United States General Accounting Office

GAO

Report to the Secretary of Defense

December 1995

UNMANNED AERIAL VEHICLES

Hunter System Is Not Appropriate For Navy Fleet Use

GAO/NSIAD-96-2

GAO

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

National Security and
International Affairs Division

B-266159

December 1, 1995

The Honorable William J. Perry
The Secretary of Defense

Dear Mr. Secretary:

As part of our ongoing review of the $4.2 billion Joint Tactical Unmanned Aerial Vehicle (UAV) program, we are assessing the development of a shipboard variant of the Hunter UAV for Navy use. We are issuing this interim report to bring your attention to a conflict over Navy requirements for the Hunter UAV shipboard variant that we believe should be resolved before the Navy portion of the program proceeds.

Background

The Hunter UAV shipboard variant is planned for deployment on Navy amphibious assault ships to accomplish reconnaissance, target acquisition, and other military missions. Each system is to include eight UAVs with payloads and modified Hunter support equipment for launching and recovering UAVs, controlling UAVs in flight, and processing information from the UAVs during flight missions.

The Joint Tactical UAV Projects Office, which manages the program, is currently identifying the UAV system modifications as well as the ship modifications required for the Navy's use of Hunter. Current plans are to acquire 9 complete systems[1] for the Navy, begin deployment to the fleet in 1998, and outfit the Navy's entire fleet of 12 amphibious assault ships with shipboard control stations that could be used to operate Hunter air vehicles.

Results in Brief

The Joint Tactical UAV Projects Office is proceeding with the acquisition of the Hunter shipboard variant even though all Navy fleet commanders have stated that they do not want the system on Navy ships. Thus, the Department of Defense (DOD) is at risk of investing in a system that will not be used.

[1]The Navy is acquiring eight complete systems for deployment on the ships and one complete ground system for training.

Navy Fleet Commanders Do Not Want Hunter UAV

In April 1995, the Commander of the Atlantic Fleet informed the Chief of Naval Operations that he, the Commander of the Pacific Fleet, and the Commander of Naval Forces in Europe did not support deploying Hunter UAVs on Navy ships. Fleet officials told us that they opposed Hunter because of the adverse impact that it would have on flight operations of other aircraft on the ships. Some fleet representatives also opposed Hunter because its performance capability was insufficient and because the system required too much space on the ships.

Fleet officials provided the following details of their opposition to Hunter:

- First, all aircraft currently operating from amphibious assault ships, typically including some 25 helicopters and 6 AV-8B Harriers, can take off and land vertically from up to 9 designated points on the ship's flight deck. Since Hunter cannot take off or land vertically, a ship's crew would have to clear the back half of the ship's deck to allow Hunter operations, moving the helicopters and Harriers to the front of the ship or below to the hangar deck. For Hunter landings, the crew would also have to erect a protective barrier to shield parked aircraft from a possibly errant, or out-of-control, 1,500 pound Hunter UAV.
- Moving aircraft and erecting the barrier to allow for each Hunter operational cycle would take about 1 hour. This, coupled with the need for frequent Hunter takeoffs and landings necessitated by Hunter's limited flight endurance, would severely disrupt flight operations by other aircraft. Fleet representatives pointed out that when other aircraft were moved to allow Hunter landings, the area remaining would be too crowded to safely conduct routine flight operations.
- Hunter's limited performance capability detracts from its potential use by the Navy. Hunter's range capability of about 100 miles is considered to be inadequate in the vast Pacific. In addition, when Hunter is viewing land targets, its limited range means that the ship must move closer to shore, increasing the risk from shore patrol attacks, mines, and other threats. Finally, because of weight limitations, Hunter cannot carry payloads capable of seeing in poor weather conditions.
- Use of Hunter would compound an already existing space problem on amphibious assault ships. Atlantic Fleet and Naval Forces Europe representatives also told us that because of a lack of available space, storage of Hunter air vehicles and related equipment (estimated to take up 12,000 cubic feet on each ship) would dictate that other combat mission equipment, such as helicopters and artillery pieces, be removed. The number of Marines stationed on the ships for assault missions would also

have to be reduced to make room for personnel needed to operate and maintain Hunter.

