United States General Accounting Office

GAO

Report to the Chairman, Subcommittee on Readiness, Committee on Armed Services, House of Representatives

March 1989

TACTICAL AIRLIFT

Issues Concerning Air Force Plans for Pacific Distribution System

GAO/NSIAD-89-81

GAO

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

National Security and
International Affairs Division

B-203466

March 30, 1989

The Honorable Earl Hutto
Chairman, Subcommittee on Readiness
Committee on Armed Services
House of Representatives

Dear Mr. Chairman:

As requested, we reviewed the Air Force Pacific Distribution System (PDS) to assess the need for PDS and whether it can effectively and efficiently satisfy its planned objectives. We briefed your staff previously on the results of our work.

PDS is an Air Force logistics initiative aimed at providing assured distribution/redistribution of mission-essential tactical aircraft spare parts within the Pacific theater. A similar initiative, the European Distribution System (EDS), began operating in 1985. Like EDS, PDS includes three elements: a logistics command, control, and communications (LOG C^3) system to provide theater-wide visibility over the location of tactical aircraft spare parts; a forward stockage warehouse (the Pacific Distribution Center) at Kadena Air Base (AB), Japan, to stock depot-level material nearer to the anticipated war zone; and light-utility aircraft to provide at least daily deliveries of mission-essential spare parts to U.S. tactical air bases in Korea, Japan, and the Philippines.

PDS was designed primarily to deliver spare parts between the Pacific Logistics Support Center (PLSC), an intermediate-level repair facility located at Kadena AB, and tactical air bases in Korea, Japan, and the Philippines. PDS was based on the results of a 1984 Pacific Air Forces (PACAF) command study on ways to improve tactical fighter readiness and sustainability. The study concluded that assured spare parts availability could provide up to 28 more mission-capable aircraft in wartime. It was expected that about 80 percent of the spare parts to achieve that result would come from the PLSC at Kadena; the other 20 percent would come from stocks available at other bases within the Pacific theater. However, since completion of the study and operational design of PDS, the PACAF command has decided to phase out PLSC operations at Kadena and move its repair capabilities to various air bases, thereby eliminating the principal operational center to be served by PDS. PACAF officials stated that, even without the PLSC, PDS is needed to provide assured and rapid lateral support between bases. PACAF initiated a new study to determine how many C-12 aircraft it would need for that purpose.

As discussed in an earlier report (GAO/NSIAD-87-4, October 1986), the Air Force experienced various problems in planning, designing, and implementing EDS. These problems included (1) selecting an aircraft capable of performing the entire mission, (2) achieving the goal of quicker and more efficient delivery of spare parts, and (3) interfacing the LOG C^3 system with the standard base supply system. The Air Force has experienced some of these problems with PDS. For example, the Air Force selected an aircraft for PDS that is not fully capable of carrying out the assigned mission. The C-12 can provide only limited, emergency spare parts service, which can also be provided by similar administrative aircraft already operating in the theater.

The use of low-capacity C-12 aircraft to meet the stated PDS mission is questionable, particularly since high-capacity C-130 and other aircraft operate over the same routes. To illustrate, Military Airlift Command (MAC) C-130 aircraft provide regular airlift to U.S. air bases in the Pacific. An extra 300 to 1,000 pounds of PDS cargo, the maximum amount that a C-12 can carry, would constitute less than 3 percent of a C-130's capacity. In addition, early PDS experience did not demonstrate that it would speed up spare parts delivery service in the Pacific.

The Air Force requested $8 million for the PDS LOG C^3 in fiscal year 1988. The other system elements were financed by the Air Force Logistics Command (AFLC) for the forward stockage as part of its depot-level supply operations and by MAC for the aircraft flying hours as part of its operational support airlift (OSA) operations in the Pacific. The Air Force had not resolved problems with the EDS LOG C^3 system before it proceeded with the development of a system for PDS. The Congress, in disapproving fiscal year 1988 funding for PDS, stated that the Air Force should not procure or install the system before conducting a thorough evaluation of the EDS LOG C^3 system.

In denying the LOG C^3 funding, the House and Senate Committees on Appropriations concluded that PDS constituted a "new start" and, as such, the system should be justified in the normal budgetary process before funding is approved. Therefore, the Air Force discontinued designated PDS operations in March 1988. This decision followed a January 1988 opinion from the Air Force Office of the Judge Advocate General that the Air Force had no authority to operate the system.

Currently, the six C-12 aircraft, designated for the PDS mission, continue to operate in a redesignated OSA role, performing similar service—on a reduced scale—to that performed while designated as PDS aircraft, plus

a normal OSA mission. There have been some routing changes, and control over the aircraft has changed from the PLSC at Kadena AB to the 5th Air Force at Yokota AB. However, the six C-12s are still based at Kadena AB and flown by the 13th Military Airlift Squadron (MAS), the MAC unit established to operate as part of PDS. The Air Force left the 13th MAS intact with a continuing role of operating the six (formerly) PDS C-12s because it expects to obtain authority to resume PDS operations with the Department of Defense (DOD) 1990 appropriation. The former PDS forward stockage warehouse is operating under a new name (the Pacific Parts Store), although only a few items (primarily tires) had been stocked there as of August 1988.

Conclusions and Recommendation

The C-12 is not well-suited for the PDS mission. More rapid delivery of mission-critical spare parts may be neither practical nor necessary, as MAC already operates extensive delivery service between PACAF bases and the PLSC is being phased out. Even if aspects of PDS (e.g., improved spare parts visibility) could be justified, a new LOG C^3 system, separate from the standard base supply system, may not be appropriate. The Air Force's new worldwide stock control and distribution system, scheduled to become operational in 1990, should provide most of the spare parts visibility needed for the PACAF bases.

We recommend that the Secretary of the Air Force not resume developing PDS until it has sought congressional authority and provided to the Congress a detailed analysis of the need for and benefits to be gained from having such a system, fully considering the issues discussed in this report.

Agency Comments

DOD agreed with our recommendation but did not agree with some of our findings and conclusions. DOD emphasized that there is a continuing need for the movement of critical items to and from intermediate repair. While we agree with that observation, the need for a dedicated PDS will depend on the volume of such movement and the amount of airlift available for that mission. The extent of the requirement will not be known until PACAF completes its analysis of the subject. In the interim, DOD has concluded that ". . .movement to and from intermediate repair facilities will continue at a level similar to that under the PLSC."

A complete copy of DOD's comments along with our evaluation is included as appendix VI.

Objective, Scope, and Methodology

To assess the need for PDS, we reviewed pertinent Air Force documents including requirements studies, cost estimates, regulations, and operational data. We performed our work primarily at selected offices associated with the PDS program at DOD Headquarters, Washington, D.C.; AFLC Headquarters, Wright-Patterson Air Force Base, Ohio; MAC Headquarters, Scott Air Force Base, Illinois; PACAF Headquarters, Hickam Air Force Base, Hawaii; 7th Air Force and 51st Tactical Fighter Wing Headquarters, Osan AB, Korea; and the 13th MAS and the 18th Tactical Fighter Wing, Kadena AB, Japan. We conducted our review between August 1987 and September 1988 in accordance with generally accepted government auditing standards.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of the report until 30 days from its issue date. At that time we will send copies to the Secretaries of Defense and the Air Force; the Director, Office of Management and Budget; appropriate congressional committees; and other interested parties.

This report was prepared under the direction of Harry R. Finley, Director, Air Force Issues. Other major contributors are listed in appendix VII.

Sincerely yours,

Frank C. Conahan

Frank C. Conahan
Assistant Comptroller General

Contents

Abbreviations

AB	Air Base
AFLC	Air Force Logistics Command
DOD	Department of Defense
EDS	European Distribution System
FAA	Federal Aviation Administration
GAO	General Accounting Office
LOG C^3	logistics command, control, and communications
MAC	Military Airlift Command
MAS	Military Airlift Squadron
MICAP	mission capable
NMCS	not mission capable (due to) supply
OSA	operational support airlift
PACAF	Pacific Air Forces
PDS	Pacific Distribution System
PLSC	Pacific Logistics Support Center
SC&D	stock control and distribution

Introduction

In 1984 the Pacific Air Forces (PACAF) command studied ways to improve the readiness and sustainability of its in-theater tactical fighter wings. It concluded that a need existed for an assured distribution system to provide mission-essential spare parts to its units during peacetime and wartime to ensure optimum combat production in wartime. At the time of the PACAF study, combat sortie production was based on the presumption that many spare parts would be moved between PACAF air bases and the Pacific Logistics Support Center (PLSC), an intermediate-level repair facility operated by PACAF at Kadena Air Base (AB), Japan.

