REPORT BY THE

Comptroller General

OF THE UNITED STATES

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The Services Can Further Refine Management Of Flying Hour Programs

In 1976 GAO reviewed flying hour programs--flying for training and transportation--of the Army, Navy, and Air Force and made recommendations for improving those programs.

This report describes the substantial progress the services have made since that review and offers specific recommendations for continued improvements, which could save millions of dollars.

LCD-79-401
MARCH 27, 1979

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-146896

The Honorable Warren G. Magnuson
Chairman, Committee on Appropriations
United States Senate

Dear Mr. Chairman:

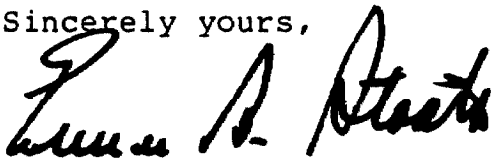
This report discusses the flying hour programs of the military services and points out ways to further improve them. The review was undertaken in response to strong interest in the subject area by your office. In addition to raising new issues, we followed up on the implementation of recommendations of our prior report, "Flying-Hour Programs of the Military Services: Opportunities for Improved Management," LCD-75-451, June 18, 1976.

We maintained close liaison with your office throughout the review to coordinate milestones to coincide with hearings and mark-up. On March 9, 1978, we provided a list of suggested questions which were subsequently used in the fiscal year 1979 hearings on operation and maintenance appropriation requests before your Committee.

As your office requested, we solicited written comments from the Department of Defense on November 15, 1978. The Department's comments, dated February 27, 1979, were not received in our office until March 6, 1979. Since the Department provided us with unofficial advance comments of each of the services, we treated the comments as informal and addressed them in the report in general terms, as appropriate. We will provide your office with a more detailed analysis of the Department's comments under separate cover.

This report contains recommendations to the Secretary of Defense on page 80; the Secretary of the Army on pages 9, 11, 13, and 14; the Secretary of the Navy on pages 24, 27, 30, 33, 36, 38, and 40; and the Secretary of the Air Force on pages 50, 55, 59, 62, 67, 70, and 73. As agreed with your office, we plan to release the report 3 days after it is sent to you so that the requirements of section 236 of the Legislative Reorganization Act of 1970 can be set in motion.

Sincerely yours,



Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE SENATE
COMMITTEE ON APPROPRIATIONS

THE SERVICES CAN FURTHER REFINE MANAGEMENT OF FLYING HOUR PROGRAMS

D I G E S T

The military services have improved their flying hour program management systems since GAO's report of over 2 years ago. However, some areas require further attention.

In fiscal year 1977 military aircraft flew about 6-1/2 million hours at a cost of over $3 billion. Most military flying is for pilot replacement training and pilot skill improvement and maintenance. Some is for transporting people and cargo, surveillance, and other support purposes. Flying affects, among other things, fuel consumption and costs, maintenance effort, and spares requirements. (See pp. 1 to 4.)

All three services have either improved or instituted systems tying the extent of flight training to readiness. The Air Force and Navy have reduced little used or unnecessary flights. The Army is in the final stages of developing a new flying hour management system. The fiscal year 1980 program is expected to be the first program based on the Army's new flying hour standards.

Although progress has been made by the services in establishing better flying hour management systems, some areas require further attention.

SOME STANDARDS NEED TO BE REFINED

A number of standards serving as the basis for training and flying hour requirements should be improved to assure force readiness at lower costs. The Navy's monthly flying hour standards for the P-3 could be reduced if simulator substitution and other operational factors were adequately considered. According to Marine officials, the standard for the Marines' Harrier aircraft is too high. (See pp. 20 to 25.)

The services still emphasize flight hours over events performed. This causes unnecessary flying. The Navy and Air Force have arbitrary minimum flying hour criteria for pilot advancement in multipiloted aircraft, but these criteria do not allow for individual differences. Unless they meet the minimums, pilots cannot advance to a higher level, irrespective of their skills and capabilities. (See pp. 37 to 39 and 56 to 59.)

About 60 percent of the Air Force's C-141 flying hour program for its active forces is determined by minimum flying hour criteria. This percentage translates into about $133 million a year in aircraft operating costs. (See p. 58.)

A large portion of the Army's flying hour program consists of mission support flying not considered in training standards. The Army should determine the extent to which support flying contributes to individual training and should reduce the flying hour program accordingly to accomplish readiness training at the least cost. (See pp. 8 to 10.)

CLOSER CORRELATION BETWEEN FLYING REQUIREMENTS AND READINESS MEASUREMENT SHOULD BE ESTABLISHED

The services need to establish a closer correlation between flying hours and unit readiness. In the Army and the Air Force, the readiness measurement system for training is not based on total training requirements. The Navy has incorporated flying hour completion percentages into readiness measurement without considering events flown or other pilot readiness standards. In all, the services readiness measurement criteria should coincide with training requirements.

The Navy should also establish a more realistic readiness measurement system for aviation units by considering the number of events completed by crews rather than basing readiness solely on the percentage of standard flying hours. (See pp. 14, 30, and 61.)

PROGRAM DEVELOPMENT FACTORS NEED TO BE REFINED

Flying hour programs should reflect training requirements modified by operational constraints for the periods in question. Because improper planning factors were used in developing the programs, flying hour requirements were overstated for each service. (See pp. 7 to 11, 25 to 27, and 45 to 51.)

Using authorized strength or inflated estimates of pilot assignment levels caused overprograming of flying hours by the Army and the Navy.

Fort Hood's program for fiscal year 1978 was an estimated 20 percent too high, amounting to about $1.2 million, because assigned aviator strength was far below programed levels. If present trends continue, this situation will persist in fiscal year 1979.

Because the Navy used authorized strength, rather than the best estimate of assigned pilots, to program flying hours for fiscal year 1978, the program for one weapon system was $5.1 million too high and in fiscal year 1979 it was $4.3 million too high. (See pp. 11 and 25.)

GAO estimates that training requirements for the Air Force's C-141 aircraft were overstated in fiscal year 1979 by as much as 32,000 flying hours and in fiscal year 1980 by 48,000 hours because estimated pilot tour length and pilot experience levels were not updated. The overstatements amount to about $34 million and $54 million in aircraft operating costs for the respective fiscal years.

Flying hours for the Air Force's fleet of executive jet-type aircraft exceed annual training requirements by at least 50,000 hours, amounting to about $9 million in aircraft operating costs, and many flights cost more than available commercial services. (See pp. 46, 49, and 72.)

POTENTIAL FOR REDUCING AIRCREWS FOR AIRLIFT AIRCRAFT

The Air Force's airlift aircraft are authorized multiple crews to sustain high aircraft use rates in emergencies. Staff and supervisory personnel maintaining full readiness currency in the aircraft should be counted toward crew ratios for emergencies to the extent possible. This policy should apply to the C-5, C-130, C-141, and other aircraft with multiple crews. In the case of the C-141, training requirements of as many as 19,000 flying hours a year, amounting to $21.3 million in aircraft operating costs, could be eliminated. (See pp. 68 to 70.)

SIMULATOR TRADEOFF IS NOT FULLY EXPLOITED

Simulators should replace flying in aircraft as much as possible. The Navy's Pacific antisubmarine aircraft community could have avoided 2,300 to 2,800 flying hours, valued at $840,000 to $1 million in 1977, if simulators had been used for operations authorized to be simulated. C-5 simulators in the Air Force could save about 2,000 flying hours a year ($4.7 million) if they were used to replace flying hours to the extent permissible. (See pp. 32 and 53.)

MANY STAFF PILOTS DO NOT NEED TO FLY

The services authorize more than 7,000 staff and supervisory pilots to maintain minimum flying currency at a level much lower than that needed to maintain combat readiness. GAO estimates that such flying costs more than $30 million a year. Many of these pilots do not need to fly to do their jobs.

Before they are assigned to combat duty, staff and supervisory pilots must undergo refresher training. GAO believes that only those pilots who need to fly to do their jobs should be authorized to maintain currency unless they maintain full combat readiness and are counted toward authorized crew ratios. (See pp. 15, 33, and 62.)

RECOMMENDATIONS

The Secretary of Defense should develop and implement improved guidance for managing the services' flying hour programs, with particular emphasis on:

--Identifying the skills and qualities needed by commmanders of multipiloted aircraft and establishing systems to monitor pilot progress without relying on minimum flying hour criteria.

--Using full flying training requirements as the baseline for readiness measurement.

--Assuring that flying hour requirements are based on assigned pilots, operational constraints are considered, and operational support flying is limited to training requirements.

--Identifying tasks and events to be done in simulators and doing them in simulators to the extent possible, giving priority to events reducing the number of flying hours the most.

--Better defining who should and should not fly. (See p. 80.)

Specific recommendations to each service secretary are contained in the chapter covering that service.

AGENCY COMMENTS AND GAO'S EVALUATION

As the Committee requested, GAO solicited written comments on the draft report from the Department of Defense on November 15, 1978. The Department was asked to reply within 30 days. The written response, dated February 27, 1979, included as appendix I, was not received until March 6, 1979.

The Department of Defense provided us unofficial advance comments of each of the services. These comments did not change and were addressed in general terms following the specific topic to which they pertain.

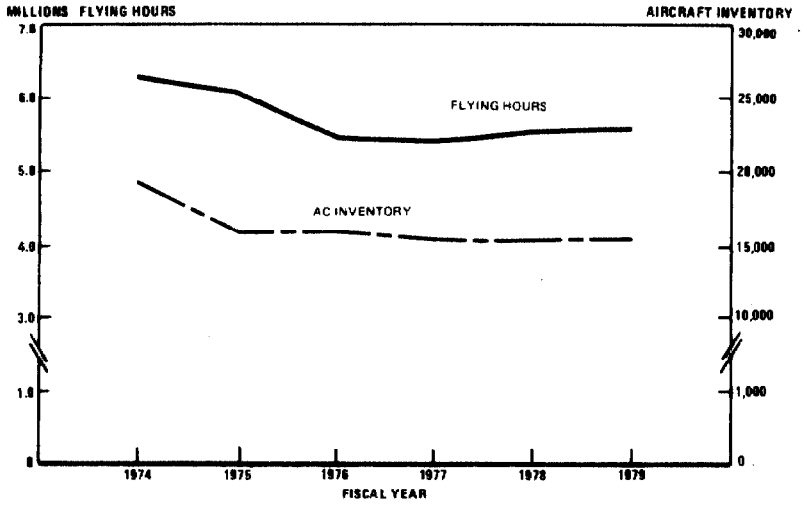
Contents

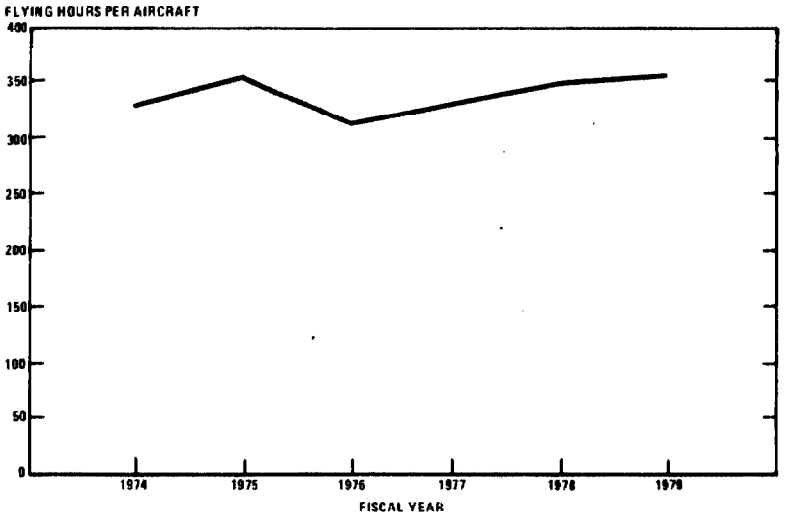
CHAPTER 1

INTRODUCTION

Flying of military aircraft for training and transportation is expensive but is required to maintain combat ready forces. In fiscal year 1977 the military services, including the reserves, flew about 6-1/2 million hours at a reported cost of over $3 billion.

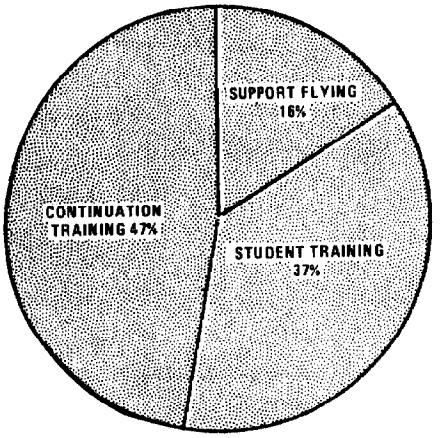
Over the last few fiscal years the level of flying has stabilized since Vietnam operations have ceased. The charts below illustrate the overall flying hour trends for the active services.





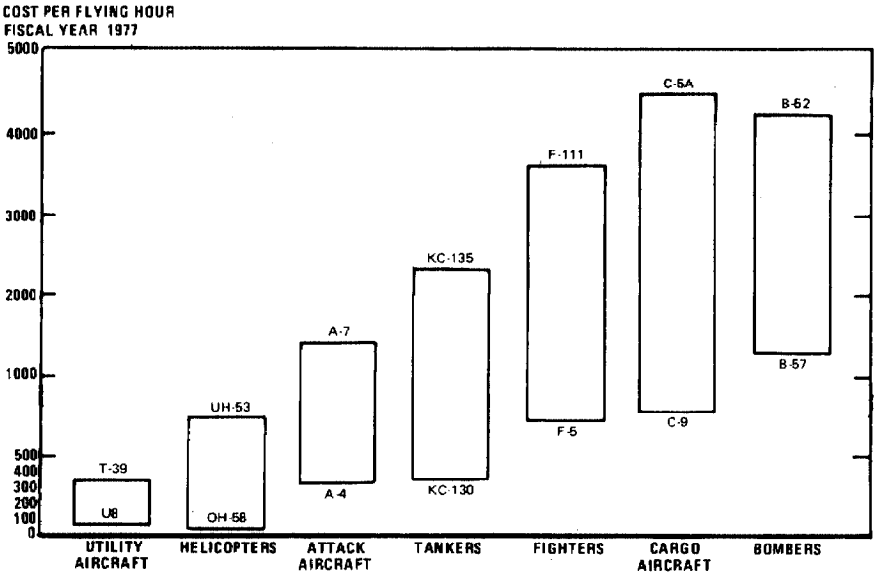
Military aircraft are flown for three major reasons: (1) training, (2) continuation training, and (3) support. Pilot training includes initial flight training; graduate flight training in specific operational aircraft; and specialized courses, such as instructor pilot training and refresher training for pilots returning to pilot positions after serving elsewhere. Continuation training, which accounts for the largest portion of flying, is to maintain and improve the skills of pilots assigned to operational fighter, transport, or other units to insure readiness for potential combat operations. Support flying involves transporting cargo and personnel and other specialized tasks necessary for the day-to-day operations of the services.

Following is a breakdown of the active Navy flying for fiscal year 1977.



The extent of flying affects many support activities. For example, the more an aircraft is flown, the higher the support costs are likely to be. The most direct relationship between flying hours and resource requirements is in the amount of fuel used. However, spares, overhaul, and maintenance labor requirements are determined largely by flying time. It is not suprising then, that projections of future material and maintenance requirements are often based on proposed flying hour programs.

Costs per flying hour vary widely, depending on the aircraft type. Service data show that costs per flying hour range from $49 for the Army's OH-58 observation helicopter to $4,486 for the Air Force's C-5 cargo aircraft. The following chart illustrates the ranges for some aircraft types.



Most flying by the services is done for training to enable crews and pilots to be combat ready. Some flying tasks are done in simulators as effectively as in aircraft, and some maneuvers, such as pilot reactions during emergencies, cannot be practiced without simulators without endangering men and machines. The extent of flying, then, apart from support requirements, should be at a level where optimum training is imparted; i.e., additional flying would result in only minimal, if any, additional skills.

For the annual appropriations for operations and maintenance, each service is provided a lump sum for its flying program. No limitations are placed on the hours flown. Each service manages its own program within the broad dollar limitations and the reprograming authority.

In our report, "Flying-Hour Programs of the Military Services: Opportunities for Improved Management," LCD-75-451, June 18, 1976, we pointed out that each service had developed its own flying hour management system. The Air Force's system was the most developed, the Army's was the least developed, and the Navy's was somewhere in between.

Our report stated that an effective flying hour management system should identify

--the mission of each aircraft system,

--the training needed to accomplish the mission,

--the controls needed so that only those who need to fly, fly an adequate amount, and

--the desired results in terms of combat readiness.

We also pointed out that such a system required sound criteria and should provide for a mechanism evaluating the component factors and methods, such as:

--How much training is enough?

--Were results achieved with a minimum expenditure of hours?

--Are squadrons and/or individuals reaching predetermined goals within prescribed limits?

We recommended that the Secretary of Defense

--insure that the services adopt systems that (1) can be used to plan, execute, and manage flying hour programs and (2) can be related to force readiness objectives;

--direct the commanders to improve control procedures to insure more effective training by balancing flying hours allocated and used and by making greater use of crew substitutions; and

--discontinue little used or unnecessary flights.

SCOPE OF REVIEW

We reviewed the Army, Navy, and Air Force flying hour management systems. We examined the procedures and methods used to relate training and readiness objectives to flying hour programs in fiscal years 1977 and, to some extent, 1978 and 1979. We evaluated the controls established to insure that maximum benefits had been derived from the hours flown.

Our review covered several types of aircraft ranging from helicopters to cargo aircraft. Following is a list of aircraft and locations reviewed:

	Aircraft	Locations visited
Army	Helicopters OH-58 (observation) UH-1 (utility) AH-1 (attack) CH-47 (heavy utility)	Fort Hood, Tex.
Navy	F-4 P-3	Oceana, Va. Moffett Field, Calif.
Air Force	F-15 F-4 C-5 C-141	Langley AFB, Va. Seymour Johnson AFB, N.C. Travis AFB, Calif.

In addition, we did work at the U.S. Army Forces Command, Fort McPherson, Georgia; the Commander Naval Air Force, U.S. Atlantic Fleet, Norfolk, Virginia; the Commander Naval Air Force, U.S. Pacific Fleet, San Diego, California; the Commander, Patrol Wings Pacific, Naval Air Station, Moffet Field, California; the Tactical Air Command, Langley Air Force Base, Virginia; the Military Airlift Command, Scott Air Force Base, Illinois; and the respective service headquarters, Washington, D.C.

CHAPTER 2

BUILDING A BETTER FLYING HOUR PROGRAM--

WHERE THE ARMY IS AND EXPECTS TO BE

In response to past criticism the Army is developing standards to control its flying hour program. On balance the Army is making good progress in its standards development. While the Army's flying hour program for continuation training is relatively unsettled, several aspects require attention and/or should be incorporated into the standards and program management methodology.

Adopting standards will not by itself alleviate some of the flying hour program development problems which could cause overprograming. Specifically, a better definition of the extent of individual training requirements satisfied by mission support flying is needed to assure an optimum flying level. The Army also needs to develop a more reliable system to forecast aviator assignments to assure a flying hour program commensurate with training needs.

In addition, the standards were not developed scientifically in that the number of repetitions required were established by groups of acknowledged experts without testing the propriety of the number of repetitions. As experience is gained, these standards need to be adjusted.

Other problems are the relationship between flying hours and readiness and requirements for flying by aviators in staff positions. The Army has recognized most of these problems and is working to resolve some of them. In the Army the switch to standard hours per aviator is increasing the total number of hours flown and the flying hour program cost. After declining somewhat during fiscal years 1974-76, the Army's flying hour program is again increasing in total as well as on a per aircraft basis, as follows:

COURTESY OF U.S. ARMY

THE AH--1 ATTACK HELICOPTER MAKING A LANDING APPROACH--THIS HELICOPTER, ARMED WITH MISSILES IS USED AS A WEAPON AGAINST ARMOR AND OTHER SUITABLE TARGETS.

Fiscal year	Flying hours	Aircraft inventory	Flying hours per aircraft	Flying hour program costs (millions)
1974	1,192,679	7,087	168	Not available
1975	1,151,203	6,559	176	$ 87.3
1976	975,697	6,218	157	66.5
1977	1,001,850	5,455	183	105.8
a/1978	1,070,500	5,507	194	124.7
b/1979	1,170,621	5,675	206	142.2

a/Approved program.
b/Budget request.

PROGRAM DEVELOPMENT

The Army's program is developed from the bottom up with guidance from the Department of the Army and major commands. Each aviation unit prepares its program composed of individual training, unit training, and mission support flying. These

estimates are forwarded to the next higher headquarters, where they are consolidated after they are analyzed and adjusted as necessary. This process is repeated until the Department of the Army is reached. Through fiscal year 1977 the Army's program was developed principally on the basis of prior years' flying hours adjusted for anticipated changes. This methodology has been changed. The Army has since developed draft standards of the flying requirements in terms of events and repetitions with estimated execution times for aviators. These standards are set out in aircrew training manuals. Each aircraft type has its own manual recognizing the mission and resultant flying complexities. The fiscal year 1980 program is expected to be the first complete implementation of the standards.

The fiscal year 1978 and 1979 programs were based on draft standards, and standard hours for each aviator and aircraft type were used. However, aviator experience levels, aviator turnover rates, and other intricacies were not considered in the program development for these fiscal years. These factors are to be incorporated into the fiscal year 1980 program. We believe the Army needs to determine the extent individual training needs are satisfied by mission support flying and program for the experience level of aviators assigned. These items profoundly affect the number of flying hours required.

Extent of individual training satisfied by mission support flying needs to be better defined

The Army has not yet developed definitive guidance to determine the extent of individual training satisfied by mission support flying. As a result, there is no assurance that the flying hour program is at the level commensurate with needs. While we could not precisely quantify this effect on the Army's flying hour program, our work at Fort Hood indicates that it is substantial.

The training manuals being developed for aviators of each Army aircraft type specify requirements in tasks and events translated into total flying hours necessary to acquire, improve, and maintain flying skills of aviators. But formulating a unit's flying hour program is not a simple process of determining individual flying needs. Mission support flying has to be considered as well. Army policy requires that every effort be made to maximize individual aviator training benefits

available from operational support flying. Army guidance also provides that unit commanders establish programs whereby individual aviators are scheduled for operational support missions and for collective training missions based on the tasks required to complete a mission and the proficiency training requirements of assigned aviators. According to draft Army guidance, the number of flying hours devoted to individual aviator training should be the absolute minimum necessary to supplement the training received in collective training and on operational missions. But because the process of developing a unit's flying hour program is not well defined and developed, additional Army-wide guidance would be of benefit.

The fiscal year 1978 flying hour program at Fort Hood illustrates this point, even though it was not yet totally developed in accordance with the methodology to become effective in fiscal year 1980. To derive its fiscal year 1978 program, Fort Hood used the individual training hours as directed by Forces Command, its higher headquarters, for its authorized pilots and added unit training and mission support flying, for a total of 117,964 hours. Forces Command reduced Fort Hood's request to 76,205 hours to compensate for overlaps between unit training, mission support flying, and individual training. The Army has since issued new standards consolidating individual and unit training flying hour requirements, recognizing that unit training fully contributes to individual flying training. As far as we could determine, no clear relationship has been established as to how much individual training can to be accomplished by mission support flying. Mission support flying is extensive, constituting 37.5 percent of Forces Command's flying hour request for 519,086 hours for fiscal year 1979.