Department of the Navy Proceeding With Plans for Shipboard Variant

Representatives of the Chief of Naval Operations told us that despite the position of the Fleet Commanders, the Navy's participation in the Hunter program would continue at least until testing shows whether Hunter will meet its performance requirements. The Joint Tactical UAV Projects Office is proceeding with plans to identify and perform the UAV and ship modifications required to install and operate Hunter. The first modified UAV system and ship are to be ready for testing in 1997. The cost of the Navy's portion of the Hunter program is estimated to be about $340 million.

We discussed with fleet representatives the Department of the Navy's intention to continue with the Hunter program at least until testing shows whether it will meet its performance requirements. They told us that they consider Hunter inadequate to meet shipboard requirements even if it meets all of the UAV performance requirements.

Fleet UAV Requirements Are Uncertain

Fleet commanders plan to complete an assessment of their UAV requirements by May 1996 and will not know what their specific requirements will be until that time. However, the Pacific Fleet Commander believes that a UAV with substantially more capability is needed while the Atlantic Fleet Commander and the Commander of Naval Forces Europe believe that a system requiring less space than Hunter is needed.

Recommendation

We recommend that the Secretary of Defense stop all acquisitions of shipboard variants of the Hunter UAV System until the Navy (1) allows fleet commanders to complete their assessments of shipboard UAV requirements, (2) resolves the issue of whether Hunter will meet those requirements, and (3) determines whether fleet commanders will use Hunter if Navy acquisition officials procure it.

Agency Comments and Our Evaluation

In commenting on a draft of this report, DOD stated that it plans no further acquisition of the Hunter shipboard variant until an assessment is completed. However, DOD also indicated that the concerns of the Fleet Commanders about the Hunter system had been resolved and cited a

message from the Deputy Chief of Naval Operations as representing a coordinated Navy position on the matter. Our review of the message and follow-up contacts with Fleet Commanders' representatives indicate that the objections to Hunter have not been resolved. In addition, the Defense Acquisition Board will meet shortly to consider a Joint Chiefs of Staff recommendation to terminate the Hunter program. This further indicates that the issue remains unresolved. DOD's comments are presented in their entirety in appendix I along with our evaluation of them.

Scope and Methodology

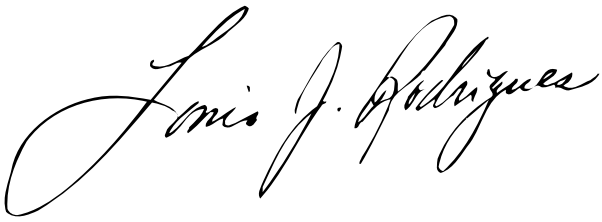
Our examination of the shipboard variant requirements controversy was done as part of our ongoing review of the Joint Tactical UAV program. We discussed the fleet commanders' objections to using the Hunter shipboard variant with representatives of the Commanders in Chief, U.S. Atlantic Fleet, Norfolk, Virginia; U.S. Pacific Fleet, Pearl Harbor, Hawaii; and the Commander, U.S. Naval Forces Europe, London, England. To better understand their objections, we visited a deployed amphibious assault ship, the USS Kearsarge, and another operational ship, the USS Nassau, and discussed with the ships' commanders and crew the potential problems associated with use of the Hunter UAV shipboard variant.

We also discussed the issues with representatives of the Chief of Naval Operations in Washington, D.C., and reviewed the Joint Tactical UAV Project Office's plans for acquiring the shipboard variant. We conducted our work from June 1995 to October 1995 in accordance with generally accepted government auditing standards.

We are sending copies of this report to appropriate congressional committees; the Secretaries of the Army and the Navy; the Commandant of the Marine Corps; and the Director, Office of Management and Budget. We will make copies available to others on request.

Please contact me at (202) 512-4841 if you or your staff have any questions concerning this report. Major contributors to this report were Jack Guin, Mark Lambert, John S. Warren, and Charles A. Ward.