Elements of PDS

Under the PLSC system, unserviceable supply items are transported from PACAF bases to Kadena AB for repair, and repaired items are shipped back to the bases. The Pacific Distribution System (PDS) was planned to transport many of these items to and from the PLSC. In addition, PDS was planned to enhance PACAF lateral support capability, which involves identifying and moving spare parts from bases where the parts are available to other bases that critically need them. To achieve this capability, PACAF proposed a three-part PDS to include airlift, forward stockage, and a logistics command, control, and communications (LOG C^3) network. Six dedicated, Military Airlift Command (MAC) C-12 aircraft positioned in theater would provide the airlift. The Air Force Logistics Command (AFLC), Defense Logistics Agency, and General Services Administration would stock an additional inventory of spare parts in a forward stockage facility at Kadena AB. The LOG C^3 network would contain computer equipment and communications systems to identify, source, track, and direct the movement of needed spare parts. The Air Force considers supply visibility to be very important to reducing the number of aircraft that cannot perform their missions because of a lack of spare parts. Such aircraft are referred to as being in a non-mission capable (MICAP) or not mission capable (due to) supply (NMCS) condition.

The estimated PDS life-cycle cost, at the time of our review, is shown in table I.1.

Table I.1: Estimated PDS Life-Cycle Costs

Millions of then-year dollars

	Fiscal years		
	1986 through 1995	1996 through 2005	Total
LOG C^3	$53.7	$69.3	$123.0
Aircraft	32.5	49.7	82.2
Forward stockage	7.5	13.9	21.4
Total	**$93.7**	**$132.9**	**$226.6**

Source: AFLC

Status of PDS as of June 1988

Two C-12 aircraft, reassigned from within the Pacific theater, started flying PDS missions in October 1987. Four additional C-12s, transferred during November and December 1987 from Langley Air Force Base, Virginia, brought the total PDS aircraft to six. The aircraft are operated by MAC's 13th Military Airlift Squadron (MAS) based at Kadena AB. The PLSC logistics readiness center at Kadena decided on the PDS routes.

The PDS forward stockage site, now called the Pacific Parts Store, is located in an existing warehouse at Kadena. AFLC identified the material to be stocked there and began stocking the warehouse in June 1988. Its decisions on the items to stock were based on recommendations from affected commands and an evaluation of prior PACAF, AFLC, Defense Logistics Agency, and General Services Administration supply experience.

PACAF officials had planned that an operational prototype of the LOG C^3 system would be in place at Kadena by about April 1988 and would be fully implemented by September 1989. The PDS program manager told us in February 1988 that the LOG C^3 system was in source selection, and the contract award was pending funding authorization.

Congressional Action

In October 1987 the House Committee on Appropriations recommended that PDS funding requested for fiscal year 1988 ($8 million for LOG C^3) not be approved and that the Air Force not procure or install the PDS LOG C^3 system until it conducted an evaluation of a similar system being developed as part of the European Distribution System (EDS). The Senate Committee on Appropriations concurred with the House Committee's recommendation, and the funding was not provided. Both committees regarded PDS as a new start that had not been justified in the budget

submission; therefore, they would not consider program funding until the next budget period (i.e., fiscal year 1989). On January 19, 1988, the Office of the Air Force Judge Advocate General issued an opinion which concluded that these legislative actions precluded PDS operations in fiscal year 1988. Therefore, PACAF discontinued operations designated as PDS in March 1988 but continued such service—on a reduced scale—as part of a theater operational support airlift (OSA) operation.

The six PDS C-12s, redesignated as OSA aircraft, now operate under the direction of the 5th Air Force located at Yokota AB, Japan, instead of under the direction of the PLSC. However, the six C-12s are still flown by the 13th MAS, the MAC unit established to operate PDS aircraft and based at Kadena. The Air Force left the 13th MAS intact to continue operating the six C-12s because it expects to request authority to resume PDS operations in fiscal year 1990. Although the total volume of PDS-type cargo moved by these C-12s since their redesignation has decreased significantly, the percent of PLSC and lateral support between PACAF bases has remained about the same. We found no evidence that the movement of mission-essential cargo has been delayed significantly as a result of the discontinuation of PDS.

Some PACAF and MAC officials in the Pacific theater appear to be satisfied with the modified arrangement and believe it may be a more efficient use of the six C-12s than dedicating them solely to a PDS-type operation.

PDS Not Needed During Peacetime and Questions Exist Concerning Its Need in Wartime

Some Air Force officials said that PDS is not needed in peacetime, but they stated that the system is justified because it would likely be needed in wartime. Little data had been developed to demonstrate such benefits, and the principal wartime benefit will disappear with the phasing out of the PLSC. In peacetime, PDS is intended to (1) be more responsive than MAC's common user airlift service to the needs of tactical air bases for delivering mission-essential spare parts and (2) train aircrew and logistics personnel for providing such service in wartime. However, initial PDS operations during the period October 1, 1987, through January 26, 1988, showed that PDS aircraft carried few mission-essential spare parts, often did not meet the 18-hour transit time goal established for PDS, sometimes provided slower service than regular MAC service, and duplicated many of MAC's other scheduled flights.

MAC Maintains an Extensive Peacetime Airlift Schedule Between PACAF Bases

It would be difficult for PDS aircraft not to duplicate existing MAC airlift service because MAC operates an extensive airlift schedule throughout the Pacific theater. This extensive service brings into question the need for another airlift system (i.e., PDS) in peacetime. From Kadena AB—the operational center for PDS aircraft—MAC operates one or more direct flights daily to and from air bases in Japan, except for cargo shipments to Misawa AB, Japan, which receive daily service routed through Yokota AB. In addition, MAC operates direct flights daily between Japan and the Philippines and near-daily direct flights between Japan and Korea (see tables II.1 and II.2).

Table II.1: MAC Flights From Kadena AB to Other Air Bases

Destination	Average number of flights per week
Korea	
Kunsan AB	6
Osan AB	7
Taegue AB	6
Japan	
Yokota AB	13.5
Misawa AB	7
Philippines	
Clark AB	11

Table II.2: MAC Flights to Kadena AB From Other Air Bases

Origin	Average number of flights per week
Korea	
Kunsan AB	6
Osan AB	7
Taegue AB	6
Japan	
Yokota AB	12.5
Misawa AB	7
Philippines	
Clark AB	11.5

Because MAC operates extensive airlift service between the PACAF air bases, some MAC Headquarters planning and transportation officials, during the system's initial planning phases, questioned the need for dedicated PDS aircraft. Those officials observed that PACAF had expressed dissatisfaction with existing MAC service only once in the previous 2 years and that MAC had responded by increasing its service. MAC concluded that the increased service satisfied PACAF peacetime requirement. Based on their understanding of PACAF airlift requirements at that time, some MAC officials also concluded that their airlift capacity, augmented during emergencies by OSA aircraft (e.g., C-12s and others) available in theater, would satisfy PACAF wartime requirements for distribution of critical spare parts.

A member of MAC's PDS working group advised us that MAC had requested PACAF to refine its spare parts distribution requirement further, thus allowing MAC to satisfy the requirement without establishing a specific system (i.e., PDS) for that purpose. PACAF decided that it should not rely solely on MAC's common user system to distribute mission-essential spare parts because MAC's aircraft could be diverted to higher priority needs during the first few days of a contingency. However, PACAF officials acknowledged that such service would not be lost for long due to the importance of keeping tactical aircraft operating. The wartime need for PDS is discussed further on pages 19 to 20.