Conclusion

Because of the large overlap and the effect on the flying hour requirements, the Army should develop guidelines for unit commanders as to the extent of individual training which can be satisfied by mission support flying. Such guidance is needed to assure that the flying hour program is near the minimum level needed to assure adequate and effective training.

Recommendation

We recommend that the Secretary of the Army establish guidelines covering the extent of individual training that can be accomplished by mission support flying.

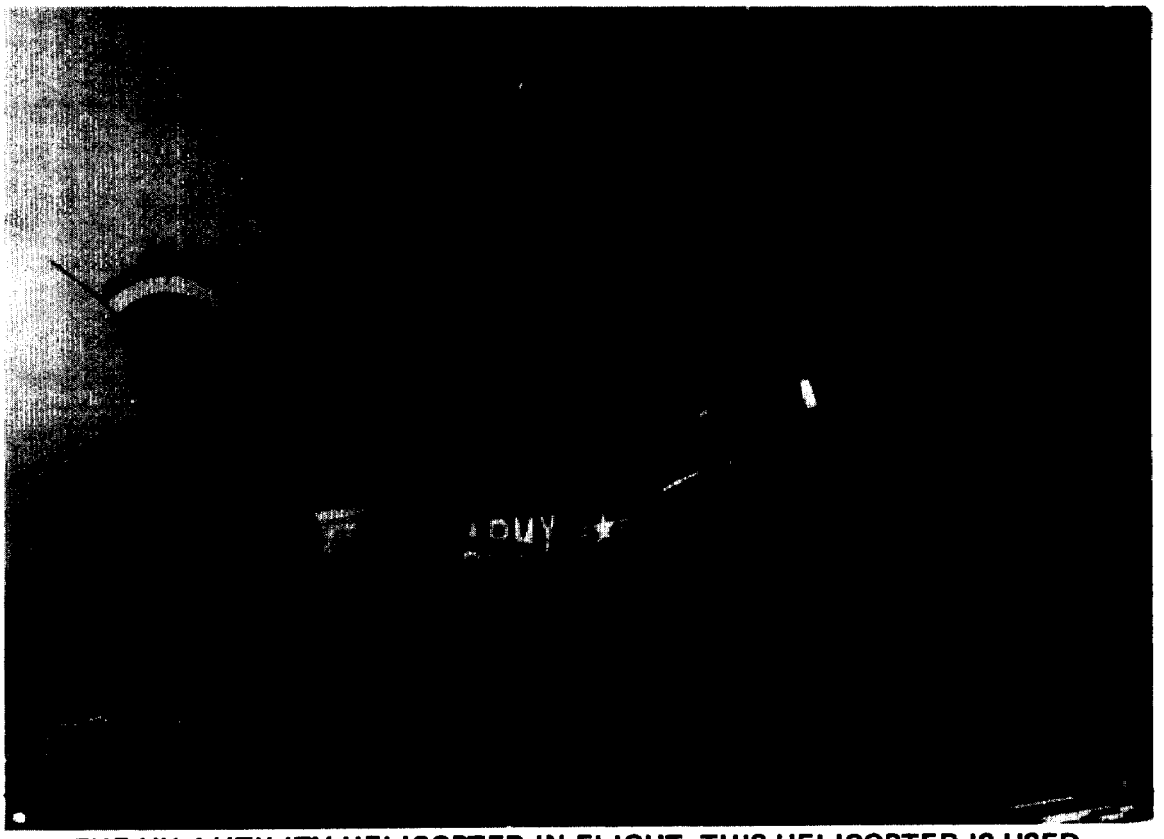
Agency comments and our evaluation

The Army is in general agreement with our conclusion and recommendation.

Better estimates of assigned aviators are needed for programing

Using other than the most realistic estimates of pilot assignment for the programing year can seriously overstate or understate the flying hour program for specific units and locations. Fort Hood's program for fiscal year 1978 was seriously overstated because programing was based on authorized aviator levels whereas only about two-thirds are assigned.

COURTESY OF U.S. AIR FORCE



THE UH-1 UTILITY HELICOPTER IN FLIGHT--THIS HELICOPTER IS USED PRIMARILY TO TRANSPORT TROOPS AND MATERIALS.

In developing the fiscal year 1978 program, Fort Hood used full authorized aviator strength to derive a requirement of 117,964 flying hours. Forces Command reduced the requirement to 76,205 hours after allowing for overlap between individual training, unit training, and mission support flying. Due to subsequent congressional budget cuts, Fort Hood's

program was reduced to 66,098 hours to cover 87 percent of authorized strength.

As of March 31, 1978, assigned aviator strength at Fort Hood was only 70 percent. The assigned strength has not exceeded 75 percent of authorized strength since March 1977. If present trends continue, fiscal year 1978 flying hour needs will be overprogramed by nearly 13,000 hours, or 20 percent, valued at $1.2 million.

A similar situation may occur in fiscal year 1979. As of March 31, 1978, Forces Command had instructed Fort Hood to use 95 percent of authorized strength to develop the fiscal year 1979 program.

Conclusion

The fluctuation between the authorized and assigned aviator strength for flying hour program development purposes is too large to be dismissed as a reasonable estimating error. The major commands should better coordinate expected aviator assignment levels with the appropriate Department of the Army staff to develop more realistic flying hour programs and advise their subordinate units accordingly. The best estimate of assigned strength should be used for flying hour programing after considering aviator turnover, replacement, and other factors.

Recommendation

We recommend that the Secretary of the Army use the best estimate of assigned aviator strength, not to exceed authorized strength, for flying hour programing.

Agency comments and our evaluation

The Army is in general agreement with our analysis, conclusion, and recommendation.

ARE THE ARMY'S FLYING HOUR STANDARDS VALID?

The Army is developing, by consensus, aviator training standards of events and repetitions with attendant flying hours. But there is no assurance that the standards are valid because the numbers of repetitions of events were not challenged once they were subjectively compiled. If the standards are too low, aviation units might not be combat ready. If they are too high, unnecessary flying and unnecessary use of fuel and other resources might result.

As we understand it, the Army used task groups of experienced aviators to develop training manuals for each aircraft type. The groups analyzed the events and tasks which need to be flown to enhance and maintain proficiency at desired levels. The numbers of times events and tasks need to be repeated were also determined in this fashion.

From March through August 1977 the Army tested the draft standards at selected units of the 6th Cavalry Brigade at Fort Hood, but the required numbers of repetitions were not validated. The objectives of the tests included (1) validating the flying times for events and tasks and (2) identifying individual training tasks which can be accomplished as part of unit training or mission support.

Whether the test objectives were accomplished and whether the results were adequately considered in the subsequent training manuals is questionable. Participating units reported the conduct of the tests to be unsatisfactory for reasons including:

--Draft manuals used did not contain complete, validated task lists with appropriate standards and conditions.

--There were insufficient test personnel.

--There was a turnover of test personnel.

--Recordkeeping was inadequate.

In addition, directives implementing the manuals were issued before the tests at Fort Hood had been completed. Army personnel told us in mid-July 1978 that the Army recognized this weakness and that event/task iteration tests were being planned. Test sites and units to participate in the tests had not yet been selected.

The Army's flying hour standards are average hour requirements for training. It is recognized that experienced aviators may need somewhat less training to remain combat ready whereas less experienced aviators need more. The standard average flying hours are considered to be good programing figures. No maximum or minimum events and/or hours have been established for aviators in different experience levels. However, to provide different levels of training, depending on aviators' experience, the Army is authorizing unit commanders to deviate a maximum of 15 percent from the standard.

The new training manual standards also recognize the training value of flying in the copilot position in multi-piloted aircraft. The manuals now state that at least 50 percent of required training hours must be accomplished as a pilot. As a result, as much as half of the required training may be performed as copilot.

Conclusions

The Army has made significant progress toward developing and implementing a manageable flying hour program, but certain elements remain to be tested before the standards can be considered fully valid. The procedures used to determine necessary events and tasks have merit in that experienced aviators would be in the best position to identify the events and tasks necessary to enhance and maintain aviator training for combat readiness. However, the number of repetitions of these events and tasks should not be determined subjectively without validation testing; the Army appears to agree. Separate aviation units should fly differing repetitions of the event and task schedules to derive the optimum number of repetitions needed by evaluating the effectiveness of the units against each other.

Recommendation

We recommend that the Secretary of the Army require validation testing of the repetitions of events to assure proper combat readiness of aviation units with minimum resources expenditures.

Agency comments and our evaluation

The Army is in general agreement with our analysis, conclusions, and recommendation.

RELATING FLYING HOURS TO READINESS

Army draft guidance for aviation unit commanders relates flying hours to readiness by means of the training component of the readiness measurement system. However, the relationship between aviation unit training readiness and flying hours will still be indirect, barring measurement of the effect on readiness of incremental changes in flying hours. Also, the guidance is permissive, allowing commanders to apply suggested criteria.

To derive a unit's readiness status, a commander must consider the condition of personnel and equipment, training,

and other factors, such as morale and discipline. According to Army guidance, melding these factors into an overall readiness status is largely a matter of the commander's judgment.

A key ingredient of the training readiness status of a unit is the individual aviator readiness status, which is tied to flying hours. To qualify for the highest readiness ranking in the training area, a unit must have at least 85 percent of its authorized aviators assigned and qualified. To be considered qualified, an aviator must have completed at least 80 percent of the tasks listed in the appropriate aircrew training manual in the specified time frame.

The readiness measurement criterion is not consistent with the flying hour requirements for training. According to the training manuals, all tasks must be flown the specified number of times by each aviator, irrespective of experience levels, and the flying hour standards are based on the average flying time required to perform all prescribed tasks. Flying hours are programed on the basis that all tasks will be flown the specified number of times. For readiness reporting, however, an aviator is considered ready if he has flown only 80 percent of the task requirements.

Conclusions

The basis for readiness measurement should coincide with training requirements. The Army's system allows readiness measurement at a lower baseline than that required for training programing requirements by counting aviators as combat ready when they complete only 80 percent of the task list established for training purposes. If aviators are fully ready when they have flown only 80 percent of prescribed task lists, it appears that flying hour standards are too high, thus allowing more resources to be used than necessary. Conversely, if training standards are valid, reported readiness is understated.

Recommendation

We recommend that the Secretary of the Army use the same baseline for readiness measurement as the one used to establish flying hour training requirements.

Agency comments and our evaluation

The Army is in general agreement with our analysis, conclusions, and recommendation.

FLYING BY MANY STAFF AND SUPERVISORY AVIATORS MAY NOT BE NECESSARY

In a September 1977 memorandum, the Army's Office of the Judge Advocate General stated that the legislative history of the Aviation Career Incentive Act of 1974 indicated that operational flying duty was intended to include only those positions which required actual cockpit duty as a necessary dimension of the individual's job. The Army's then-existing policy was considered to be in violation of the law. As a result, the Army is now reviewing the need to fly over 1,900 personnel in positions currently authorized to fly. The positions are considered to be managerial, supervisory, and staff positions tending to support a requirement for either aviation expertise or a general knowledge of Army aviation. In correspondence to the major commands, the Army stated that these positions would be automatically redesignated as either nonoperational flying whose incumbents might not fly or as positions not requiring an aeronautical designation unless justification to the contrary was received at the Department of the Army by August 31, 1978. The Aviation Position Review Committee will review every justification on a case-by-case basis. As of mid-September 1978, this review had not been done.

At Fort Hood we noted several positions authorized to fly whose incumbents did not need to fly regularly and frequently to carry out their duties. For example, the III Corps' Aviation Officer and Assistant Aviation Officer are responsible for coordinating the flying hour program management among the various Corps' units. Both officers maintained flying currency at a level less than that required for combat readiness. Neither officer flew frequently or regularly in performing his duties. Both stated that maintaining currency was necessary to effectively deal with aviators in performing their duties.

Conclusions

The Army has recognized that many aviators authorized to maintain currency in an aircraft may not need to do so in performing their duties and has initiated the needed justification review. In view of the action underway, we have no specific recommendation on this subject.

Agency comments and our evaluation

The Army is in general agreement with our analysis and conclusions.

CHAPTER 3

POTENTIAL FOR IMPROVING THE NAVY'S FLYING HOUR PROGRAM

While the bulk of the Navy's (including the Marine Corps') flying hour program appears to be sound and well documented, certain areas can be improved with resultant resource savings and program effectiveness. In particular, (1) some monthly flying hour standards have questionable validity, (2) the program is developed centrally without full recognition of variables such as logistics support capabilities and expected aircrew assignments, (3) flying hour requirements are not realistically tied to readiness measure, (4) simulators are not used as extensively as they could be, and (5) flying by pilots in certain supervisory and staff positions is questionable.

The impact of these problem areas is substantial. For example, the Navy overprogramed fiscal year 1978 and 1979 flying requirements for the F-14 by $5.1 million and $4.3 million, respectively, because authorized pilot levels rather than the best estimates of assigned pilot levels were used.

The response to specific recommendations in our 1976 report is mixed. As we recommended, the Navy has (1) reduced unproductive operational P-3 flights, (2) reduced West Pacific flights to reasonable levels, and (3) instituted better controls over cross-country flights. However, the Navy's action concerning pilot advancement criteria has not been adequate. As noted in our earlier review, dedicated training flights by pilots who have already met currency requirements persist.

THE NAVY'S PROGRAM AND ITS DEVELOPMENT

Over the last several years the active Navy's program has been relatively stable, although the aircraft inventory has decreased, as follows:

Fiscal year	Flying hours	Aircraft inventory	Flying hours per aircraft	Flying hour program cost (millions)
1974	1,980,406	4,650	425	$392.5
1975	1,964,026	4,099	479	529.2
1976	1,809,144	4,382	413	584.2
1977	1,753,385	4,493	390	618.3
a/1978	1,799,385	4,027	434	662.5
b/1979	1,791,753	3,928	456	742.1

a/Approved program.

b/Budget request.

The Navy's flying hour program falls into three primary categories: student pilot training, pilot continuation or proficiency training, and administrative and support flying. The following table shows the magnitude of each of these types of flying done by the active Navy, including the Marine Corps.

	Student pilot training	Continuation training	Fleet support	Other	Total
Fiscal year 1977:					
Requested	215,099	901,608	254,758	553,032	1,924,497
Approved	212,006	806,377	182,735	542,229	1,743,347
Actual	213,782	826,634	211,692	501,277	1,753,385
Fiscal Year 1978:					
Requested	208,357	882,354	216,076	521,216	1,828,003
Approved	223,494	843,477	200,394	482,040	1,799,385
Fiscal year 1979:					
Requested	220,695	884,620	207,585	478,853	1,791,753

Program development

The Navy and Marine Corps programs are developed centrally by the Department of the Navy. After congressional appropriations have been made, the Navy allocates funds and flying hours to the operating commands.

The level of flying hours required for student pilot training is determined by the number of student pilots and the standard hours needed for the particular courses in question as prescribed by training syllabuses. Forecasts of the number of student pilots by course is the primary variable.

The continuation training is the readiness training of qualified pilots and crews needed to enhance and maintain combat proficiency. This training is based on training standards established for each aircraft type. These standards reflect the number of flying hours required to maintain the average aircrew qualified and current to perform the primary mission of the assigned aircraft. To determine the number of flying hours needed for primary mission ready requirements for each aircraft type, the standard is multiplied by the number of authorized aircrews. Programing has been limited to 88 percent of standards by agreement between the Department of Defense and the Navy ever since the standards were established. Added to this is a historically determined number of hours required for support activities, such as ferrying aircraft to depots and a limited amount of flying by supervisory personnel.

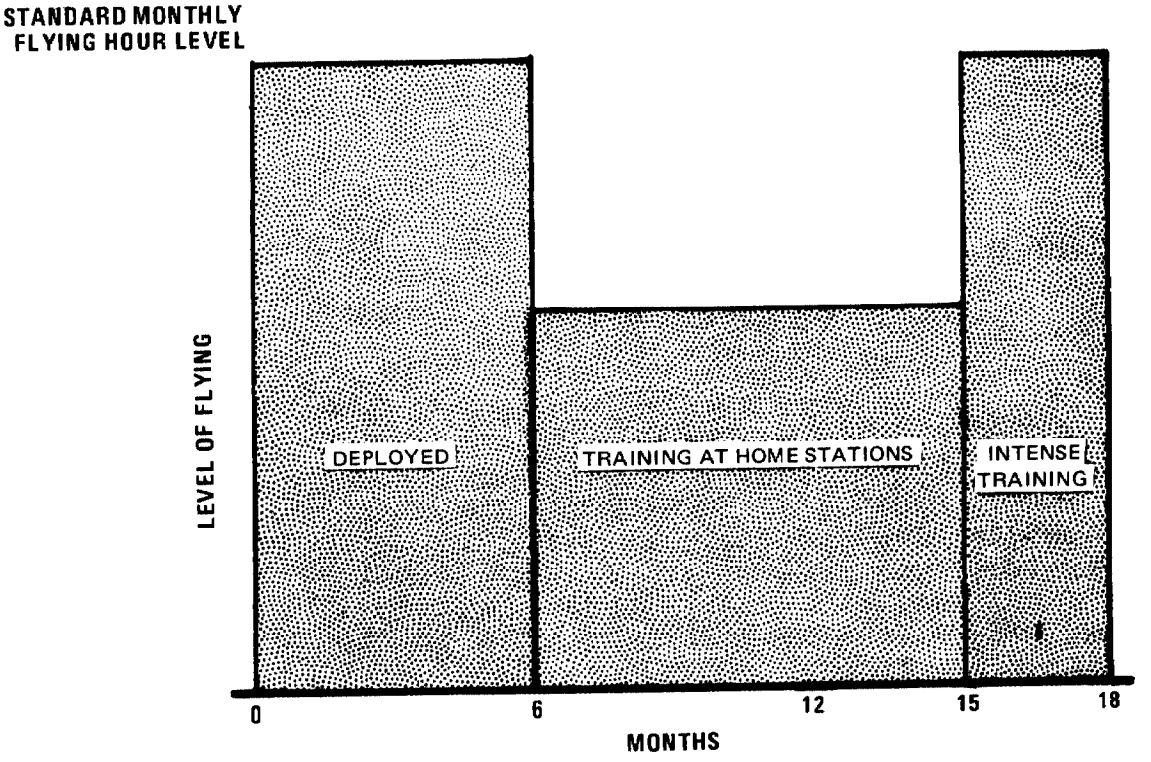
Fleet support flying requirements are a projection of need based on historical data, future commitments, and aircraft capabilities. Other flying requirements consist of intelligence activities and the like.

The effect of the Navy's deployment cycle on the flying hour program

For programing purposes the Navy uses a standard flying hour rate per month for each aircraft type. The flying hour program execution varies, depending on the phase in the deployment cycle.

The Navy's aircraft communities generally operate on an 18-month deployment cycle, of which 6 months are spent in a deployed status to overseas areas on carriers or bases, 9 months are spent in a training status at home stations, and 3 months are spent at more intense training at home stations in preparation for deployment.

The tempo of operations varies with the phase of the deployment cycle of a particular unit. During the deployment period pilots fly at or in excess of the standard monthly flying hours for the aircraft. During the training status phase at home stations, pilots generally fly well below the standard monthly flying hours. Pilots fly about the standard monthly flying hours during the 3 months of more intensive training in preparation for deployment. The Navy has depicted the deployment cycle as it relates to the flying hour program, as follows:



THE VALIDITY OF SEVERAL FLYING HOUR STANDARDS USED FOR FLEET READINESS TRAINING IS QUESTIONABLE

Some of the standards used for developing the flying hour program for fleet readiness training are overstated, unnecessarily costing several million dollars annually. In addition, most of the standards are not supported adequately.

How the standards were developed

Before fiscal year 1972, the Navy's program was based on historic aircraft use rates multiplied by the number

of programed aircraft. The fiscal year 1972 and subsequent programs for the fleet readiness training portion were based on standards. Neither the Navy headquarters nor the fleet level were able to provide us studies, analyses, or reviews on how the standards had been developed.

The Navy established a level of flying hours deemed necessary for the average pilot to enhance and maintain proficiency on a monthly basis. Using these standards, each fleet developed a training manual for each of its tactical aircraft. The manuals specify the training events needed for aircrews to achieve and maintain combat ready status. The manuals provide the average time needed for an aircrew to qualify in each event, but they do not delineate maximum or minimum times, nor do they provide separate standards for experienced or inexperienced pilots.

Some standards appear to be too high

Standards for some Marine aircraft and the Navy's P-3 antisubmarine aircraft appear too high, resulting in potentially unnecessary flying hours. We estimate that P-3 flying could be reduced by over 4,000 hours a year, costing about $2 million.

Marine Corps aircraft

The monthly standard for the Marine Corps' AV-8 Harrier may be too high by an undetermined amount. The standard requires each crew to fly 25 hours per month to maintain primary mission readiness. In fiscal year 1977 the aircraft was flown only 49 percent of the approved flying hour program. While some of the underflying may be due to support problems, Fleet Marine Forces, Atlantic, officials stated that the standard is too high. Navy and Marine Corps headquarters disagreed, attributing the underflying to the Marine Corps' policy of not flying aircraft unless they are full system capable/operationally ready. Fleet Marine Forces, Atlantic, officials also contended that the standards for two helicopters are probably too high as well.

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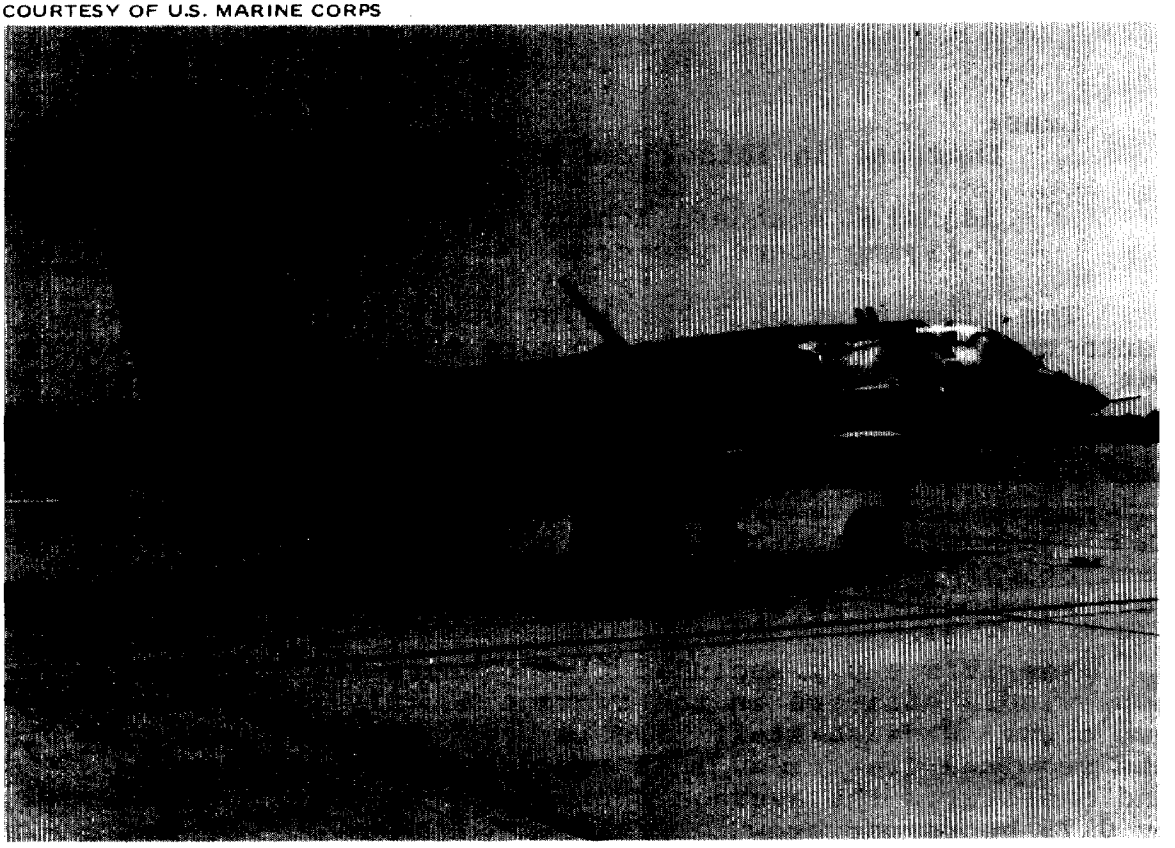

THE MARINES' AV-8 "HARRIER" VERTICAL TAKE-OFF AND LANDING AIRCRAFT.