Sincerely yours,



Louis J. Rodrigues
Director, Systems Development
and Production Issues

Comments From the Department of Defense

OFFICE OF THE UNDER SECRETARY OF DEFENSE

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NOV 0 8 1995

ACQUISITION AND TECHNOLOGY

Mr. Louis J. Rodrigues
Director, Systems Development
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National Security and International
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US General Accounting Office
Washington, DC 20548

Dear Mr. Rodrigues:

This is the Department of Defense (DoD) response to General Accounting Office (GAO) draft report, "UNMANNED AERIAL VEHICLES: Navy Fleet Commanders Do Not Want Hunter System," dated September 27, 1995 (GAO Code 707117), OSD Case 1030. The DoD partially concurs with the GAO report and plans no acquisition of shipboard variants of Hunter until an assessment is completed.

As the GAO pointed out, there were concerns among the Navy Fleet Commanders. Under the auspices of the Deputy Chief of Naval Operations (Resources, Warfare Requirements, and Assessments) [N8], those concerns have been resolved and a coordinated Navy position is documented in an N8 message [112054Z SEP 95, Navy UAV Plan]. The current Navy plan calls for marinizing one of the 7 Hunter low-rate initial production systems to use as a test bed to further refine their requirements and concept of operations.

See comment 1.

The DoD is continuing with an interim acquisition strategy for the Hunter, approved by the Defense Acquisition Executive (DAE) at a July 17, 1995 meeting. That strategy calls for completing developmental and user testing and taking those results to the Defense Acquisition Board (DAB) for a decision on the future of the program. The recent memo from ADM Owens (JROCM 126-95) to the DAE recommends a DAB-level review at the earliest opportunity to consider a recommendation to terminate the Hunter program. We plan a DAB review, probably before the end of the calendar year, which will determine the future of the program.

The detailed DoD comments on the report findings and recommendation are provided in the enclosure. The DoD appreciates the opportunity to comment on the GAO draft report.

George R. Schneiter
Director
Strategic & Tactical Systems

Enclosure

GAO DRAFT REPORT - DATED SEPTEMBER 27, 1995
(GAO CODE 707117) OSD CASE 1030

"UNMANNED AERIAL VEHICLES: NAVY FLEET COMMANDERS DO NOT WANT HUNTER SYSTEM"

DEPARTMENT OF DEFENSE COMMENTS

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FINDINGS

FINDING A: Navy Fleet Commanders Do Not Want Hunter UAV. According to the GAO, in April 1995, the Commander of the Atlantic Fleet informed the Chief of Naval Operations that the Commander of the Pacific Fleet and the Commander of Naval Forces, Europe, did not support deploying Hunter Unmanned Aerial Vehicle (UAV) on Navy ships for the following reasons:

-- Adverse Impact on Flight Operations. Since Hunter cannot take off or land vertically, a ship's crew would have to clear the back half of the ship's deck to allow Hunter operations, moving the helicopters and Harriers to the front of the ship or below to the hangar deck. For Hunter landings, the crew would have to erect a protective barrier to shield parked aircraft from a possibly errant, or out-of-control, 1,500 pound Hunter UAV. Moving aircraft and erecting the barrier to allow for each Hunter Operational cycle would take about 1 hour. This, coupled with the need for frequent Hunter takeoffs and landings necessitated by Hunter's limited flight endurance, would severely disrupt flight operations by other aircraft. Fleet representatives pointed out that if other aircraft were moved to allow Hunter landings, the area remaining would be too crowded to safely conduct routine flight operations.

-- Performance Insufficient. Hunter's limited performance capability detracts from its potential use by the Navy. The GAO noted that (1) its range capability of about 100 miles is considered to be inadequate in the vast Pacific; (2) when the ship must move closer to shore, increasing the risk from shore patrol attacks, mines and other threats; and (3) it cannot carry payloads capable of seeing in poor weather conditions due to weight limitations.

-- System Requires Too Much Space on the Ships. According to Atlantic Fleet and Naval Forces Europe officials, because a lack of available space, storage of Hunter air vehicles and related equipment (estimated to take up 12,000 cubic feet on ship) would dictate that other combat mission equipment, such as helicopters and artillery pieces, be removed. In addition, the number of Marines stationed on the ships for assault mission would have to be reduced to make room for personnel needed to operate and maintain Hunter. (pp. 2-4/GAO Draft Report)

See comment 2.

