United States General Accounting Office

GAO

Report to the Chairman, Committee on Government Operations, House of Representatives

May 1993

NAVAL AIR OPERATIONS

Interservice Cooperation Needs Direction From Top

149391

157234

GAO/NSIAD-93-141

GAO

United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-252216

May 19, 1993

The Honorable John Conyers, Jr.
Chairman, Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

This report responds to your request that we identify and report on issues significantly affecting naval aircraft performance during Operations Desert Shield and Desert Storm.

As agreed with your office, we focused our efforts on complications introduced by the joint service operating environment and the impact on naval air operations. We examined the difficulties and challenges the Navy and Marine Corps aviation units encountered integrating their combat skills and equipment capabilities with other services, the impact these challenges had on Navy and Marine Corps aircraft operations, and the actions being taken to resolve insufficiencies.

As agreed with your office, we plan no further distribution of this report until 30 days from the issue date, unless you publicly announce its contents earlier. At that time, we will send copies to other appropriate congressional committees; the Secretaries of Defense and the Navy; and the Director, Office of Management and Budget. Copies also may be made available to others upon request.

This report was prepared under the direction of Richard Davis, Director, National Security Analysis, who may be reached at (202) 512-3504, if you or your staff have any questions. Major contributors to this report are listed in appendix II.

Sincerely yours,

Frank C. Conahan

Frank C. Conahan
Assistant Comptroller General

Executive Summary

Purpose

The Chairman, Committee on Government Operations, House of Representatives, asked GAO to identify and report on issues significantly affecting naval aircraft performance during Operations Desert Shield and Desert Storm. Accordingly, GAO focused its efforts on complications introduced by the joint service operating environment and the impact on naval air operations to determine

- the difficulties and challenges Navy and Marine Corps aviation units encountered integrating their combat skills and equipment capabilities with other services,
- the impact these challenges had on Navy and Marine Corps aircraft operations, and
- actions being taken in response to lessons learned.

The Army and the Air Force also encountered problems operating with other services, as acknowledged in lessons learned from the war. For example, most Army aviation units did not have the appropriate equipment to receive airspace management information from the Air Force, and the Air Force initially lacked air refueling procedures to meet the operational needs of naval aircraft. However, given the nature of the congressional request, this report focuses only on the Navy and the Marine Corps.

Background

The massive engagement of U.S. and other coalition forces during Desert Storm revealed management challenges to the successful coordination, integration, and application of the participating Army, Navy, Air Force, Marine Corps, and multinational forces. However, Desert Storm also showed that air, ground, and sea units could fight together against a common enemy given time to prepare and readily available resources. The integration of Navy and Marine forces with other U.S. and coalition forces during the war also validated the importance of joint warfare preparation, as fostered by the Goldwater-Nichols Department of Defense Reorganization Act of 1986. The act streamlined the military chain of command from Washington to the Commander in Chief, U.S. Central Command[1] (CINCCENT), and his subordinate commanders. Departing from past practice, CINCCENT, as a unified commander,[2] controlled operations

[1]The Commander in Chief, U.S. Central Command, also served as the Commander of U.S. Forces and Commander of Western Forces during Desert Storm.

[2]A unified commander is responsible for the performance of missions assigned to a particular unified combatant command. As defined by the Goldwater-Nichols Act, a unified combatant command has broad, continuing missions, and is composed of forces from two or more military departments. Examples of unified combatant commands include the U.S. Central Command, U.S. Pacific Command, and U.S. Atlantic Command.

during Desert Shield and Desert Storm. CINCCENT thus commanded and organized U.S. forces, even exercising control of logistics support and deployment priorities.

Results in Brief

Although general military success was achieved, Desert Storm air operations experienced problems because

- some Navy aviation units were not familiar with the air tasking system and did not receive critical Desert Shield training necessary to familiarize them with it and the other services' tactics, procedures, and weapon capabilities;
- the Navy lacked equipment to receive and transmit aircraft mission orders, which limited its flexibility in organizing and responding to air taskings;
- neither the Navy nor the Marines located their senior officers in Riyadh, Saudi Arabia, to closely coordinate air operations with the other services; and
- the Marines complicated air operations by adding another layer of control over the existing airspace management structure.

These factors hindered the planning and execution of the air campaign, prevented the most effective use of naval forces, and allowed enemy aircraft to escape coalition engagement. Additionally, despite the intent of the air tasking order to prevent friendly aircraft from engaging each other, naval air forces risked doing so when they did not adhere strictly to the air tasking order.

The Navy and Marine Corps' historically independent operating philosophy and strategy prior to Desert Storm limited opportunities to train and operate with other services. Additionally, neither the Chairman of the Joint Chiefs nor his staff played a strong role in ensuring the services operated and trained together before the war.

Since Desert Storm, the Navy and the Marine Corps have taken actions to improve Desert Storm's shortcomings and overall interoperability with the other services. However, they have not established a comprehensive plan to prepare their forces for joint missions. Similarly, the Chairman of the Joint Chiefs has not developed a plan, consistent with his oversight responsibilities, to ensure that services are able to operate together as a smoothly functioning joint team.

Principal Findings

Navy and Marine Corps Had Difficulty Integrating Into Desert Storm's Joint Air Campaign

Navy aviation units operating off four aircraft carriers in the Arabian Gulf did not receive the critical 5-1/2 month Desert Shield training that familiarized Navy aviation units flying from the two aircraft carriers in the Red Sea with other services' tactics, procedures, and weapon capabilities and with the requirements of the tasking system used to assign targets and coordinate aircraft traffic. The lack of familiarity with the system by Arabian Gulf Navy aviation units, and later failure to follow directions, contributed to incidents in which enemy aircraft evaded coalition air engagement. Additionally, naval air forces risked firing on other friendly air forces when they did not adhere strictly to the air tasking order.

The Navy also lacked the shipboard equipment to receive and transmit mission orders. Although the Navy substituted other communication methods, the methods often were not flexible, reliable, or quick enough. And, even though the air campaign was directed from Riyadh, where the Army and the Air Force located their senior commanders, the Navy and the Marine Corps positioned their highest ranking officers with the majority of Navy and Marine forces—at sea and near the Kuwaiti border—making coordination of air operations more difficult.

Moreover, the Marines complicated air operations by adding another layer of control over the existing airspace management structure. The Marines controlled much of the airspace within their area of responsibility during the war, including the air traffic into, within, and out of this airspace. As a result, other coalition aircraft had to coordinate with Marine Corps command and control centers before entering these air zones, a procedure not practiced before in training exercises, to prevent collisions or accidental destruction of friendly aircraft.

Multiservice Operations Were Not a Priority in Naval Training Prior to Desert Storm

The integration difficulties Navy and Marine aviation units encountered during Desert Storm resulted largely from their inexperience operating and training with the other services before the war. For example, the Navy and Marine Corps' tactical training schools generally did not focus on joint operations. Similarly, while the Navy and the Marine Corps gained some experience participating in exercises with other services, they did not participate more extensively due to other operational and budget priorities.

When naval forces did participate in joint exercises, they did not always act on lessons they learned, only to encounter the same problems again in Desert Storm. For example, a 1989 exercise report indicated that the Navy needed to install a computerized force management system, such as an existing Air Force system, on carriers and command ships to send and receive aircraft mission information. Yet, the Navy did not do so, nor did the Joint Staff act to ensure that all services had compatible command and control systems to use in joint exercises and real conflicts. The lack of a compatible force management system during Desert Storm limited naval aviators' flexibility in organizing and responding to aircraft taskings.

Before Desert Storm, U.S. military forces did not always have the chance to practice controversial joint concepts and procedures because the services could not agree on individual service responsibilities. In fact, exercises typically were planned to end before the controversial event occurred and thereby avoid conflict over what each service saw as its appropriate role. Many of these controversial concepts, such as control of airspace above Marine ground forces operating inland, were tested for the first time in Desert Storm.