Antisubmarine patrol (P-3) aircraft

The standard flying hours per P-3 crew per month are 52 hours on the average. This standard was established during the fiscal year 1972 flying hour program development and was reconfirmed in a December 1976 analysis. Due to budgetary constraints the Navy lowered the standard to 47 hours for fiscal years 1976 and 1977. The reduction is no longer in effect.

We analyzed the Commander Patrol Wings Pacific flying hour study of December 1976 and believe that at least 2.22 hours can be eliminated from the 52-hour standard. Following is an analysis of the recommended adjustments.

Navy's standard monthly flying hours per crew		52.00
Quantifiable adjustments:		
Overstatement due to rounding	0.47	
Flying by staff and supervisory officers	.75	
Events allowed to be performed in simulators	1.32	
	2.54	
Less:		
Increase in authorized pilots	.32	2.22
Adjusted standard monthly flying hours per crew		49.78

The adjustment of 2.22 flying hours per P-3 crew per month amounts to a reduction of more than 3,800 flying hours per year valued at about $1.6 million for the Pacific P-3 community. An equal amount may be applicable to the Atlantic P-3 community, which has the same standards and an equivalent antisubmarine patrol aircraft.

The average monthly flying hours required for the P-3 were calculated to be 51.53 in the December 1976 analysis. This was rounded up by 0.47 hours to 52.

The 1976 study included flying hours for staff and supervisory officers in the average monthly requirements per crew. Because staff time is programed in addition to the required crew time, this represents double counting and overstated the average monthly flying hour requirements by 0.75 hours per crew.

The last quantified overstatement is caused by satisfying requirements by flying them in aircraft rather than using simulators, as authorized by regulations. We estimate that the monthly flying hours per crew could be reduced by 1.32 hours. See page 30 for further details.

Because the number of pilots authorized per squadron was increased from 37 to 38 since the December 1976 analysis, the monthly flying hour requirements should be increased. We estimate that 0.32 standard flying hour per crew per month is required to compensate for the change in pilot authorization.

We noted other factors affecting the number of required standard flying hours which we have not quantified, nor has the Navy done so. For example, the 1976 study, with

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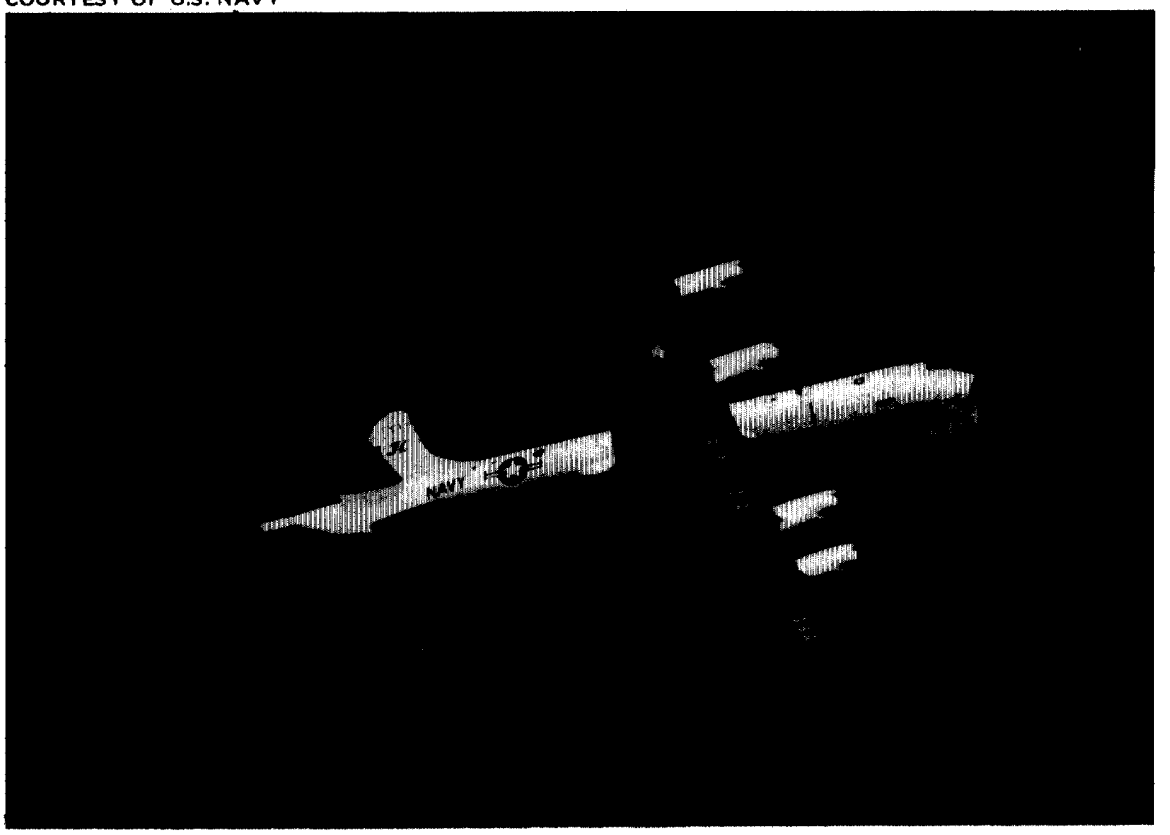

THE NAVY'S P-3 "ORION" ANTISUBMARINE AIRCRAFT.

minor exceptions, lists training requirements as separate flights. However, in practice several events are often combined in single flights. Similarly, during squadron deployments many required training events could be performed during operational flights. Of the more than 800 flying hours per month required per squadron during deployment, more than 400 hours are needed for training, many of the programed operational and training events being identical.

Another factor is an increase in the aircraft's primary mission responsibilities since the 1976 analysis. This change could increase flying hour requirements to an as yet undetermined extent.

P-3 squadrons are encouraged to upgrade inexperienced pilots to aircraft commanders faster than necessary to meet operational requirements. Before becoming an aircraft commander, a pilot must have at least 800 hours of flying experience, about 550 with his squadron. The Navy has targets to upgrade pilots within 18 to 24 months. An element in the squadron readiness rating formula penalizes squadrons for falling behind the 18-month target rate, thereby encouraging potentially unnecessary flying. The questionable validity of the advancement criterion is discussed on page 37.

Since late 1977 the Navy has been again reviewing flying hour requirements for the P-3 aircraft. The review was expected to be completed in mid-1978. The results were not made available to us during our review because they were considered unofficial.

Conclusions

The flying hour standards for the P-3 in the Pacific could be reduced to avoid more than 3,800 flying hours per year valued at about $1.6 million. Also, conditions in the Atlantic P-3 community should also be analyzed to determine if similar reductions are possible there.

Recommendations

We recommend that the Secretary of the Navy

--reduce the P-3 flying hour standards to the level required after simulation, flying by staff officers, aircrew adjustments, change in mission, and other factors not quantified have been considered, and

--reevaluate the Marine Corps' flying hour standards for the Harrier and other aircraft whose standards are of questionable validity and adjust them as necessary.

Agency comments and our evaluation

The Navy stated that until even more sophisticated simulators are available, the flying hour standards for the P-3 must remain at 52 primary mission hours per month. The Navy does not acknowledge double counting for flying by staff and supervisory pilots or the rounding factors.

The Navy's regulations authorize the performance of annual instrument evaluations and selected qualification exercises in simulators rather than in aircraft. The needed simulators are in place at Moffett Field, California. At locations not yet equipped with necessary simulators, the events would have to be carried out in the aircraft. However, flying hour programing should reflect the differing simulator capabilities at the various locations. As we demonstrate on pages 30 through 33, simulator time is available at Moffett Field, but the aircraft are used to perform events authorized to be done in the simulators.

Concerning the programing of staff hours, the Navy's analyses of monthly flying hour standard requirements of December 1976 and summer of 1978 clearly allow for staff flying hours. In programing flying hours, the Navy uses the standard which includes staff hours and allows for staff hours as a separate computational element.

The Marine Corps is reevaluating flying hour requirements. In view of the above, we see no need to change our position.

THE NAVY'S PROGRAMING OF FLYING HOURS DOES NOT ADEQUATELY CONSIDER THE OPERATING ENVIRONMENT

The Navy's practice of centrally programing continuation training or proficiency training for its tactical and patrol aircraft results in unnecessary flying because authorized, rather than anticipated, assigned crew ratios are used, and flyable aircraft generation factors are not considered. While some aircraft communities fly well above standards, others fly well below standards.

As stated on page 18, the Navy uses authorized pilot ratios in computing the flying hour program. If the average assigned pilot ratios for the F-14 had been used for fiscal year 1977 and 1978 programing, $5.1 million could have been saved in each year. For fiscal year 1979, the Navy expects the assigned ratio to equal the authorized ratio for all aircraft types except the F-14. The F-14 is expected to average 14 aircrews as compared with 15 authorized. Because of this difference, the fiscal year 1979 program is overstated by $4.3 million.

The Navy's practice of programing flying hours strictly on the basis of standards for each aircraft type modified by budget constraints is not a realistic reflection of the operational environment and results in overprograming of flying hours. For example, in fiscal year 1977 the Marines underflew their program by more than 30,000 hours valued at $6.8 million. The Navy, on the other hand, overflew its program using the funds not used by the Marines during the fiscal year. For example, the Marines in the Atlantic Fleet were authorized to fly 113,551 hours, representing 77 percent of standards. However, these Marine units actually flew only 96,822 hours, or 62 percent of standards, thus underflying their program by 15 percent. By comparison, Atlantic Fleet Navy aircraft were authorized to fly 250,772 hours, also 77 percent of standards, but actually flew 278,174 hours, or 88 percent of standards.

The primary reason for the Marine Corps' underflying is its practice of flying only aircraft which are full system capable/operationally ready. In essence, the Marines have problems supporting much of their aircraft due to material and maintenance difficulties. While progress is being made in alleviating these problems, the flying hour development process gives no consideration to either the Marines' concept of flying only operationally ready aircraft or to aircraft generation problems anticipated to be encountered as the result of material and maintenance difficulties.

The same problem occurs with various other Marine Corps and Navy aircraft types. While one aircraft type is flown above the standard, other types are flown well below standards. For example, in fiscal year 1977 the Navy's E-2C electronic surveillance aircraft in the Atlantic Fleet flew 114 percent of the standard, while it was programed to fly only 85 percent of the standard. In comparison, the S-3 carrier-based antisubmarine aircraft flew only 77 percent of the standard. None of the Marine Corps' aircraft in the Atlantic Fleet flew above standards during fiscal year 1977. However, the Marines AV-8 Harrier attack aircraft flew only 49 percent of requirements.

The major reason for the disparate flying levels between aircraft types is attributable to reduced material readiness. While the Navy claims that material readiness conditions are improving, no consideration is given to anticipated shortfalls in aircraft availability in developing the flying hour program.

Conclusions

The Navy should consider anticipated material readiness and maintenance problems for each aircraft type in developing the flying hour program for its own as well as the Marine Corps' aircraft, to minimize flying hours and related expenditures consistent with readiness and training requirements. It is difficult to understand how the Marine Corps' readiness or training is enhanced by the Navy's flying its aircraft more than programed or more than training requirements. Had material readiness and maintenance capabilities been considered in developing the Corps' flying hour program, as much as $6.78 million could have been saved in fiscal year 1977.

Considering material readiness and other conditions in developing the program for specific aircraft types is not a new concept. As discussed on page 51, the Air Force's Tactical Command adopted a procedure to program flying hours

at a level of requirements or maintenance capability, whichever is lower. A similar procedure appears appropriate for the Navy.

Recommendation

We recommend that the Secretary of the Navy incorporate anticipated material readiness, maintenance capability, and other factors limiting aircraft availability into the Navy's flying hour program development process to achieve optimum readiness with minimum resources.

Agency comments and our evaluation

The Navy stated that material readiness, maintenance problems, and crew availability are considered during the flying hour program development process. The Navy's flying hour development formulas consider the average number of aircraft in the inventory, crew ratio, and standard hours per crew with adjustments for simulators and staff pilot flying. In their detailed explanation, the Navy stated that individual aircraft will be flown more to absorb required training from aircraft which cannot be flown as much as planned due to readiness problems. While this is true, the Navy did not explain the disproportionate flying levels among aircraft types, nor does the Navy explain the use of funds earmarked for the Marine Corps for its own purposes after the Marines were unable to fly their aircraft at programed levels due to material readiness problems.

TYING FLYING HOURS TO READINESS

The essence of the flying hour program for tactical and patrol aircraft is to enhance and maintain combat readiness of these forces, and a direct relationship between the level of the flying hour program executed and readiness reports could be expected. In September 1977 the Navy established a direct relationship in its force status reporting guide for aviation squadrons, as follows:

Reporting code		Description	Percent of authorized crews combat ready	Percent of standard hours flown over a 90-day period
C-1:	fully ready	Essentially no deficiencies.	85-100	93-100
C-2:	substantially ready	Deficiencies in training cause minor degradations in primary mission area.	70-84	83-92
C-3:	marginally ready	Deficiencies in training cause major degradations but not the loss of any primary mission area.	55-69	70-82
C-4:	not ready	Deficiencies in training are worse than C-3 and cause a loss of at least one primary mission area.	0-54	0-69

The Navy has implemented these readiness-reporting criteria, and squadrons are generally reporting degraded readiness. This is not surprising because, generally, the Navy programed and was approved only 88 percent or less of stated standard flying hour requirements. This condition under current reporting criteria would automatically cause a C-2 rating for a large portion of the squadrons.

Also, the percentage of the standard flying hours executed for a particular aircraft type does not reasonably reflect the Navy's operating conditions. As explained on page 18, the naval aviation community operates on a deployment cycle and the number of hours flown per crew per month depends largely on the stage of the deployment cycle in which a squadron finds itself. Since squadrons are shorebased at home stations for 6 consecutive months and are programed to fly well below standards, they by definition have to report degraded readiness for several months beginning with the fourth month after deployment.

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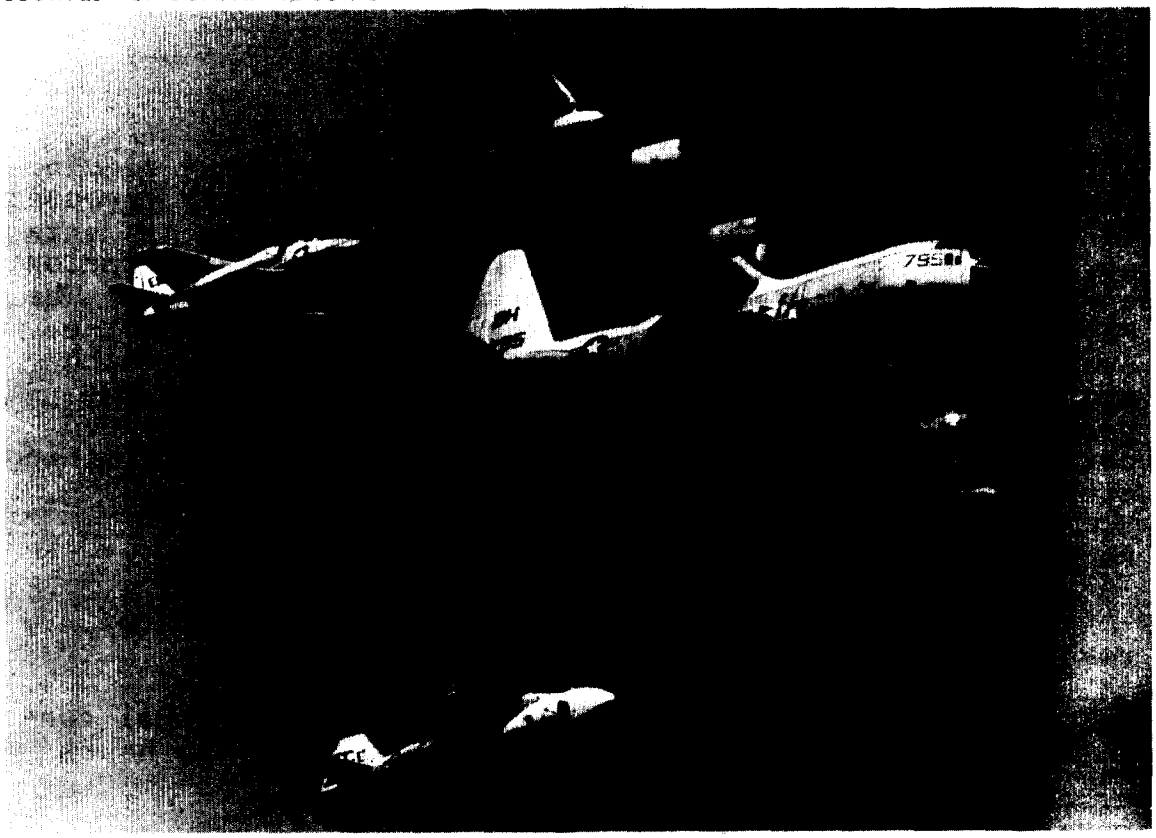

REFUELING TACTICAL AIRCRAFT.

The requirements for each readiness category are more stringent for the standard flying hour execution criteria than they are for the proportion of crews considered combat ready. For example, to be rated "substantially ready" (C-2), a squadron requires only 70 to 84 percent of its crews in combat ready condition, whereas 83 to 94 percent of the standard flying hours must be executed. It would appear that crews must have an adequate number of flying hours to maintain and improve skills to be considered combat ready. As long as crews are combat ready, the level of standard flying hours executed appears irrelevant. It is unclear why a squadron should report a C-3 readiness condition when it executed 80 percent of its flying hour requirements and when only 55 to 69 percent of its authorized crews need to be combat ready to report the same readiness rating.

To be considered combat ready, pilots must perform certain events and tasks. Performing these events and tasks requires flying of aircraft. Determining pilot and crew readiness, then, is to establish the satisfactory completion of the prescribed event schedules. Certain pilots may require more or less flying hours to perform the prescribed event schedules. In essence, the number of flying hours required for readiness may not necessarily correspond with the standards developed for programing purposes.

Conclusions

The Navy's efforts to directly relate combat readiness-reporting and the level of the flying hour program executed is commendable. However, the readiness reporting criteria now used do not realistically reflect the Navy's operational environment, nor are they consistent with each other. The Navy should base its crew readiness determination on the number of events and tasks required for readiness, which are a reflection of flying hours, rather than using the percentage of standard flying hours executed as an added criterion, which had already been considered in determining crew readiness.

Recommendations

We recommend that the Secretary of the Navy adopt readiness-reporting standards that

--more accurately reflect the Navy's operational conditions and the relationship between flying hours and readiness, and

--reflect the number of authorized crews considered ready for combat as the primary training readiness factor, deemphasizing the level of standard flying hours executed.

Agency comments and our evaluation

The Navy stated that the established Primary Mission Readiness requirements are valid, minimal, and consistent with current defense requirements and safe operations. In their comments, the Navy does not address the basic point we addressed, namely, conflict between using the percent of authorized crews combat ready and the percent of standard hours flown as a separate criterion. Flying hours are needed to achieve aircrew readiness. However, the objective should be to have combat ready crews, not to fly a certain predetermined number of hours. As long as crews are considered ready, the number of hours they flew is immaterial. The events and hours flown should be considered in determining crew readiness and not as a separate factor to determine unit readiness.

MORE USE OF EXISTING SIMULATORS COULD REDUCE FLYING HOUR REQUIREMENTS

While reductions for use of simulators are considered in developing the Navy's flying hour program, simulators

are not substituted for flying hours to the extent possible. The P-3 program could be reduced by an estimated 2,300 to 2,800 flying hours a year, valued from $840,000 to over $1 million.

The Navy buys simulators to (1) enhance combat readiness, (2) improve flight safety, and (3) conserve resources. While the Navy could effectively use new simulators, they would not necessarily result in further flying hour reductions.

Regulations allow performance of periodic instrument evaluations and qualification exercises in simulators in lieu of the P-3 aircraft. In P-3 operations in the Pacific Fleet, simulators were not used to the extent authorized.

Instrument evaluation

All Navy pilots have to undergo an annual instrument evaluation to maintain a valid instrument rating. This evaluation may be done in a simulator. At Moffett Field, California, the simulators are in place, yet the instrument evaluations are done in the aircraft. Naval officials stated that the simulator is not realistic at the transition point between instrumented flight and manual flight before landing. The transition is beyond the scope of the instrument evaluations, and it is included in the annual standardized flying ability evaluations performed in the aircraft separately from the instrument evaluation. An estimated 1,596 to 2,218 flying hours could be saved annually in the Pacific Fleet patrol aircraft community. Similar savings may be possible in the Atlantic Fleet and other aircraft communities.

Qualification exercises

Selected qualification exercises are authorized to be done in simulators. At Moffett Field two operational squadrons did 72 percent of these exercises in simulators during 1977 but did the remaining 28 percent in aircraft. An estimated 700 flying hours, valued at about $290,000, could be saved annually if all qualification exercises authorized to be done in simulators were done in simulators. Again, these savings may be possible in the Atlantic Fleet and other aircraft communities.

Simulator availability

Through scheduling adjustments the necessary simulator hours are or could be made available to reduce P-3 flying hours.

At the Command, Patrol Wings Pacific, at Moffett Field, adequate time was available to do authorized exercises in simulators. While simulator usage records for 1977 showed insufficient hours available to substitute for flying hours, much of the usage consisted of locally prescribed simulator hours to insure high simulator usage without substituting flying hours, as follows:

Unused simulator hours in 1977	1,593
Simulator hours used to satisfy local requirements to achieve high usage	2,095
Simulator hours available to substitute for flying hours	3,688
Simulator hours needed to perform substitutable exercises	2,298
Simulator hours available for other uses	1,390

The Navy generally operates simulators 16 hours per day, 5 days per week, as is the practice at Moffett Field. One shift per day is set aside for maintenance. If locally prescribed simulator usage has the requisite training value, increasing simulator operations to a 6- or 7-day workweek should be explored.

At the time or our review, the Training and Readiness Manual of the Command, Patrol Wings Pacific, required that P-3 pilots each use the simulators a minimum of 3 hours per month. The requirement was derived to insure maximum usage for operations of 5 days per week. These simulator hours do not substitute for flying hours. The requirement was not enforced and pilots performed only two-thirds of the nearly 3,200 hour requirement at Moffett Field.

Conclusions

At least in the P-3 antisubmarine patrol aircraft community, simulators are not used as extensively as they could be in displacing flying hours. Although pertinent regulations allow certain instrument evaluations and qualification exercises to be performed in available simulators, thereby reducing flying hours, this is not done to the maximum extent possible. Exercises authorized to be done in simulators should be done in simulators to the extent possible. Also, any simulator training which could replace flying hours should have precedence over local requirements for simulators. The

Navy should direct the Command, Patrol Wing Pacific, to perform instrument evaluations and qualification exercises in simulators to the extent possible to reduce flying hours and conserve resources. The Navy should review its simulator policy and practices to determine the extent to which existing simulators can displace flying hours and see to it that substitution policies and procedures are enforced. The Navy should also institute 6- or 7-day-a-week simulator operations where it is cost effective.