DoD RESPONSE: Partially concur. Adverse Impact on Flight Operations: Hunter Shipboard will be capable of a rolling or rocket assisted take-off (RATO) launch and an arrested rolling recovery from Landing Helicopter, Assault/Dock (LHA/LHD) class ships. During rolling launches, the operational portion of the flight deck will, in fact, have to be cleared, but the Hunter RATO launch option, which will remain part of the Shipboard program, will allow launch from a single spot. During recovery, the aft half of the flight deck must be cleared to facilitate an arrested rolling landing. A barricade net similar in design to the net now used for manned Navy aircraft will be rigged amidships in the event of an emergency recovery. Though launch and recovery will restrict deck operations for short periods, these

restrictions will only be required for initial launch, air vehicle relief and final recovery. Given Hunter's endurance (11 hours demonstrated), those limitations may impact flight deck operations as often as every four hours and as seldom as every eight hours. Recent planning meetings with Fleet users and the *USS Tarawa* ship's company, including the Air Department Head, have contributed to a clear understanding of how Hunter will fit into the flight deck of LHA/LHD class ships. In their view, the plan is sound and would cause minimum impact to other operations. Their support was documented in a coordinated message sent by Deputy Chief of Naval Operations (DTG 112054Z SEP 95). This message was provided to the GAO investigators on September 14, 1995. Flight deck operations with the Hunter system conducted in December 1993 onboard the *USS Essex* have been reviewed by Carrier Suitability personnel from the Naval Air Warfare Center, Aircraft Division, at Patuxent River. In their words, Hunter is "suitable for shipboard operations."

See comment 2.

Performance Insufficient: The Operational Requirement Document (ORD) requirement of 200 kilometers (KM) (300 KM demonstrated), or 108 nautical miles (NM), is more than adequate to support amphibious assault operations from LHA/LHD class ships. Hunter will be used to provide real time imagery of landing zones, assault corridors and battle damage assessment for Naval Fire Support. The advertised range of emerging Naval Fire Support weapons is 75 NM. The LHA/LHD could stand-off-shore 33 NM and still provide targeting with the Hunter over land. During amphibious operations, LHA/LHD class ships usually stand off between 20 to 40 NM to support the launch and recovery assault craft and helicopters. That is within the range capability of Hunter. That range capability also allows for over-the-horizon ship threat surveillance on the open ocean when not conducting amphibious operations

Hunter currently carries a day/night payload with electro-optical and infrared sensors. The infrared sensor is effective in most weather conditions except total cloud obscuration. No other Unmanned Aerial Vehicle has better capabilities at present. Hunter has growth potential of 185 lbs and has a 1 KW power reserve for additional payloads such as Synthetic Aperture Radar, which will give all-weather ground mapping capability. The Hunter Acquisition Strategy documented and adhered to, envisioned minimum requirements initially with growth to objectives via pre-planned and time phased block upgrades. This approach remains viable.

See comment 2.

System Requires Too Much Space on the Ships: The installation currently planned for the Hunter requires approximately 12,000 cubic feet; however, only 4,000 cubic feet of the system would be stowed in shared Navy/Marine Corps flight and hanger deck spaces. This is less volume than one stowed AH-1W helicopter. Warfighters would be able to scale the number of air vehicles deployed to meet their exact intelligence gathering needs. If the situation dictated that the LHA deploy with maximum cargo/troop capacity, the Hunter configured ship could leave behind the air vehicles and personnel with no impact to the combat cargo capacity of the ship. The Navy detachment that will operate the Hunter will be the same size as the Pioneer detachment. They will be trained to provide end to end service from mission planning to maintenance and flight operations. The space, weight, and cube of the installed Hunter system is competitive with any current Unmanned Aerial Vehicle system with similar performance.

