

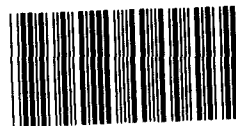
GAO

Report to the Chairman, Subcommittee
on Defense, Committee on
Appropriations, U.S. Senate

April 1991

FLYING HOURS

Overview of Navy and Marine Corps Flight Operations



143694

National Security and
International Affairs Division

B-241707

April 12, 1991

The Honorable Daniel K. Inouye
Chairman, Subcommittee on Defense
Committee on Appropriations
United States Senate

Dear Mr. Chairman:

As you requested, we reviewed the Navy's flying hour program to determine

- what types of aviators are flying carrier-based aircraft,
- the types and amounts of flying performed by such aviators, and
- the relevancy of the flying to operations and training.

We focused on the A-6, F-14, and F/A-18 carrier-based aircraft, although we also reviewed the flying hour program as it relates to other carrier-based aircraft. The information pertains to naval aviation prior to the commencement of Operations Desert Shield and Desert Storm. While the concepts discussed in the report and the prior years data presented are still relevant, the fiscal year 1991 budget data do not reflect the commencement of the air war in January 1991.

Background

The Navy and Marine Corps need well-trained, highly skilled aviators to effectively and successfully accomplish their aviation missions. The skills demanded of an adept aviator include the ability to strike naval and land targets, protect ships from air threats, and take off from and land on aircraft carriers. An aviator's primary means of gaining and maintaining proficiency is through hands-on training funded by the flying hour program.

The flying hour program encompasses all flying activity from initial training of new personnel to the day-to-day operations of fleet squadrons. Naval aviators serve in a wide range of skill categories, including pilot, radar intercept officer, bombardier, navigator, and electronics warfare and antisubmarine warfare specialist.

New personnel initially receive undergraduate pilot and flight officer training to gain basic flight skills. These individuals are assigned to and trained in one of three broad specialties: strike (carrier-based aircraft), maritime (land-based aircraft), and helicopters. Undergraduate training

is lengthy; the training for strike pilots, for example, lasts about 74 weeks.

Once individuals complete their undergraduate flight training, they are assigned to 1 of 32 fleet training squadrons for specialized instruction in a particular type of aircraft, before being assigned to a fleet squadron. Aviators being reassigned to fleet squadrons after nonflying assignments also receive refresher training in one of the fleet training squadrons. These training squadrons provide familiarization and weapons tactics training and qualify aviators in weapons delivery and carrier landings.

The Navy requested, and Congress appropriated, nearly \$3 billion in fiscal year 1991 for approximately 2.2 million flying hours. Of this amount, \$1.6 billion was for operating about 2,250 Navy and Marine Corps tactical and antisubmarine aircraft about 939,000 hours. These hours are required to conduct flight operations by forward deployed squadrons aboard ships and at overseas locations and to provide mission-related training to aviators assigned to fleet squadrons operating ashore. The Navy requested an additional

- \$412 million for 257,000 flying hours to train replacement aviators in the fleet training squadrons prior to assignment to fleet squadrons,
- \$205 million for 196,000 hours to provide ship and shore-based air logistic support and special operational test and evaluation support,
- \$397 million for 490,000 hours to provide undergraduate flight training, and
- \$301 million for 247,000 Naval and Marine Corps Reserves flying hours.

Results in Brief

Our work showed the following:

- Aviators who are permanently assigned to carrier-based fleet squadrons and fleet training squadron instructors and students generally use most of the flight time allocated to the flying hour program. Aviators assigned to air wing staffs and other headquarters organizations, such as functional wings and major commands, fly on a more limited basis.
- The largest number of flying hours for fleet squadrons is used to train before deployment and to conduct air operations during deployment. The flying rate decreases significantly after squadrons return from deployment, then gradually increases as training intensifies for the next deployment.

- Navy officials generally believe that the amount and type of training aviators receive adequately prepares the aviators for deployment. However, they did express concerns that limited training resources, such as ordnance, targets, and training ranges, hinder training and aviators' ability to effectively attain and maintain mission area proficiency.