Although planning documents state that PACAF would ensure effective interface of PDS aircraft with MAC's airlift system, we found many instances in which PDS aircraft had duplicated MAC flights. For example, 21 of 24 (87.5 percent) of the PDS missions, from Kadena AB to various bases in Korea, Japan, and the Philippines between October 2 and

November 18, 1987, covered routes that were already served the same day by MAC.

During our review we found examples of PDS and MAC flights scheduled to depart Osan AB within a few hours of each other, as shown in table II.3. The additional weight of mission-essential PDS cargo could have been carried on the MAC flights. PACAF planned to avoid PDS/MAC duplication by scheduling the PDS missions at the opposite end of the day from the MAC missions, thereby providing two pickups a day at each air base.

Table II.3: Examples of Duplicating PDS and MAC Flights From Osan AB

Date	Source of service	Estimated time of departure	Routing
October 31, 1987	MAC	0640	Kunsan, Taegue, and Kadena ABs
	PDS	0841	Kadena AB
November 7, 1987	MAC	0625	Kunsan, Taegue, and Kadena ABs
	PDS	0841	Kadena AB
November 10, 1987	MAC	0940	Kadena, Taegue, and Kadena ABs
	PDS	1240	Kadena AB

In a discussion of the PDS duplication of existing MAC flights, a PLSC official acknowledged that it was difficult to justify PDS flights from Kadena to the bases in Korea in view of the existing MAC schedule.

In commenting on a draft of this report, the Department of Defense (DOD) said that PDS is geared to providing assured support in time of crisis or war and that the need for PDS in peacetime has never been a factor in a decision to adopt PDS. We are not questioning the need for assured support in time of crisis or war. However, we do believe that PDS should make as significant and positive impact on peacetime readiness as practicable.

PDS Did Not Accomplish Some of Its Goals During the First 4 Months of Operations

PDS was planned to transport mission-critical tactical aircraft spare parts between theater locations within 18 hours of the request. However, our analysis of operations during the period October 1, 1987, through January 26, 1988, showed that about one-half, or 1,210, of all items transported were mission-critical and were needed to repair weapon systems that were unable to perform one or more of their missions (see table II.4). This activity amounted to an average of 3.6 mission-critical parts being transported on each PDS aircraft per day. The remaining items transported by PDS aircraft were not mission critical.

Table II.4: Priority of PDS Cargo During the Period October 1, 1987, Through January 26, 1988

Type of cargo	Number of pieces[a]	Percent
MICAP/999[b]	1,210	48.2
Transportation priority 1	405	16.1
Transportation priority 2	895	35.7
Total	**2,510**	**100.0**

[a]May include some non-tactical aircraft systems; data were not maintained on how many "tactical aircraft" spare parts were carried by PDS aircraft. Using the days PDS was operational during the period from October 1, 1987, to January 26, 1988, we calculated that PDS aircraft transported an average of 10 mission-essential spare parts per day and only 3.6 per aircraft each day.

[b]Pertains to those critically needed items required to remove primary weapons systems and equipment from not mission capable status

Table II.5 shows that PDS movement times range from 44 to 389 percent over the 18-hour transit time goal. None of the October 1987 movements met the 18-hour goal. PACAF officials said that they planned to reduce PDS transit times to 18 hours once PDS is fully implemented. We noted several instances in which regular MAC channel service was faster than the above PDS transit times, apparently due in part to less holding time at one or both ends of the trip.

Table II.5: Comparison of Actual Transit Times[a] During October 1987 for High-Priority Cargo and PACAF's Goal

Kadena AB cargo	Actual PDS transit time (in hours)	PACAF's transit goal (in hours)	Percent actual time exceeds goal
Outbound to Kunsan AB	47.7	18.0	165
Outbound to Osan AB	26.0	18.0	44
Inbound from Clark AB	54.9	18.0	205
Inbound from Kunsan AB	63.6	18.0	253
Inbound from Misawa AB	88.1	18.0	389
Inbound from Osan AB	41.4	18.0	130

[a]Difference between time of departure of spare parts at point of origin to arrival at user's location.

Although peacetime training of PDS aircrews and logistics personnel is part of the PDS justification, the need to train for a mission that has yet to be demonstrated as a wartime requirement is questionable. General pilot training can be accomplished with existing systems, including the OSA fleet, which also provides relatively low-cost flying hours.

Changes in PACAF Operations Raise Questions Concerning the Original Justification for PDS

PACAF decided in mid-1987 to phase out PLSC operations, thereby eliminating the principal operational center to be served by PDS. PACAF has also modified the PDS service to carry low-priority cargo and passengers, duplicating similar MAC operations and departing from the PDS concept of meeting urgent needs for spare parts.

About 80 percent of the planned PDS cargo was to be transported from the PLSC at Kadena to user bases; the remaining 20 percent would represent redistribution of available parts from one base to another base where the parts are critically needed (referred to as "lateral support"). However, in July 1987 PACAF announced that it planned to restructure its intermediate maintenance support by phasing out PLSC activities over the next few years. In commenting on a draft of this report, DOD said the intermediate repair function will still be performed within the theater and significant amounts of material will continue to require movement to and from dispersed locations.

PACAF's objective is to transfer all of the intermediate-level repair capability from the PLSC to selected fighter wings to enhance the survivability and combat capability of those activities. According to a 1987 PACAF memorandum, the expanding threat in the Pacific theater was the impetus for the reevaluation of PACAF's logistics support structure and the decision to decentralize the PLSC organization. The PLSC commander estimated that it would take from 2 to 4 years to phase out the PLSC completely. After the phase-out, reparable spare parts will be transported to and from the bases that have the capability to repair them. Preliminary estimated PLSC phase-out costs provided to us varied greatly, ranging from about $58 million to several hundred million dollars over a 4-year period. PACAF officials stated in July 1988 that more analysis is needed to accurately estimate the cost of the PLSC phase-out.

Although Kadena was considered too vulnerable for the PLSC, it was determined to be the least vulnerable of all the potential sites considered for a PDS forward stockage site. The PLSC commander said that since all

PACAF bases stock some spare parts, the forward stockage site is less critical to the war effort than the PLSC would have been in the same location. He explained that if the PLSC were destroyed, all theater-wide intermediate-level repair capability would be lost. The forward stockage site, on the other hand, will not be the sole supply source of any spare parts in the Pacific.

PACAF is updating its 1984 PDS study and expects to complete the update later this year. The study update is based on the premise that a separate PDS airlift service is needed. Also, the study is intended to determine the number of C-12s required under the planned decentralized repair concept to satisfy PACAF's peacetime and wartime needs by taking into account the existing or, in the case of wartime, anticipated MAC C-130, C-141, and C-5 aircraft operating or expected to operate in the Pacific.

PDS was justified to carry mission-essential spare parts to reduce the number of non-mission capable tactical aircraft. As illustrated in table II.4, about one-half the cargo carried on PDS aircraft is non-mission critical.

To increase the volume of cargo on PDS aircraft, PACAF allowed shipments from other military services. The PLSC commander informed Marine Corps and Navy officials that they could use the PDS to move cargo on a space-available basis. From October 1, 1987, through January 26, 1988, 13 percent of the cargo transported on PDS flights was for other services. However, very little of the cargo was mission-critical (i.e., an average of 3.6 items per aircraft per day) during the initial period of operation.

The PLSC phase-out and low volume of mission-critical cargo carried on PDS aircraft, as well as the extensive MAC service between PACAF bases, as previously discussed, suggest that the original PDS justification may no longer be valid. It would appear that such needs could be satisfied as well by routine MAC service.

Questions Concerning PACAF's Wartime Need for Dedicated PDS C-12s

Based on its 1984 study, PACAF concluded that the assured availability of critical tactical aircraft parts would generate an estimated 67 to 85 additional fighter missions daily during a conflict, which equates to about 22 to 28 additional aircraft per day based on three sorties per aircraft per day. The study concluded that 80 percent of PDS cargo would move to and from the PLSC. As discussed previously, PACAF plans to phase out the PLSC and transfer the intermediate-level repair functions to selected wings, each of which will be given intermediate repair capability for a

given type of aircraft. However, PACAF officials state that the wartime need for the PDS has not diminished. Those officials anticipate that overall spare parts movement requirements will not change with the decentralization of the PLSC. However, they believe that requirements to transfer parts from one base to another (i.e., lateral support) will increase with the decentralization of PLSC activity.