Additional Efforts and a Coordinated Approach Could Address Joint Operating Deficiencies

The Navy and the Marine Corps have made concerted efforts since the war to improve Desert Storm's joint operations shortcomings and improve overall interoperability with the other services. In addition, the Department of the Navy[3] issued a new naval strategy and policy statements emphasizing the importance of functioning effectively in a joint team environment. Although the new strategy identifies a new direction for naval forces and emphasizes multiservice cooperation, the Navy and the Marine Corps have not established a plan detailing how they will prepare and train to achieve this cooperation, nor appointed a single authority to ensure that interoperability initiatives are implemented consistently throughout the Navy and the Marine Corps.

Despite interoperability improvements, individual naval organizations still determine their own requirements and priorities, and narrow naval interests still prevail over joint concerns in some cases. As a result, naval units are not consistently improving joint training. Some avoid valuable training opportunities that might require additional funding or avoid solutions that might disrupt traditional training cycles.

[3]The term Department of the Navy includes both the Navy and the Marine Corps.

The 1986 Goldwater-Nichols Act gives the Chairman of the Joint Chiefs broad oversight responsibilities concerning all aspects of military operations and joint training; yet, more steps could be taken to improve interoperability consistent with the oversight responsibilities set out in the act. While the Chairman and his staff have taken steps to improve joint training, other efforts are needed to ensure that service interoperability initiatives meet war-fighting requirements and contribute to overall Department of Defense interoperability goals and objectives.

Recommendations

GAO recommends that the Secretary of the Navy develop a comprehensive plan to ensure that naval forces continue recent efforts to improve their ability to operate in a joint team environment. The plan should include (1) joint training goals and objectives specifying how naval forces will fulfill the roles and the missions identified in the new naval strategy, (2) specific steps, time frames, and funding allocations for achieving the Department of the Navy's joint training goals and objectives, and (3) a mechanism for measuring progress made by the Navy and the Marine Corps toward their goals and objectives.

Although this report dealt primarily with naval aviation, GAO recommends that the Secretary of Defense direct the Chairman, Joint Chiefs of Staff, to develop a comprehensive interoperability plan encompassing the forces of all four military services to achieve optimum service integration in training and operations and ensure the linking of air, land, and sea forces from the four services. Additionally, the Chairman should ensure that the services' military capabilities are integrated into an affordable and smoothly functioning team without unwarranted duplication, yet fully supporting the Department of Defense's interoperability goals and budget priorities.

Agency Comments

As requested, GAO did not obtain written agency comments on this report. However, GAO discussed the information in the report with responsible Department of Defense, Navy, and Marine Corps officials and incorporated their comments where appropriate. These officials generally agreed with the information as presented. However, they expressed concern that while our report focuses exclusively on problems the Navy and the Marine Corps experienced operating in the joint environment, the Air Force and the Army also had interoperability problems during the war.

Contents

Executive Summary		2
Chapter 1 Introduction		10
	Validation of Goldwater-Nichols Act	10
	Desert Shield Practice Aided Coalition Victory	11
	U.S. Military Services Operated as a Team During Desert Storm	12
	Objectives, Scope, and Methodology	12
Chapter 2 Integrating Naval Forces Into Desert Storm Air Tasking and Coordination System Was Difficult		15
	Air Force System Used to Manage Air Campaign	15
	Navy Unfamiliar With Air Tasking and Coordination System	16
	Marine Corps Controlled Its Own Air Space	18
	Navy's Participation in Air Tasking Order Process Hampered by Equipment Incompatibilities	18
	Lack of High-Level Naval Representation in Riyadh Affected Participation in Air Campaign	19
Chapter 3 Multiservice Operations Were Not a Priority in Naval Training Prior to Desert Storm		22
	Tactical Training Schools Provided Little or No Exposure to Joint Operations	22
	Numerous Factors Affected Naval Participation in Joint Military Exercises Prior to Desert Storm	23
	Important Joint Concepts and Procedures Often Not Included in Exercises	24
	Naval Forces Did Not Always Act on Past Lessons	25
	Naval Forces Missed Opportunities to Train in Exercises Sponsored by the Air Force	26
	Naval Focus Reflected Independent Operating Philosophy	26
	Joint Chiefs of Staff Had Limited Role in Monitoring Joint Training	27

Chapter 4 Additional Efforts and a Coordinated Approach Could Address Joint Operating Deficiencies

	28
Efforts to Improve Joint Operating Capabilities Lack Strategic Focus	28
Goldwater-Nichols Act Makes Chairman Responsible for Reviewing Force Capabilities	32
Conclusions	33
Recommendations	34

Appendixes

Appendix I: Locations Visited	36
Appendix II: Major Contributors to This Report	37

Tables

Table 2.1: Total Navy, Marine Corps, and Air Force Headquarters Staff in Riyadh During Desert Storm	20
Table 4.1: Naval Personnel Participating in Blue Flag Exercises, Fiscal Years 1989-92	30
Table 4.2: Naval Aircraft Participating in Red and Green Flag Exercises, Fiscal Years 1989-92	31

Figure

Figure 1.1: Chain of Command During Desert Storm	11

Abbreviations

AWACS	Airborne Warning and Control System
GAO	General Accounting Office
CINCCENT	Commander in Chief, U.S. Central Command

Introduction

The teamwork required of deployed air, sea, and ground units during Operation Desert Storm proved that distinctive and somewhat unique military forces can and must operate together to be successful. Thus, Desert Storm both validated the importance of joint[1] warfare preparation, as fostered by the Goldwater-Nichols Department of Defense Reorganization Act of 1986, and demonstrated that separate and somewhat unique military forces can work as a team when given sufficient time and resources. Yet, in spite of the advantageous conditions and the success achieved, Operations Desert Shield and Desert Storm revealed challenges to the effective coordination, integration, and application of unique war-fighting capabilities of participating Army, Air Force, Navy, and Marine Corps forces.