Types of Aviators Who Are Flying

Aviators flying the most are those permanently assigned to fleet squadrons that periodically deploy to ships and overseas bases. When deployed, aviators may fly various missions, depending on the type of aircraft they operate, as well as their geographical location, world events, and potential threats. These missions include combat and noncombat fleet air defense, patrol, antisubmarine, surveillance, search and rescue, and antiship/antisurface attack missions. Deployed aviators also fly in training exercises and whenever conditions and circumstances permit, fly prescribed training missions, such as air combat maneuvering and low-level night attack missions, designed to maintain proficiency in their primary mission areas. When not deployed, aviators fly similar training missions and participate in various training exercises and evaluations designed to prepare them for their next deployment. Table 1 shows the number of flying hours for these fleet squadron aviators and other types of aviators.

Table 1: Hours Flown by Selected Categories of Naval Aviators

	Fiscal year			
	1988 (actual)	1989 (actual)	1990 (actual)	1991 ^a (budget)
Fleet squadron aviators	868,110	879,121	863,149	904,039
Fleet training squadron aviators and instructors	249,834	247,817	254,563	257,044
Staff aviators	33,275	39,126	36,397	35,248

^aBudgeted hours do not include flight hours for Operations Desert Shield and Desert Storm.

Generally, aviators are assigned to fleet squadrons for 2 to 3 years and deploy once or twice, for about 6 months, aboard ships or at overseas bases. While assigned to fleet squadrons, aviators concurrently perform other nonflying administrative duties as operations, safety, maintenance, and training officers.

Replacement aviators, newly assigned to fleet training squadrons, must be qualified to fly specific types of aircraft before they join fleet squadrons. The amount of flying time required depends on the aviator's previous experience in the aircraft. Fleet training squadron instructors are

required to fly in most training events, either in the same aircraft with the student or in an accompanying aircraft.

Aviators assigned to Navy carrier and Marine Corps air wings and group staff positions also fly periodically. Wing commanders and operations officers, for example, fly periodically to maintain their proficiency and to observe the performance of squadron aviators. In fiscal year 1991, over \$66 million was appropriated for 35,000 flying hours to enable Navy and Marine Corps staff aviators to fly with fleet squadrons.

In some instances, aviators assigned to other organizations, such as functional wings or major commands, occasionally fly with the fleet training squadrons as instructors to help compensate for shortages of permanent instructors or fly as mission observers or evaluators. Although additional flying hours are not budgeted for these aviators, the squadron aviators we interviewed did not believe that the hours used by these aviators had an adverse impact on squadron training and operations.

Types of Flights and Number of Flying Hours Used by Aviators

The Naval Flight Record Subsystem is a single, integrated source of flight data designed to gather and report information on individual aviators and flight activity. Flying hours reported for individual aviators in the Naval Flight Record Subsystem data base frequently differ from the flying hours entered in their log books. While naval aviators generally believe that total flying hours reported for a specific type of aircraft, such as the A-6, F-14, or F/A-18, is accurate, they believe the flying hours reported for individual aviators flying those aircraft is incorrect. Our comparison of flying hour totals reported for these aircraft in the data base closely matched the totals in Navy budget reports, whereas our comparison of individual aviator flying hours reported in the data base with their log books varied considerably. (Appendix I includes our concerns regarding the data base.)

Aviators usually report only the general type of training for each flight, such as air-to-air combat training for fighter aircraft or attack training for attack aircraft, even if they perform other functions during the flight. For example, as shown in table 2, only 9,227 hours are attributed to battle group operations over the 18-month period, even though the Navy routinely has several carriers deployed at sea simultaneously for 6 months. In this example, aviators recorded most of their flying hours as training.

Table 2 depicts the flying hours as reported in the data base by purpose of flight, for October 1987 through March 1989, to illustrate how aviators reported their flying time.