Since PDS C-12s can only carry a small amount of supplies, it seems unlikely that tactical air bases in wartime could operate long without MAC service. Theater operational support airlift (administrative aircraft including C-12s) also are available for light-cargo, emergency transportation needs.

PACAF justified PDS in part on the basis that intratheater airlift shortfalls existed and suggested that MAC might not be able to ensure mission-essential cargo movements in the initial days of contingency operations. However, the PACAF 1984 study acknowledged that, "Unlike the case in Europe, PACAF believes it can claim sufficient priority for air transportation of critical supplies to guarantee ... [it] will not be destitute for long periods." In addition, a December 1987 PACAF position paper states that sufficient intratheater airlift would be available in the initial days of a contingency to provide the required support for PACAF operations.

MAC Had Little Input to Developing PDS Requirements

Officials at MAC's 834th Airlift Division, Hickam Air Force Base, Hawaii, and the 603d Aerial Port Squadron and the 13th MAS at Kadena—key elements of MAC's airlift system in the Pacific—said that their units had not been asked for input regarding the extent that MAC could satisfy the wartime airlift requirement, which is the reason that PDS aircraft were justified. According to a MAC document, MAC's responsibilities in justifying this requirement included coordinating PACAF's concept of operations and administering the operational aspects of the PDS squadron. Essentially, MAC operates on a "you call, we haul" basis, in responding to other command airlift requirements (i.e., the user commands decide on their own requirements and MAC responds as called upon). Force airlift requirements are developed and prioritized based on intratheater assets under the control of the supported theater commander, which in the case of PDS requirements is the PACAF commander.

Aircraft Could Be Diverted to Higher Priority Missions During Wartime

Although a major justification for PDS was the need for assured airlift to move critical tactical aircraft parts in the event of a contingency, Air Force officials agreed that all airlift resources fall under the authority of the unified commander (i.e., Commander-in-Chief, U.S. Pacific Command) during wartime. Also, MAC regulations specify that theater-assigned airlift forces, including PDS aircraft, are assigned by the Joint Chiefs of Staff to the unified commander for employment. Operational control over theater-assigned airlift forces is therefore the responsibility of the unified commander. Thus, the unified commander could divert PDS aircraft (like other airlift under his command) to higher priority missions during a contingency. Therefore, PACAF cannot be assured that PDS aircraft would continue to be dedicated to PDS missions.

C-12s May Not Be Suitable for the PDS Role

Airlift in the Pacific theater typically moves over bodies of water, which means that range was important in selecting a PDS aircraft. Since the objective of PDS was to use a light, already available aircraft, the C-12 was one of the few options. The Air Force selected C-12s for the PDS role because of its range and immediate availability, recognizing that the aircraft could not fully carry out such a mission, thereby concurrently requiring the use of normal MAC channel[1] service, which includes larger aircraft. Although testing of the C-12's operational safety and suitability for a PDS mission began in January 1988, it was discontinued in March 1988 when the Air Force redesignated the operations of the six PDS C-12s as OSA operations.

Evolution of PDS Aircraft Requirements

On May 2, 1986, Air Force Headquarters issued a draft program management directive for PDS that outlined the characteristics required of PDS aircraft. On May 14, 1986, Air Force Headquarters issued an approved directive, which revised the PDS aircraft required characteristics. Although the revised directive listed the C-12 as the PDS aircraft without detailing many of the required characteristics, this did not change the previously stated mission requirements of the aircraft.

Table III.1 shows how some of the PDS aircraft requirements changed in the approved program management directive and compares the stated requirements with the actual C-12 characteristics.

Table III.1: Aircraft Requirements per Program Management Directives Compared With C-12 Capabilities

Requirements per directives dated		C-12 capability
May 2, 1986	**May 14, 1986**	
Capability of operating 1,000-pound cargo missions twice a day, nonstop from Kadena AB, Japan, to Osan AB, Korea	No change	Unknown/testing required
Cargo compartment with a minimum of 300 cubic feet	245 cubic feet	245 cubic feet
Federal Aviation Administration (FAA) certified	No change	[a]
Dual UHF radios	Dual VHF radios	No dual UHF or VHF radios
Ground proximity warning system (GPWS)	Desired	No
Dual intercoms	Dual deleted	One intercom
Secure voice communications desired	No change	No

[a]The PDS C-12 is not FAA certified. The commercial version is certified, but the military version has been modified for the PDS role, and military equipment has been installed.

[1]Movement of cargo and passengers over established routes, served by either scheduled DOD aircraft or commercial aircraft under contract to and scheduled by MAC.

Weight Limitation of C-12 Aircraft Restricts Cargo Capacity

In commenting on the program management directive, MAC stated that to meet the PDS requirement to carry 1,000 pounds for 1,000 miles, the C-12 would have to operate above its gross certified weight of 12,500 pounds. This would conflict with the PDS requirement for an FAA-certified C-12. Our analysis indicates that MAC will need a waiver for the higher weight limitation for PDS missions to Clark and Misawa ABS. Without a waiver of the gross weight limitation, the cargo limits to Clark and Misawa would be 401 and 321 pounds, respectively, because of the long distance and fuel requirements involved in serving those locations. This potential efficiency reduction of 60 and 68 percent, respectively, of a standard 1,000-pound load planned for PDS raises a question as to the practicality of serving Clark and Misawa with C-12s, especially since routine MAC service is planned to be available and would be required for some MICAP items going to those locations.

MAC officials expressed the opinion that operating C-12s at the higher gross weight would not degrade safety, but the effects, if any, on aircraft wear and tear are unknown. MAC has asked the C-12 manufacturer to study the effects of the higher weight and plans to work with the manufacturer to obtain certification for a 12-percent higher weight limitation (i.e., 14,000 pounds).

Additional C-12 Limitations

In addition to the limitation discussed above, the C-12 has other operational constraints, including the following.

- The aircraft is not certified to carry some hazardous cargo (e.g., items containing toxic material) needed to repair aircraft. According to MAC officials, the Air Force expected to obtain authorization to carry hazardous material after an operational test and evaluation, which was expected to be completed in mid- to late 1988. However, those tests, which are discussed in the following section, were discontinued in March 1988. Therefore, uncertainty continues concerning the C-12's suitability to carry some mission-critical hazardous cargo.
- The current net-and-strap cargo tie-down configuration limits the C-12's capacity to about 95 cubic feet, or less than 40 percent of the revised PDS cargo requirement of 245 cubic feet. By modifying the net-and-strap configuration, the C-12 could carry more cargo, but it cannot be modified until MAC completes its operational test and evaluation of the aircraft.
- C-12s cannot carry all aircraft parts that are repaired by the PLSC or parts that would become high priority. For example, the C-12 cannot carry engines, certain antennae, and transmitter equipment used on

fighter aircraft. Therefore, parallel airlift service (e.g., MAC C-130 service) will also have to operate over the same routes.

- C-12 aircraft do not have dual UHF radios or a ground proximity warning system and have only one intercom, well short of such capability described in the program management directives.

MAC's Testing Program for the PDS C-12s

MAC initiated action to test the C-12's operational effectiveness and suitability to perform the stated PDS mission. MAC considered it necessary to conduct the aircraft tests because of the potential safety issues related to the C-12 operating in a PDS role. At the time that these tests began, they were expected to require 6 months to conduct. An additional 75 days would be required to prepare the final test report and have it approved. However, the tests were discontinued in March 1988 when the Air Force redesignated the C-12's PDS operations as part of OSA operations.

The C-12's tests were to focus on the physical capabilities of the aircraft, its payload/range capability, and its suitability for the Pacific environment, as well as its effectiveness in moving designated cargo to and from various locations in the Pacific theater. However, since the C-12's tests were not completed, questions continue concerning the safety and suitability of that aircraft for a PDS-type mission.