Validation of Goldwater-Nichols Act

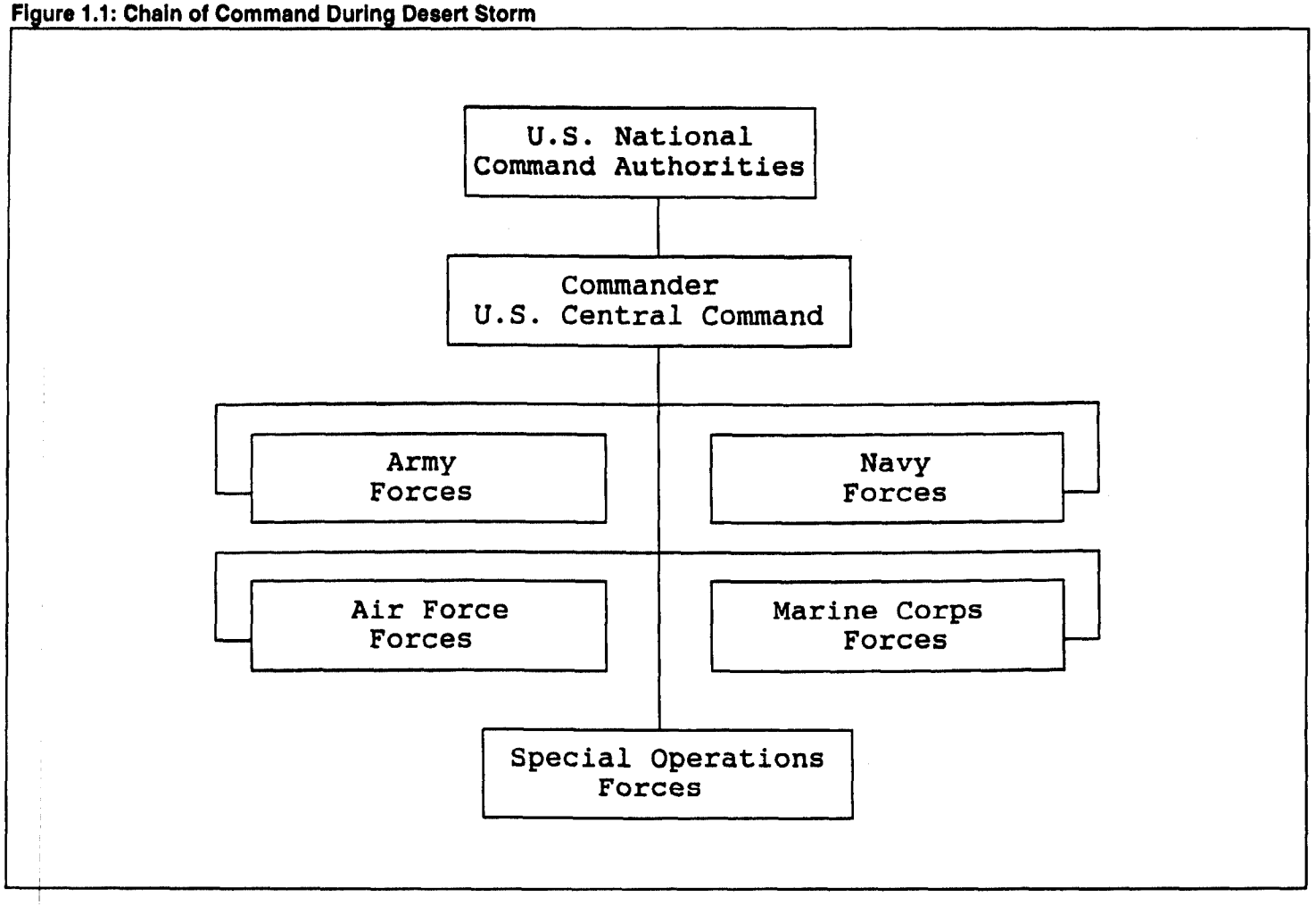
Desert Storm represented the first major wartime test of joint war-fighting as fostered by the Goldwater-Nichols Department of Defense Reorganization Act of 1986. The act streamlined the military chain of command from Washington to the Commander in Chief, U.S. Central Command (CINCCENT) and his subordinate commanders. Departing from past practice, CINCCENT, as a unified commander, controlled operations during Desert Shield and Desert Storm. He commanded and decided how to use the U.S. forces, even exercising control of logistics support and deployment priorities over all the forces.[2] He reported to the National Command Authorities, the President, and the Secretary of Defense, through their principal military adviser, the Chairman, Joint Chiefs of Staff[3] (see fig. 1.1).

[1]For the purpose of this report, the term "joint" refers to the interaction of Army and/or Air Force forces with Navy and/or Marine Corps forces.

[2]As provided by the Goldwater-Nichols Act, unified and specified commanders provide authoritative direction to their subordinate commands and forces on all aspects of military operations, joint training, and logistics. The individual services are responsible for such functions as training and equipping their forces.

[3]As provided by the Goldwater-Nichols Act, the Chairman, Joint Chiefs of Staff, is the principal military adviser to the National Command Authorities and formulates policies for the joint training of the U.S. armed forces.

Figure 1.1: Chain of Command During Desert Storm



Desert Shield Practice Aided Coalition Victory

The availability of time to train in Southwest Asia proved invaluable and contributed to the coalition victory over Iraq. The 5-1/2 month period preceding the war allowed most U.S. forces to move into position, train extensively, and gain experience operating with other coalition forces in preparation for the war.

From August 1990 to the start of the war on January 17, 1991, coalition forces rehearsed almost all aspects of defensive and offensive operations. By mid-October, training had evolved to include multiservice air attack exercises, as well as integrated operations, including artillery firing, chemical and biological defensive drills, and amphibious operations. Navy, Marine Corps, and Air Force strike aircraft, for example, rehearsed the

bombing missions they would perform during Desert Storm. Similarly, aviation units with close air support missions practiced with the ground forces they were expected to protect.

U.S. Military Services Operated as a Team During Desert Storm

The U.S. military services conducted unprecedented joint operations as an integrated team during Desert Storm. The planning and execution of the joint air campaign, in particular, contrasted sharply with earlier individual service U.S. air operations conducted in Vietnam. Desert Storm's integrated, multiservice operations established the effectiveness of coordinating aircraft sorties from each of the military services to achieve a common goal.

Several factors proved critically important to the effectiveness of the air war. The development of a single air campaign plan encompassing all U.S. and coalition fixed-wing aircraft in Southwest Asia played a major part in bringing these forces together as a fighting unit. Likewise, the establishment of a single air component commander who coordinated and allocated theaterwide air operations contributed to a team effort because it prevented repetition of the four separate service air campaigns that characterized U.S. efforts in Vietnam. Similarly, the use of one tasking order to schedule and coordinate some 3,000 missions flown each day by U.S. and coalition aircraft facilitated efforts to employ the unique strengths that each service could contribute to the team effort.

Objectives, Scope, and Methodology

Concerned about the impact Desert Storm had on naval[4] air operations, the Chairman of the House Committee on Government Operations asked us to identify and report on issues significantly affecting naval aircraft performance during the war. We focused our efforts on complications introduced by the joint operating environment and the impact on naval air operations. Our specific objectives were to examine

- the difficulties and challenges naval aviation units encountered integrating their combat skills and equipment capabilities with other services,
- the impact these challenges had on naval aircraft operations, and
- the actions being taken in response to lessons learned.

We reviewed the performance, operations, and training of naval tactical aviation units flying strike, fighter, and support missions during Operations Desert Shield and Desert Storm. We also reviewed naval

[4]For the purpose of this report, the term "naval" refers to both Navy and Marine Corps forces.

forces' post-war efforts to improve their joint war-fighting capabilities and correct joint operating deficiencies identified before and during the war. The Air Force and the Army also experienced problems operating in the joint environment, as acknowledged by lessons learned after the war. However, we did not review the performance, operations, or training of Air Force or Army aviation units during Operations Desert Shield and Desert Storm, since the congressional request focused on Navy and Marine Corps aviation only.

We held discussions with U.S. military officials from the Navy, Marine Corps, Air Force, Joint Chiefs of Staff, unified commands, and multiservice organizations. The naval officials interviewed were involved in doctrine development, operations, and training at service headquarters; fleet air wings and squadrons; and tactical training schools. The officials from the remaining organizations were involved in doctrine development, operations, and training activities with naval organizations.

We reviewed documents from the Navy, the Marine Corps, the Air Force, the Joint Chiefs of Staff, two unified commands, and the Center for Naval Analysis concerning naval participation in operations and training before, during, and after Desert Storm. Documents reviewed included operational assessments, lessons learned, and messages and memorandums indicating naval forces' current and planned efforts to improve joint operating capability. We accepted statistics concerning naval forces' participation in joint training and exercises as reported and did not independently test the data to determine its accuracy or reliability.

Our review was conducted primarily at naval locations and unified command headquarters within the continental United States (see app. I). We contacted by phone any relevant organizations we did not visit, such as the Tactical Training Group Pacific in California; the Air Force's 41st Training Group at Eglin Air Force Base in Florida, which conducts Blue Flag exercises; and the 57th Fighter Weapons Wing at Nellis Air Force Base in Nevada, which conducts Red Flag exercises. Our review was performed from June 1991 to November 1992 in accordance with generally accepted government auditing standards.

As requested, we did not obtain written agency comments on this report. However, we discussed the facts, conclusions, and recommendations in this report with Department of Defense, Navy, and Marine Corps officials responsible for these programs and incorporated their comments where appropriate. These officials generally agreed with the facts as presented,

but they noted that the Air Force and the Army also had interoperability problems during the war, even though our report focuses exclusively on problems the Navy and the Marine Corps experienced operating in the joint environment.