FINDING B: Department of Navy Proceeding with Plans for Variant. According to Chief of Naval Operations officials, despite the position of the Fleet Commanders, the Navy participation in the Hunter program would continue at least until testing shows whether Hunter meets its performance requirements. The Joint Tactical Unmanned Aerial Vehicle Project Office is proceeding with plans to identify and perform the ship modifications required to install and operate Hunter. The first modified Unmanned Aerial Vehicle system and ship are to be ready for testing in 1997. The cost of the Navy portion of the

See comment 3.

Hunter program is estimated to be about $340 million. Nevertheless, according to Fleet representatives, Hunter is inadequate to meet shipboard requirements even if it meets all of the Unmanned Aerial Vehicle performance requirements.

According to the GAO, Fleet commanders plan to complete an assessment of their Unmanned Aerial Vehicle requirements by May 1996. The GAO noted that the Pacific Fleet Commander believes that an Unmanned Aerial Vehicle with substantially more capability is needed while the Atlantic Fleet Commander and the Commander of Naval Forces Europe believe that a system requiring less space than Hunter is needed. (pp. 4-5/GAO Draft Report)

DoD Response: Partially concur. The Shipboard requirement is a validated Navy requirement as stated in the Joint Operational Requirement Document and recently amplified by a Chief of Naval Operations message (DTG 112054Z SEP 95) clearly stating that the Tactical Unmanned Aerial Vehicle is the number one priority for Navy. A copy of that message was provided to the GAO investigators on September 14, 1995.

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RECOMMENDATION

RECOMMENDATION: The GAO recommended that the Secretary of Defense stop all acquisitions of shipboard variants of the Hunter UAV system until the Navy (1) allows fleet commanders to complete their assessments of shipboard UAV requirements, (2) resolves the issue of whether Hunter will meet those requirements, and (3) determines whether fleet commanders will use Hunter if Navy acquisition officials procure it. (p. 6/GAO Draft Report)

DoD RESPONSE: Concur. The DoD has deferred consideration of future Hunter acquisition. The DoD is continuing with an interim acquisition strategy for the Hunter, approved by the Defense Acquisition Executive (DAE) at a July 17, 1995 meeting. That strategy calls for completing developmental and user testing and taking those results to the Defense Acquisition Board (DAB) for a decision on the future of the program. The recent memo from ADM Owens (JROCM 126-95) to the DAE recommends a DAB-level review at the earliest opportunity to consider a recommendation to terminate the Hunter program. The DoD is planning a DAB review, probably before the end of the calendar year, which will determine the future of the program.

The following are GAO's comments to the Department of Defense's (DOD) letter dated November 8, 1995.

GAO Comments

1. Our review of the N8 message and follow-up contacts with Fleet Commanders' representatives indicate that the objections to Hunter have not been resolved. The message from the Deputy Chief of Naval Operations to the Fleet Commanders summarized Navy plans for acquiring various UAVs. With respect to Hunter, the message stated, in part, that (1) continued Navy participation in the Hunter program was pending results of a user demonstration in October 1995[2] and (2) fleet concerns about Hunter would be resolved in an upgrade process, including consideration of a vertical takeoff and landing air vehicle. The message also requested comments and concurrence with the plans.

In their response message dated October 3, 1995, the Fleet Commanders stated that they supported the "focus" of the plans and concurred in the need for an endurance UAV and certain other aspects of the plan. However, they did not mention the Hunter in their response to the N8 message.

In an attempt to clarify the Fleet Commanders' position on Hunter, we recontacted their representatives on October 20, 1995, to determine if they had changed their position and supported the Hunter system. None would state that they supported Hunter. The fact that the Defense Acquisition Board will meet shortly to consider a Joint Chiefs of Staff recommendation to terminate the Hunter program further indicates that the issue remains unresolved.

2. These comments appear to be aimed at discrediting the Fleet Commanders' opposition to Hunter. We did not attempt to independently determine whether Hunter is suitable for shipboard operations. Rather, we point out the Fleet Commanders are opposed to it and outline the reasons for their opposition. We believe that these issues should be settled by the Navy before DOD allows the Navy portion of the program to proceed.

3. We do not question the Navy's need for a tactical UAV, but show why the Fleet Commanders believe that the Hunter System is not appropriate for Navy Fleet Use.

[2]This demonstration was not held because the Hunter system has been grounded due to technical problems.

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