A Theater-Unique LOG C^3 May Not Be the Best Option for PDS

The proposed PDS LOG C^3 would add another system to the many that are currently operating within the Air Force to assist in inventory control and distribution decisions. Supporting Air Force units with needed material, including time-critical spare parts for tactical aircraft, is a major undertaking. The perceived need for more responsive service to U.S. tactical air forces in the Pacific led to the proposal to develop a separate, theater-unique LOG C^3 to facilitate improved lateral support between air bases in that theater. While we agree that supply visibility is a worthy objective, we believe that a separate PDS LOG C^3 may not be the best option for efficiently and effectively satisfying that objective. The 20-year cost of the PDS LOG C^3 was estimated at about $123 million, $8 million of which was requested in the fiscal year 1988 Defense budget.

PACAF Officials Stated That the LOG C^3 Is an Important Part of PDS

Officials at PACAF and Kadena and Osan ABS told us that the most critical PDS element is the LOG C^3 system. The LOG C^3 system is intended to improve the movement of critically needed spare parts within the theater by providing PACAF theater-wide asset visibility through an on-line, real-time, and computer-linked system. The LOG C^3 is planned to give PACAF the capability to transfer logistics information rapidly and reliably between all PDS locations. The system would use automated computer equipment to highlight, source, and present information to enable PDS operators to make allocation and movement decisions within 2 hours from the time of the requirement notification.

Under the LOG C^3 system, critical aircraft parts are to be located and assigned a priority. This is the most practical way of speeding up the delivery of needed spare parts, according to PACAF. The LOG C^3 system will be used to ensure that critical aircraft parts are given a high priority as they move through base maintenance, supply, and transportation systems.

The soon-to-come worldwide Air Force stock control and distribution (SC&D) system raises concerns over the PDS LOG C^3 overlap with the worldwide system. For example, the following questions should be answered before the PDS LOG C^3 is acquired.

- What will a theater system do that a worldwide system will not or cannot do, and is that incremental benefit worth the estimated $123 million over the system's life cycle?
- If both worldwide and separate theater systems are needed, should they be developed concurrently? If not, which should be developed first, and

how should they interface? Should the theater system be a subsystem of the worldwide system or should it operate independently?

In short, theater-unique systems may not be appropriate, in view of the problems associated with them and the hundreds of millions of dollars they will cost to develop and operate over their life cycles.

AFLC manages and accounts for an inventory of over 1 million items of material, including spare parts, to provide logistical support to the U.S. active and reserve forces, other U.S. government agencies, and foreign air forces receiving security assistance. Currently, control and distribution decisions over this material are assisted by 23 data systems that do not allow Air Force supply managers to provide adequate customer service, according to the Air Force.

The Air Force has had a system under development for about 12 years that could encompass many of PDS' basic principles. This system, a worldwide modernized SC&D system, will replace 13 of AFLC's data systems with 1 integrated on-line system, designed to provide improved visibility over the quantity, condition, and location of all AFLC material. The new system, scheduled to become fully operational in September 1990, is to provide for faster, more accurate allocation and movement decisions, thereby more effectively utilizing available material and transportation capabilities and funds, according to the Air Force.

With the new worldwide system coming on line within a couple of years—which could encompass many of the basic objectives of the PDS LOG C³—the criticality of developing a separate theater LOG C³ for PDS at this time is not clear. It appears that the three major PDS LOG C³ features not now provided for by the new worldwide SC&D system are (1) the PDS LOG C³ system is planned to be "real-time," whereas the worldwide system is to be kept current daily, (2) PACAF bases would access the PDS system directly, whereas they would have to obtain such information through the respective item manager at the Air Logistics Centers under the worldwide system, and (3) the worldwide system will not include Defense Logictics Agency and General Services Administration supplies. A question must be asked, however, whether these benefits are worth $123 million over the life cycle of the system, particularly in view of the difficulties of making such a system work. A separate theater-unique system in the Pacific is of particular concern, since the Air Force has yet to resolve many of the problems associated with a similar system for the European theater.

Congressional Action on Funding PDS LOG C^3

In October 1987 the House Committee on Appropriations recommended that the proposed PDS funding of the $8 million LOG C^3 be eliminated from the Air Force fiscal year 1988 appropriation request and that the Air Force not procure or install a PDS LOG C^3 system until it evaluated a similar system being developed for the European Distribution System (EDS). However, AFLC, PACAF, and Kadena officials stated that the PDS and the EDS LOG C^3 systems are very different. According to these officials, the PDS is an active, computer-linked system that uses a state-of-the-art supply system interface and automates theater-wide asset tracking on a real-time basis. They view the EDS system as a stand-alone electronic mail system that has no interfaces or centralized point for maintenance.

The PDS program manager told us that PDS had benefited from the mistakes made during the implementation of EDS, which follow.

- EDS had several managers responsible for different elements of the project. The PDS, however, is being implemented under the "single manager/single integrator" concept, so one focal point will have responsibility for the system.
- The Air Force did not obtain advanced certification from the Defense Communications Agency on EDS LOG C^3 interface with the Defense Data Network. The EDS LOG C^3 contractor had difficulty obtaining the certification, which delayed system implementation. The PDS contractor will be required to obtain the certification in advance.
- The EDS LOG C^3 contractor was not required to provide continuity of personnel to resolve problems after EDS LOG C^3 was implemented. The PDS program manager said that he insisted on using a formal source selection process to select a contractor for PDS to ensure continued availability of contractor personnel to resolve problems during and after PDS LOG C^3 implementation.

Does the Air Force Need Additional Theater Tactical Aircraft Supply Visibility?

Increased spare parts visibility, the major purpose of the PDS LOG C^3, is a worthwhile goal. However, such a goal is not unique to lateral support, and it is therefore unclear whether such a goal should be pursued independently of the other related base supply management issues. In addition, if spare parts visibility is a problem, we believe there may be better approaches than designing a separate, theater-unique LOG C^3 system to address the problem.

We understand the Air Force's desire for adequate visibility over its spare parts and its desire to ensure the effectiveness of lateral support. Visibility over critical spare parts is important in all theaters. In fact,

such spare parts are sometimes moved between theaters to satisfy mission-essential needs. We believe that there would be advantages to having the same system worldwide for the same mission, which would benefit the learning curve of personnel rotating between theaters and the interaction between theaters to operate the system. The question becomes how best to achieve adequate visibility to ensure effective lateral support where appropriate in all theaters.

We are not suggesting that PACAF adopt the EDS LOG C^3 system. If the PDS system is as simple and easy to implement as PACAF officials say and the EDS LOG C^3 system continues to experience software interface and other problems, the PACAF concept may be preferred over the EDS approach. On the other hand, lateral support may depend more in the long term on strengthening the worldwide, base supply system visibility and distribution capability than in developing new systems like the PDS or EDS LOG C^3 systems. The Air Force may be missing an opportunity to incorporate lateral support LOG C^3 needs into the worldwide SC&D system, which it is currently developing.

In commenting on a draft of this report, DOD said the PDS LOG C^3 system does not duplicate the SC&D system, since the SC&D system does not provide visibility over base level retail assets as required for a system such as PDS. The SC&D system is still being developed. One of its objectives is to combine 13 other data systems into one integrated system. During the course of our audit we were advised and given a document that shows that the SC&D system plans to provide AFLC with visibility over materials that it manages. Since neither system is operational, we have not determined whether the SC&D system could reasonably be changed to accomplish the PDS LOG C^3 function. However, we believe the Air Force should examine whether the SC&D system could be modified to satisfy lateral support needs before proceeding with the new PDS LOG C^3 system.