Recommendations

We recommend that the Secretary of the Navy

--review the Navy's simulator policies and practices to determine the extent to which flying hours can be displaced by existing simulators and enforce feasible substitution,

--insure that training and exercises authorized to be performed in simulators take precedence over nonsubstitutable simulation to the extent possible,

--institute 6- or 7-day-a-week simulator operations where it is cost effective, and

--reduce flying hour standards to levels needed exclusive of substitutable simulator hours.

Agency comments and our evaluation

The Navy stated that it reviews its policies and procedures on a continuing basis and that flying hour programs are adjusted for simulator substitution. We have shown that exercises and events specifically authorized to be done in P-3 simulators installed at Moffett Field are flown in the aircraft instead. We have also shown that simulator availability would have allowed these events to have been done in simulators rather than the aircraft.

FLYING BY MANY SUPERVISORY AND STAFF PILOTS MAY NOT BE NECESSARY

Many Navy supervisory and staff pilots designated to fly frequently and regularly in performing their duties have a questionable need to fly. A large proportion do not meet annual minimum flying standards and request waivers. Even those meeting periodic minimum flying standards are not considered combat ready.

More than 930 Navy supervisory and staff pilots are designated to fly frequently and regularly in performing assigned duties. In fiscal year 1977 they flew at least 17,871 hours at a cost of $9 million.

Navy regulations require that to maintain minimum proficiency, pilots have at least 100 flying hours a year, 50 of which may be done by simulation. Many pilots in jobs supposedly requiring them to frequently and regularly fly do not meet this minimum. In the transition quarter of fiscal year 1976 and in fiscal year 1977, Navy headquarters received 588 requests for waivers because pilots did not meet this minimum. The disposition of these requests was as follows:

Waivers approved	297
Waivers disapproved	2
Changed to nonflying billets	106
Total	405

As of June 1978, 183 requests for waivers were pending resolution.

On the basis of the large number of waivers submitted and granted, it is questionable why supervisory and staff pilots need to fly at all. Our review of 10 waivers granted selected at random demonstrates this.

For example, a captain was assigned from a nonflying position to a carrier group staff job designated as requiring minimum currency flying. Because he did not meet minimum flying requirements, he could not resume flying while deployed. The officer was an aviator but had no flight time during either the transition quarter or all of fiscal year 1977. While past flying experience may be a valid requirement for the job, frequent and regular flying in performing assigned duties does not appear to be.

In another case, a lieutenant was assigned to a ship as Air Operations Officer/Safety Officer, duty involving operational or training flight status, in January 1977. Through February 1978 he was able to fly only 10.8 hours because suitable aircraft was not available. To resume flying at this point would require refresher training. Minimum flying requirements were waived for fiscal year 1977. As in the previous case, frequent and regular flying does not appear to be required in this position.

Many supervisory and staff pilots authorized to fly appear to be in this category to enable them to accumulate sufficient flying time to qualify for continued flight pay rather than meet operational requirements. To qualify for continued flight pay, eligible personnel must have been in operational flying status a predetermined number of months at the 12th and 18th years of aviation service. Assignment to supervisory and staff positions classified as flying positions, even though only minimum flying requirements need to be met, provide full credit toward operational flying time.

The reclassification of waiver requests to nonflying positions generally involved relatively senior officers, commanders and above, who had already met the flight pay eligibility requirements. Of the 13 cases reviewed, only 1 involved an individual of lower rank whose previous job had been a nonflying assignment.

At Moffett Field, pilots in staff positions designated to require flying also did not meet minimum requirements. Of 10 pilots reviewed, only 4 met the semiannual minimum for the first half of fiscal year 1978. The Navy stated that it was continuously analyzing the flying needs of supervisory and staff positions.

Navy aircraft generally have more than one crew per aircraft to meet the anticipated flying tempo in emergencies. As an alternative to providing complete crews, the crew ratios could be reduced if staff and supervisory pilots were to maintain full readiness in the appropriate aircraft, rather than flying minimum currency only. Pilots maintaining minimum currency require substantial refresher training before they are sent into combat.

Conclusions

The Navy has not adequately determined the supervisory and staff positions requiring minimum flying to perform their jobs, as evidenced by the number of waivers granted. The Navy should critically review supervisory and staff positions whose incumbents are authorized to fly and allow only those to fly who have an operational need for it; that is, they either have to fly or are likely to fly to satisfy operational requirements. As an alternative the Navy should explore the feasibility of staff and supervisory pilots maintaining full readiness in combat aircraft and counting them toward authorized crew ratios, thereby reducing the number of overall pilots needed.

Recommendations

We recommend that the Secretary of the Navy

--reduce supervisory and staff positions authorized to fly and allow only those to fly who have to operate aircraft in doing their jobs, and

--evaluate the possibility of having staff and supervisory pilots maintain full combat readiness and count them toward authorized crew ratios.

Agency comments and our evaluation

The Navy stated that it will continue to review staff and supervisory billets requiring minimum flying and require only those to fly which contribute to the overall effectiveness of naval aviation. We consider the Navy's position largely unresponsive to the issue at hand. The Navy stated that staff hours are considered essential in order to manage a training/mission oriented program. We did not question this. Our position is that the Navy should determine which of the staff and supervisory pilots need to fly to do their job and fill mobilization requirements.

The Navy stated that meeting flying time requirements for aviation career incentive pay also enters in determining which positions should be designated as flying positions. In our opinion, only those staff and supervisory pilots who need to fly to carry out their jobs and/or are designated to fill specific flying positions for surge manning during mobilization should fly.

ACTION IN RESPONSE TO PAST GAO REPORT

The Navy has taken action in response to some of the recommendations in our report entitled "Flying-Hour Programs of the Military Services: Opportunities for Improved Management," June 18, 1976 (LCD-75-451). On other items corrective action is still needed.

Unproductive operational flights by P-3 aircraft

Our 1976 report noted that some of the surveillance activities carried out by P-3 aircraft were not a proper mission for the sophisticated aircraft. We recommend that unproductive operational P-3 flights be eliminated. One such activity was island surveillance flights in the U.S. Trust Territory of the Pacific Islands. These flights were conducted in response to an agreement between the

Departments of Defense and the Interior. Such flights have been cut by two-thirds since then. The present level of effort of about 80 hours per year is considered necessary by Interior. In view of the small effort involved, we believe that further attention is not warranted.

West Pacific flights

We reported that the about twice monthly training flights to acquaint crews with the various P-3 operating sites were not achieving their objectives. Thus, we recommended that the need for these flights be reevaluated. Subsequently these flights were reduced to biannual trips used by the patrol wing commander as inspection visits. In our opinion, the Navy has taken adequate action on this item.

Minimum flying hour requirements for pilot advancement

Our 1976 report pointed out the inconsistency between Chief of Naval Operations and fleet criteria for P-3 pilot advancement and recommended reinforcement of minimum flying hour requirements. While Chief of Naval Operations criteria required a minimum of 700 flying hours to become a P-3 commander, Commander Patrol Wings Pacific required 800 hours. These standards, we pointed out, encourage flying to log hours irrespective of the pilots's ability and event performance.

The Department of Defense and the Navy did not agree with our recommendation on the grounds that there was no way to precisely measure the number of total hours a pilot needed to advance and that the ultimate designation was properly a function of a unit commander. Defense stated that Commander Patrol Wings Pacific was justified in applying more stringent requirements than minimum Navy standards.

While we agree that there is no precise number of flying hours after which an individual is ready to assume the responsibilities of an aircraft commander, we believe that individual competence in event performance and command abilities should be considered rather than solely an arbitrary number of flying hours before a pilot is eligible to demonstrate his proficiency in the aircraft and advance. Considerable variances in the rate of learning are widely recognized in the behavioral and social sciences. We believe such variances should be recognized in establishing criteria for aircraft commander advancement.

Specific skills and qualities of aircraft commanders which pilots must acquire during the upgrade flying period have not been identified. Navy personnel said the advancement criteria for multipiloted aircraft were based strictly on experience as to when the Navy pilots had had enough experience to perform the job. Studies or analyses supporting the minimum flying hours are not available. Of course, a pilot must demonstrate proficiency in the aircraft in addition to meeting the minimum flying hour criteria.

Minimum flying hour standards for pilot advancement have changed over the years. Before 1971 the minimum required to become an aircraft commander was 650 hours. In 1971 the criterion was increased to 700 hours for reasons no longer known. The fleets decided to make the Chief of Naval Operations criterion even more stringent by choosing an 800-flying-hour minimum. Navy personnel could not give us definitive material supporting either the initial criterion or the changes.

Conclusion

The Navy should identify the skills and qualities required of aircraft commanders and monitor pilots' progress in acquiring them. Pilots should be allowed to demonstrate proficiency in the aircraft and be upgraded as soon as they have acquired these skills and qualities rather than insisting on minimum arbitrary flying hour criteria. As in 1976, we believe that a standard higher than necessary for upgrade purposes encourages potentially unnecessary flying.

Recommendation

We recommend that the Secretary of the Navy identify the skills and qualities needed by commanders of multipiloted aircraft and establish criteria and a monitoring system which considers individual differences and allows pilots to advance as soon as they are ready.

Agency comments and our evaluation

The Navy stated that flying hours are only part of the requirements for pilot advancement and that they are set at a figure high enough to provide the experience necessary to safely and efficiently employ the aircraft in an operational environment. The Navy agreed that there is no way to precisely measure the number of hours required for pilot advancement. We fully recognize that aircraft commander candidates must successfully accomplish specific events before being upgraded. We did not address this matter in our draft because pilots have to demonstrate this

proficiency before being upgraded to aircraft commander irrespective of the hours flown. The Navy chose not to address the heart of the issue in question, namely, why individual differences among aircraft commander candidates are not considered before they have flown a subjectively predetermined number of hours.

Training flights by pilots beyond currency requirements

All pilots are required to meet certain minimum flying hour and event requirements to maintain currency in the P-3 or other aircraft. These requirements can be met during normal operational flights and especially scheduled training flights, referred to as dedicated training flights.

In our prior report we pointed out that fully qualified aircraft commanders were performing dedicated training flights far in excess of periodic currency requirements, and we recommended that such flights be eliminated. This practice has continued. The Department of the Navy disagreed, stating that dedicated training flights were required periodically to provide a period in which concentrated practice was exercised in fundamental flying skills, such as normal/engine-out landings, emergency procedures, and instrument approaches. The Navy also stated that the currency requirements represented minimums to maintain currency below which pilots would have to undergo retraining.

We recognize that minimum standards will be exceeded by operational pilots. However, we question the need for the exceedingly high number of dedicated training flights when flying events beyond minimum requirements had already occurred. For example, we found the following cases at Moffett Field in 1978:

	Pilot		
	A	B	C
Flying hours:			
6-month minimum requirement	45	45	45
Hours flown in excess of minimum 6-month requirement	114	127	159
Dedicated training flight hours	69	62	106
Landings:			
6-month minimum requirement	10	10	10
Landings in excess of minimum 6-month requirement	74	46	61
Dedicated training flight landings	54	40	57
Precision approaches:			
6-month minimum requirement	6	6	6
Approaches in excess of minimum 6-month requirement	24	24	44
Dedicated training flight approaches	24	24	44

Conclusion and recommendation

Dedicated training flights beyond minimum periodic requirements should be justified and approved in writing on a case-by-case basis to prevent unnecessary flying. We recommend that the Secretary of the Navy establish such an approval process.

Agency comments and our evaluation

The Navy's comments on this topic are no longer applicable because we have changed our position from that reflected in the draft provided the Navy.

Cross-country flights

In our 1976 report we recommended that the Navy eliminate ineffective cross-country flights, because in some instances such flights had been exceptionally long and training objectives had not been completed. The Navy has taken action on this recommendation through better control of cross-country flights.

CHAPTER 4

THE AIR FORCE'S FLYING HOUR PROGRAM AND POTENTIAL IMPROVEMENTS

On the basis of our review of the Military Airlift and Tactical Air Commands' flying hour programs, the bulk of the Air Force's flying hour program appears sound and well documented. However, some program areas could be improved with resultant resource savings and enhanced program effectiveness. Specifically, (1) factors used in programing flying hours for the Military Airlift Command were inadequately updated resulting in overprograming of training requirements, (2) simulators are not used by the Military Airlift Command as advantageously as they could be to minimize flying hours, (3) pilot advancement criteria for multipiloted aircraft are not well-founded, (4) the relationship between readiness reporting and flying hour requirements is not realistic, (5) selected supervisory and staff pilots in the Tactical Air Command are authorized to maintain currency when they do not necessarily need to do so, (6) selected supervisory and staff pilots in the Military Airlift Command are not counted toward crew ratios although they maintain full mission currency, and (7) the Air Force maintains a fleet of executive jet aircraft whose flying program far exceeds training requirements and whose related costs exceed those of commerical services.

The impact of these items is substantial. For example, the flying hour requirements of the Military Airlift Command could be reduced by more than 32,000 hours and 48,000 hours, valued at $34.7 million and $51.9 million, in fiscal years 1979 and 1980, respectively, if programs were adjusted to coincide with training requirements based on more recent information. While less dramatic, more advantageous use of C-5 simulators could eliminate more than 2,000 flying hours, valued at $4.7 million per year.

TRENDS OF THE AIR FORCE'S PROGRAM

The active Air Force's operations and maintenance and industrial fund flying hour programs have been relatively stable over the last several years. Aircraft inventories have decreased while the average number of hours flown by each aircraft has remained about the same, as follows:

Fiscal year	Flying hours	Aircraft inventory	Flying hours per aircraft	Flying hour program cost (millions)
1974	3,168,177	7,505	422	$ 800
1975	2,985,810	6,604	452	1,282
1976	2,571,884	7,027	366	1,237
1977	2,604,909	6,095	427	1,486
a/1978	2,619,319	6,132	427	1,999
b/1979	2,686,249	6,262	429	2,218

a/Approved program.
b/Budget request.

On an overall basis flying hours requested by the Air Force are not significantly different from those approved and actually flown, as follows:

Flying hours	Fiscal year 1976	1977	1978	1979
Requested	2,957,741	2,632,484	2,687,854	2,686,249
Approved	2,711,739	2,671,406	2,619,319	Not available
Flown	2,571,884	2,604,909	Not available	Not available

PROGRAM DEVELOPMENT

The program's prime purpose is to provide training and maintain pilots and aircrews in a state of readiness that will enable missions to be fulfilled. Minimum flying requirements have been established by the Air Force, which are considered necessary to provide and maintain readiness for each aircraft type.

Because of the diversity of missions, program development varies considerably among the Air Force's major commands, such as the Military Airlift Command and the Tactical Air Command. While the wing level actively participates in developing the Tactical Air Command's flying hour programs, program development is relatively centralized at the Military Airlift Command.

This variation is caused by the difference in factors governing the programs of these two major commands. While the number of flights and iterations dictate the program of the Tactical Air Command, the upgrading of pilots to predetermined experience levels drives the program of the Military Airlift Command.

MILITARY AIRLIFT COMMAND

The command's program is designed to keep the strategic and tactical airlift forces combat ready. The command's mission consists of operating the fleets of C-5 and C-141 aircraft, constituting the strategic airlift, and C-130 aircraft, constituting the tactical airlift capability.

Minimum peacetime use rates and event schedules have been established to keep the active and associate reserve crews combat ready. Each crew has two pilots. Half the pilots authorized for the C-141 must be aircraft commanders. The Air Force has determined that a pilot must have at least 1,150 flying hours before he can be designated an aircraft commander. In addition, the Air Force has a readiness goal stating that 33 percent of C-141 pilots should be experienced aircraft commanders requiring at least 1,350 flying hours. The pilot-aging process along with local proficiency flying are the determinants of the C-141 flying hour program.

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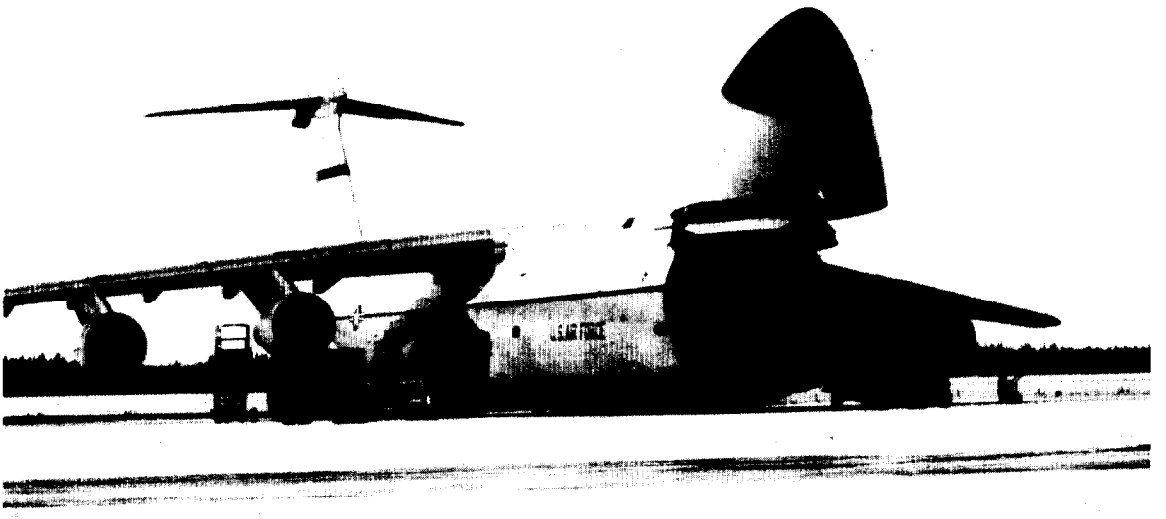

THE C–5 STRATEGIC AIRLIFT AIRCRAFT--THE WORLD'S LARGEST PLANE.

Because the C-5 is staffed with experienced pilots, mostly from C-141s, experience flying is not considered necessary to season pilots in this aircraft. The flying hour program for the C-5 is currently based on minimum flights and related hours considered necessary to maintain the proficiency of the crews. Until fiscal year 1978, the C-5 program was reduced below the level considered necessary for crew readiness training purposes to preserve aircraft wing lifespan.

Each C-141 assigned to operational units is assigned four crews, containing two pilots each. Active Air Force personnel staff two crews, whereas reserve personnel staff the remaining two crews. Operational C-5s are staffed in a similar manner, having two crews of active Air Force personnel and one and one-fourth crews of reserve personnel. The Air Force plans to increase the number of reserve crews to two in fiscal year 1983. As in the case of the C-141, each C-5 crew has two pilots.

As a byproduct of the readiness training, the Military Airlift Command operates a global air transportation system, carrying generally priority cargoes between the United States and overseas locations. Air Force policy is that flying hours be limited to training requirements. This policy applies to strategic airlift aircraft as well as to other types of aircraft.

The number of flying hours needed for pilot proficiency is largely determined by the average length of time needed to complete overseas missions and other scheduled events. The number of missions and proficiency events required periodically has been predetermined. In fiscal years 1978 and 1979, the strategic airlift flying hour program was composed of the following elements:

	Number of flying hours	
	Fiscal year 1978	Fiscal year 1979
C-141:		
Regular Air Force:		
Pilot proficiency	91,919	86,599
Pilot aging for experience	115,851	120,631
Subtotal	207,770	207,230
Reserves:		
Pilot proficiency	65,709	63,626
Total--C-141	273,479	270,856
C-5:		
Regular Air Force:		
Pilot proficiency	29,536	29,536
Reserves:		
Pilot proficiency	15,826	15,830
Total--C-5	45,362	45,366

Virtually all the regular Air Force's C-141 flying hour program could be viewed as experience flying needed to upgrade pilots to aircraft commanders. For example, documentation for the fiscal year 1979 program shows that 203,832 hours of the 207,230 hours programed for the C-141 for active duty personnel are needed to upgrade copilots to commanders within acceptable time frames.

Another peculiarity of the strategic airlift flying hour program is that it is funded primarily from industrial fund operations. Only the flying hours needed for local proficiency and evaluations, exercises, and other minor activities are directly funded by operations and maintenance appropriations. Most of the flying hour program for these aircraft is financed from reimbursement for cargo carried for any of the services or other official Government activities.

Strategic airlift flying hours exceed training requirements

Because factors have changed since the fiscal year 1976 flying hour program for the Military Airlift Command was

developed, programed flying hours for the C-141 aircraft exceeded training requirements. Changes in the tour length of C-141 pilots and changes in the experience level of newly assigned pilots to the C-141 since the program was developed have caused the fiscal year 1979 program to be overstated by about 32,000 hours, amounting to about $34 million. Nearly 15,000 of the overprogramed hours, valued at about $16 million, are due to changes in pilot tour length. Changes in the experience level of newly assigned pilots account for about 16,900 hours, valued at about $18.2 million. The following schedule depicts the details.

	Number of copilot equivalents needing experience	Flying hours per copilot	Total flying hours
Effect of under programing tour length (See p. 47):			
Programed by Air Force	380	536.4	203,832
Required	380	497.1	188,898
Excess hours			14,934
Cost per hour (variable only)			$ 1,074
Cost of over-programing--tour length			$16,039,116
Effect of understating pilot experience level at assignment (See p. 48):			
Programed	380	a/497.1	188,898
Required	346	497.1	171,997
Excess hours			16,901
Cost per hour (variable only)			$ 1,074
Cost of over-programing--experience level			$18,151,674

a/Adjusted for effect of underprograming of pilot tour length. The Air Force programed 536.4 hours per copilot for experience flying requirements.

Air Force officials responsible for the flying hour program development generally agreed with our analyses.

Overstatement of C-141 flying hour requirements attributable to changes in tour length

The Air Force requires that each strategic aircraft crew have at least one aircraft commander. Each aircrew has a pilot and a copilot. To become an aircraft commander, a pilot must have a minimum of 1,150 flying hours. Pilots are assigned an average of about 4 years to the C-141. To insure that each aircraft has a commander, newly assigned pilots must be upgraded in about 2 years. The Air Force programs experience flying above normal proficiency requirements for the C-141 aircraft fleet for this reason. For fiscal year 1979, 120,631 hours are scheduled strictly for experience flying. A more appropriate level of hours for this purpose is 88,796 (120,632 less 31,835 excess hours).

In deriving the experience flying hour requirement, the Air Force projected that pilots would be assigned an average tour of 45.6 months to the C-141 aircraft after completing qualification training in the aircraft. Pilots reassigned or separated from the C-141 during fiscal year 1977 averaged a tour of 49.2 months, or 3.6 months longer than forecasted by the Air Force.

In view of other evidence concerning C-141 pilot tour length, the fiscal year 1979 budget request should be adjusted. According to Air Force officials, the average tour length for C-141 pilots has been rising and is expected to continue to do so. The Air Force's projected C-141 pilot tour lengths for fiscal years 1977-80 substantiate the upward trend, as follows:

Fiscal year	Average projected C-141 pilot tour length (in months)
1977	43.4
1978	43.4
1979	45.6
1980	49.6

Because the tours are longer than previously anticipated, upgrading can take longer without adversely affecting readiness. Rather than having to upgrade the pilots in 22.8 months as programed (45.6 divided by 2), the upgrade period can be lengthened to 24.6 months (49.2 divided by 2). The extended time reduces the 536.4 hours programed per copilot for the year to 497.1 hours per copilot, thereby reducing the flying hour requirement for fiscal year 1979 by 14,934 hours for the 380 copilot equivalents programed.