Table 2: Navy and Marine Corps Flying Hours by Flight Purpose (October 1987 Through March 1989)

Flight purpose	Hours			Total
	A-6E	F-14	F/A-18	
Training flights for individuals and crews to maintain or improve readiness	120,536	157,616	200,682	478,834
Support service flights in support of assigned missions, including tests, logistics, search and rescue	17,496	9,472	18,953	45,921
Battle group operation flights conducted as part of an exercise while deployed with a battle group	964	4,619	3,644	9,227
Fleet Marine Force operation flights conducted as part of an exercise while deployed with a battle group or task force	5	17	341	363
Contingency flights conducted when placed in an alert status or other emergency condition where a threat is possible	330	695	8	1,033
Combat flights by units specifically designated as being in combat status	102	262	0	364
Miscellaneous	0	102	0	102
Total	139,433	172,783	223,628	535,844

Relevance of Flying to Training and Operations

The primary factors that determine the types and number of flying hours used are squadron training schedules and fleet training and readiness plans. Squadrons continuously monitor their aviators' skill proficiency and schedule specific training events to keep aviators combat ready in their primary mission areas.

Nearly all flying hours are scheduled to prepare aviators for deployments and allow them to gain and maintain proficiency in their primary mission areas. Aviators also fly to provide support services, such as refueling, although these flights do not greatly enhance aviator training and proficiency in mission areas. The number of flying hours allocated to squadrons are determined by training schedules preparing them for deployment.

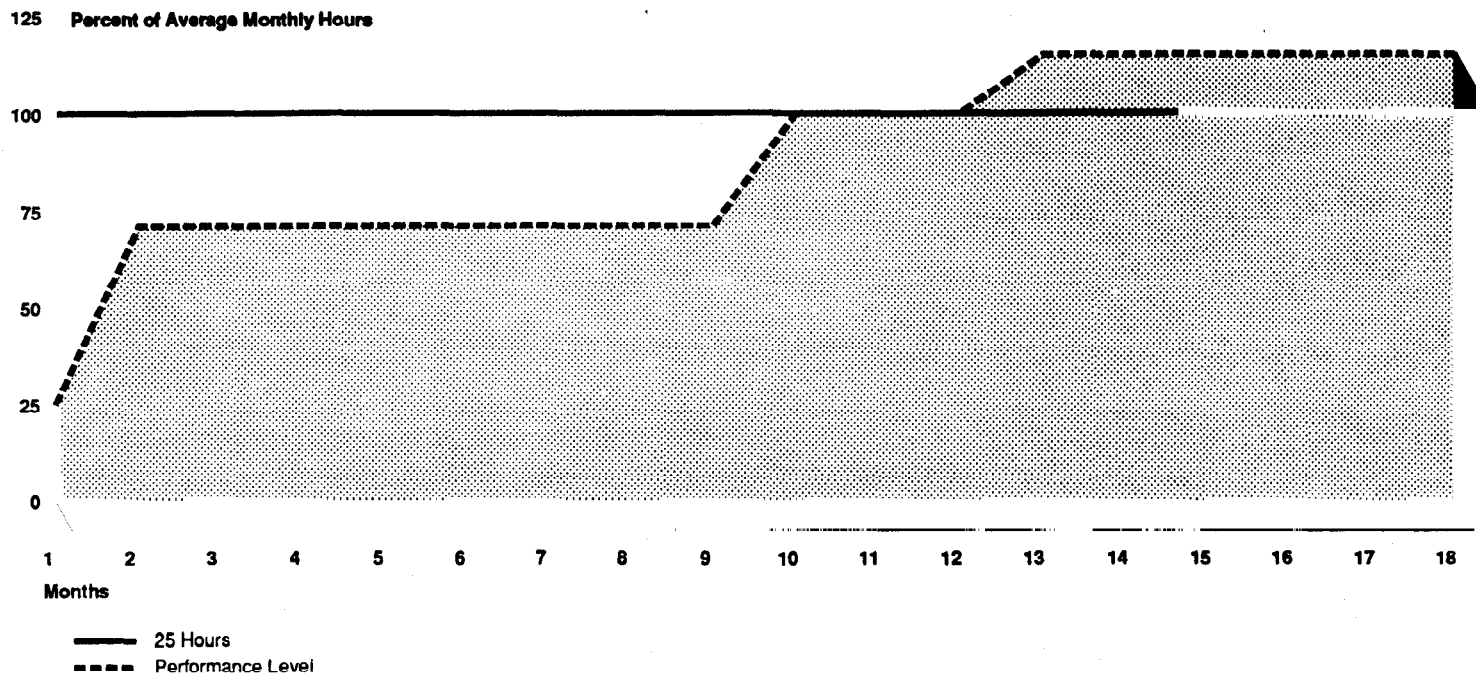
Overall, aviators said that the amount and type of training they participated in adequately prepared them for deployment. However, they expressed concerns that limited training resources, such as ordnance,