PACAF Tactical Aircraft MICAP Analysis, September 1, 1987, to August 31, 1988

	No. of MICAP incidents by resolution source and % of distribution								Average days per MICAP incident by resolution source			
	Depot stocks		On-base stocks		Lateral support		All sources					
Month/year	No.	%	No.	%	No.	%	No.	%	Depot stocks	On-base stocks	Lateral support	All sources
Pre-PDS												
9/87	635	19	1,753	52	**1,000**	**29**	3,388	100	12.20	4.96	**21.06**	11.07
PDS with 2 C-12s												
10/87	654	18	1,966	54	**996**	**28**	3,616	100	12.17	4.33	**20.45**	10.19
11/87	714	20	1,782	51	**1,023**	**29**	3,519	100	9.32	4.40	**19.41**	9.76
12/87	628	20	1,634	51	**925**	**29**	3,187	100	9.87	5.08	**21.92**	10.91
Averages per month	665	19	1,794	52	**981**	**29**	3,441	100	10.43	4.58	**20.55**	10.27
PDS with 6 C-12s												
01/88	750	22	1,798	52	**912**	**26**	3,460	100	8.78	4.83	**25.24**	11.07
02/88	630	20	1,582	49	**1,005**	**31**	3,217	100	8.88	5.39	**21.78**	11.19
03/88	659	24	1,204	44	**855**	**32**	2,718	100	8.86	7.38	**21.07**	12.04
Averages per month	680	22	1,528	49	**924**	**29**	3,162	100	8.84	5.69	**22.70**	11.39
Post-PDS (same 6 C-12s but OSA run plus more reliance on traditional means)												
04/88	628	22	1,306	46	**927**	**32**	2,861	100	8.04	5.34	**17.63**	9.91
05/88	578	25	996	44	**710**	**31**	2,284	100	8.57	6.61	**18.34**	10.75
06/88	433	20	1,181	55	**551**	**25**	2,165	100	8.49	4.68	**19.11**	9.11
07/88	478	21	1,171	53	**587**	**26**	2,236	100	7.16	3.84	**17.58**	8.16
08/88	554	22	1,291	50	**726**	**28**	2,571	100	4.47	3.40	**11.40**	5.89
Averages per month	534	22	1,189	49	**700**	**29**	2,423	100	7.33	4.71	**16.70**	8.75

Source: AFLC's D165A System

Comments From the Assistant Secretary of Defense (Production and Logistics)

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C 20301-8000

PRODUCTION AND
LOGISTICS

NOV 16 1988

(L/TP)

Mr. Frank C. Conahan
Assistant Comptroller General
National Security and International
Affairs Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the September 29, 1988, General Accounting Office (GAO) draft report, "TACTICAL AIRLIFT: Concerns Relating to the Discontinued Air Force Pacific Distribution System," (GAO Code 392358 - OSD Case 7788). While the DoD concurs with the sole recommendation proposed by the GAO, it does not fully concur with the specific findings and conclusions offered.

It is the DoD position that there is a continuing need for movement of critical items to and from intermediate repair. It is also the DoD position that the use of the C-12 aircraft is appropriate for this mission. The Department also emphasizes the critical nature of a logistics command, control and communications system to enable effective operations.

The detailed DoD comments on the report findings and recommendation are provided in the enclosure. (Technical corrections were separately provided to the GAO staff.) The DoD appreciates the opportunity to comment on this draft report.

Sincerely,

Merle Freitag, MG, USA
Military Deputy

Enclosure

GAO DRAFT REPORT - DATED SEPTEMBER 29, 1988
(GAO CODE 392358) OSD CASE 7788

"TACTICAL AIRLIFT: CONCERNS RELATING TO THE
DISCONTINUED AIR FORCE PACIFIC DISTRIBUTION SYSTEM"

DEPARTMENT OF DEFENSE COMMENTS

* * * * *

FINDINGS

- FINDING A. Status of the Pacific Distribution System (PDS). The GAO described the Pacific Distribution System (PDS) as an Air Force logistics initiative aimed at providing assured distribution/redistribution of the mission-essential tactical aircraft spare parts within the Pacific theater. According to the GAO, a similar initiative, the European Distribution System (EDS), began operating in 1985. The GAO reported that the PDS includes three elements:

  - a logistics command, control, and communications (LOG C^3) system to provide theater-wide visibility over the location of tactical aircraft spare parts;

  - a forward stockage warehouse (i.e., the Pacific Distribution Center) at Kadena Air Base to stock depot-level material nearer the anticipated war zone; and

  - light utility aircraft to provide at least daily deliveries of mission-essential spare parts to the U.S. tactical air bases in Korea, Japan, and the Philippines.

  The GAO concluded that the PDS was designed primarily to deliver spare parts between the Pacific Logistics Support Center (PLSC) an intermediate-level repair facility, and tactical air bases in Japan, Korea, and the Philippines.

  The GAO also indicated that the PDS was based on the results of a 1984 U.S. Pacific Air Forces (PACAF) command study on ways to improve tactical fighter readiness and sustainability which concluded that assured spare parts availability could provide up to 28 more mission-capable aircraft in wartime. The GAO explained, however, that since completion of the study, the PACAF

1 Enclosure

command has decided to phase out the Kadena PLSC operations and move its repair capabilities to various air bases, thereby eliminating the principal operational center to be served by the PLSC. The GAO reported, however, that according to PACAF officials, even without the PLSC, the PDS is needed to provide assured rapid lateral support between bases. (pp. 1-2, pp. 8-11/GAO Draft Report)

Now on pp. 1-2, 10-11.

DOD RESPONSE: Partially concur. The DoD agrees with the current status of the PDS, but does not agree with GAO concerning the relationship of the PLSC and the PDS or the inferences drawn by the GAO concerning the operational changes which have occurred since March 1988. The statement of operational need (SON number 307-84 dated 30 April 1985) which established the need for the PDS, indicated that the Kadena PLSC would be enhanced by the PDS. The PDS was not primarily designed to deliver parts between the PLSC and tactical air bases. The PLSC was considered integral to the PDS not because of its centralization at Kadena but, rather, because of the concept of moving items between a using activity and an intermediate repair activity. The intermediate repair function will still be performed within the theater and significant amounts of material will continue to require movement to and from dispersed repair activities. Because of the changes brought about by the the dispersal of the PLSC, flow patterns for these items will change significantly. It cannot, however, be inferred, as does the report, that a decreased requirement of the magnitude implied will result. The PACAF is updating the requirements study in light of the phase out of the PLSC. This study is expected to be complete in December 1988. In the interim, requirements for movement to and from intermediate repair facilities will continue at a level similar to that under the PLSC.

See pp. 17-19.

- FINDING B. Congressional Action. The GAO noted that, in October 1987, the House Committee on Appropriations recommended that PDS funding requested for FY 1988 not be approved and that the Air Force not procure or install the LOG C^3 system until an evaluation of a similar system (being developed as part of the EDS) is conducted. In addition, the GAO referenced an Air Force Judge Advocate opinion saying that these legislative actions preclude the PDS operations in FY 1988. The GAO concluded that, in March 1988, the Air Force discontinued operations designed as the PDS, but continued such service--on a reduced scale--as part

Now on pp. 2-3, 11-12.

of a theater operational support airlift (OSA) operation. (pp. 1-2, pp. 11-12/GAO Draft Report)

DOD RESPONSE: Concur. The PDS was designed as a three-part system, only one of which was in place--the C-12 aircraft. The Air Force ceased action to procure the PDS LOG C^3 system, as directed by Congress, and deleted the designation of the six C-12 aircraft as part of the PDS. Upon discontinuing the PDS role for the C-12 aircraft, the aircraft were returned to the operational support airlift role. In this role, the C-12 is configured for both passengers and a limited amount of cargo. Therefore, it is not unusual or beyond the scope of OSA operations to carry cargo, consisting of mission capability (MICAP) or critical spares, and provide lateral support transportation within the theater. In this capacity, however, the aircraft and the supporting systems do not provide the breadth and depth of support envisioned in the PDS.

- FINDING C. MAC Maintains An Extensive Peacetime Airlift Schedule Between PACAF Bases. The GAO found that the MAC operates one or more daily direct flights from Kadena Air Base to and from air bases in Japan except for cargo shipments to Misawa Air Base, which receives daily service routed through Yokota Air Base. In addition, GAO found that the MAC operates direct flights daily between Japan and the Philippines and near-daily direct flights between Japan and Korea. According to the GAO, some MAC officials have concluded that its airlift capacity, augmented during emergencies by OSA aircraft available in the theater, would satisfy the PDS wartime requirements for distribution of critical spare parts. (The GAO found examples of PDS and MAC flights scheduled to depart within hours of each other and noted that the additional weight of mission-essential PDS cargo could have been carried on MAC flights). The GAO observed that this extensive service brings into question the need for another airlift system in peacetime. The GAO concluded that it would be difficult for PDS aircraft not to duplicate existing MAC airlift service because the MAC operates an extensive airlift schedule throughout the Pacific theater. (pp. 3-4, pp. 13-17/GAO Draft Report)

Now on pp. 2-3, 13-15.