Integrating Naval Forces Into Desert Storm Air Tasking and Coordination System Was Difficult

Desert Storm air operations were made more difficult because of several factors. Some Navy aviation units did not receive critical Desert Shield training necessary to familiarize them with the air tasking system and other services' tactics, procedures, and weapon capabilities. The Marines complicated air operations by adding another layer of control over the existing airspace management structure. Although the predominantly land-based Marines had command and control equipment to receive and transmit mission orders, the Navy did not; thus, its flexibility in organizing and responding to air taskings was limited. Moreover, neither service placed their senior officers in Riyadh, Saudi Arabia, as did the Army and the Air Force, to closely coordinate air operations with the other services. Combined, these factors taxed the planning and execution of the Desert Storm air campaign, prevented naval forces from effectively using their weapons, and sometimes excluded them from high-priority missions. The lack of familiarity with the air tasking system, and thus, the failure to follow directions, allowed enemy aircraft to escape coalition engagement. Additionally, naval air forces risked firing on other friendly air forces when they did not adhere strictly to the air tasking order.

Air Force System Used to Manage Air Campaign

The diversity and number of coalition air forces participating in Desert Storm, as well as the need to control the air traffic congestion generated by some 3,000 daily combat missions, made central coordination of all air assets a necessity. CINCCENT tasked the Commander, U.S. Air Forces Central Command, to serve as the Joint Forces Air Component Commander to manage and control all air operations. The Joint Forces Air Component Commander assembled a staff composed mostly of Air Force officers. Within this structure, Navy, Marine Corps, and Army officers served as liaisons between their aviation units and the Joint Forces Air Component Commander by providing information on their services' aircraft combat capabilities, helping to plan targets to hit, and coordinating aircraft flight routes.

The Joint Forces Air Component Commander and his staff planned, coordinated, allocated, and tasked such efforts as targets to attack, reconnaissance missions, and refueling for coalition aircraft. The Joint Forces Air Component Commander, who was also the U.S. 9th Air Force Commander, relied on many of the 9th Air Force's systems and procedures to manage the air campaign because he was familiar with them and because there were no other approved joint systems and procedures for managing aircraft tasking and control.

Accordingly, the Joint Forces Air Component Commander and his staff used an Air Force combat management tool, the air tasking order, to schedule and coordinate aircraft missions. The order, which ranged from 200 to 800 pages per daily issue, provided information to air combat commanders on targets to hit, air routes to take, radio communication frequencies to use, timing and location of aircraft refueling and reconnaissance support, availability of command and control support, and many other mission details.

The Joint Forces Air Component Commander selected the 9th Air Force's electronic computer system, the Computer-assisted Force Management System, to develop and transmit the air tasking order to the hundreds of units participating in the air campaign from land bases because there was no common joint air tasking system available and because the system could handle the large number of sorties generated each day during the war. The system coordinated about 3,000 daily multiservice combat missions and enabled land-based units to communicate mission status and future target information by computer to command and control operations and planning authorities in Riyadh.

After receiving the order and deploying their aircraft in response, U.S. aviation units used the Air Force Airborne Warning and Control System (AWACS) aircraft to provide real-time air surveillance and command and control of their airborne operations. AWACS detected enemy aircraft, controlled fighters and strike aircraft, and gave long-range air pictures to theater commanders.

Navy Unfamiliar With Air Tasking and Coordination System

Navy strike forces operated from six aircraft carriers in the Red Sea and Arabian Gulf during Desert Storm. The aircraft carriers in the Red Sea had an extended opportunity to work with and, therefore, adapt to the Joint Forces Air Component Commander and air tasking order processes. This training opportunity was made possible by the carriers' fairly consistent presence in the Red Sea from the early months of Desert Shield through the end of the war. Similarly, most Marine Corps units had an extended opportunity to adapt to the Joint Forces Air Component Commander and the air tasking system due to their presence in Saudi Arabia during Desert Shield and Desert Storm.

Arabian Gulf Carrier Air Wings Received Less Training Than Other Air Wings During Desert Shield

Carriers in the Arabian Gulf did not get as much Desert Shield experience operating with the Joint Forces Air Component Commander and the air tasking order as the carriers in the Red Sea because they did not arrive in the Gulf until shortly before the start of the air war. For example, of the four aircraft carriers in the Gulf—the Midway, the Roosevelt, the Ranger, and the America—none had more than 2 weeks' experience in the Gulf working with the Joint Forces Air Component Commander and air tasking order process before the air war began on January 17, 1991.

Lack of Desert Shield Practice Resulted in Life-Threatening Incidents

The Navy's lack of experience with the air tasking and coordination system not only reduced the effectiveness of Desert Storm air operations but also contributed to life-threatening incidents during the war. In one incident, AWACS was unable to contact Navy aircraft to intercept approaching Iraqi MIG fighter aircraft. The Navy aircraft should have been on combat air patrol in the vicinity but had left their station and were not operating on appropriate communication channels to receive the request for assistance. The AWACS aircraft alerted two coalition F-15s from an adjacent patrol area to pursue the Iraqi MIGs; however, the MIGs escaped before the F-15s caught up with them. Other similar incidents occurred at other times during the war. Further details are classified.

Post-war assessments, as well as Air Force officers flying in the AWACS aircraft, noted that Navy aircraft from Arabian Gulf aircraft carriers routinely failed to fly in accordance with the air tasking order, use communication channels specified in the order, or adhere to the order's special instructions concerning where to obtain fuel. Despite the intent of the air tasking order to prevent friendly aircraft from engaging each other, naval air forces risked such action when they did not adhere strictly to it. Again, further details are classified.

According to the Navy's Arabian Gulf representative in Riyadh, the Joint Forces Air Component Commander would have assigned Navy aircraft operating in the Arabian Gulf higher priority targets and provided more aircraft refueling and strike support had the Navy complied with the air tasking order early in Desert Storm. As it was, lapses by naval aircraft in the proper use of communication channels contributed to an impression of unpredictability and unreliability. In a post-war assessment, the Center for Naval Analysis noted that this impression contrasted sharply with Red Sea battle force relations with the Joint Forces Air Component Commander. According to the Navy's Arabian Gulf representative in Riyadh, most Arabian Gulf aviators did not seem to realize that they had to

specifically follow the air tasking order. Although the Commander of the Arabian Gulf carrier task force notified all Arabian Gulf aircraft carriers to comply fully with air tasking order instructions, he did not do so until 2 days before the February cease-fire date for Desert Storm.

Marine Corps Controlled Its Own Air Space

The Marine Corps controlled much of the air space within its area of responsibility throughout the war, based on the Marine Corps doctrine of providing close air support and other combat assistance to ground forces participating in the Marine Air-Ground Task Force[1] mission. Its control of airspace complicated command and control by adding another layer of management control over all aircraft passing through Marine Corps' areas of operation. Other services had not had much previous experience operating with the Marines under these circumstances.

While the Joint Forces Air Component Commander had the authority to decide the location and size of separate Marine Corps air zones, as well as when the zones could be activated, the Marine Corps controlled air traffic into, within, and out of them. As a result, other aircraft not only had to comply with instructions specified in the air tasking order but also had to coordinate with Marine Corps command and control centers before entering these air zones to prevent collisions or accidental destruction of friendly aircraft. Marine Corps officials told us that peacetime exercises prior to the war had not permitted Marine forces to conduct sustained inland operations because of disagreement between the Air Force and the Marine Corps over which service would control the airspace over Marine ground forces beyond amphibious assault areas. Thus, other services did not obtain the experience necessary to facilitate operations under these circumstances with the Marine Corps during Desert Storm.

Navy's Participation in Air Tasking Order Process Hampered by Equipment Incompatibilities

Navy units, unlike land-based Marine units, could not receive and transmit mission orders using the Air Force's computer system because it did not have the shipboard computer equipment or the super high-frequency satellite link necessary to operate the system. Consequently, the Navy used other methods to distribute the voluminous air tasking order to its ships. The most reliable method proved to be using courier aircraft to pick up paper copies in Riyadh and deliver them to the various Navy aircraft carriers and other command ships. The Navy also used military message

[1]A Marine Air-Ground Task Force is a balanced air-ground-logistics team. Central to the Marine Corps doctrine is the close integration of these elements under one commander.

systems and the international maritime satellite system to transmit the air tasking order.