Overstatement of C-141 flying hour requirements due to experience level of pilots being understated

The C-141 flying hour program is determined by the influx of copilots requiring experience to be upgraded to aircraft commanders. The Air Force requires at least one commander for each strategic airlift aircraft. Since the average assignment to the C-141 is about 4 years or slightly longer, enough copilots must be upgraded every year to fill vacated commander positions. Consequently, copilots must be upgraded after about 2 years of their assignments to insure an adequate supply of aircraft commanders.

To upgrade to commander, copilots must have at least 1,150 flying hours since their undergraduate pilot training. At least 500 hours must have been logged in the C-141. The net flying hours which must be obtained in the C-141 for a C-141 copilot immediately after completion of graduate pilot training is 1,019, allowing 75 hours for graduate pilot training and 56 hours for simulation.

The extent of experience flying necessary is also affected by the experience level of copilots when they are assigned to C-141s. Many of the pilots assigned have had prior experience in the C-141 or other aircraft. Because experience flying needs for such pilots are greatly reduced, the Air Force programs only 500 hours of experience flying for them.

When the fiscal year 1979 C-141 flying hour program was developed, the number of pilots with prior flying experience was underestimated. More recent information disclosed that the number of inexperienced pilots was overestimated. Consequently the fiscal year 1979 program is overstated by 16,900 hours.

Experience flying for a fiscal year is programed for one-half the pilot influx of the next to preceding fiscal year, the full pilot influx of the preceding fiscal year, and one-half the pilot influx of the program year. This

means that the pilots requiring experience flying during fiscal year 1979 are one-half those that were assigned to the C-141 during fiscal year 1977, all those assigned during fiscal year 1978, and one-half those assigned during fiscal year 1979. The weighting of the pilot influx for two of the fiscal years is designed to smooth the influx.

For fiscal year 1979 the Air Force estimated that 305 copilots assigned to the C-141 directly after graduate pilot training and 163 copilots with previous flying experience would require upgrade training. This was equated to a total of 380 undergraduate pilot training equivalents. Data available in May 1978 disclosed that experience flying had been overstated by 34 equivalents for fiscal year 1979, because more recent estimates of the influx of inexperienced copilots are less than the forecasts used for the flying hour program development. The 34 overprogramed copilot equivalents included in the fiscal year 1979 program result in 16,901 unnecessary C-141 flying hours costing about $18.1 million.

Fiscal year 1980 C-141 flying hour requirements are also overstated

If the fiscal year 1980 budget request contains the estimates of flying hour requirements for the C-141 reflected in the Military Airlift Command's worksheets, flying hour requests could exceed training requirements by over 48,000 hours valued at nearly $52 million. The potential overstatement is due to overestimating the number of pilots without extensive prior flying experience.

For fiscal year 1980 the command estimates that the equivalent of 451 inexperienced pilots will need experience flying to allow them to upgrade to aircraft commander within acceptable timeframes. Using the command's estimating methodology and data available as of May 1978, we estimate that the equivalent of 353 inexperienced pilots will need experience flying. The differential of 98 inexperienced pilot equivalents amounts to 48,000 potentially overprogramed flying hours, as follows:

	Inexperienced pilot equivalents	Flying hours	Required flying hours
Military Airlift Command estimate	451	493	222,343
GAO estimates	353	493	174,029
Potential excess hours			48,314
Variable cost per hour			$ 1,074
Value of potential overprograming			$51,889,236

Conclusions

The Military Airlift Command's flying hour program for fiscal year 1979 substantially exceeds training requirements, according to data available as of May 1978. Unless adjustments are made before the command's program request is incorporated into the President's budget, training requirements will be exceeded by an even larger amount in fiscal year 1980. The command should periodically upgrade the factors used in its flying hour program development so that realistic training requirements can be established.

Recommendations

We recommend that the Secretary of the Air Force

--tailor the Military Airlift Command's flying hour program to training requirements by periodically analyzing the factors used in program development to make sure they reflect anticipated conditions for the program period, and

--review the fiscal year 1980 program for strategic airlift to make sure that it is limited to training requirements based on the conditions expected during the year as reflected by the most recent data available.

Agency comments and our evaluation

The Air Force agreed that the factors used in developing the flying hour programs for the Military Airlift Command should be periodically updated and intends to do so at least twice a year. Such an update after our review work resulted in a reduction of 18,593 flying hours from the fiscal year 1980 budget request for the C-141. The Air Force did not address the overstatement in the fiscal year 1979 C-141 flying hour program.

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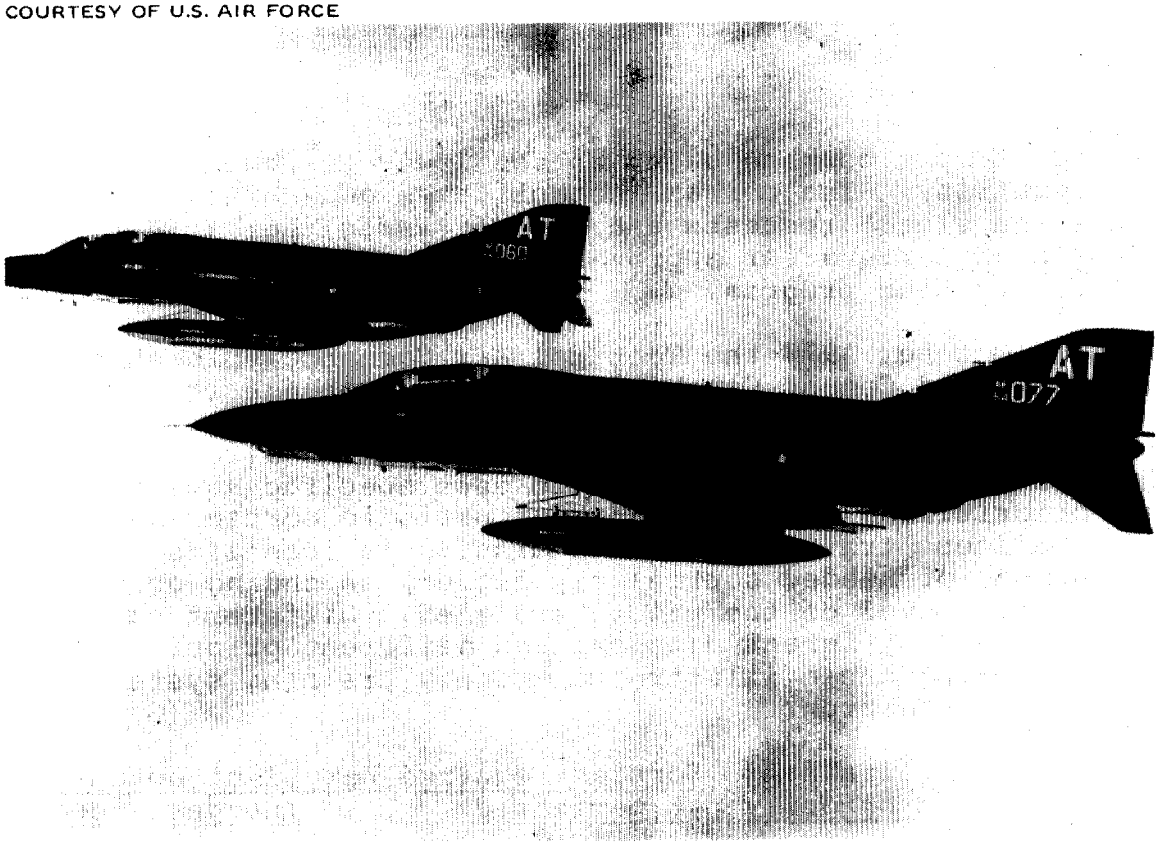

THE F-4 "PHANTOM" IN FLIGHT.

The Air Force changed the flying hour programing method for the C-141 since our review was made. These changes account for the difference of 30,000 flying hours between our estimated 48,000 hour overstatement and the Air Force's reduction of more than 18,000 hours in the fiscal year 1980 program. Since we have not had an opportunity to evaluate the changes, we cannot vouch for the validity of the Air Force's fiscal year 1980 revised flying hour program for the C-141.

TACTICAL AIR COMMAND

The basis for the command's flying hour program is the number of sorties (a single flight that may vary in length) needed to fulfill training requirements. These requirements, or standards, were developed by the command. On the basis of the standards and the number of authorized aircrews, training sortie requirements are determined by each wing. Historically determined numbers of sorties required for mission support acitivities, such as the ferrying of an aircraft to a depot for overhaul, are added. The wing then converts the total required sorties to total required flying hours using historical experience for sortie duration.

The command requires each wing to compare its required hours with the estimated number of hours that its maintenance organization can support. Each wing submits its flying hour

request to the command based on the lower of requirements or capability. The command consolidates and sometimes adjusts the wings' requests and then forwards them to Air Force Headquarters for approval and inclusion in the overall flying hour program.

In October 1977 the Tactical Air Command implemented the Graduated Combat Capability system to manage its flying hour program. Under this system each squadron is assigned a range of possible missions depending on the aircraft type. The missions actually assigned to each specific squadron are prioritized, and the number of periodic sorties needed for readiness training for each mission is identified. The number of needed sorties may differ, depending on the experience level of the pilots assigned. Different squadrons are assigned different missions and different priorities. The following table illustrates the new training system for an F-4 squadron.

Capability	Training priority	Sorties required per pilot(note a) Experienced	Inexperienced
Nuclear	1	16	18
Air support	2	14	16
Maverick	3	4	4
Air superiority alert	4	10	14
Interdiction	5	19	21
		63	73
Mission support		12	13
Total		75	86

a/6-month requirement.

The Graduated Combat Capability system is a refinement of the Designed Operational Capability system used through fiscal year 1977 for programing purposes. Under the old system each unit was assigned a primary and secondary mission with identified standard numbers of sorties. A major advantage of the new system is that the missions assigned to squadrons are prioritized so that the commanders know the order in which to conduct their training. The new system also recognizes the need for inexperienced pilots to fly more than experienced pilots to be mission proficient by identifying differing periodic sortie requirements based on pilot experience level.

Program execution

Our tests of whether pilots had flown in excess of standards in the first half of fiscal year 1978 and whether only those authorized to fly had actually flown disclosed no unreasonable discrepancies. While certain pilots exceeded standards, they were instructors who invariably fly above standards in doing their jobs.

In fiscal year 1977 the Tactical Air Command was unable to fly its aircraft at programed levels because the maintenance and support capability was inadequate. The command assumed that maintenance and support would not be a constraint in the second through fourth quarters of the fiscal year and developed its flying hour program on the basis of training requirements.

The requested program was approved by the Air Force. However, during the second quarter of 1977, the commmand realized that capabilities could not be increased to the requirement level and requested that the excess hours be transferred back to Air Force for redistribution to other commands. Air Force headquarters disapproved the request and directed the command to execute its program.

The command attempted to execute the balance of the program as closely as possible to the approved flying level. Particularly during the third quarter of 1977, wings were directed to fly as much as possible provided that hours could be used for productive training.

The table below summarizes, by quarter, the command's execution of the 1977 program.

	Hours approved	Hours flown	Percentage difference
1st quarter	120,373	107,584	-11
2d quarter	135,997	118,384	-13
3d quarter	131,600	137,313	+ 4
4th quarter	134,204	126,847	- 5
Total	522,174	490,128	- 6

AVAILABLE SIMULATORS COULD BE USED TO REDUCE FLYING HOURS

The benefits of significantly reduced flying hours resulting from acquiring sophisticated flight simulators are obscure in the Air Force. While claims are made that

thousands of flying hours are avoided every year by simulators in continuation training, flying hours are not decreasing. The Air Force has admitted as much in testimony before the Congress by stating that while simulator use may reduce training costs and save energy, the primary reason for procuring additional simulators is to increase combat readiness. Yet simulators continue to be justified on the basis of economic returns resulting from reduced flying.

In certain instances the Air Force is not taking full advantage of further reducing flying hours with simulators. For example, in the case of the C-5 simulators, training requirements could be reduced by more than 2,000 flying hours a year, valued at at least $4.7 million. Nearly half the simulator time is taken up by navigators even though they could be receiving their training in aircraft by doubling up on flights, thus making more time available to pilots who would need to fly less in aircraft.

Tactical aircraft

Air Force training manuals now prescribe more simulator training for pilots than they have in the past. However, flying hours have not necessarily been reduced. For example, in 1970 an A-7 line pilot required 240 hours a year for continuation training and spent no time in simulators. In 1978 an A-7 pilot needs about 270 hours on the average and spends 36 hours in a simulator. While A-7 pilots now spend time in simulators, the required flying hours have significantly increased on the average. Similarly, while the number of simulators hours increased from 12 to 36 a year between 1970 and 1978 for the F-4, average required flying hours per pilot have remained about the same, being 240 and 243 in 1970 and 1978, respectively.

C-5 aircraft

The situation is similar for cargo aircraft. While pilots are required to use simulators for continuation training, few, if any, flying hours are saved.

A case in point is the C-5. Neither the fiscal year 1979 nor the projected fiscal year 1980 flying hour program allows reductions resulting from training in simulators. The fiscal year 1978 program, however, allowed a 4-hour tradeoff for each pilot and copilot.

The Air Force has determined that the C-5 program can be reduced by 4 hours per year for each pilot and copilot as the result of simulator training. Each pilot must undergo 28 hours of simulator training a year. Half this time is

spent as a pilot, and the other half is spent as a copilot. Enough simulators to allow the tradeoff of flying hours are available. Yet the Air Force chose not to program tradeoff for the C-5 in fiscal years 1979 and 1980.

The C-5 program could be reduced as follows if 4 hours of simulator training tradeoff were allowed.

Number of active pilots and copilots	280
Number of active supervisory pilots	52
Number of reserve pilots and copilots	176
Number of reserve supervisory pilots	11
Total pilots and copilots	519
Simulator tradeoff per pilot	4
Annual flying hour program reduction	2,076

The C-5 costs $4,486 an hour to operate in 1977 dollars, for a potential operating cost reduction of $9.3 million a year. If only variable costs of fuel, consumable material, and spares are considered, the hourly cost is $2,246 for an operating cost reduction of nearly $4.7 million. Further reductions may be possible if more simulator time were made available to pilots.

Conclusions

While claims are made that simulators are reducing flying hours in continuation training, the number of hours actually flown has not decreased. Simulators with full mission capability continue to be installed on the basis that they will displace flying hours. Yet they are not used to their potential in reducing flying hours.

The Air Force should clearly establish its training requirements for each aircraft type, evaluate the simulator capability, and then determine the number of events needed to train pilots and other aircrew members in the aircraft. Simulator displacement should be clearly identified on an event-by-event basis for each aircraft type.

Recommendations

We recommend that the Secretary of the Air Force

--clearly identify the pilot training events to be performed in simulators for each aircraft type, and

--reduce the flying hour program for simulator tradeoff for instances when tradeoff has been identified, as in the case of the C-5, so that the sum of the flying hour program and simulator training does not exceed training requirements.

Agency comments and our evaluation

The Air Force took exception to the data we presented concerning flying hour requirements for tactical aircraft. While the numbers remain the same, we have made the necessary wording changes.

The Air Force stated that we are incorrect in reporting that simulators are not used to their fullest extent in the C-5 flying hour program. However, fiscal year 1978, 1979, and 1980 flying hour programs for the C-5 were based on full training requirements for the authorized crew ratio. While the fiscal year 1978 program was reduced for simulator tradeoff, the fiscal year 1979 and 1980 programs were not.

The Air Force stated that the C-5 winglife conservation is responsible for different treatment of simulator tradeoff. Wing conservation affected the fiscal year 1978 C-5 flying hour program. The fiscal year 1978 program was limited to 37,000 flying hours. This limitation was lifted about half way through fiscal year 1978. The fiscal year 1980 program of 45,366 hours is based on readiness training requirements and is not constrained by winglife conservation considerations. For this reason, the simulator tradeoff identified in the fiscal year 1978 program should reduce the fiscal year 1980 C-5 flying hour program.

PILOT ADVANCEMENT CRITERIA FOR MULTIPILOTED AIRCRAFT ARE NOT WELL-FOUNDED

Minimum flying requirements to advance copilots to commanders for multipiloted aircraft are subjective and do not consider individual differences. The requirements are based exclusively on giving aircraft commanders the experience thought necessary for the position without identifying the skills and qualities needed to perform the job or monitoring individual growth toward acquiring capabilities. Large portions of the flying hour programs for multipiloted aircraft are the result of these subjective minimums. There appears to be good potential to reduce training flying requirements if the skills and qualities required of aircraft commanders were identified and criteria to measure progress in acquiring them were established. Minimum flying hour pilot advancement criteria for the C-141 have changed

in response to budgeting pressures, and the Air Force to date has been unable to clearly relate experience levels to serious accident rates.

To become an aircraft commander in the C-141, a pilot must now have a minimum of 1,150 total flying hours, of which 500 must have been in the C-141. In addition, he must demonstrate proficiency in the aircraft and pass the necessary mission evaluation. However, no matter how qualified an individual pilot may be in all the areas tested and evaluated, the minimum advancement criteria are rarely waived.

Specific abilities of aircraft commanders which pilots must acquire during the upgrade flying period have not been identified. The Air Force states that the minimum number of flying hours is needed to give pilots the experience to have acquired the judgment, maturity, and expertise to safely operate multimillion dollar aircraft that transport passengers, cargo, and dangerous materials.

When do individual pilots acquire the necessary aeronautical experience? Unless the specific skills and qualities constituting the experience are identified, attainment cannot be measured. The social sciences, however, have recognized that there are wide differences in learning among individuals. It follows, then, that some pilots may need only 700 total flying hours in the aircraft to become well-qualified aircraft commanders, while others may need 1,500. The Air Force recognizes that some pilots require more experience than others, but it does not recognize that some may acquire the necessary skills and qualities in less than arbitrary minimums.

Minimum flying hour advancement criteria are subjective. The minimums reflect what a group of expert pilots believes is necessary to acquire the minimum level of expertise to successfully perform missions. Quantitative evaluations have not been made, and specific studies or analyses testing the validity of the minimums are not available. Air Force officials told us that the criteria determination process consisted of the continuous standards evaluation process at each level of command.

The minimums have by no means been static over the years. In the mid-1960s a pilot needed a minimum of 2,000 flying hours before he could advance to aircraft commander. Because of budgetary constraints the minimum was lowered to 1,000 hours. This minimum remained in effect for the C-141 until late 1976, when it was raised to the current 1,150 hours on the basis that a number of accidents had occurred which might

possibly be attributable to experience levels of pilots. According to Air Force officials, none of these changes were substantiated by formal analyses which could be reviewed.

Air Force officials said they had recently reviewed all 125 accidents in which aircraft had been lost from January 1977 through June 1978. According to an official who participated in the analysis, the review team could not substantiate a correlation between accidents and pilot flying hour experience. Results of the analysis were not available at the time of our review.

Some advancement criteria recognize that minimum flying hours should not be applied in a totally rigid manner. For example, a C-130 pilot must have a minimum of 1,000 flying hours to be eligible to advance to aircraft commander. Regulations, however, provide that when necessary to maintain a realistic ratio of line pilots to copilots, wing commanders or other commanders designated by the major command may upgrade carefully selected copilots who have 750 or more hours of total time and 400 hours in the C-130. In either case the pilot must meet applicable proficiency requirements.

Minimum flying hour criteria for pilot advancement greatly affect the flying hour programs for multipiloted aircraft. For example, advancement training requirements for the C-141 account for about 120,000 of the total 210,000 flying hours, or nearly 60 percent, programed for the active forces for fiscal year 1979. Similarily, experience flying for C-130 pilot advancement in the Air Force required nearly 60,000 flying hours in fiscal year 1978, representing close to 40 percent of the flying hours for the particular aircraft. Considering the cost of fuel, materials, and repair parts, the minimums are responsible for $133 million and $27 million of the flying hour costs of the C-141 and C-130, respectively.

The Air Force is developing a system which is expected to measure experience in terms of training events accomplished, weighted by complexity of events, rather than flying hours logged. Because the system has not yet been finalized, we could not evaluate its adequacy.

Conclusion

The current minimum flying hour criteria for pilot advancement are inadequate to identify qualified pilots as early as possible because they are arbitrary, do not adequately consider individual differences, and do not clearly identify the skills and qualities required of aircraft commanders.

Recommendation

We recommend that the Secretary of the Air Force identify the skills and qualities needed by commanders of multi-piloted aircraft and establish advancement criteria and a monitoring system which considers individual differences and allows pilots to advance as soon as they are ready.

Agency comments and our evaluation

The Air Force agreed that the advancement criteria were subjectively established. While the Air Force stated that the levels were established with safety considerations in mind, a clear correlation between safety and the upgrade criteria has not been determined.

The Air Force does not agree with our recommendation to identify the characteristics required of aircraft commanders and establish a criteria and monitoring system which considers individual differences and allows pilots to advance as soon as they are ready, on the grounds that this would not necessarily reduce flying hour requirements and that such a system would also be subjective. The point is, however, that fewer flying hours might be required, if such a system were established at no loss in readiness, proficiency, and effectiveness.

THE RELATIONSHIP BETWEEN READINESS REPORTING AND FLYING HOUR REQUIREMENTS IS VAGUE

While the primary purpose of the flying hour program is to provide training to maintain and enhance the readiness of pilots and other members of aircrews, the readiness reporting system does not correlate with this objective. Pilots are reported ready when they have flown significantly below program levels because the criteria used for reporting define readiness of pilots differently than flying hour program requirements.

The Tactical Air Command has established training standards for each of its units under the Graduated Combat Capability system. As described on page 52, each unit is assigned capabilities it is to acquire for readiness purposes. For each capability the Air Force has identified a number of sorties needed in a specific time frame for pilot-training requirements. Sorties are converted to flying hours by using average flight duration based on historical experience. A unit's flying hour requirements consist of the sums of sorties identified with the designated capabilities multiplied by the

number of aircrews and the average sortie duration rate plus mission support needs.

The training-readiness-reporting system does not use total sortie and event requirements as the basis for readiness. Instead, a lower assigned capability level than that assigned to a unit is used. The training readiness reporting for F-15 units illustrates this point.

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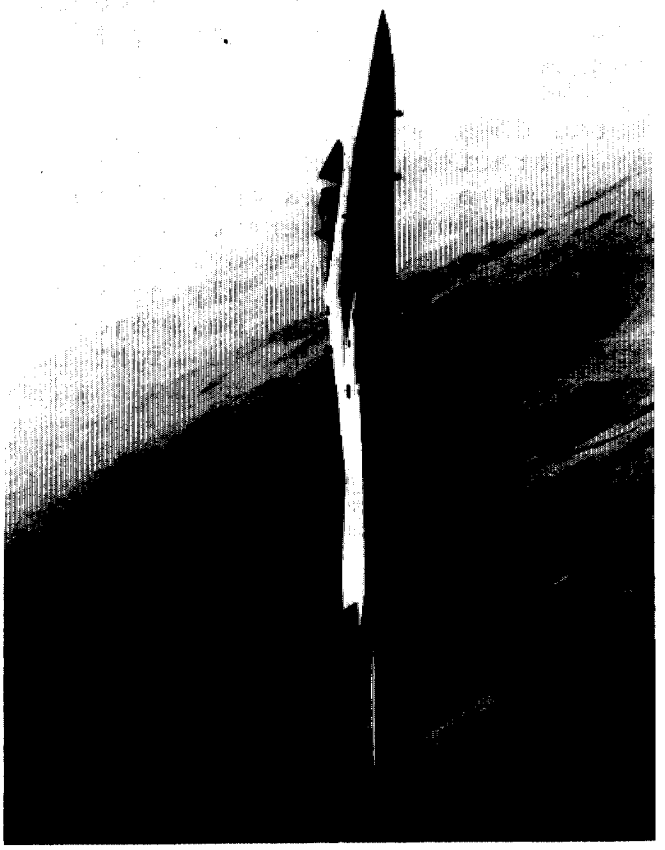

THE F–15 "EAGLE" AIR SUPERIORITY FIGHTER IN FLIGHT.