DOD RESPONSE: Partially concur. The DoD concurs that the MAC maintains an extensive peacetime airlift schedule between PACAF bases in peacetime. During the initial discussions and conceptualizing of the PDS, there have been several different

methods proposed for supporting theater requirements. The concept, which evolved from this process as most satisfying the projected wartime requirement, was that described in Finding A. It is unlikely that any system of the complexity of the PDS would attain unanimous agreement of all persons involved in the conceptualizing process; nevertheless, the programming document establishing the PDS was thoroughly reviewed and coordinated by all affected commands. The fact that some MAC officials believe that MAC support, when augmented by OSA, will satisfy the PDS requirements in wartime is inconsistent with the position taken by all affected commands in the programming document that was officially coordinated with the MAC. The need for the PDS in peacetime has never been a factor in a decision to adopt the PDS. The PDS is geared to providing assured support in time of crisis or war; in peace it will provide for increased readiness of tactical air systems as well as the PDS system itself. A primary focus toward minimizing the cost of support and duplication in peacetime may detract from PDS effectiveness during time of crisis when many competing requirements may diminish the capability of common user transportation to support these needs.

- FINDING D. The PDS Did Not Accomplish Some Of Its Goals During The First 4 Months of Operations. The GAO observed that the PDS was planned to transport mission-essential tactical aircraft spare parts between their theater locations within 18 hours of the request. The GAO found that, between October 1, 1987, and January 26, 1988, about one-half of all items transported were mission-critical and were needed to repair weapons systems that were unable to perform one or more of their missions. The GAO estimated that this activity amounted to an average of less than two mission-critical parts being transported on each PDS aircraft per day. According to GAO, the remaining parts transported by the PDS were not mission-critical. The GAO recognized the peacetime training of PDS aircrews and logistics personnel is also a part of the PDS justification. The GAO concluded, however, that the need to train for a mission that has yet to be demonstrated as a wartime requirement is questionable. The GAO further concluded that general pilot training can be accomplished with existing systems, including the OSA fleet, which also provides relatively low-cost flying hours. (pp. 2-4, pp. 17-19/GAO Draft Report)

See pp. 16 and 18.

Now on pp. 2-3, 16-17.

DOD RESPONSE: Concur. Since the PDS was not fully implemented, i.e., the LOG C^3, which is the most significant element through

which improved management and visibility may be attained, was not yet designed or available for use--the PDS was not expected to fully satisfy the system objectives. If it were possible to satisfy the PDS objectives without the LOG C^3 and the forward stockage portions of the system, it would not be necessary to pursue them.

- FINDING E. Changes in PACAF Operations Raise Questions Concerning the Continued Importance of PDS. The GAO reported that, in mid-1987, the PACAF decided to phase out the PLSC operations due to the vulnerability of Kadena Air Base. The GAO pointed out that this decision eliminated the principal operational center to be served by the PDS. According to the GAO, the PACAF also decided to expand the PDS mission to carry low-priority cargo and passengers, duplicating similar MAC operations and departing from the PDS concept of meeting urgent needs for spare parts. The GAO concluded that these changes raise questions concerning the continued validity of the original PDS justification and suggests that, if the PDS is to have a role, its basic objectives and purpose need to be redefined and rejustified. (pp. 2-4, pp. 19-22/GAO Draft Report)

Now on pp. 1, 17-18.

DOD RESPONSE: Partially concur. The restructuring of intermediate maintenance in the PACAF demands an update of the study that led to the PDS as it relates to the nature of requirements flowing to and from intermediate repair facilities. The dispersal of intermediate repair functions will significantly alter the flow patterns for material moving to and from repair, but may have negligible impact on the overall systems requirements and system sizing. The inclusion of lower priority items on PDS missions does not represent an expansion of the system. Such movement is opportune in nature and is prudent as long as it does not adversely impact the movement of critical items.

See comment 1.

- FINDING F. The PACAF Wartime Need For Dedicated PDS C-12s. The GAO referenced a 1984 PACAF study as concluding that the assured availability of critical tactical aircraft parts would generate an estimated 67 to 85 additional fighter missions daily during a conflict (which equates to about 22 additional aircraft per day based on three sorties per aircraft per day). The GAO stated that the PDS study further concluded that 80 percent of PDS cargo would move to and from the PLSC. The GAO pointed out that this concept was no longer valid because of PACAF plans to phase out

the PLSC and to transfer the intermediate-level repair functions to selected wings, each of which will be given intermediate repair capability for a given type aircraft. According to the GAO, PACAF officials believe that the wartime need for the PDS has nonetheless not been diminished; in fact, these officials anticipate increased requirements to transfer parts from one base to another after decentralization of the activity. Based on this information, the GAO questioned the use of the C-12s for this purpose, because of the aircraft's small capacity to carry supplies. The GAO concluded that, because of the limited C-12 capacity, it is unlikely that tactical air bases in wartime could operate long without MAC service.

The GAO also noted Air Force officials agree that all airlift resources fall under the authority of the Unified Commander (i.e., the Commander-in-Chief, Pacific Command). The GAO further concluded that, as a result, the Unified Commander could divert PDS aircraft (like other aircraft under his command) to higher priority missions during a contingency so the PACAF cannot be assured that PDS aircraft would continue to be directed to PDS missions. (pp. 2-4, pp. 22-24/GAO Draft Report)

Now on pp. 1-3, 10, 18-20.

DOD RESPONSE: Partially concur. The phase out of the PLSC and dispersal of intermediate maintenance functions throughout the theater requires that PDS requirements be updated. It cannot be concluded, however, that the movement requirements to and from intermediate repair disappear with this conceptual change; rather, it is apparent only that the flow patterns will change and some volume adjustments may result.

See pp. 17-19.

The statement that theater airlift and logistics resources fall under the authority of the Unified Commander is correct, but should not be considered as an indicator that resources would likely be diverted from the PDS. Programs such as the PDS are developed in coordination with the unified command, based on their merit as a dedicated system. The Unified Commander would likely only divert such resources if support to some other activity was more critical and the impact on the operational status of tactical fighter operations was not of preeminent concern at that specific time.

See pp. 19-20.

- FINDING G. PDS Aircraft Requirements. The GAO found that, on May 2, 1986, Air Force Headquarters issued a draft program management directive for the PDS that outlined the

characteristics required of PDS aircraft. The GAO further found that, on May 14, 1986, Air Force Headquarters issued and approved a directive revising the PDS aircraft required characteristics. The revised directive, which was issued less than two weeks after the draft program management directive, listed the C-12 as the PDS aircraft without detailing many of the required characteristics. The GAO pointed to MAC comments on the draft program directive, which stated that the C-12 would have to operate above its gross certified weight of 12,500 pounds to meet the PDS requirement to carry 1,000 pounds for 1,000 miles. The GAO reported that the MAC also advised that such operations would conflict with the PDS requirement for a Federal Aviation Administration (FAA) certified C-12. The GAO analysis indicated that the MAC will need a waiver for the higher weight limitation for PDS missions to Clark and Misawa Air Bases. The GAO estimated that, to stay within FAA guidelines, a potential efficiency reduction of 60 percent would result. In addition to the weight limitation, the GAO identified four more operational constraints on the use of the C-12 as follows:

See comment 2.

- the aircraft is not certified to carry hazardous cargo (e.g., batteries, flares, acids, explosives for aircraft ejection seats, etc.);
- the current net-and-strap cargo configuration as limiting the C-12 capacity to about 95 cubic feet, or less than 40 percent of the revised PDS cargo requirement of 245 cubic feet;
- the C-12 inability to carry all aircraft parts repaired by the PLSC or parts that would become high priority; and
- the C-12 aircraft do not have dual UHF radios or a global positioning warning system and have only one intercom, well short of such capability described in the program management directive. (pp. 2-44, pp. 25-29/GAO Draft Report)

Now on pp. 2-3, 21-23.