The lack of the computer system limited the Navy's flexibility in organizing and responding to air taskings. First, late arrival of an air tasking order, due to extended delivery times, sometimes forced a carrier's weapons department to reconfigure or completely change the type of ordnance loaded on aircraft about to take off because the mission assignment had changed between the time the order was initially prepared and the time the units received it. At times, this occurred even after the aircraft engines had started. Second, by not having the computer system and the on-line computer capability it provided, Navy aviation units could not access or input late modifications to the order made after the Navy had received the hard-copy version. Thus, Navy aviation units often were unaware of late changes, such as assigned targets already destroyed, until they were airborne and AWACS provided updated mission information.

The Navy's incompatibility with the Air Force's computer system also hindered the coalition's ability to plan future missions. The Navy could not always provide updated mission results and status in time for the Joint Forces Air Component Commander's daily 5 p.m. planning meeting in Riyadh because the Navy reported through backlogged message systems and the telephone. Therefore, CINCCENT and his staff were sometimes uncertain of the Navy's accomplishments, such as targets destroyed, and thus, how to plan future missions.

Lack of High-Level Naval Representation in Riyadh Affected Participation in Air Campaign

Before Desert Storm began, the Navy and the Marine Corps each decided to locate their senior commanders with the majority of their forces—at sea and near the Kuwait border, respectively. They established small staffs in Riyadh to provide liaison with the headquarters of the U.S. Central Command, the Royal Saudi Forces, and other organizations such as the Joint Forces Air Component Commander's staff. However, these staffs could not always influence the air campaign because they were small in number and junior in rank compared with the Air Force staff in Riyadh. Even combined, the Navy and Marine Corps staffs in Riyadh did not equal 10 percent of the representatives on the Air Force staff (see table 2.1). Moreover, neither the Navy nor the Marine Corps staff was headed by an official of equal rank to the Air Force senior representative.

Table 2.1: Total Navy, Marine Corps, and Air Force Headquarters Staff in Riyadh During Desert Storm

	Total representation[a]	Rank of highest representative	Number and rank of other senior representatives[b]
Navy	100	Rear admiral (one star)	4 captains
Marine Corps	150	Major general (two stars)	2 colonels
Air Force	2,900	Lieutenant general (three stars)	1 major general (two stars) 5 brigadier generals (one star) 33 colonels

[a]Representation fluctuated during Desert Shield and Desert Storm.

[b]"Other senior representatives" consist of officers from the colonel/captain levels and above. Air Force colonels, Marine Corps colonels, and Navy captains are of equivalent rank.

CINCCENT recognized that the limited naval representation to the Joint Forces Air Component Commander's staff was a problem during the war. In a post-war assessment, he noted that all services with participating air assets should be represented at appropriate levels on that staff to optimize the full capabilities of each service and the strength of the total war-fighting team against the enemy.

With their senior commanders at sea, Navy personnel, in particular, could not communicate efficiently with Central Command senior officials in Riyadh, nor could they ensure that their ships, missiles, and aircraft were used most effectively against the enemy. Communications from Navy ships to Riyadh sometimes required a computer relay through the Pentagon in Washington, D.C., while messages from Central Command Headquarters in Riyadh took up to 48 hours to be received and processed aboard Navy ships. As a result, Navy ideas and recommendations were not always factored into decisions in Riyadh. For example, the Joint Forces Air Component Commander did not receive the Commander of Naval Forces' target nominations until about 20 days into the war because those nominations were forwarded to the wrong personnel in Riyadh and mistakenly filed away in a cabinet.

In another instance, the Navy had difficulty incorporating the Tomahawk missile into the air tasking order because it did not have sufficient influence in Riyadh to push for the Tomahawk's use. According to Navy

officials, the Air Force staff required the Navy to provide nearly 10 years of testing data from the Navy's Cruise Missile Support Facility rather than accept the Navy's descriptions of the Tomahawk's capabilities. Eventually, the Navy fired 288 Tomahawks, including some in the earliest stages of Desert Storm.

Multiservice Operations Were Not a Priority in Naval Training Prior to Desert Storm

In the years prior to Desert Storm, naval operations and training provided little instruction or practical application to prepare naval forces for joint campaigns because other operational priorities took precedence. And, before the war, the Chairman of the Joint Chiefs and the Joint Staff applied minimal oversight to decisions made by the individual services and unified commands to ensure U.S. military forces could operate effectively together. As a result, important joint concepts and procedures that appeared in Desert Storm often were not practiced or were practiced inconsistently from one exercise to the next. Also, naval forces, as well as the other services, did not always act on lessons they learned from pre-war joint exercises, only to see them surface again in Desert Storm. The naval forces' historically independent operating philosophy and associated strategy prior to Desert Storm contributed to the forces' near exclusive focus on sea-based operations and their lack of participation in multiservice exercises. Moreover, the Chairman of the Joint Chiefs and the Joint Staff were just beginning to adjust to their new, stronger role resulting from the 1986 Goldwater-Nichols Act promoting jointness.

Tactical Training Schools Provided Little or No Exposure to Joint Operations

Naval tactical training and development schools play an important role in tactics development and simulated combat training, covering Navy ships, aircraft, submarines, and associated weapon systems. Yet, the difficulties the naval forces had integrating their combat capabilities into the Desert Storm air campaign resulted, in part, from the schools' lack of instruction on the roles and operations of other services and the role that the two services would play in such operations. In particular, the focus of three Navy and one Marine Corps tactical training schools, whose roles are to prepare forces for large-scale, multiasset warfare scenarios, provided little specific instruction in interservice matters.

The Naval Strike Warfare Center in Fallon, Nevada, the Navy's primary authority for integrated aviation strike warfare, provided little instruction on joint air operations during its classroom training and seldom included other services' aircraft and personnel in flight exercises prior to Desert Storm. Navy aircrews would get some experience refueling with Air Force tanker aircraft during flight exercises but would rarely work with other Air Force command and control aircraft, such as AWACS, or other tactical aircraft. According to Naval Strike Warfare Center officials, the Center's first priority has always been to teach Navy personnel to operate their aircraft along with other Navy aircraft as part of an integrated air wing. These officials stated that training at the Center is the first chance a Navy air wing has to bring together its various types of tactical aircraft, such as

fighters, bombers, jamming, and reconnaissance planes, so the air wing can operate as an integrated whole. Navy officials also noted that Air Force personnel often declined to participate in the Strike Warfare Center's flight training because it did not provide the necessary experience to satisfy Air Force training requirements.

The Navy's Atlantic and Pacific Tactical Training Groups provide flag and senior officers current tactical knowledge and practical skills required to plan and execute battle group and battle force combat operations. Prior to Desert Storm, these two groups, like the Naval Strike Warfare Center, focused almost exclusively on naval operations. The Atlantic group's curriculum emphasized naval operations, a maritime strategy, and a Soviet threat. According to Atlantic Training Group officials, joint service operations were only mentioned briefly in conjunction with naval operations courses. This lack of curriculum attention to interservice operations contributed to an overall lack of fleet-level knowledge on joint service operations.

The chief Marine Corps tactical training school, the Marine Aviation Weapons and Tactics Squadron One at Yuma, Arizona, whose mission is to provide training in all aspects of Marine aviation employment, including weapons and tactics development, centered its curriculum around Marine Corps operations. Prior to Desert Storm, only one or two courses were oriented to joint operations. In addition, flight operations focused on employment of Marine aircraft. While the school used the Air Force AWACS to practice command and control, most aircraft from other services acted chiefly as enemy aircraft. According to Marine Corps officials, joint training is not the school's purpose. They pointed to the joint exercises sponsored by the Joint Chiefs of Staff as the appropriate source for Marines to obtain such joint experience. Yet, other Marine and Navy personnel told us that joint exercises, by themselves, do not provide enough exposure to the many aspects of joint operations.

Numerous Factors Affected Naval Participation in Joint Military Exercises Prior to Desert Storm

Although joint training opportunities were available prior to Desert Storm, naval forces did not always take advantage of them because of conflicts with preplanned ship schedules, other operational priorities, or budget constraints. Changes in joint exercise schedules often meant that naval forces could not participate in a joint exercise or that their participation was limited—often because ship schedules could not be altered easily. For example, naval participation in the major U.S. Central Command exercise Bright Star was not possible after 1987 because the exercise was

rescheduled to start 6 months later, which interfered with the Navy's preplanned ship schedule. An Air Force post-exercise report noted that Bright Star 1990 suffered in scope and tactical realism due to omission of sea-based units and that naval air units were needed to complement deployed Air Force units.

