including the use of simulation to augment live training. (Page 26/Draft Report).

DoD RESPONSE: Concur. The JCAS Action Plan includes issues on training plans, live sortie/artillery resource plans, joint CAS exercises, and training simulation support, all of which specifically address ways to mitigate home station training limitations. These issues, as all the issues in the Action Plan, will be assigned completion dates in order to ensure timely implementation.

RECOMMENDATION 5: The GAO recommended that the Commander of the Joint Forces Command take action to resolve the issues identified in the joint close air support action plan that includes preparing aircraft controllers to perform in a joint environment by standardizing training and certifications. (Page 26/Draft Report).

DOD RESPONSE: Concur. Standardized procedures for Joint Terminal Attack Controller (JTAC), will be established in the soon to be published Joint Publication 3-09.3 (Joint Tactics, Techniques and Procedures (JTTP) for Close Air Support). The 2003 JCAS Action Plan specifically addresses JTAC standardization of training and certification. A JTAC Working Group has developed recommendations for JTAC certification and currency requirements for the JTAC.

RECOMMENDATION 6: The GAO recommended that the Secretary of Defense, through the Joint forces Command or other appropriate organizational entity, review the Services' plans for procuring advanced close air support equipment to ensure that it is interoperable and meets valid joint requirements. (Page 26/Draft Report).

DoD RESPONSE: Concur. U.S. Joint Forces Command is the lead organization for the Close Air Support Capstone Requirements Document (CAS CRD). USJFCOM will conduct a gap analysis between the JCAS Integrated Architecture, Service CAS Operational Requirements Documents, and the CAS CRD. This gap analysis will identify equipment capability and interoperability issues along with an investment strategy to ensure Service CAS equipment is interoperable and meets valid joint requirements.

GAO CODE 350192/GAO-03-505

"MILITARY READINESS: LINGERING TRAINING AND EQUIPMENT ISSUES HAMPER AIR SUPPORT OF GROUND FORCES"

DEPARTMENT OF DEFENSE COMMENTS ON THE MATTERS FOR CONGRESSIONAL CONSIDERATION

SUGGESTION 1: The GAO suggested that the Congress may wish to consider requiring the Secretary of Defense to report on the progress the Department has made toward resolving the identified issues. The GAO noted that Congress needs this information to ensure that U.S. Forces are adequately prepared to perform the mission and that the Department is making cost-effective decisions in procuring equipment to enhance joint performance on the battlefield. (Page 27/Draft Report)

DOD RESPONSE: To ensure the Action Plan issues are addressed in a timely manner, the Department is in the process of establishing specific completion dates for each of the issues identified in the 2003 JCAS Action Plan. Once these dates are established, U.S. Joint Forces Command will report to the Department their status on a periodic basis.

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