targets, and training ranges, hindered their ability to attain and maintain mission area proficiency.

Squadron Training Plans

When a squadron is ashore, training is scheduled and conducted to prepare aviators for their next deployment, with the number of flying hours increasing as deployment nears. Figure 1 depicts the general distribution of flying hours per aircrew per month during the training and deployment cycle.

Figure 1: Distribution of Flying Hours Over the Operational Cycle



Month 1: Personnel turnover and leave
Months 2-9: Turnaround training
Months 10-12: Pre-deployment training
Months 13-18: Deployment period
Source: Navy briefing documents.

Squadron training plans define classroom, simulator, and flying requirements designed to build aviator proficiency and incorporate key training events, such as combat exercises at the Strike Warfare Center at Fallon, Nevada, carrier landing practice, and predeployment assessments by wing and headquarters staffs. The rest of the training plan is devoted to completing specific training events required in training and readiness plans.

Training and Readiness Plan

In February 1990, the Navy's Atlantic and Pacific fleet air forces jointly issued a revised training and readiness plan that identified training events and specified when each aviator needs to complete each event. Each event is assigned a number of points relative to its importance to the primary mission area, with a maximum attainable score of 100 points for each mission area. Primary mission areas include antiair warfare, antisubmarine warfare, antisurface ship warfare, and strike warfare. The more events aviators perform to reach the 100 points, the more fully combat capable they are considered in that mission area. For example, F/A-18 aviators need to fly two air-to-ground gunnery flights every 90 days to earn 10 points toward their amphibious warfare qualifications. A-6 aviators need to fly three missions every 90 days, in which they drop at least 10 MK-80 series bombs per sortie, to earn 18 points for their strike warfare qualifications.

The plan also identifies flight hours required for each event, annual aircrew and squadron flying hour requirements, and other training resources, such as ordnance, adversary, and training range requirements. Navy aviators are considered combat ready if they earn at least 75 points in each mission area. Monthly, each squadron reports the percentage of its aircrews that are combat ready for each of the mission areas to headquarters.

The Marine Corps also has a similar training and readiness plan, but it uses different point levels and designations of aviator readiness, as shown in table 3.

Table 3: Marine Corps Designations of Aviator Readiness

Point level	Designation
60 points	Combat capable
70 points	Combat ready
85 points	Combat qualified
100 points	Full combat qualified

The Marine Corps training and readiness plan allows aviators to qualify in several tasks by completing a related but more difficult task. For example, a night refueling qualifies the crew for a day refueling mission without their having to fly a day mission.

We visited 14 squadrons and found that they closely monitor each aviator's training. Each squadron has computerized programs that enable operations department personnel to record training completed and to monitor and schedule training requirements on a daily basis. Navy and Marine Corps squadrons attempt to follow the training plan as much as possible, both during predeployment training and when deployed, to attain and keep their aviators proficient in each mission area. According to aviators in these squadrons, it is easier for them to adhere to the plan when ashore than when deployed because of operating priorities. Battle group taskings have first priority, followed by assignments for air wings, and then training and other assignments determined by squadrons.

Support Flights

Flying hours budgeted and allocated for fleet squadrons do not include the hours required to accomplish necessary support flying in addition to training. Flying hours are used to accomplish support missions that do not necessarily enhance aviator combat proficiency, but that are needed to support day-to-day training and operations. These tasks include post-maintenance check flights, aerial refueling, target towing, and flying as a target for other aircraft or ships to train. Since extra hours are not budgeted and allocated for support requirements, these missions draw hours away from the total hours available for training.