Graduated Combat Capability level assigned to typical F-15 squadrons	Training priority	Number of semiannual sorties required per pilot	
		Experienced	Inexperienced
Air superiority alert (E-1)	1	19	19
Air superiority (E-2)	2	25	31
Advanced air superiority (E-3)	3	23	29
		67	79
Mission support		13	14
Total		80	93

Mission support sorties are programed as a cushion to cover noneffective mission, higher headquarters tasking, and Air Force requirements not directly identified with the capability levels.

For readiness reporting the E-2 capability level is taken as the baseline for pilot training readiness measurement. In other words, as long as an inexperienced pilot flies the 50 sorties identified with the E-1 and E-2 levels for the F-15, he can be reported as fully ready. This is totally inconsistent with training requirements and the flying hour program. The F-15 unit is to train to the E-3 level, which requires 79 sorties for an inexperienced pilot, and the flying hour program is formulated accordingly. In essence, for training-readiness-reporting purposes, only about two-thirds of training requirements are considered, assuming mission support sorties are valid and should not be considered in the training readiness measurement baseline.

The situation is similar for other tactical aircraft systems. For example, for training and flying hour programing purposes, an inexperienced A-7 pilot needs 71 sorties, but for training-readiness-reporting purposes, he needs only 47 sorties.

Conclusions

The Air Force should reevaluate its training requirements to make them compatible with readiness requirements or change the baseline for training-readiness-reporting purposes. It is inconceivable that a unit's training

requirement for readiness purposes are established at a high level when readiness training requirements for reporting purposes are set at a lower level.

Recommendation

We recommend that the Secretary of the Air Force

--reevaluate training requirements and reduce them to those needed for readiness purposes, and

--use the training required for all capability levels assigned to a unit as the baseline for training-readiness-reporting purposes.

Agency comments and our evaluation

The Air Force stated that they are following their established readiness reporting procedures. In our report we state that flying hours should be programed at a level considered necessary for readiness purposes and readiness reporting should use the same baseline, which is not now being done. We did not take issue with whether or not the Air Force is following its established procedure. We are questioning the propriety of the reporting system baseline.

QUESTIONABLE NEED FOR FLYING BY PILOTS FILLING SUPERVISORY AND STAFF POSITIONS

At the end of fiscal year 1977, nearly 5,000 Air Force supervisory and staff pilots were authorized to maintain flying currency. Most of these fly at a level lower than that necessary for combat readiness and many maintain currency in noncombat aircraft. The jobs generally require flying experience, but they do not necessarily require flying currency. While we have not quantified potential savings if pilots who do not fly frequently and regularly in doing their jobs were deleted from flying status, resource conservation would be substantial. Most staff and supervisory pilots are not counted toward authorized aircrew ratios.

At the end of fiscal year 1977, the Air Force had 18,800 active pilots of which nearly 5,000 filled supervisory and staff positions, as follows.

Line pilots		13,990
Staff pilots at wing level and below	3,020	
Staff pilots above wing level	1,300	
Proficiency flyers	490	4,810
Total		18,800

Incumbents of certain supervisory and staff pilot positions, such as squadron commanders, squadron operations officers wing commanders, directors of operations in operational wings, wing quality control officers, and aircrew evaluation flight examiner officers, are required by Air Force regulations to maintain currency. Other positions must have a specific justification as to why a pilot is needed to perform the job and why flying is necessary.

The Air Force also has several thousand supervisory and staff pilots who are not authorized to maintain flying proficiency. This does not bar them from future flying assignments. However, before they may be assigned to an operational pilot position, these pilots must (1) undergo refresher training if they were previously qualified in the particular aircraft type in question or (2) undergo qualification training in the aircraft type if they are assigned to an aircraft for which they are not qualified.

Supervisory and staff pilots who maintain currency also must undergo refresher training before they are reassigned to operational flying jobs, unless they have maintained full readiness training proficiency in the particular aircraft type. This is seldom the case for staff pilots above the wing level.

Even the extent of refresher training differs little. Staff pilots in jobs above the wing level who maintain proficiency require refresher training of about 10 sorties, even if they are proficient in a combat aircraft type, such as the F-4. Staff pilots who do not maintain proficiency require refresher training of about 18 sorties. If proficiency is not maintained in the operational aircraft type, refresher training is also 18 sorties. This latter case applies to pilots who maintain proficiency in the T-39 aircraft if they are reassigned to operational tactical units.

Staff pilots above wing level authorized to fly must fly at least 60 sorties a year, which would not retain their combat readiness in tactical aircraft. In comparison, pilots assigned to tactical combat aircraft require twice that many sorties a year or more. In addition, staff pilots above wing level authorized to fly need not maintain currency in combat aircraft. Before these pilots may be assigned to combat or operational flying jobs, they must undergo refresher training.

We reviewed 101 pilot staff positions of the Tactical Air Command, whose incumbents are authorized to fly, to determine the need for them to fly. All are positions above

wing level category. In our opinion, none of the position justifications demonstrate a need to fly frequently and regularly in performing the pilots' duties.

The justifications generally demonstrate the need for flying experience by the incumbents. However, they do not demonstrate that the incumbents need to fly frequently and regularly in doing their jobs. In 51 instances, currency flying in the T-39 aircraft, which is an executive jet aircraft, is specified because

--individuals are currently qualified in T-39 aircraft, which enables them to maintain flying proficiency which can be used in their area of expertise;

--assigned duties require individuals to fly in support of the Air Force operational support mission, although their positions are in areas other than the operational support mission; and

--pilots should maintain proficiency in tactical aircraft, but if none are available, T-39 should be substituted.

Following are specific examples of pilots authorized to maintain currency which we believe need not do so.

--The position description of the Tactical Air Command Weapons Range Manager states that he (1) develops, plans, and programs operation and maintenance of air-to-ground and air-to-air weapons ranges and (2) participates in special range projects and studies, including targets, scoring systems, and range employment procedures. The duties directly support tactical flying activities and require flight with tactical units to evaluate weapons range layout, procedures, and operations. Strong tactical fighter operations background with current knowledge of weapons delivery systems, techniques, and procedures, plus a knowledge of aerial ammunitions ballistics, is required.

The active flying justification states that the incumbent is currently qualified in T-39 aircraft, which enables him to maintain flying proficiency which can be used in his area of expertise.

While the incumbent should probably be a tactical fighter pilot, the justification does not demonstrate the need to fly frequently and regularly in performing the duties. To the contrary, the

justification implies that if the incumbent were not qualified in the executive jet aircraft, he would not need to fly. Also, it is difficult to understand how proficiency flying of executive jet aircraft aids in performing the job.

--The position description of the Tactical Air Command's program officer for the F-4, F-16, and AWACS states that this position must be manned by a rated officer and operational experience is a necessity. The detailed knowledge of the capabilities and employment of tactical fighter/reconnaissance forces required to develop guidance for these forces would not be available to a non-rated officer. This worldwide knowledge of fighter/reconnaissance operation is required for determining force implications of Tactical Air Forces. The position should not be manned by a navigator due to limited number of tactical aircraft requiring navigators. This work center is authorized eight pilots, two civilians, and one administrative specialist.

The justification for active flying states that assigned duties require the incumbent to fly in support of the Air Force operational support mission (T-39).

As in the previous case, we do not question the need for flying experience by the incumbent. However, the need to fly frequently and regularly in performing the job is not demonstrated, nor does this position description demonstrate that assigned duties include the flying of operational support missions in executive jet aircraft. We are not certain how proficiency flying in an executive jet aircraft can contribute toward performing the program officer duties for the delineated aircraft.

--The position description of the Chief, Air Superiority Division, Tactical Air Command, states that the incumbent is responsible for determining and interpreting the operational requirements for air superiority fighter aircraft; manages the overall conduct of an independent operational test and evaluation of new air superiority weapons systems; and acts as a point of contact with industry for major aircraft systems improvements to provide increased operational capability for air superiority fighter aircraft.

The justification for active flying states that a pilot is required since the responsibilities deal specifically with pilot-directed and pilot-operated weapons systems. He should maintain proficiency in either the F-15 or the F-16. Until this is available, proficiency in an F-4 or an F-5 is acceptable. If none are available, the T-39 should be substituted.

Again, the Tactical Air Command has made a good case that a pilot should fill the position. However, the command does not demonstrate that the incumbent needs to fly frequently and regularly to do the job. Furthermore, the justification language regarding the proficiency flying is permissive rather than directive. Also, it is difficult to understand how proficiency in flying an executive jet aircraft would contribute to the job performance.

--Three members of the Tactical Air Command briefing team also maintain flying currency. The primary duties of these positions consist of briefing military and civilian audiences and answering questions.

The justification for active flying states that active flying is essential for briefing team members to insure that they are abreast of changes in flying procedures, airspace management, and other aspects of active flying. This ongoing experience is the only way credibility for performing the mission described previously can be maintained, according to the justification. While experienced pilots should probably fill these positions, we do not believe that current flying proficiency is required.

Air Force aircraft are generally authorized more than one pilot per aircraft. For example, the tactical aircraft community is authorized a crew ratio of 1.25 per aircraft. The C-130 tactical airlift is authorized two crews per aircraft. An option to eliminating all staff and supervisory pilots from currency flying status would be to have them maintain full combat currency in an aircraft and count them toward the aircrew requirements. The effect on the flying hour program would be the same as deleting staff and supervisory pilots from flying status. While staff and supervisory pilots would generally fly more than they do now to maintain their combat readiness, fewer line pilots would be needed, which in turn would require less replacement training.

Conclusions

On the basis of our review of supervisory and staff pilot positions above the wing level at the Tactical Air Command, we believe that a large proportion of the 1,300 pilots in such positions Air Force-wide do not need to maintain flying proficiency to do their jobs. None of the justifications reviewed demonstrate a frequent and regular need to fly in order to perform their jobs, although pilot experience may well be required.

Recommendations

We recommend that the Secretary of the Air Force

--critically review all staff and supervisory positions whose incumbents are authorized to fly, particularly those above the wing level, to determine their need to fly to do their jobs and eliminate from flying status all pilots who do not have this need, and

--determine the feasibility of having staff and supervisory pilots maintain full combat readiness to count toward authorized crew ratios, thereby reducing the number of required pilots and replacement pilot training.

Agency comments and our evaluation

The Air Force stated that rated officer assignment criteria require that supervisory jobs requiring rated expertise only be distinguished from positions where active flying is necessary for proper accomplishment of assigned duties. The Air Force recognized that this is a subjective process. We agree with this position, and our report demonstrates that the criteria to authorize supervisory and staff pilots to fly has been applied too liberally in favor of flying. We have demonstrated the questionable need to fly with specific examples, which the Air Force chose not to address.

The Air Force stated that flying in other than combat aircraft is desirable when combat aircraft is not available or too costly to operate to maintain flying skills, such as flight rules and policies, FAA regulations, etc. In essence, the Air Force is simulating the operation of combat aircraft, and flight simulators should be considered to maintain this type of currency.

The Air Force stated that staff and supervisory pilots assigned to tactical fighter wings are considered in wartime

surge and sustained sortie rate aircrew requirements. The Air Force did not address the staff pilots assigned to jobs above the wing level, such as the Tactical Air Command. Of course, we agree that pilots identified to specific active wartime flying assignments should maintain their proficiency. However, we believe that staff and supervisory pilots who need to fly to perform their jobs or fill specific mobilization requirements should be identified and justified on a case-by-case basis.

POTENTIAL FOR REDUCING CREW RATIO OF CARGO AIRCRAFT

Aircrew training requirements for aircraft with multiple crews could be reduced substantially, if supervisory pilots maintaining full combat readiness flying currency were counted toward the crew ratios. In the case of the C-141, pilot replacement requirements could be reduced by an estimated 60 pilots a year; as many as 19,800 flying hours a year valued at $21.3 million in fuel, spares, and other direct operating costs would thus be eliminated.

The C-141 is authorized four crews per aircraft. Two of the crews are active military personnel and two are reserve personnel. In addition to the 2 active military personnel crews, 233 staff and supervisory pilots maintain currency in the aircraft, many of them exceeding the minimum hours and events needed for C-141 pilots to be combat ready.

While maintaining full currency, these supervisory and staff pilots are not counted toward crew ratios, which are designed to meet contingency surge requirements. The emergency surge requirements are the most demanding placed on the cargo aircraft, crews, and other resources. And combat ready supervisory and staff pilots could be called upon to contribute their share under emergency surge conditions.

Crew ratio requirements are expected to decrease after a period of emergency surge conditions. Under emergency surge conditions the C-141 and C-5 are expected to achieve an average use rate of 12.5 hours per day. A Military Airlift Command study estimates that to sustain this high rate, 3.57 and 3.68 crews per aircraft are needed for the C-141 and C-5, respectively. After the situation has stabilized, the average use rate is expected to decrease to 10 hours per day requiring 2.97 crews per aircraft for each aircraft.

The staff and supervisory pilots in question include wing commanders; squadron commanders; vice commanders; operations officers; plans officers; flight safety officers;

standards evaluation officers; and a host of other positions at the squadron, wing, numbered Air Force, and command levels. Many of these jobs, such as simulator officers, probably need not be performed or could be performed by other personnel during the temporary emergency surge period, making many of these pilots available for line duty until the situation stabilized. Generally all these staff and supervisory pilots are experienced aircraft commanders.

To maintain readiness, aircraft commanders for the C-141 need at least 146 flying hours a year. Supervisory and staff pilots appear to exceed this minimum. Records of 8 of the 51 supervisory and staff pilots at Travis Air Force Base, California, showed that they had averaged 339 flying hours over a 12-month period, ranging from 187 to 483 hours. Our test of eight C-5 supervisory and staff pilots showed similar results. These pilots flew from 155 to 395 hours during the 12-month period. These statistics include observer hours creditable on flying records. However, local personnel were unable to distinguish between pilot time, co-pilot time, or other flight time.

The C-130 and C-5 also have multiple aircrews, exclusive of staff and supervisory pilots. While the impact would be less than for the C-141, training flying hour requirements would decrease substantially, if these pilots were counted toward crew ratios.

Conclusions

Pilot replacement training requirements could be reduced substantially, if staff and supervisory pilots were counted toward crew ratios under surge emergency conditions. While not all these pilots could be made available for continuous flying duty because of the urgency of their other jobs, many of the staff and supervisory pilots appear to be in jobs which could be suspended during the temporary period. Such jobs would include training officers, simulator officers, and others.

The crew ratios for strategic and tactical airlift forces should be based on emergency surge requirements adjusted by pilots who could be made available during temporary surge periods, since crew ratio requirements in the sustained emergency are expected to be substantially less than the crew ratios authorized.

Recommendation

We recommend that the Secretary of the Air Force adjust crew ratio requirements for emergency surge conditions of strategic and tactical airlift forces to levels considering fully combat ready staff and supervisory pilots to the extent possible.

Agency comments and our evaluation

The Air Force stated that the crew ratio figures attributed to the Military Airlift Command are erroneous. The figures appear in the Military Airlift Command analysis of C-5 and C-141 aircrew requirements made in December 1976. We are using these crew ratio figures to show that a crew ratio of lesser magnitude is needed after the relatively short emergency surge period has passed and sustained operations have begun, thus allowing the use of staff and supervisory pilots to fill some of this gap. It is not our intent to validate crew ratio requirements in this report. A separate evaluation is underway on that topic.

T-39 OPERATIONS EXCEED TRAINING REQUIREMENTS AND OFTEN PROVIDE UNECONOMICAL TRANSPORTATION SERVICES

The operations of the Air Force's executive jet aircraft by far exceed training requirements, and services rendered are often much more costly than those available commercially. In October 1977 the Defense Audit Service reported that in fiscal year 1977 the T-39 flying hour program had exceeded training requirements by as much as 78,000 hours costing $26 million, including consumption of about 24 million gallons of aviation fuel. According to the Defense Audit Service, the T-39 airlift support in June 1976 cost the Air Force about $1.7 million more than comparable available commercial transportation. Our limited work in this area confirmed that similar conditions continued to exist in March 1978.

The purpose and management of operational support flights

The purpose of operational support flights is to transport people and cargo with time, place, or mission sensitive requirements. The Military Airlift Command has responsibility for providing this support to all Air Force commands on a cost-effective basis considering mission requirements and priority of the travel requests. All requests are forwarded to command headquarters after

local base validators have assigned a priority to each request. The command coordinates flight requests when possible and schedules the flights.

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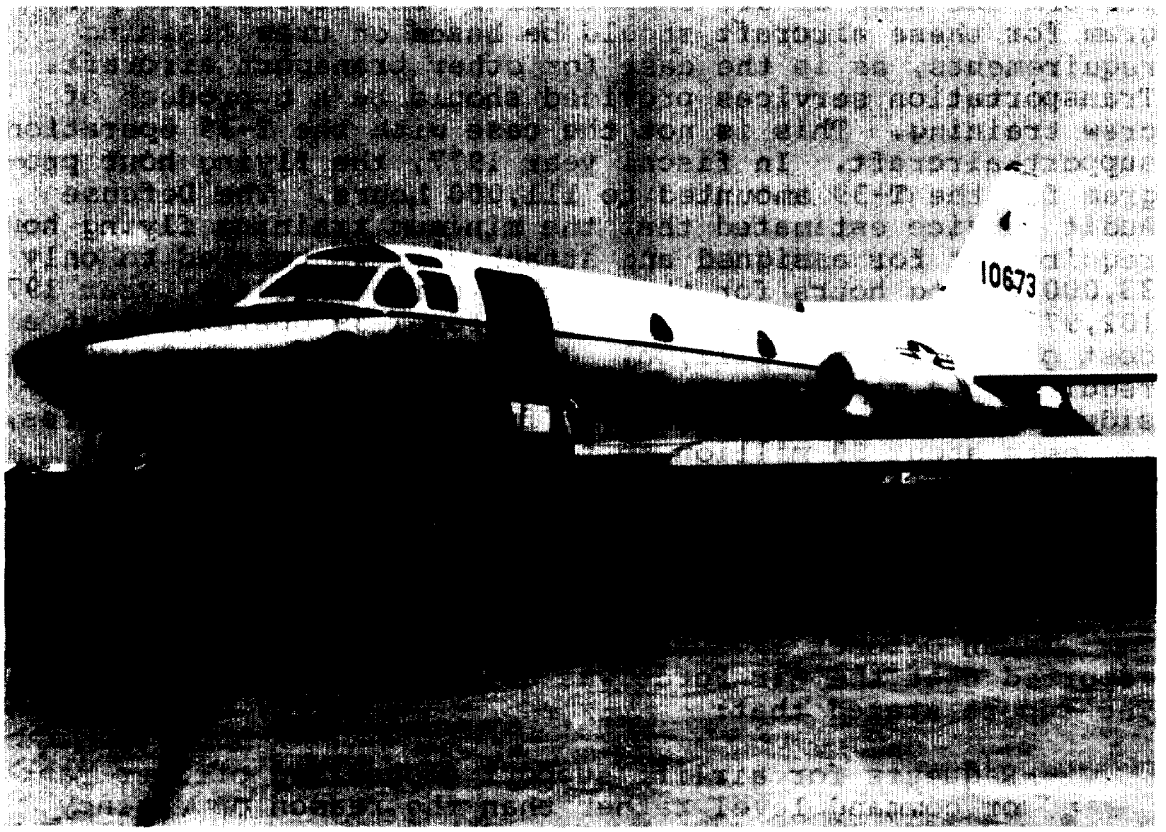

THE AIR FORCE'S T–39 AIRCRAFT IS USED FOR OPERATIONAL SUPPORT, PRIMARILY FOR PASSENGER FERRYING.

Much of the operational support flying is performed by the T-39 aircraft, a twin-engine, executive jet that can carry five to seven passengers. The Military Airlift Command operates 104 T-39s from 15 different continental United States air bases. In fiscal year 1977, 95,737 of the 196,208 flight requests submitted were supported. Commercial air transportation satisfied the unsupported requests. Overall, the T-39 flew 103,431 mission hours in fiscal year 1977.

The command provides skeleton crews at locations where T-39s are operated. The aircraft requires two pilots during flight. For example, 13 T-39s are stationed at Langley Air Force Base, Virginia. The Military Airlift Command provides 14 assigned pilots, and the Tactical Air Command supplements the crews with 102 staff and supervisory pilots who maintain flying currency.

The T-39s are required for contingencies to transport high priority personnel and materials on a short notice basis when other methods of transportation are unable to perform the task or are unavailable. The flying hour program for these aircraft should be based on crew training requirements, as is the case for other transport aircraft. Transportation services provided should be a byproduct of crew training. This is not the case with the T-39 operational support aircraft. In fiscal year 1977, the flying hour program for the T-39 amounted to 111,000 hours. The Defense Audit Service estimated that the minimum training flying hour requirement for assigned and attached crews totaled to only 33,000 flying hours for the fiscal year. In fiscal year 1979, 102,974 flying hours are programed for T-39 operations at a cost of about $35.1 million. Minimum readiness training requirements may account for as many as 52,700 hours. Considering only variable costs of fuel, materials, and spares, it costs about $9 million to fly the aircraft the 50,274 hours above minimum training requirements.

Unfavorable conditions noted in prior audit continue to exist

In an October 1977 report, the Defense Audit Service reported that the Air Force was using the T-39 inefficiently. The report stated that:

--Requests for airlift support emphasized officer rank or command level rather than the reason or urgency of the travel.

--Cost analyses were not prepared.

--Passenger seat use was only 36 percent of maximum.

--T-39 airlift support in June 1976 had cost the Air Force about $1.7 million more than comparable available commercial transportation.

In limited tests at one Air Force base in February 1978, we found that conditions noted by the Defense Audit Service continued to exist. For example, we were told that cost analyses still are not made for T-39 passenger flights. Also, seat use rates for duty personnel continued to be low--only about 30 percent for February 1 to 5, 1978, at the base tested.

Our tests of nine T-39 flights in February 1978 showed that uneconomical flights are still made. These nine flights cost the Air Force about $22,000. However, if commercial

airlines had been used, the costs would have been about $4,500--a savings of $17,500. The relatively minor ground transportation costs to and from the commerical airports and added per diem costs were not considered in our analysis.

The following examples illustrate the type of flights found in our tests.

--One T-39 on February 1, 1978, was flown from Langley Air Force Base to Bergstrom Air Force Base via Scott Air Force Base and then returned to Langley. Two duty passengers flew from Langley to Bergstrom, and two more boarded at Scott and flew to Bergstrom. Two passengers boarded at Bergstrom and flew on the return flight to Langley. The cost to the Air Force was $2,500. Commercial air transportation would have cost the Air Force only $800.

--Another T-39 flight on February 19, 1978, carried two duty passengers from Langley Air Force Base to Randolph Air Force Base and then carried other duty passengers from Randolph to Andrews Air Force Base. The cost to the Air Force was $2,800. Commercial air transportation would have cost the Air Force $700.

Conclusions

The T-39 program should be managed more economically by limiting aircraft operations to crew training requirements as closely as possible and by using commercial transportation, urgency permitting, whenever it is more economical. As with other military assets, transportation operations of the aircraft should be a byproduct of training requirements to the extent possible. Also, crew assignments should be the minimum required to achieve the most likely emergency operating conditions to minimize the expenditure of scarce training resources.