Even in computer-generated joint exercises that involved command and control functions and simulated flight operations, naval participation was less than that of other military services. During the U.S. Central Command's computer-generated 1990 exercise Internal Look, which simulated an Iraqi invasion of Saudi Arabia, only about 100 to 150 Navy personnel participated out of total participation of about 8,000 to 9,000 personnel. According to Navy Central Command officials, the cost of attending the exercise and the Navy's focus on naval operations, rather than joint operations, contributed to the limited participation. While the exercise employed a Joint Forces Air Component Commander to coordinate simulated joint air operations, the Navy did not take advantage of this training opportunity and chose to focus instead on its own battle force operations, according to Navy Central Command officials.

Important Joint Concepts and Procedures Often Not Included in Exercises

Certain important joint concepts and procedures that were used during Desert Storm often were not practiced prior to the war because the services did not see an immediate need to resolve difficult joint operational issues, nor were they being directed to do so. For example, the U.S. Central Command did not use a Joint Forces Air Component Commander in its live air exercises prior to Desert Shield in 1990. Similarly, coordination and control of tactical aircraft by a Joint Forces Air Component Commander appeared as a formal exercise objective in the Atlantic Command only in 1989. Prior to 1989, although aircraft from many services participated in live joint exercises, the aircraft were never coordinated as a fighting team by a Joint Forces Air Component Commander. The U.S. Atlantic Command did not employ such a commander in the major joint exercise held in 1990, according to officials, because the exercise had limited air participation and joint air coordination was not assumed necessary. However, lessons learned from the 1989 joint exercise pointed to the need for more practice with the Joint Forces Air Component Commander concept in future exercises.

Important joint concepts and procedures, such as command and control of joint air operations, often were not practiced because the services could not agree on how the concepts and procedures would be implemented.

When agreement could not be reached, exercises typically ended before the event occurred to avoid conflict over what each service saw as its appropriate role. For example, exercises tended to end after a Marine Corps amphibious operation was completed, rather than have the Marines move farther inland. According to a Marine Forces Atlantic official, the Air Component Commander (who was usually an Air Force officer) was reluctant to give the Marines control over airspace further inland, beyond the amphibious operating area, as occurred in Desert Storm. The lack of this realistic practice in peacetime complicated air operations during Desert Storm when the Marines, operating inland, established their own air control zones above their ground forces (see ch. 2).

In addition to a lack of agreement among the services, neither the unified commanders, the Chairman of the Joint Chiefs, nor the Joint Staff aggressively sought to resolve difficult joint operational issues. According to Navy and Joint Staff officials, the Chairman, the Joint Staff, and the unified commanders took a "hands off" approach in dealing with the individual services prior to the war and applied minimal control over decisions affecting such joint operational concerns such as the conduct and funding of joint exercises and training.

Naval Forces Did Not Always Act on Past Lessons

Naval forces often did not act on lessons learned from pre-war exercises, only to find that those problems occurred again in Desert Storm. For example, communication difficulties that emerged during the Atlantic Command's exercise, Solid Shield 1989, indicated that the Navy should study the operational benefits and costs of equipping all its aircraft carriers and command ships with the Air Force's Computer-assisted Force Management System and super-high frequency satellite communications to allow direct communications with the Air Force component commander. A post-exercise report noted that "[The system] made communications possible when other methods were impossible . . . and reflects a real milestone in interoperability." The Navy, however, did not initiate an effort to adopt the Air Force's computer system or any other force management system that would have provided deployed naval forces with the on-line capability to receive an air tasking order and communicate effectively with other land-based commanders. The Navy's lack of a force management system compatible with other services' systems arose once again during Desert Storm, significantly hindering communication between Navy ships and the Air Force-run Joint Forces Air Component Commander staff in Riyadh (see ch. 2).

Naval Forces Missed Opportunities to Train in Exercises Sponsored by the Air Force

Naval forces often missed opportunities to gain joint training experience of practical benefit in Desert Storm because they did not send personnel and aircraft to training sponsored by another service—such as the Red, Green, and Blue Flag exercises sponsored by the Air Force. Red and Green Flag exercises, conducted about four or more times each year at Air Force bases in Nevada, are large-scale combat exercises that provide pilots of tactical and electronic combat aircraft realistic exposure to targets defended by simulated enemy air threat systems. Computer-simulated Blue Flag exercises are generally held about four times each year to train combat leaders and support personnel in command, control, and intelligence procedures.

Although naval aviators who participated in Desert Storm acknowledged the valuable training received in these exercises, U.S. naval forces have not always placed a high priority on attending them. For example, U.S. naval forces comprised only about 5 percent of the participants attending Blue Flag exercises in 1989. Similarly, naval aircraft constituted only about 15 percent of the total number of aircraft during Red and Green Flag exercises in fiscal year 1989. While Red and Blue Flag officials told us that they wanted increased naval participation to make the exercises more realistic, Navy officials said other higher priority commitments, combined with tight operations and maintenance budgets (from which Navy participation is funded), often limited Navy involvement in these exercises.

Naval Focus Reflected Independent Operating Philosophy

The naval forces' decision to focus on their own operational and training concerns rather than joint service issues prior to Desert Storm reflected their traditional independent operating philosophy. Building on this, the naval strategy of the 1980s—the Maritime Strategy—emphasized open ocean, "blue water" operations, separating naval forces from the operating areas of the other services. The naval forces' independent philosophy also derives from a tradition of delegating operational authority to officers who command ships at sea, where great distances from shore-based senior commanders make centralized command impractical.

Differences in Air Force and naval tactical aviation also are illustrated by their dissimilar command and control doctrines. The Air Force vests control of all tactical decisions in one command. Operational procedures are strictly prescribed, such as in the detailed air tasking order used in Desert Storm, and thus are designed to leave little to chance or interpretation at the air wing, squadron, or cockpit level. In contrast, the

Navy makes tactical decisions at the lowest appropriate command level and operates from an air plan that allows considerable flexibility, providing only basic information, including event number, aircraft take-off and landing times, mission, ordnance loads, and refueling times. Thus, Navy squadron and air wing commanders independently may take any further actions they see as appropriate to satisfy mission objectives.

Differences in each service's operating environments and philosophies contributed to the initial difficulties of integrating the Army, Navy, Air Force, and Marine Corps into a smoothly functioning joint team during Desert Storm. Such basic differences also were responsible, in part, for further tactical, procedural, and equipment dissimilarities manifested during the war.

Joint Chiefs of Staff Had Limited Role in Monitoring Joint Training

The Chairman of the Joint Chiefs and the Joint Staff exerted a limited role in guiding and coordinating servicewide joint training and operations prior to Desert Storm because they were just beginning to adjust to their new, stronger role resulting from the 1986 Goldwater-Nichols Act, according to Joint Staff officials. As discussed earlier in this chapter, the Chairman and the Joint Staff used a "hands off" approach in dealing with the individual services prior to the war. According to Joint Staff officials, they applied minimal oversight to decisions made by the individual services and unified commands affecting such joint operational concerns as the conduct and funding of joint exercises and training and the development of command, control, and communications equipment.

They did not, for example, consistently ensure that important lessons from joint exercises were used to improve the services' cohesiveness. To illustrate, the Joint Staff did not direct the services to develop and train with a common computer-aided aircraft management system to integrate multiservice air operations, even though the services noted the value of the Air Force's Computer-assisted Force Management System during the 1989 joint exercise Solid Shield. The lack of such a system significantly affected the Navy's ability to operate as part of a smoothly functioning joint team during Desert Storm's air operations.