The Naval Flight Record Subsystem data base reported that about 8.5 percent of the A-6, F-14, and F/A-18 flying hours from October 1987 through March 1989 was used for support services. Aviators said that the extent of support flights reported in the data base is probably understated. For example, aerial refueling may consume up to 60 percent of some A-6 aviators' flying time when deployed. Aviators generally believe that support flights provide only limited training enhancement to developing and maintaining their primary mission skills.

Aviators' Concerns

During our review, we noted that the shortages of some training resources, such as ordnance, targets, and ranges, affected the ability to train realistically. For example, the Navy fleet training and readiness

plan requires that each A-6 aircrew drop a combination of 160 live and inert 500-pound bombs annually, although fleet projections for fiscal year 1990 estimated only 10 bombs per aircrew for the year. Many aviators we interviewed were concerned that they were not always exposed to realistic conditions. Some had never actually fired the sophisticated munitions they would be expected to use in combat. We noted that some training procedures and tactics focus more on conserving scarce resources than providing the best tactics and techniques to strike the targets. Concerns about training resources are described further in appendix II.

Media coverage of recent events in the Persian Gulf have highlighted the successes of our military, but did not reveal whether such shortages may have hindered actual combat effectiveness. We plan to consider the shortages in future reviews related to operational problems the Navy and Marine Corps may have encountered in Operations Desert Shield and Desert Storm.

Appendix III discusses how the Navy and Marine Corps budget for and allocate flying hours. Our scope and methodology are discussed in appendix IV. We obtained official oral comments on a draft of this report from Department of Defense and Navy officials. The officials agreed with our observations.

Unless you publically announce its contents earlier, we plan no further distribution of this report until 10 days from its issue date. At that time, we will send copies to the Secretaries of Defense and the Navy; the Chairmen, House Committee on Appropriations and Senate and House Committees on Armed Services; and other interested parties. We will make copies available to others on request.

If you or your staff have questions concerning this report, please contact me on (202) 275-6504. Major contributors to this report are listed in appendix V.

Sincerely yours,



Martin M Ferber
Director, Navy Issues

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Abbreviations

GAO General Accounting Office

Naval Flight Record Subsystem

The Naval Flight Record Subsystem is a single, integrated source of flight data for several aviation-related reporting systems, including the aviation Maintenance and Material Management System. It uses the Naval Aircraft Flight Record (OPNAV Form 3710/4), commonly referred to as the "Yellow Sheet," as its data input source. Both the Navy and the Marine Corps use the subsystem's data to produce annual aviator flying hour summary reports. Each aviator then reviews, corrects, and certifies his annual and cumulative career flying activity. Other possible uses of the subsystem's data include budgeting and funding decisions, maintenance and logistic support, and safety analyses. However, flying hour program managers and fleet squadron operations and maintenance personnel generally use other reports derived from the Yellow Sheets rather than the subsystem reports, since they believe the subsystem's data relating to individual aviators to be erroneous.

We compared the subsystem's flying hour data for specific aviators with their personal log books and also compared reported aircraft squadron flying activity with actual events. Because of the number of variances we found, we believe the accuracy and completeness of the data for individual aviators are uncertain. Generally, the flying hours recorded in aviators' log books were higher than hours reported in the data base. Navy officials believe that total flying hours reported for a type of aircraft, such as the A-6, F-14, or F/A-18, is accurate, but that data errors occur when flying hours are entered for individual aviators. After each flight the aircrew writes down information on the Yellow Sheet regarding the nature and duration of the flight and which aircraft was flown. The flight commander certifies that the record is accurate and complete, and then maintenance and operations personnel transcribe this data into aircraft and aviator log books and enter the data into the squadron's computers. Subsequently, the Yellow Sheet data are entered into air station and ship computers for editing, storage, and eventual inclusion in the Naval Flight Record Subsystem data base.