Recommendations

We recommend that the Secretary of the Air Force

--limit T-39 operations to crew training requirements to the extent possible, and

--use military aircraft only when adequate or less costly scheduled commercial aircraft cannot satisfy existing transportation requirements.

Agency comments and our evaluation

The Air Force stated that the level of T-39 operations satisfies support airlift requirements and is not based on readiness training requirements for wartime situations. According to the Air Force, the fiscal year 1977 T-39 flying hour program was limited to the number of hours that can be supported by airframe availability. The Air Force stated that it could use more T-39 support because less than half of the requests for T-39 support were satisfied and only about 10 percent of the Air Force travel in the U.S. was satisfied by T-39s in fiscal year 1976. According to the Air Force, the present system of transportation requirement validation considers the cost effectiveness of commercial travel versus organic airlift.

As we stated in our report, the Defense Audit Service's October 1977 report showed that cost effectiveness considerations concerning the Air Force's T-39 operations were inadequate. Our analysis of a limited number of flights at Langley Air Force Base indicated that the same conditions persisted in February 1978. In response to our request for the cost analyses for the specific flights, we were told that no such comparative analyses are made. During discussions at the Military Airlift Command we were also told that such comparisons were not made at that level for each specific transportation request.

The Air Force stated that cost is a major consideration in determining the mode of travel at the command level and that this would preclude uneconomical travel on T-39s. Our inquiries disclosed that the commands and their subordinate activities do not need to pay anyone for T-39 services used. In essence, T-39 support is free to them and supplements their travel budget because T-39 operations are funded through the Military Airlift Command's operations and maintenance appropriations.

In view of the above, we do not believe that cost effectiveness is adequately considered in T-39 operations. Since the Air Force considers the T-39 to have a wartime mission, we believe that the T-39 flying hour program should be based on readiness training requirements, and flying beyond this level should be justified on urgency and cost effectiveness considerations documented on a case-by-case basis.

CHAPTER 5

NEED FOR DEPARTMENT OF DEFENSE POLICY TO GUIDE THE SERVICES' FLYING HOUR PROGRAM MANAGEMENT

The Department of Defense needs to develop stronger guidance on the management of these programs to assure that readiness training requirements are met at the least possible cost. At this time the Department has issued only fragmented instructions on selected elements of the programs. No comprehensive guidance on their development, execution, or management has been compiled. As a result, each service has developed its own practices not necessarily coinciding with those of the others. Several million dollars can be saved each year if some of the flying hour management principles used by one service were used by another. In other areas, the absence of central guidance has caused flying hour programs to exceed training requirements by thousands of hours costing millions of dollars a year.

The issues needing improvement, discussed in the previous three chapters, fall into the following areas:

--A number of standards serving as the basis for determining who needs to fly and how much should be improved.

--The relationship between readiness measurement and flying hour requirements should be more closely correlated.

--More appropriate concepts and assumptions in the flying hour program development process should be adopted to effect significant resources conservation.

--Specific tasks and events to be performed in simulators should be identified, and controls to insure maximum simulator use should be instituted.

--The services should reevaluate the need to maintain currency in aircraft by staff and supervisory pilots whose jobs do not require frequent and regular flying.

Not all the issues apply to each service, which illustrates that the exchange of ideas concerning program management between the services is not fully developed. Dynamic Defense-wide guidance, combined with necessary monitoring,

would provide the necessary exchange. The guidance must be broad enough, however, to assure that the services' initiative for improving program management is not stifled. Each problem area, as it relates to needed Defense-wide policy, is discussed below.

ADEQUACY OF STANDARDS

Department of Defense guidance on flying hour standards development would insure that each service considered the same elements and explored identified paths in establishing standards leading to a combat ready aviation force at the lowest possible cost. Because such guidance does not now exist, pilots may be flying more than necessary in upgrading to aircraft commanders.

The Air Force and Navy have relatively high minimum flying hour criteria for pilot advancement to aircraft commander in multipiloted aircraft, as discussed on pages 37 and 56. These criteria are arbitrary and do not identify the skills and qualities necessary to become aircraft commanders. There are no evaluation systems to gage pilot progress toward acquiring the attributes before minimum hours are flown. Individual differences among pilots generally are not considered until minimum hours are flown, irrespective of how well qualified individual pilots might be. As we pointed out on pages 37 and 56, the criteria are inconsistent within the same service and even for the same aircraft type. The services still tend to emphasize hours flown over events performed in determining how much individual pilots need to fly to be combat ready, as is demonstrated by insisting on minimum flying hour criteria.

Since the continuation training flying hour programs are based on standards, the impact of standards on flying hour requirements cannot be overemphasized. For example, the Air Force's C-141 flying hour program for the active forces is governed by pilot advancement requirements. About 60 percent of the fiscal year 1979 flying hours required for this aircraft by the active forces is needed exclusively to satisfy pilot advancement requirements, costing about $133 million in terms of fuel, spares, and other items directly associated with flying aircraft.

NEED FOR BETTER CORRELATION
BETWEEN FLYING HOUR REQUIREMENTS
AND READINESS MEASUREMENT

Department of Defense guidance on how flying hour requirements are to be treated in measuring readiness for

reporting purposes would bring about uniformity and meaning in readiness assessments. Under the present readiness reporting system, each service has its method of considering flying hour requirements, but none uses full requirements for training purposes as its base.

The Air Force's Tactical Air Command is instituting a new system to assign and prioritize combat capabilities for units. The number of flights required to train pilots for each capability has been identified. For flying hour programing purposes, all capabilities assigned a unit are considered. For readiness-reporting purposes, however, a lesser capability is used as the baseline. If training requirements are valid, they should be used as a measurement base for readiness reporting. Otherwise they should be reduced to correspond with readiness requirements. Details are found on pages 59 to 62.

Since our last review, the Navy has incorporated flying hour considerations into its training-readiness-reporting system. However, the measurement criteria are not realistic in view of the Navy's operating cycle. Also, there are inconsistencies in the measurement of different elements of training readiness. The Navy's pilot readiness measurement system should incorporate the realism of the deployment cycle and use consistent measurement criteria. For more details see pages 27 to 30.

The Army has included task and event completion criteria in its pilot readiness measurement system. However, as in the Air Force, there is an inconsistency between flying hour requirement programing and pilot readiness measurement. While for programing purposes the sum of the specified tasks and events required to be performed is used, only 80 percent of the tasks and events need to be completed for readiness measurement. For more details see page 13.

PROGRAM DEVELOPMENT

Department of Defense guidance on flying hour program development factors is needed to assure that all the services consider the relevant constraints; use the same factors, as appropriate; and limit flying hours to training requirements. Because each service uses its own criteria to develop its flying hour program without the benefit of overall guidance, some programs are overstated by several million dollars.

As discussed on pages 25 through 27, the Navy's programing methodology does not consider logistics support capability constaints, whereas the Air Force's Tactical Air Command does. As a result, not all the Navy's programed flying

hours are flown because not enough flyable aircraft are available due to maintenance and spares problems. For example, during fiscal year 1977, the Marine Corps, whose flying hours are programed by the Navy, underflew its program by more than 30,000 hours, costing about $6.8 million, because not enough flyable aircraft were available due to the Marines' policy of flying only fully systems capable, operationally ready aircraft. The Navy used the funds which the Marines were unable to use and flew more than programed.

The Tactical Air Command, on the other hand, considers maintenance constraints in developing its program. Flying hours are programed on the basis of requirements or maintenance capability, whichever is lower, thereby preventing unnecessary programing. Had the Air Force's methodology been disseminated in Department-wide guidance, the Marine Corps' and the Navy's flying hour programs would have been constrained to the appropriate flying level for the various aircraft types.

The benefits of Defense-wide guidance are further illustrated by the number of pilots considered in determining the number of hours to be flown. The Army's flying hour programing method is based on the number of pilots assigned during the program period, as explained on page 7. The Navy, however, used the number of pilots authorized, which has resulted in overprograming, as discussed on page 25. For example, the fiscal year 1978 flying hour program for the F-14 aircraft was overstated by $5.1 million for this reason. The fiscal year 1979 program was overstated by $4.3 million for the same reason.

Department of Defense guidance on the use of support aircraft is needed to prevent uneconomical flights beyond training requirements. For example, as described on page 70, the Air Force operates a fleet of executive jet T-39 aircraft far in excess of training requirements. The services rendered are often much more costly than those available commercially. For fiscal year 1979, the Air Force programed about 103,000 flying hours for this aircraft at a cost of $35.1 million. Minimum readiness training requirements account for only about 53,000 flying hours. Considering only the variable costs of fuel, materials, and spares, the 50,000 flying hours in excess of training requirements are valued at $9 million.

REDUCING FLYING BY MORE USE OF SIMULATORS

Defense-wide guidance on simulator use could reduce the number of hours flown.

In the case of one Navy aircraft (see p. 30), tasks and events authorized to be performed in available simulators are flown in aircraft instead. An estimated $1 million a year in aircraft operating costs could be saved by the Pacific Fleet's P-3 community, if the authorized events were simulated.

A similar situation exists in the Air Force. As portrayed on page 53, the Air Force has determined that 4 flying hours a year can be eliminated for every C-5 pilot for a total savings of about $4.7 million annually. However, the fiscal year 1979 flying hour program did not consider the reduction. Also, nearly half of the available C-5 simulator time was taken up by navigators who could have received their training on aircraft by doubling up on operational flights.

FLYING BY STAFF AND SUPERVISORY PILOTS

The Department of Defense needs to be more involved in (1) implementing proficiency flying legislation to make sure that only those staff and supervisory pilots who need to fly in doing their jobs actually fly and (2) providing guidance in this area. The services have several thousand staff and supervisory pilots who maintain minimum flying currency. As we discussed on pages 15, 33, and 62, many of these pilots need not fly to do their jobs. Proficiency flying by staff and supervisory pilots costs an estimated $25 million to $30 million a year.

CONCLUSIONS

The Department of Defense needs to be more involved in providing guidance for the services' flying hour program management to assure that the necessary training is conducted at the least possible resource expenditures. In addition to making policy pronouncements, the Department also needs to establish a followup mechanism to insure that guidelines are implemented.

Concerning flying hour standards, the Department should direct the services to identify the skills and qualities required to become aircraft commanders and establish systems to monitor progress by pilots of multipiloted aircraft toward acquiring the skills and qualities without relying on minimum flying hour criteria. Once identified, such skills and qualities should then be disseminated as guidance to all the services.

In the case of the correlation between flying hour requirements and the readiness measurement system, the Department should direct the services to use full flying hour

requirements as the baseline for measuring training readiness. To do otherwise misrepresents the training readiness condition and does not allow the measuring of the resources needed to attain a ready force.

The Department should develop guidance covering the methods to be used by the services to develop their flying hour programs. The divergence of methods, as exemplified by the use of assigned pilots by two of the services and authorized pilots by the other service, in developing flying hour requirements necessitates development of Department-wide guidance to insure the achievement of readiness objectives at the least cost. The need for Department-wide guidance is further illustrated by the difference between the services in treating operational constraints in their program development--one service considers the constraints whereas another ignores them. Also, the Department needs to provide guidance on the use of operational support aircraft, such as the Air Force's T-39s. The Department should provide guidance on how extensively such aircraft are to be flown beyond training requirements.

Regarding simulators, the Department should direct the services to identify all pilot training requirements which can be done in available simulators and use simulators to the extent possible. The Department should direct the services to prioritize the use of simulators to assure that (1) training which cannot be done in the aircraft and (2) simulation reducing the most number of flying hours have precedence over other uses.

The Department should develop guidance concerning staff and supervisory pilots who should not fly. Relying on the services to implement the proficiency flying legislation has resulted in authorizing pilots to fly who need not fly to do their jobs.

RECOMMENDATIONS

We recommend that the Secretary of Defense develop and implement improved guidance for managing the services' flying hour programs, with particular emphasis on

- --identifying skills and qualities required for becoming commanders of multipiloted aircraft and establishing systems to monitor pilot progress without relying on minimum flying hour criteria;

- --using full flying training requirements as the baseline for readiness measurement;

--assuring that assigned pilots are used as the basis for flying hour requirements, operational constraints are considered, and operational support flying is limited to training requirements unless it is economical to do otherwise;

--using simulators to maximize flying hour reductions by identifying tasks and events to be done in simulators and doing them in simulators to the extent possible, giving priority to events reducing the number of flying hours the most; and

--better defining who does and who does not need to fly.

AGENCY COMMENTS AND OUR EVALUATION

The Department of Defense generally considers the report to be valid and helpful and is considering the specific conclusions and recommendations of the report with a view toward possible promulgation of more uniform guidance on managing the flying hour programs of the services.

(947320)

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D. C. 20301

MANPOWER,
RESERVE AFFAIRS
AND LOGISTICS

27 FEB 1979

Mr. R. W. Gutmann, Director
Logistics and Communications Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Gutmann:

This is in reply to your letter to the Secretary of Defense regarding your draft report dated 15 November 1978, entitled, "Opportunities to Further Improve the Services' Flying Hour Program Management" (OSD Case 5038, GAO Code 947320).

Except as may be noted in the detailed comments attached, we believe your report to be valid and helpful. Detailed comments are attached.

We appreciate your continuing interest in this important topic which can significantly affect our Defense readiness and economy.

Sincerely,

Richard Danzig

Richard Danzig
Acting Principal Deputy Assistant
Secretary of Defense (MRA&L)

Attachments

GAO note 1: Portions of this letter have been deleted because they are no longer relevant to the matters discussed in this report.

GAO note 2: Page number references in this appendix may not correspond to pages of this report.

DEPARTMENT OF DEFENSE COMMENTS ON THE GAO DRAFT REPORT "OPPORTUNITIES TO FURTHER IMPROVE THE SERVICES' FLYING HOUR PROGRAM MANAGEMENT" (GAO ASSIGNMENT CODE 947320; OSD CASE #5038)

General

A number of minor typographical and editorial suggestions have been made directly to your staff.

Chapter 1: Introduction

In addition to the displays relating trends in total flying hours and total aircraft inventory (e.g., page 1), you may wish to display trends in flying hours per pilot engaged in operational flying if you have obtained these data from the Services.

Chapter 2: Building a Better Flying Hour Program - Observations on Where the Army Is and Expects To Be.

The Army has informed the Department of Defense that the Army staff interposes no objection to the contents of the draft report. It should be noted that the Army Aviation Position Review Committee has completed its review, mentioned on page 19 of the draft report, of the requirement for aviators in operational flying positions of table of distribution units to fly. We have provided your staff summary data on the results of the review.

Chapter 3: Potential for Improving the Navy's Flying Hour Program.

At Enclosure 1 are the Department of the Navy comments on selected portions of the draft report.

Chapter 4: The Air Force's Flying Hour Program and Potential Improvements.

At Enclosure 2 are the Department of the Air Force comments on selected portions of the draft report.

Chapter 5: Need for Department of Defense Policy to Guide the Services' Flying Hour Program Management

The Department of Defense is considering the specific conclusions and recommendations of the draft report in the light of available data and of the comments of the Services with a view toward possible promulgation of more uniform guidance on management of flying hour programs of the Services.

Department of the Navy Response
to
GAO Draft Report, "Opportunities to Further Improve the Services' Flying Hour Program Management",
OSD Case #5038

TOPIC: The Validity of Several Flying Hour Standards Used for Fleet Readiness Training is Questionable

1. Summary of GAO Conclusions

The flying hour standards for the P-3 in the Pacific could be reduced to avoid more than 3,800 flying hours per year. Also, conditions in the Atlantic P-3 community should be analyzed to determine if similar reductions are possible there.

Additionally, the monthly flying hour standard for the Marine Corps AV-8 Harrier may be too high by an undetermined amount.

Summary of GAO Recommendations

That the Secretary of the Navy:

- reduce the P-3 flying hour standards to the level required after simulation, flying by staff officers, aircrew adjustments, change in mission, and other factors not quantified have been considered; and

- reevaluate the Marine Corps' flying hour standards for the Harrier and other aircraft whose standards are of questionable validity and adjust them as necessary.

2. Summary of Department of the Navy Position

Primary Mission Readiness (PMR) hours are under continuous review to determine their accuracy and validity, based on known training and operational requirements. PMR hours for the P-3 are established at 52 hours per month per crew, including simulator time. Staff hours are in addition to established PMR because crew seat ratios (CSR) do not include staff pilots. The only acceptable reduction in P-3 PMR would be those hours substituted through simulation. Staff hours are vital and essential to the sound management of a flying program supporting training and operational requirements.

- On Simulator Substitution. Commanders are encouraged to fly as many authorized events as possible in the simulators. A limiting factor for this substitution is the quantity and quality of simulators available to the fleet. The PACFLT

Enclosure (1) to
CNO Ser 51C/732793

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community has these trainers only at NAS Moffett Field. NAS Barbers Point based squadrons and deployed squadrons must use aircraft for all their training.

There has been considerable discussion on the use of simulators for instrument checks. This is satisfactory, with the exception of the transition from instrument break-out on an approach to a successful visual transition for landing. There is no consensus on the necessity for this, but there is a strong contention within the operational community that the landing is a necessary part of the instrument approach and that simulation of this phase of an approach is not realistic in our current generation of P-3 trainers.

- On the Factors Not Quantified. The GAO notes that training requirements are listed as separate flights, although it is often possible to combine several of these requirements on single flights. In addition, it is contended that many of the events required could be conducted on operational flights. These are correct observations. However, training is not simply doing something to satisfy a requirement; it is learning to do something by repetitious practice of the event. Thus, every training flight is a series of repetitious events as prescribed by the syllabus. Some of the required events can be accomplished on operational flights, but it depends on conditions; and training officers cannot always count on the fact that the required condition will exist. The nature of operational flights often precludes the luxury of conducting training.

The GAO also holds that penalizing a squadron's readiness rating for failing to qualify pilots as Aircraft Commanders within 18 months is not supported by operational necessity and promotes unnecessary flying. The 18 month requirement is considered necessary to obtain the greatest payoff from designated Aircraft Commanders. Additionally, the morale factor of being designated an Aircraft Commander within this time frame adds immeasureably to the overall effectiveness of a unit.

-On Marine Corps Aircraft. The Commandant of the Marine Corps concedes that the PMR hours for the AV-8A Harrier may be higher than required. CNO and CMC are currently staffing a revalidation effort which will make necessary adjustments to Primary Mission Readiness hours.

3. Statement of Department of the Navy Position

- A small reduction in P-3 flying hours can be made when adequate simulator support is available. A recent PATWINGSPAC study arrived at a figure of 50.4 hours as the minimum

requirement in the aircraft itself. However, along with this is a requirement for 3.5 hours of cockpit simulator time and 6.0 hours of tactics trainer simulator time. If the simulators are not available, aircraft flying hours must be increased accordingly. The Navy budget does reflect reductions in flying hours based on planned simulator usage. For example, PACFLT budgeted PMR hours for P-3 in FY 1980 are only 45.9 hours per crew per month.

- Under flying the AV-8A approved Flying Hour Program (FHP) in past years has been attributed to availability of operational ready aircraft. Recent post-production management actions to improve AV-8A aircraft availability have resulted in improved readiness, with the AV-8A's operational ready (OR) rate improving from 50.9 in FY-77 to 60.5 in FY-78. Further improvement is anticipated.

TOPIC: The Navy's Programming of Flying Hours Does Not Adequately Consider the Operating Environment

1. Summary of GAO Conclusions

The Navy should consider anticipated material readiness and maintenance problems for each aircraft type during the flying hour program development process for its own, as well as the Marine Corps', aircraft communities to minimize flying hours and related expenditures consistent with readiness and training requirements.

Summary of GAO Recommendations

That the Secretary of the Navy incorporate anticipated material readiness, maintenance capability, and other factors limiting aircraft availability into the Navy's flying hour program development process to achieve optimum readiness with minimum resources.

2. Summary of Department of the Navy Position

The Navy does consider material readiness, maintenance problems, and crew availability during the flying hour program development process.

3. Statement of Department of the Navy Position

All aircraft are not expected to be able to perform all assigned missions all of the time. One hundred percent availability of all aircraft for an extended period is not possible. Therefore, it has been determined, based on sortie requirements, that approximately 65% Navy-wide availability of mission capable aircraft will be required to support training

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and operational commitments. This factor is taken into account when developing the FHP. As a result, average utilization per aircraft amounts to approximately 33 hours per month per aircraft, Navy-wide.

Required hours per crew per month is the determining factor that generates flying hour requirements. Force (number of aircraft) available must generate these hours in order to meet the FHP. If fewer aircraft are used or are capable of performing mission requirements, utilization rates for individual aircraft will obviously go up.

Should a maintenance problem in one aircraft community result in a requirement for utilization rates for mission capable aircraft in excess of those which could reasonably be achieved the Navy would reduce budgeted hours. The emphasis in the flying hour program however, is and should be on maintaining the training readiness of squadron crews. To deviate from this policy would ensure degradation in crew readiness.

The Navy does reflect known maintenance and/or manning problems in developing the flying hour program. For example, F-14 crews were reduced from 15 crews per squadron to 14 for FY 79 because of anticipated manning shortfalls. The OSD FY 80 budget submission reflected this reduction in crews, which reduced total hours and costs.

TOPIC: Tying Flying Hours to Readiness

1. Summary of GAO Conclusions

The Navy's efforts to reflect a direct relationship between combat readiness reporting and the level of the flying hour program executed are commendable. However, the readiness reporting criteria now used do not realistically reflect the Navy's operational environment, nor are they consistent with each other.

Summary of GAO Recommendations

That the Secretary of the Navy adopt readiness reporting standards that:

- more accurately reflect the Navy's operational conditions and the relationship between flying hours and readiness; and

- reflect the number of authorized crews considered ready for combat as the primary training readiness factor, de-emphasizing the level of standard flying hours actually executed.

2. Summary of Department of the Navy Position

Operational readiness is achieved by the accomplishment of requisite personnel and material objectives and is measured as the degree of attainment of those objectives. Personnel readiness is achieved by having on board the required number of personnel, adequately trained in their intended functions. Material readiness is achieved by having on board the weapons systems and associated support equipment required to perform the unit's assigned mission. These material assets must, of course, be maintained and supported at the desired level to obtain the required material readiness.

The measurement of operational readiness is an objective exercise; either the objective is achieved or it is not. The establishment of objectives requires subjective judgment, experience and reflection upon past performance.

There is a basic number of flying hours required for a pilot to safely operate an airplane in the fundamentals of take-off, landing and navigation from point to point. In addition to these fundamentals, there are a number of hours required to safely execute a particular military mission in an aircraft. This requirement is compounded if that mission is to be performed in a hostile environment, either actual or simulated. The summation of these hours establishes an objective which, if maintained, should guarantee a relatively high probability of successful accomplishment of the assigned mission. The achievement of this objective is constrained by the availability of aircraft, people and dollars. To operate with these constraints, the Navy carefully evaluates all requirements to insure that we are deriving the maximum degree of combat readiness and safe, efficient operations from every dollar.

Through experience and continuous evaluation of objectives, the Navy has derived an hourly figure for the pilots of each type aircraft, which should make them combat ready (i.e., current qualification to perform any mission which may be assigned to that squadron). An example would be an F-4 pilot currently qualified to perform air combat maneuvering, intercepts, missile launch, aerial refueling and conventional bombing. This pilot would also be emergency deployable on a CVA without a requirement for refresher field carrier landing practice.