Additional Efforts and a Coordinated Approach Could Address Joint Operating Deficiencies

The difficulties naval aviation forces experienced integrating with other forces in the Desert Storm air campaign demonstrated a need to improve their cooperation and operations with other services. Acting on lessons learned, the Navy and Marine Corps have made concerted efforts since the war to improve identified shortcomings and have taken further actions to improve overall interoperability with the other services, such as participating in numerous task forces and joint projects with the Army and the Air Force. In addition, the Navy and the Marine Corps have developed a new naval strategy and policy statements emphasizing the importance of being able to function effectively in a joint team environment.

While the strategy identifies a new direction for naval forces, with greater emphasis toward roles and missions involving multiservice cooperation, as of January 1993 the Navy and the Marine Corps had not established a plan on how to prepare and train their forces for these roles and missions. Moreover, no single authority oversees naval training to ensure that appropriate actions to improve interoperability are taken and implemented consistently. Similarly, neither the Chairman of the Joint Chiefs nor his staff oversees the progress being made by individual services to improve joint training. As a result, parochial interests still prevail, naval peculiar training continues to receive priority over joint training, and certain Desert Storm lessons have gone unheeded.

Efforts to Improve Joint Operating Capabilities Lack Strategic Focus

Naval Forces Correcting Desert Storm Shortcomings

In February 1992, the Chief of Naval Operations directed the Navy to be fully capable of operating effectively in conjunction with the other services in a joint war-fighting environment. He wrote, "We must and will adjust in all areas of our thinking, education, and training," and "must fully integrate and incorporate joint and combined operations." Since Desert Storm, the Navy and the Marine Corps have improved their joint operating capabilities and corrected many Desert Storm shortcomings. They have, for example, developed procedures and equipment to resolve command, control, and communications difficulties between the services; incorporated joint operations courses at tactical training schools;

established a Naval Doctrine Command to integrate joint and naval doctrine; and participated in multiservice organizations and task forces to improve interoperability. Also, certain high-level naval officials have played important roles in ensuring that the Navy and the Marine Corps pay greater attention to joint issues and concerns.

Inconsistent and Insufficient Actions Result Without Strategic Focus

While current efforts are useful, as of January 1993, the Department of the Navy had not developed a clear joint training plan, a way to measure the Navy and Marine Corps' progress, and a central high-level authority to ensure consistent implementation. Consequently, individual naval organizations have determined their own requirements and priorities and have taken actions generally independent of each other. This approach has resulted in inconsistent advancement toward improved joint training, with certain naval units avoiding problems that require additional funding, and thus, a shifting of priorities, or avoiding solutions that might threaten traditional naval training cycles.

Although naval participation in Blue Flag exercises has improved, naval personnel still represented less than 10 percent of the total combined service participation in these exercises during 1992 (see table 4.1). Naval officials told us that while they consider Blue Flag exercises to be one of the best opportunities available to exercise joint command and control capabilities, the costs of per diem and providing transportation to and from the exercises are the major stumbling blocks to greater naval participation. Also, since the naval forces have no overall policy regarding attendance at these exercises, participation is left to the individual fleets.

Atlantic Fleet officials told us that per diem funding is typically short at the fleet level and certain activities that they consider of lesser priority do not get funded. For example, Atlantic Fleet officials declined to send forces to an August 1992 Blue Flag exercise primarily because it would have cost the fleet $20,000 to participate, and secondly because it did not lend itself readily to naval involvement. However, a Blue Flag official indicated a willingness to adapt Blue Flag scenarios to better accommodate naval forces if this would increase naval participation.

Table 4.1: Naval Personnel Participating in Blue Flag Exercises, Fiscal Years 1989-92

Participants	FY 1989	FY 1990	FY 1991	FY 1992[a]	Total
Air Force	1,532	1,705	839	1,421	**5,497**
Navy	45	20	1	89	**155**
Marine Corps	50	9	2	67	**128**
Army	348	299	108	529	**1,284**
Other[b]	51	48	42	104	**245**
Total	**2,026**	**2,081**	**992**	**2,210**	**7,309**
Percentage Navy and Marine Corps[c]	**5**	**1**	**1**	**7**	**4**

[a]Fiscal year 1992 data includes information for two Blue Flag exercises, through July 31, 1992.

[b]"Other" category includes participants from miscellaneous government agencies, such as the National Security Agency; U.S. Central, Pacific, and Southern Commands; and foreign countries.

[c]Percentages are rounded.

In addition, as of December 1992 there was no overall Navy or Marine policy encouraging unit-to-unit aviation training with other services, such as a Navy tactical fighter squadron training with a similar Air Force squadron or with Air Force AWACS aircraft. Currently, decisions to participate in or initiate such training is left up to the squadron or air wing commander. Some unit commanders can continue to advance naval specific training to the exclusion of joint training.

Aviation Training Falls Short

Even though naval aviation tactical training schools, such as the Naval Strike Warfare Center, the Atlantic and Pacific Tactical Training Groups, and the Marine Aviation Weapons and Tactics Squadron One, are now incorporating a greater joint operations emphasis in their curricula, they still are not consistently applying certain important lessons from Desert Storm to their programs. For example, Desert Storm's Naval Forces Commander, as well as other naval aviators who participated in the war, recommended that naval aviation training be expanded to incorporate greater joint operations instruction and more face-to-face contact with their counterparts in other services during flight operations and mission planning. The Naval Forces Commander also recommended that the AWACS command and control aircraft, which played such an important role in Desert Storm, be integrated into Navy air wing training.

Despite these recommendations, personnel from other services do not regularly attend the classroom and flight portions of the Naval Strike

Warfare Center, the Marine Aviation Weapons and Tactics Squadron One, or the Atlantic and Pacific Tactical Training Groups. Yet, incorporating other services' aircraft and personnel would be an excellent way for naval forces to become familiar with the terminology and procedures used by other services in conducting air operations. In addition, the Naval Strike Warfare Center was still, as of December 1992, excluding the Air Force's AWACS aircraft from its flight training because it continues to believe that its focus should be training Navy aviators to operate effectively together and that introducing aircraft from other services would take away from this focus. Similarly, while the Marine Aviation Weapons and Tactics Squadron One incorporates AWACS in joint flight training, other non-Marine aircraft generally still act only as enemy aircraft, not as part of an integrated combat force.

Naval aviators believe that Red and Green Flag exercises provide some of the best flight training available to air forces and that Navy-Marine participation in such training should increase in the future. Despite this, however, fleet officials responsible for participation in Red and Green Flag exercises consider their costs prohibitive[1] when compared with other naval priorities and, therefore, have virtually eliminated naval participation, except when requested to participate as "aggressor forces" by the Air Force (see table 4.2). The Air Force pays most of the associated expenses when the Navy or the Marine Corps participate as aggressor forces, but naval forces then do not gain experience operating in a joint team with air forces from other U.S. military services and foreign countries.

Table 4.2: Naval Aircraft Participating in Red and Green Flag Exercises, Fiscal Years 1989-92

Fiscal Year	Air Force	Navy	Marine Corps	Foreign[a]	Total	Percent Navy and Marine Corps[b]
1989	769	61	105	139	**1,074**	15
1990	808	0	27	50	**885**	3
1991	836	23	0	107	**966**	2
1992[c]	410	31	10	70	**521**	8
Total	**2,823**	**115**	**142**	**366**	**3,446**	**7**

[a]Foreign countries do not participate in Green Flag exercises.

[b]Percentages are rounded.

[c]Fiscal year 1992 data includes information for Red and Green Flag exercises through July 31, 1992.

[1]According to naval officials, the Navy and Marine Corps pays an estimated $150,000 to $200,000 to send a squadron of 10 naval aircraft and 100 accompanying naval personnel to a 2-week Red Flag exercise.

The Navy, the Air Force, and the Marine Corps have made progress in linking the Southwest U.S. tactical training ranges to increase tactical interoperability and joint use of ranges and to define common training requirements. These ranges could provide U.S. military services many opportunities to work together and incorporate their various air assets in joint training exercises. Since these three services' tactical training schools are located within the ranges, this recent linkage may encourage the schools to expand their current programs for coordinated operations with their sister services.