We were unable to determine why variances occurred between the log books and the data base, even though both used the Yellow Sheet as the initial input source. Most aviators we talked to placed total reliance on their personal log books and had little confidence in reports generated by the subsystem, which are sent to the aviators annually for verification and correction. Some aviators stated that their past efforts to correct information had been unsuccessful, and they no longer bother to correct it. Navy officials offered several possible explanations for problems with the subsystem's data accuracy, including inaccurate data entry from the handwritten Yellow Sheet, computer software problems,

an incomplete process to ensure that errors were corrected, and the loss or omission of data when squadrons move between their air stations and carriers.

Officials in the Navy's Flying Hour Program Office acknowledged problems with the data, but emphasized that the flying hour data reported to the Congress, and justified in budget requests, is accurate and based on monthly fleet squadron reports rather than the data base. We did not compare flying hour totals generated and maintained by fleet squadrons with the flying hour totals reported in Navy budget data since it was beyond the scope of this review. Navy officials said that the Navy plans to rely on the subsystem more in the future for budget and management purposes as data accuracy improves and enhanced data entry processes are implemented.

The Navy is developing a computer-aided data entry system to improve the accuracy of flight data. The system is being designed to allow aviators or other personnel to enter flight data into a squadron computer programmed with edit checks. Data entered will be placed on a floppy disk and sent to the base Data Services Facility for transmission to the central Naval Flight Record Subsystem data base. Navy officials stated that data base accuracy should be greatly enhanced by having automated data entry at the point where the information is generated, namely, at the squadron level. The Navy did not have a firm date for fully implementing the new system.

Aviator Training Resources

During our review, Navy and Marine Corps aviators and other aviation personnel expressed concerns about the shortages of training resources, which they believe negatively affects training and operations. Training resources include ordnance, targets, and range facilities. Aviators believe that they do not always train under realistic conditions. They said that some had never actually fired the sophisticated munitions they would be expected to use in combat and that some training procedures and tactics focus more on conserving scarce resources than providing the best tactics and techniques to strike the targets. We did not evaluate the basis for training resource requirements since it was beyond the scope of this review.

According to Navy officials and data, significant shortages are occurring in some training ordnance and targets. For example:

Heavy Bombs

The training plans require that each A-6 aircrew drop a combination of 160 live and inert 500-pound MK-80 series bombs per year, while F/A-18 crews need to drop 64 bombs. According to fleet projections, however, the fiscal year 1990 training ordnance allocation, "...will provide, on average, ten (10) live bombs per...pilot/crew (F/A-18, A-6, A-7) for the entire twelve-month period; inert bomb allocation closely parallels the live ordnance deficiency."

The Navy believes that insufficient training ordnance allocations will degrade aviator proficiency in ordnance delivery. According to a Navy training assessment, "Live/heavy ordnance training is essential to train each pilot/crew in mission planning..., flying a heavily loaded aircraft, experiencing the associated degradation in aircraft performance, and delivering the weapon on target, on time, first pass. Not only is it essential to train the flight crews, the ground crews must also remain proficient in ordnance loading, arming, etc. procedures."

Navy headquarters officials said that the Navy is only buying enough bombs to replace those used in training and not to reduce the shortfall. They foresee no improvement until at least the mid-1990s when an advanced replacement bomb is scheduled for introduction to the fleet.

Air-To-Air Warfare Targets

Navy aviators identified several problems related to air-to-air targets. The fiscal year 1989 target allocation for the Pacific Fleet met only 27 percent of its requirements and was a 60-percent reduction from fiscal year 1988. The Pacific Fleet air force required 110 targets for fiscal year

1989, but only 30 were available. The target shortage was severe enough that approval was given to fire AIM-9 Sidewinder missiles at parachute flares instead of maneuvering targets. According to a Navy training assessment document, this action provided no tactical training. It added that aircrews were instructed, "...to shoot on 'the edge of the missile envelope' [maximum range] vice maneuvering to 'the heart' of the envelope [optimum range]. At missile firing, the target can be maneuvered out of the envelope to increase odds of a 'miss'." We believe that having aviators try to miss targets or fire at flares is not the most effective way to train, but it is one way to provide some training while conserving scarce resources.