For several years, the inability to achieve Full Combat Readiness due to fiscal constraints has forced the Navy to resort to budgeting for Primary Mission Readiness (PMR) which enables the average fleet pilot to perform safely only the primary mission assigned to his type squadron. Monthly operational flying below the level of Primary Mission Readiness reduces a pilot's capability to safely perform all assigned missions.

3. Statement of Department of the Navy Position

The yardstick for measuring the capability to attain operational readiness is the Primary Mission Readiness (PMR) factor. Measurement is an objective exercise; either the objective is attained or it is not. Establishment of the objective requires a certain amount of subjective evaluation. Navy believes that the established Primary Mission Readiness requirements are valid, minimal and consistent with current defense requirements and safe operations.

TOPIC: More Effective Use of Existing Simulators Could Reduce Flying Hour Requirements

1. Summary of GAO Conclusions

Simulators are not used as extensively as they could be in displacing flying hours. The Navy should review its simulator policy and practices to determine the extent to which simulators in the inventory can displace flying hours and see to it that substitution policies and procedures are enforced.

Summary of GAO Recommendations

That the Secretary of the Navy:

- review the Navy's simulator policies and practices to determine the extent to which flying hours can be displaced by simulators in the inventory and enforce such feasible substitution;

- ensure that training and exercises authorized to be performed in simulators rather than aircraft take precedence over non-substitutable simulation to the extent possible;

- institute simulator operations on a seven day per week basis where it is cost effective to do so; and

- reduce standard flying hour requirements to levels needed exclusive of substitutable simulator hours.

2. Summary of Department of the Navy Position

Policies and Procedures. The Navy reviews its policies and procedures on a continuing basis. The extent to which simulators may be used for flying hours avoidance is determined by the capabilities of the devices themselves. The Navy projects full utilization of flight simulators and adjusts flying hours programs accordingly. These adjustments effectively enforce overall funding ceilings on flying hours programs.

Fleet Readiness Squadrons have precedence in the use of simulators for syllabus flights. Projected fleet squadron utilization of substitutable simulators results in programmed reductions in flying hours on a two for one basis (i.e., two hours in the simulator replaces one hour in the aircraft).

Training and Exercises. The Navy authorizes the use of flight simulators to complete certain qualification exercises. This authority is contingent upon complete configuration and performance congruency between the simulator and its parent aircraft. Additionally, the Navy encourages the use of flight simulators for instrument training flights but recognizes that most present flight simulators cannot replace all aspects of instrument qualification requirements.

Extended Simulator Operations. The Navy budgets simulator utilization for 16 hours per day, five days per week, 50 weeks per year. Manpower constraints preclude extending simulator use to seven days per week.

Standard Flying Hour Requirements. Standard flying hour requirements are currently at levels needed, fully taking into consideration the substitutable simulator hours available. Overall PMR hour rates of 88% are based on 85% aircraft flying hours and 3% simulator time.

3. Statement of Department of the Navy Position

In general, flight simulators acquired prior to FY 1977 were designed to supplement rather than replace actual flight. For this reason the Navy has pursued a measured approach to the reduction of flying hours based upon the use of these flight simulators.

In early 1975, the Navy stated as policy that in the future all major flight simulators and training devices would be acquired using the techniques of Instructional Systems Development (ISD). ISD provides a rational approach to tailoring training media to specific training requirements. The product of this policy is the acquisition of flight simulators capable of being used in lieu of certain flight training phases. Deliveries of these kinds of trainers will commence during FY 1979.

The Navy has dedicated considerable resources to the modification, modernization, and update of training equipments to insure their ability to satisfy current training requirements.

In the absence of revolutionary advances in training

state-of-the-art, the Navy does not foresee significant avoidance of flying hours through the use of flight simulators. However, the Navy intends to continue a vigorous program dedicated to the use of flight simulators to improve mission readiness, enhance flight safety and conserve resources.

TOPIC: Flying by Many Supervisory and Staff Pilots May Not Be Necessary

1. Summary of GAO Conclusions

The Navy has not adequately determined the supervisory and staff positions requiring minimum flying to perform their jobs. The Navy should critically review supervisory and staff positions whose incumbents are authorized to fly and require only those to fly who have an operational need for it.

Summary of GAO Recommendations

That the Secretary of the Navy:

-critically reevaluate supervisory and staff positions authorized to fly and only allow those to fly who have to operate aircraft in the performance of their duties; and

- evaluate the possibility of having staff and supervisory pilots maintain full combat readiness and count them toward authorized crew ratios.

2. Summary of Department of the Navy Position

The argument for staff officers in DIFOPS billets is that surge manning during mobilization will place staff DIFOPS pilots in operational squadrons. When considering the actual billets with DIFOPS status, it is doubtful that the more senior officers will go to a squadron and their need for flying proficiency is questionable; however, for mid-level and junior officers, the situation is different. They may well be used to augment a squadron. In addition, under current rules, pilots have flight time "gates" to meet for continued aviation career incentive pay (ACIP). Staff duty that did not count toward the requirements for meeting those gates would be much less desirable and a source of discontentment.

The suggestion that staff officers maintain full combat readiness and count against authorized crew ratios is considered inappropriate. Staff officers generally do not have the time to devote to all the requirements of full combat readiness, nor would they be fully integrated with their crews. That integration is a very necessary ingredient to the team concept found in a successful crew.

3. Statement of Department of the Navy Position

Staff hours are considered essential in order to manage a training/mission oriented program. Staff billets are reviewed continuously to determine the value and requirement for flying of staff officers. However, to count these pilots as fully combat ready would be invalid since their availability to perform on a continuous basis as squadron pilots is limited.

The Navy will continue to review staff and supervisory billets requiring minimum flying and require only those to fly which contribute to the overall effectiveness of naval aviation.

TOPIC: Minimum Flying Hour Requirements for Pilot Advancement

1. Summary of GAO Conclusion

The Navy should identify the qualitative attributes required of Aircraft Commanders and monitor advancing pilots' progress in acquiring the desired skills and characteristics.

Summary of GAO Recommendation

That the Secretary of the Navy adopt pilot upgrade standards which consider individual competence in event performance and command abilities, along with the number of total flying hours.

2. Summary of Department of the Navy Position

- The Navy has established 800 hours as a minimum for Aircraft Commander designation in the P-3. OPNAVINST 3710 series requires 700 hours as a minimum. The P-3 community recognizes that 700 hours are sufficient for some types of flying, such as point to point transport flights, but holds that 800 hours are required to provide the experience necessary for safe and effective operational mission accomplishment. This figure is based on experience.

- There is a requirement in the NATOPS program for the successful accomplishment of specific events prior to Aircraft Commander designation. This is done by a series of examinations in the air and on the ground.

3. Statement of Department of the Navy Position

- The GAO is in error in thinking that Aircraft Commander designation is based solely on an arbitrary number of flying hours. Flying hours are only a part of the requirements and are set at a figure high enough to provide the experience necessary to safely and efficiently employ the aircraft in an operational environment. There is no way to precisely measure how many

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hours are required, but the 800 hours is the figure arrived at, after many years of experience, by people in the best position to know--the Functional Unit Commanders.

AIR FORCE COMMENTS

ON

GAO DRAFT REPORT

OPPORTUNITIES TO FURTHER IMPROVE THE SERVICES' FLYING HOUR PROGRAM MANAGEMENT

OVERSTATEMENT OF C-141 FLYING HOUR REQUIREMENTS ATTRIBUTABLE TO CHANGES IN TOUR LENGTH (Page 59)

The FY-80 active C-141 flying hour program has been revised to include projected tour length. This revision accounts for differences in tour length for UPT graduates and first assignment instructor pilots (FAIP).

Detail:

1. A UPT graduate requires 1150 hours minimum to qualify for upgrade to aircraft commander (AC). This total is reduced by advanced training time (40 hours flight simulator plus 30 hours in the aircraft), and in-unit simulator time (42 hours), leaving 1038 in-unit C-141 flying hours required to meet minimum upgrade criteria.

2. The FAIP requires 500 hours minimum in the aircraft. The in-unit time is reduced to 470 hours by the 30 hours flown in advanced training.

3. Tour length projections are based on historical data modified by current personnel policies and are periodically updated. Since the GAO visit, projections have been updated and the tour lengths are now projected to be: UPT-52.0 months and FAIP - 36.6 months. To upgrade pilots at mid-point in their tour the requirements are calculated as follows:

UPT: 52.0 MO WG TOUR - 2 = 26.0 MOS TO UPGRADE
-2.0 MOS FOR UPGRADE TNG

24.0 MOS TO GET 1038 HRS

(1038 - 24.0 MO X 12) - (2.3 VIS/CPT*) = 516.7 HRS/YR

FAIP: 36.6 WG TOUR - 2 = 18.3 MOS TO UPGRADE
-2.0 MOS FOR UPGRADE TNG

16.3 MOS TO GET 470 HRS

470 - 16.3 MO X 12 = 346 HRS/YR

*VIS/CPT = Combination of Visual System added to Simulator and Cockpit Procedures Trainer

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OVERSTATEMENT OF C-141 FLYING HOUR REQUIREMENTS DUE TO EXPERIENCE LEVEL OF PILOTS ASSIGNED TO THE C-141 AIRCRAFT BEING REDUCED (Page 61)

For greater accuracy, experiencing requirements are no longer expressed in terms of UPT equivalents. UPT and FAIP are tracked separately with different tour lengths. Experience flying is still programmed for one-half of the pilot input two years prior to the program fiscal year, the full input for one year prior and one-half of the input for the program year. Requirements for the UPT/FAIP mix (468 authorized copilot positions) are determined as follows:

UPT	FY77	FY78	FY79	FY80
INPUT	171	114	83	210
FY79 Computation				
50% of FY77			86	
100% of FY78			114	
50% of FY79			42	
UPT TOTAL			242	
FY80 Computation				
50% of FY78				57
100% of FY79				83
50% of FY80				105
UPT TOTAL				245

FAIP

FY79 Computation	
468 Authorized Positions minus 242 UPT's	226
FY80 Computation	
468 Authorized Positions minus 245 UPT's	223

FISCAL YEAR 1980 C-141 FLYING HOUR REQUIREMENTS ARE ALSO OVERSTATED (Page 64)

Based on updated tour length and UPT/FAIP factors, experiencing hours for FY80 have been reduced as follows:

	Experience Hours
Prior FY 80 program in report	222,343
Current FY 80 program	203,750
Hrs change due new factors	-18,593

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RECOMMENDATIONS (Page 65).

We agree that factors should be periodically updated and intend to do so at least twice each year. Factors used in programming flying hours for MAC have been updated in July, the C-141 program has been revised in the budget submit to OSD in October, the C-141 and C-130 programs will be updated again in December, and the C-5, C-141, and C-130 will all be revised again during the POM exercise.

AVAILABLE SIMULATOR CAPACITY COULD BE USED TO REDUCE FLYING HOURS (Page 69)

For several years the Air Force has been required to submit to OSD and subsequently to Congress an estimation of the value of simulators, both present and future acquisition devices documented as "Flying Hours Avoided," the estimates represent what additional sorties would have to be flown if simulators were not part of the training program for the individual weapon systems. Although for some systems these avoidances represent flying hour program reductions, in most systems the avoidances do not represent actual reductions.

There are varied and complex constraints that prevent further flying hour reductions. For example, sortie generation restrictions already require the Air Force to program the TAF flying hours at approximately 20% below that required to meet training requirements. Another factor that must be considered is pilot experience; the average experience level of line pilots continues to drop. The less experienced pilots need more, not less, flying time. A third factor is the continuously changing combat environment. The simulator usefulness changes as we change the mission assigned to the aircrews. In summary, simulators are an integral part of the training programs and cannot be considered in isolation from the aircraft, the pilot and the mission. The Air Force continues to maintain that the primary purpose of simulators is to increase readiness with the added benefit of economic savings in some weapon systems.

TACTICAL AIRCRAFT (Page 70)

Exception must be made to the flying hours stated for the F-4 and A-7 systems which the report used as examples. Air Force Flight Management Data System records, as of 30 Sep 78, indicate the average A-7 line pilot flew approximately 186 hours per year vice the 270 hours per year as the report stated. Current Air Force continuation training requires each A-7 line pilot to fly approximately 250 hours per year plus those hours flown in a simulator. In the F-4, our records indicate an average of approximately 161 hours per pilot per year vice the 243 hours per year as stated. The requirements for the average F-4 line pilot (with a Graduated Combat Capability of A/S) would require approximately 210 hours per year plus simulator. The reduction in hours flown versus hours required by current training programs is caused by the lack of capability to generate the sorties to support a higher flying hour program for each pilot. The GAO Report is correct in stating our simulator usage has increased; and the Air Force will continue to

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make maximum effective utilization of our simulators to produce the highest level of proficiency in our tactical pilots.

C-5 AIRCRAFT (Page 71)

The GAO has stated, "C-5 simulators in the Air Force are not used to avoid as many flying hours as possible." That is incorrect. In holding the C-5 flying hour program to the minimum with prudent risk to conserve wing life, the Air Force uses simulators to their fullest extent. The confusion apparently stems from the flying hour accounting procedure which does not follow that used for other aircraft. The flying hours are artificially limited by wing conservation, making an entry showing the simulator benefit misleading since it would indicate we would fly more hours if the simulators were not used. We have held the crew ratio below the required 4.0 to 1 rather than damage the wing more than absolutely necessary.

PILOT ADVANCEMENT CRITERIA FOR MULTI-PILOTED AIRCRAFT ARE NOT WELL FOUNDED (Page 73)

The multi-piloted aircraft flying hour upgrade criteria is not arbitrary as suggested by GAO; upgrade criteria has been established by the collective, corporate judgment of the supervisory personnel who are directly involved with the day-to-day operations. Although somewhat subjective in nature their decisions, and judgment, are based on their personal experience gained during flying operations in the airlift system over many years. Past experience has shown the established minimums are that -- minimums. The minimums established for the C-141, for example, were lower at one time than they are now. We discovered that level was too low when the flight evaluation failure rate and accident rate increased to unacceptable levels. Safety of the aircraft and passengers must be a foremost consideration of the supervisory personnel responsible for the airlift system. For example, past experience has shown 1150 total with 500 in the C-141 to be required to develop the air sense and judgment required to command a C-141 and be assured of aircraft and passenger safety. Safety, not budgeting constraints, must be the driving factors.

The GAO suggests the Air Force should identify required Aircraft Commander attributes rather than to use arbitrary flying hour minimums. There are two problems involved in that suggestion. First, there is an implication that many pilots would be ready for upgrade sooner and with fewer flying hours if the standards were changed. Current trends indicate that this

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is not necessarily true. Few pilots are ready for upgrade immediately upon reaching the minimum upgrade criteria under the present system. Unless pilot proficiency were to improve due to some other factor, the number of flying hours required to prepare for upgrade would remain about the same. Second, if we assume the minimum flying hour criteria is arbitrary, as the GAO alleges, there is no reason to believe the attributes determined to be required would be less arbitrary. The GAO is suggesting a change that guarantees neither reduced flying hours nor better qualified pilots.

THE RELATIONSHIP BETWEEN READINESS REPORTING AND FLYING HOUR REQUIREMENTS IS VAGUE (Page 78)

The JCS Force Status and Identity Report requires that an organization measure against the standard for a fully trained unit. The Air Force generates a flying unit "training" C-rating based upon the number of mission ready crewmembers assigned to a unit divided by the number authorized. MAJCOMs determine and publish appropriate criteria for assigning mission ready status. Obviously, the training level at which a MAJCOM considers its crews mission ready controls the numerator in "training" readiness equation.

The mission ready standard, determined by the MAJCOM, reflects the minimum training level to which a crew must be trained to perform the unit's mission(s). Fully ready in the basic area provides minimum capability, but will require additional training to increase a crew's ability to perform all unit tasking. Additional training beyond basic mission ready status is essential to increase aircrew capability, lower crew/aircraft attrition, and in short, enhance the ability to fight and win.

QUESTIONABLE NEED FOR FLYING BY PILOTS FILLING SUPERVISORY AND OVERHEAD POSITIONS (Page 81)

The determination of need to fly, for staff pilots, is the responsibility of major commanders under stringent guidelines established by HQ USAF in AFR 60-1 and AFM 26-1. Assignment criteria require that supervisory jobs requiring rated expertise only be distinguished from those positions where active flying is determined as necessary for proper accomplishing of assigned duties. It is apparent that, cost aside, any position requiring rated experience would be enhanced if the incumbent was currently flying. Air Force recognition of the costs involved has resulted in establishing criteria to be used to distinguish those positions where current flying

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experience is deemed necessary. Recognizing that these must be judgmental, each request is, as recommended in the report, reviewed by HQ USAF. It is USAF policy that, to the maximum extent possible, flying supervisors of tactical units maintain their skills in tactical aircraft. However, in a limited number of cases, because of fiscal considerations, lower cost aircraft may be used. Flying skills involve not just the type aircraft flown, but the enormously complex and highly dynamic environment in which flying occurs. Service flight rules and policies, FAA regulations, air-ground communications, service and FAA weather systems and a host of other interactive factors are significant aspects of active flying. They demand currency for supervisory/staff pilots.

Position justifications normally indicate when active flying in a specific weapon system is mandatory. It is an undesirable but acceptable degradation to permit certain of these pilots to maintain general flying background currency while supporting the CT-39 mission. This is cost-effective in that additional flyers need not be returned to status purely in support of the CT-39.

The report stated that staff and supervisory pilots are not counted toward aircrew ratio requirements. The Air Force has developed aircrew computer simulation models to determine exact aircrew requirements for each Tactical Weapon System. These aircrew requirements are based on supporting the programmed wartime surge and sustained sortie rates in each of the fighter/attack weapon systems. In order to determine the minimum crew ratio required to support combat sortie rates, the number of overhead crews assigned to a Tactical Fighter Wing are considered.

The following table compares current crew ratio requirements based on a standardized 6/7 overhead crews per 18/24 UE squadron versus crew ratio requirements based on two overhead crews per 18/24 UE squadron. The two overhead crews represent the Squadron Commander and Operations Officer assigned to each squadron.

	6/7 per 18/24	2 per 18/24
A-7	1.23	1.42
A-10	1.49	1.68
F-4	1.29	1.50
F-15	1.31	1.38
F-16	1.31	1.49

Therefore, for Tactical Operations the draft GAO Report is in error when it recommends that crew ratios could be reduced by using overhead crews to supplement aircrew requirements.

The GAO states that staff and supervisory personnel often exceed minimum hours and events needed to maintain combat readiness, thus inflating flying hour requirements. On MAC aircraft, the Air Force has established special currency requirements permitting these pilots to credit a portion of their flying hours in observer status while primary line assigned pilots gain their currency events at the aircraft controls. In addition, these pilots will form the contingency support staff -- the nucleus of unit decision makers in time of war or contingency which does not exist in peacetime.

Their currency is required to insure decisions made are possible under conditions (manning, command and control, and equippage) at the time the emergency occurs.

POTENTIAL FOR REDUCING CREW RATIO OF CARGO AIRCRAFT (Page 90)

The crew ratio figures attributed to Military Airlift Command estimates in the study are erroneous. The required wartime crew ratio to fully support required surge and sustained utilization rates, validated by numerous studies and computer simulations, is 4.5 to 1. Any reduction in the prudent risk program of 4.0 to 1 degrades the force and adds to the present airlift shortfall.

T-39 OPERATIONS EXCEED TRAINING REQUIREMENTS AND OFTEN PROVIDE UNECONOMICAL TRANSPORTATION SERVICES (Page 93)

1. The FY 77 flying hour program was not based on wartime readiness training but rather on the hours needed for the airlift mission. All flying hours in the T-39 program, with the exception of those used to train pilots to fly the aircraft, are used for airlift. It would be desirable to have more hours available for airlift because we are currently able to support less than 50% of the requested travel requirements; however, we are limited in the amount of hours that can be supported by airframe availability. Thus, the FY 77 program of 111,000 hours was dictated by our ability to generate hours for the airlift mission. Readiness training is accomplished within these hours.

2. The audit states that military aircraft should be used only

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when commercial aircraft cannot satisfy the existing transportation requirement and that cost analyses be prepared to substantiate the cost effectiveness of not using commercial air transportation. The present system of validation does consider the cost effectiveness of commercial travel vs organic airlift. However, since urgency of travel is used in assigning priorities, there are times that, while commercial travel may be cheaper military aircraft must be used to meet the needs of a mission. An example is the movement of the Brooke Army Hospital Burn Team that must move on short notice. Use of the support airlift system on a strict cost basis would not satisfy all mission requirements. Total CONUS travel for FY 76 was estimated at 1,200,000 passengers. Less than 10% of these (about 110,000) traveled on T-39s. Approximately an equal percentage of passengers traveled as team members on operational support airlift C-135s and C-131Hs. The remaining 80% of CONUS travel was supported by commercial service. This level of support airlift reflects that nearly all routine travel is being accomplished using commercial sources.

3. The following comments address the audit conclusion that the CT-39 force is not managed economically.

a. Requests for airlift support emphasized officer rank of command level rather than the reason or urgency of the travel.

Comment: The priority system was designed specifically to be responsive to urgency of any travel request. It is expected that urgency increases along with the level of command responsibility. The priorities reflect this while retaining the capability for any travel requirement, regardless of rank, to be supported through assignment of an appropriate priority. Commands assign priority based on their assessment of urgency and mission requirements.

b. Cost analyses were not prepared.

Comment: Evidence is not presented to support the contention that the commands do not perform cost analyses as part of their determination. Commands are required by regulation (AFR 75-8) to determine the appropriate method of travel to meet their particular needs. Since they must operate within a specific transportation budget, cost is a major consideration in determining mode of travel.

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c. Passenger-seat utilization was only 36% of maximum.

Comment: Information for the year 1976 reveals a higher level of utilization. Computed on missions carrying duty/nonduty passengers (excluding positioning/depositioning legs), the rate is 61%. If positioning/depositioning legs are included, the rate is 49%. Seat utilization rates are improved by assigning duty and space available passengers to unused seats on scheduled priority missions.

However, any discussion of seat utilization rates independent of flying hours and the traveler's requirements (Ref. para 1) can lead to misconceptions. These three operating parameters are interdependent. Theoretically more flying hours, or improved seat utilization would allow more travel requests to be supported. The current flying hour program cannot be increased without an appropriate increase in funding for spare parts and maintenance. As mentioned above, management of the seat utilization rate has improved from 36% to 49%. This alone represents a management improvement of over 35% from the earlier seat utilization. Significant increases in seat utilization beyond 49% are constrained by the nature of the traveler's requirements. Some travelers have an urgent requirement to travel at a specific time to a specific destination which involves few other travelers, thus, the seat utilization cannot always be maximized.

d. CT-39 airlift support in June 1976 cost the Air Force about $1.7 million more than comparable available commercial transportation.

Comment: See detailed comment in paragraph 2.

4. The mission of the CT-39 was stated in the FY 60 appropriations testimony that justified continuing aircraft procurement: Satisfaction of airlift and pilot support requirements.

Page 103, last paragraph, CT-39 Ops.

In discussing cost effectiveness, the audit report does not consider all costs associated with commercial travel or the effectiveness advantage of the CT-39. The cost of ground transportation and additional TDY must be included when making comparisons. Frequent, when individuals travel by

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commercial air, additional TDY is required for adjustment to airline schedules. Some value must also be placed on the work lost as a result of the longer travel times. The audit also fails to address operational impacts in its assessment of the cost effectiveness. It is necessary to consider such things as noncompatibility of commercial schedules, inaccessability of some locations, the need to discuss classified subjects or work classified papers while traveling, and the capability to respond to short notice urgent travel needs such as movement of burn teams, accident investigation teams, and critical cargo.

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