Goldwater-Nichols Act Makes Chairman Responsible for Reviewing Force Capabilities

While the 1986 Goldwater-Nichols Act assigns unified commanders authoritative direction to their subordinate commands over all aspects of military operations and joint training, it gives the Chairman of the Joint Chiefs overall responsibility for developing policies and doctrine for the joint training of the armed forces and for advising the Secretary of Defense of critical deficiencies and strengths in force capabilities identified during the preparation and review of contingency plans. The act also makes the Chairman responsible for advising the Secretary on the extent to which the services' program recommendations and budget proposals conform with the priorities established in strategic plans and with requirements of the unified commanders. Thus, the Chairman has the authority to draw attention, for example, to shortcomings in joint operations and capabilities, such as the lack of common command and control equipment and the exclusion of difficult concepts and procedures from joint exercises, which affect the war-fighting capabilities of all unified commanders. The Chairman has gradually become more active in this regard but still has not used the full potential of the act, according to a knowledgeable congressional official.

Chairman Could Do More to Improve Interoperability Consistent With Oversight Responsibilities

One of the ways in which the Chairman and the Joint Staff have become more involved in joint training has been through the Joint Training Review, initiated in early 1992, to obtain a better understanding of the joint training programs in existence; determine joint training requirements; develop a training program that better integrates unified commander, service component, and service joint training programs; and ensure training programs meet unified commanders' requirements. Once completed in late 1993, this review will provide a "blueprint" for joint training the future force, according to the Joint Staff.

In addition to the Joint Training Review, the Joint Staff has taken steps to direct unified commanders' attention to specific training issues requiring additional action by incorporating them into an appendix to its 1993-98 Training Plan. While this effort is noteworthy, important training issues warrant greater attention than is possible in an appendix, particularly since most of these issues are unresolved lessons from Desert Storm and from past joint exercises.

Despite these and other efforts, including the recent publication concerning joint warfare, the Chairman and the Joint Staff could do more to improve service interoperability consistent with oversight responsibilities set forth in the Goldwater-Nichols Act and provide a future vision of how U.S. military forces can operate effectively together. For example, the Chairman's recently completed review of military roles and missions will not necessarily ensure that the services can operate effectively together as a smoothly functioning team. To do this, other efforts need to be undertaken to ensure that the services are training and procuring systems and equipment to meet unified commanders' war-fighting requirements, as well as broader national security requirements, for effective interoperability.

Conclusions

Lessons learned from Operation Desert Storm indicate that two important factors were critical in winning the war. First, the 5-1/2 month intensive training received during Desert Shield gave coalition forces the chance to become familiar with each other's tactics and capabilities and to correct deficiencies before the war began. Second, one person—CINCCENT—was put in charge to direct U.S. military forces to work together. These lessons have important applications today in the management of military forces.

Since Desert Storm, the Navy and the Marine Corps have taken actions to improve shortcomings identified from the war and have made further efforts to improve overall interoperability with the other services. However, joint training is not provided consistently throughout the Navy and Marine Corps, and naval peculiar training still takes priority, in many cases, over joint operational issues. While costs are often identified as the reason for not instituting necessary interoperability changes and participating in joint training activities, in relative terms, the funding required is often small. And, funding joint training may be the best use of funds to prepare the services for the types of future conflicts in which U.S. forces will be involved.

Now more than ever, the aims of the Goldwater-Nichols Act—to assure that U.S. military forces can effectively meet future challenges in joint warfare—have become a practical necessity in managing military operations. Much of the Navy and Marine Corps' progress in improving their joint war-fighting capabilities is due to certain Navy and Marine officials who have provided a strong leadership role in this regard. As personnel change, however, and the funding for defense becomes more scarce, the tendency to focus on naval specific concerns first and joint concerns later may become more prevalent, particularly without a long-range plan of action. Moreover, while the Chairman of the Joint Chiefs is focusing greater attention on joint training, he could do more to improve service interoperability, consistent with his oversight responsibilities set forth in the Goldwater-Nichols Act.

Recommendations

We recommend that the Secretary of the Navy develop a comprehensive plan to ensure that naval forces continue recent efforts to improve their ability to operate in a joint team environment in concert with the other services. The plan should include the following:

- Joint training goals and objectives specifying how naval forces, including air, land, and sea forces, will fulfill the roles and missions identified in the new naval strategy.
- Specific steps, time frames, and funding allocations for achieving the Navy and Marine Corps' joint training goals and objectives. The plan should identify what types of joint training will best accomplish naval goals and ensure that appropriate naval forces receive this training. For example, efforts could include standardizing naval participation in service-sponsored joint training such as Blue and Red Flag exercises, as well as unit-to-unit joint training with other services.
- A mechanism for measuring progress made by the Navy and the Marine Corps toward their goals and objectives.

Although this report dealt primarily with naval aviation, we recognize that to achieve optimum service integration in training and operations, a comprehensive interoperability plan must be developed encompassing all four military services. While most of the interoperability problems discussed in this report dealt with the Navy and Marine Corps' interaction with the Air Force, naval officials believed that better cooperation and training with the Army also is needed. Therefore, we recommend that the Secretary of Defense direct the Chairman, Joint Chiefs of Staff, to develop an interoperability plan, encompassing all military forces, as a follow-on

effort to the Chairman's February 1993 report entitled "Roles, Missions, and Functions of the Armed Forces of the United States." As part of this effort, the Chairman should ensure that the services' military capabilities are integrated into an affordable, and smoothly functioning team without unwarranted duplication, yet fully supporting the Department of Defense's interoperability goals and budget priorities. In managing this plan, the Chairman should

- require the individual services to report back on how and when they will achieve the interoperability goals and provide him with periodic updates on their progress and
- periodically report to Congress on the services' progress in achieving the goals.

Locations Visited

Joint Chiefs of Staff	Directorate of Operational Plans and Interoperability, Washington, D.C.
Unified Commands	U.S. Atlantic Command, Norfolk, Virginia U.S. Central Command, Tampa, Florida
Navy	Headquarters, U.S. Navy, Washington, D.C. Headquarters, Commander in Chief, Atlantic Fleet, Norfolk, Virginia Naval Air Station, Cecil Field, Jacksonville, Florida Naval Air Station Miramar, San Diego, California Naval Air Station Oceana, Virginia Beach, Virginia Naval Strike Warfare Center, Fallon, Nevada Tactical Training Group Atlantic, Dam Neck, Virginia
Marine Corps	Headquarters, U.S. Marine Corps, Washington, D.C. Marine Corps Combat Development Command, Quantico, Virginia Headquarters, Marine Forces Atlantic, Norfolk, Virginia 3rd Marine Air Wing, Marine Corps Air Station El Toro, Irvine, California Marine Corps Base Camp Pendleton, Oceanside, California Marine Aviation Tactics and Squadron One, Yuma, Arizona
Air Force	Air Combat Command, Langley Air Force Base, Hampton, Virginia
Other	Air-Land-Sea Forces Application Center, Hampton, Virginia Center for Naval Analysis, Alexandria, Virginia

Major Contributors to This Report

National Security and International Affairs Division, Washington, D.C.	Norman J. Rabkin, Associate Director William Meredith, Assistant Director M. Elizabeth Guran, Evaluator-in-Charge Tana M. Davis, Evaluator
Los Angeles Regional Office	Dennis A. DeHart, Regional Management Representative James R. Bancroft, Evaluator
Norfolk Regional Office	Hugh E. Brady, Jr., Regional Management Representative Robert C. Mandigo, Jr., Regional Assignment Manager William W. McComb, Jr., Evaluator

Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are $2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary. Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

Orders by mail:

U.S. General Accounting Office
P.O. Box 6015
Gaithersburg, MD 20884-6015

or visit:

Room 1000
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC

Orders may also be placed by calling (202) 512-6000 or by using fax number (301) 258-4066.

PRINTED ON RECYCLED PAPER

United States
General Accounting Office
Washington, D.C. 20548

Official Business
Penalty for Private Use $300

First-Class Mail
Postage & Fees Paid
GAO
Permit No. G100