Further target shortages are anticipated as additional F/A-18 squadrons begin operating. According to a training assessment document, "Some fighter aircrews could go through the ...[fleet readiness squadron] and their first fleet tour never having pulled a hot trigger on a missile. Target shortages appear to be primarily a funding issue." Navy and Marine Corps training and readiness plans require that F-14 and F/A-18 aviators need to fire a combined total of about 800 Sparrow and Sidewinder missiles annually. The Navy's F/A-18 plan was revised from one missile firing per crew per year to one every 3 years. The Marine Corps plan still requires one shot per year. According to Navy procurement data, 255 aerial drones were procured in fiscal year 1989, 256 drones in fiscal year 1990, and 352 units in the fiscal year 1991 budget. The manufacturing lead time ranges from 18 to 21 months.

Training Ranges

According to a Navy training assessment document, there are limited numbers of ranges, most of which lack the ability to provide a realistic threat environment for training. Some ranges, such as those at Yuma, Arizona, and Fallon, Nevada, had reduced operating hours due to a lack of operations and maintenance funding. These ranges also have only limited space available for supersonic overland flights that, according to the document, hampers training in realistic air-to-air combat tactics. The West Coast has no over-water instrumented Tactical Air Combat Training System to allow quality air-to-air combat training, including supersonic flight. According to the Navy, on the East Coast, "...current capabilities are inadequate to meet regional (F/A-18 and A-7) requirements," and the lease of the Pinecastle, Florida, range with the U.S. Forestry Service is in jeopardy of being terminated in 1994. In addition, "live ordnance delivery is severely limited by airspace (Federal Aviation Administration altitude restrictions) and inadequate ground targets to train advanced F/A-18 delivery tactics."

In 1987, we also reported¹ on military training airspace shortages that decreased aircrew training effectiveness, caused some units to deploy significant distances to areas where airspace was available, and caused some units to obtain waivers for some training requirements to avoid reporting degraded readiness.

Other Training Resources

Aircrews also voiced concerns about shortages of other training resources. For example:

- F-14 and F/A-18 squadrons received about 30 percent of the 20-millimeter gun ammunition required in the training plans for fiscal year 1990. Some units had used up their total year's allocation halfway through the year.
- The number of captive-carry missiles is inadequate for realistic, consistent training. Captive-carry missiles, which have a live missile radar seeker and a dummy body, are carried on the aircraft and connected to the airplane's fire control systems. Aircrews maneuver into position and electronically lock onto the target, just as they would with a live missile, but do not fire. They consider these assets to be valuable training aids that help them realistically duplicate most of the conditions encountered and tactics they would employ without having to expend a costly live missile.

¹Military Airspace: Better Planning Is Needed to Meet Future Requirements (GAO/NSIAD-87-93, Mar. 23, 1987).

Budgeting for and Allocating Flying Hours

The Navy's flying hour program, which includes the Marine Corps, is funded by the Operations and Maintenance appropriation and is comprised of several elements.

- Tactical air/antisubmarine warfare consists of the front line fleet squadrons that operate Navy and Marine Corps combat and patrol aircraft. Aviators continuously train in their combat specialty areas and are periodically forward deployed aboard ships and at overseas bases.
- Fleet air training consists of the fleet training squadrons that train replacement aviators to fly specific types of aircraft before being assigned to fleet squadrons. Aviators learn fundamentals and tactics and earn basic qualification in weapons delivery and carrier landing. The hours used by squadrons that fly as adversaries against fleet aviators are also included in this mission area.
- Fleet air support consists of the ship and shore-based air logistic support and special operational test and evaluation support squadrons.
- Undergraduate pilot and flight officer training consists of the squadrons that provide basic flight training to individuals new to naval aviation. Individuals are assigned to one of three basic training courses: strike (carrier-based aircraft), maritime (land-based aircraft), and helicopters. Once aviators complete this training, they are assigned to a specific type of aircraft and begin specialized training in one of the fleet training squadrons.

The flying hours budgeted for Navy and Marine Corps fleet squadron aviators are derived from a formula that considers, among other things, anticipated manning levels and the monthly average amount of flying hours required for each aviator to achieve and maintain proficiency in his or her primary mission areas. The Navy does not budget for 100 percent of required flying hours, because all aviators do not sustain the same rate of flying throughout the year. The amount of flying depends upon whether aviators are deployed or progressing through various stages of training while preparing for future deployment. Flying hours for aviators assigned to Marine Corps and carrier air wing staff organizations are also budgeted.

The Navy also budgets flying hours to train replacement aviators before they are assigned to fleet squadrons. Thirty-two Navy and Marine Corps fleet training squadrons train replacement aviators to fly specific types of combat and support aircraft. Aviators receive familiarization and weapons tactics training, become qualified in weapons delivery, and, where applicable, qualify to land on carriers. Budgeted flying hours are based on the number of aviators, grouped by experience category, which

is anticipated to be trained. The amount of flying hours required depends on the individuals' experience in the aircraft. Aviators recently graduated from undergraduate flight training require considerably more flying time than those who previously flew the same type of aircraft and who are being reassigned to operational squadrons after a nonflying assignment. Instructors are required to fly in most training events, either in the same aircraft as the student or in an accompanying aircraft. The Navy budgets flying hours for both the replacement aviators and their instructors, as well as additional hours for post-maintenance check flights and other nontraining requirements.

Flying hours budgeted for the fleet air support element are based on anticipated aircraft utilization rates rather than on a specific formula or training plan based on aviator experience and expertise.

Flying hours budgeted for undergraduate pilot and flight officer training are based on the planned number of student aviators in each of the basic training categories (strike, maritime, and helicopter) and duration of training required by each category.

Flying hour funds are allocated quarterly by the Navy's Atlantic and Pacific Fleet air forces to the carrier air wings. The allocations depend on how close the wing is in relation to its next scheduled deployment and its anticipated flying rate. Wings recently returned from deployment generally have a low flying rate due to personnel on leave, reassignments, and more significant aircraft maintenance and modification initiatives, and therefore receive a relatively small amount of funding. Wings closer to deployment receive increasingly higher percentages of funding as they fly more, and those deployed receive whatever funding is required to accomplish their mission. According to Navy officials, air wings can shift up to 5 percent of their flying hour funding from one fiscal year quarter to another to provide some flexibility to adjust for unanticipated conditions that could affect their flying rate.

Scope and Methodology

To provide statistics about individual aviators and the amounts of flying they perform, we obtained computer tapes from the Naval Flight Record Subsystem data base, which contains flight information submitted by Navy and Marine Corps aircrews after each flight. These data pertained to A-6, F-14, and F/A-18 aviators for October 1987 through March 1989. However, when we compared the data base's flying hour data for individual aviators with their personal flight log books, we found many inconsistencies between the subsystem's data and the aviators' personal log books. Since we did not perform a detailed audit to determine the accuracy of either the subsystem's data or the log books, we did not rely on either of these data sources for individual aviators. However, we used summary totals from the data base for illustrative purposes since Navy officials believed the overall flying hour data to be accurate, and the totals closely matched flying hours reported in Navy budget documents. We did not attempt to construct flying hour totals from individual flight records to verify the flying hour statistics reported in Navy budget data since that effort was beyond the scope of this review.

We performed our work at Navy headquarters, the Commander, Naval Air Forces Pacific Fleet, and wing and squadron organizations at Naval Air Stations Lemoore and Miramar, California; Whidbey Island, Washington; and at Marine Corps Air Station, El Toro, California. We conducted interviews, received briefings, and obtained and analyzed pertinent data related to the flying hour program and aviator training and readiness. Although most of the information pertained to West Coast squadrons, Navy headquarters officials believed that conditions were also representative of East Coast units.

We performed our audit from August 1989 through March 1991 in accordance with generally accepted government auditing standards.

Major Contributors to This Report

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