DOD RESPONSE: Partially concur. As indicated in the draft report, one of the objectives of the program directive was to use a light aircraft that was already available and this limited the available options. The C-12 aircraft currently is capable of carrying 1000 pounds 1000 miles and retaining FAA certification. Although FAA certification is a requirement of the program directive, the certification itself is not essential for the PDS.

See comment 3.

7

See comment 4.

The four operational constraints identified by the GAO as limiting the C-12 aircraft in meeting PDS requirements are not specified as operational requirements in the program directive.

See comment 5.

- The program directive does not require that the aircraft be certified by the FAA to carry hazardous cargo as suggested by the GAO. The Air Force routinely carries hazardous cargo on the C-12 and has developed a list of hazardous cargo that may be safely transported; this does not suggest that the C-12 is adversely limited in supporting the PDS.

See comment 6.

- The PDS C-12 main cargo compartment has a volume of 253 cubic feet. A separate cargo compartment provides an additional 54 cubic feet. While the program directive requires a cargo compartment volume of 245 cubic feet, it does not specify the volume of cargo that the aircraft must be capable of carrying. The net and cargo strap system provided with the aircraft limited the cargo in the main compartment to 95 cubic feet; however, a simple modification to this system increased this limitation to over 150 cubic feet. The C-12 aircraft is fully capable to carry the majority of MICAP and critical items.

See comment 7.

- The criteria for selection of the PDS aircraft did not include a requirement to carry all parts that could become high priority in support of fighter aircraft. The program directive criteria for a 1000 pound load capacity is far below that required for a jet engine. This was a key factor in decisions to allocate spare engines to PACAF bases. The program directive states that the PDS will be operated in a manner to take advantage of common-user transportation to the extent that such transport satisfies requirements. It is clear the PDS aircraft was never intended to provide all support to theater fighter aircraft.

See comment 8.

- The C-12 aircraft, which were initially assigned to the PDS, contained all the necessary equipment required by the program directive. While the program directive does not require dual UHF radios, the aircraft does contain both dual UHF and VHF communications in addition to HF communications. The aircraft also has global navigation capability using an Omega navigation system. The program directive indicated that a ground proximity warning system (not a global positioning warning system, as indicated by the GAO) was

desired, but not required. The C-12 aircraft was well equipped to satisfy mission requirements.

- FINDING H. The MAC Testing Program For The PDS C-12s. The GAO found that the MAC initiated action to test the C-12 operational effectiveness and suitability to perform the stated PDS mission. According to GAO, the MAC considered it necessary to conduct the aircraft tests because of the safety issues related to the C-12 operating in a PDS role. The GAO cited the MAC estimate on the time required for testing, as six months to conduct and 75 days to prepare and approve the final test report. The GAO noted, however, that the tests were discontinued in March 1988, when the Air Force redesignated the C-12 PDS operations as part of the OSA operations. The GAO observed that the C-12 tests were to focus on the physical capabilities of the aircraft, its payload/range capability, and its suitability for the Pacific environment, as well as its effectiveness in moving designated cargo to and from various locations in the Pacific theater. The GAO focused on the continuing questions concerning the safety and suitability of that aircraft for a PDS-type mission. (pp. 3-4, p. 29/GAO Draft Report)

Now on pp. 2-3, 23.

DOD RESPONSE: Concur. Testing of the C-12 aircraft was terminated because the PDS was terminated and the aircraft reverted to an operational support airlift role, which involves a different aircraft configuration and operational concept. In view of the congressional action to discontinue PDS funding, continuation of the PDS C-12 test program would have been inappropriate.

- FINDING I. A Theater-Unique LOG C^3 May Not Be The Best PDS Option. The GAO reported that the proposed PDS LOG C^3 system would add another system to the many that are currently operating within the Air Force to assist in inventory control and distribution decisions. The GAO agreed that supporting Air Force units with needed material, including time-critical spare parts for tactical aircraft, is a major undertaking. The GAO questioned, however, the perceived need for more responsive service to U.S. tactical air forces in the Pacific, which led to the proposal to develop a separate, theater-unique LOG C^3 to facilitate improved lateral support between air bases. The GAO pointed to the current problems with the European Distribution

Now on pp. 2-3, 24-27.

System (EDS) LOG C^3 system, as described in a previous report, [1] and expressed concern about the Air Force developing a new LOG C^3 system to enhance lateral supply support between bases in the Pacific before it resolves the problems associated with that objective in Europe. The GAO concluded that the Air Force may be headed in the wrong direction with the lateral support LOG C^3 systems in both theaters, particularly since the Air Force is also developing a worldwide stock control and distribution system (SC&D) that seems to encompass the major needs of both the PDS and EDS systems. (pp. 3-4, pp. 30-35/GAO Draft Report)

See comment 9.

DOD RESPONSE: Nonconcur. The Air Force has established and validated a need for the LOG C^3 system to provide more responsive service to tactical air forces in the Pacific. The program directive specifically required that the LOG C^3 element of the PDS be compatible with, or use, existing or currently planned logistics support systems. The SC&D system does not provide visibility of base level retail assets, as required for a system such as PDS. The PDS LOG C^3 does not duplicate the SC&D system, which provides visibility of those wholesale assets controlled by the Air Force Logistics Command. The PDS LOG C^3 is intended to interface with separate base level retail supply operations to enable the necessary management visibility to respond to mission capability deficiencies or take action to preclude imminent problems.

[1] GAO Report GAO/NSIAD-87-4, "TACTICAL AIRLIFT: Air Force Europe Distribution System Lessons Learned," dated October 1986 (OSD Case 6923)

10

RECOMMENDATION

- RECOMMENDATION: The GAO recommended that the Air Force not resume developing the PDS until it has sought congressional authority and has provided to the Congress a detailed analysis of the need for, and benefits to be gained from, having such a system, fully considering the issues discussed in this report. (p. 4/GAO Draft Report)

See p. 3.

DOD RESPONSE: Concur. The PDS has been discontinued and action to restart the program will comply with congressional guidance. The Air Force intends to submit the PDS program as a "New Start" in fiscal year 1990, along with the requisite mission analysis and justification.

The following are GAO's comments on the Assistant Secretary of Defense (Production and Logistics) letter, dated November 16, 1988.

GAO Comments

1. We revised our description of the carrying of non-mission critical cargo and passengers as an "expansion of the PDS mission" in the final report. However, those services do not represent the emergency, mission-critical spare parts delivery service that was intended when PDS was designed.

2. This discussion was revised in the final report (see pp. 22 and 23).

3. The C-12 has been judged by some Air Force officials and the aircraft manufacturer to be suitable for an OSA mission, which is generally less strenuous than that decided on for PDS. Also, as stated on page 21, the commercial version of the C-12 is FAA certified, but the military version with its added military equipment has not been certified for the PDS role. The C-12 was not designed to carry 1,000 pounds of cargo 1,000 miles and cannot do so based on FAA's certification of the aircraft. FAA certified to a gross takeoff weight of 12,500 pounds. Lifting 1,000 pounds over the distance required by PDS caused the aircraft to exceed the gross takeoff weight limitation by 12 percent (i.e., the gross takeoff weight goes up to about 14,000 pounds). According to a MAC official, it has been shown repeatedly that, in a passenger configuration, the gross takeoff weight can be exceeded without damage to the aircraft. In a cargo configuration, a revised net and tie-down procedure would be necessary. The adequacy of these procedures were to be included in operational tests and evaluations of the C-12 for a PDS mission in 1988, but those tests/evaluations were terminated before completion, and no results were published. While the military does not have to comply with FAA limitations, it is advisable to do so because of potential legal problems if it does not, according to a MAC official.

4. As stated on page 21, the last revision of the program management directive listed the C-12 as the PDS aircraft without detailing many of the required characteristics. However, this did not change the previously stated mission requirements of the aircraft.

5. The program management directive required an FAA-certified aircraft for the PDS mission, which included carrying some hazardous cargo (e.g., items containing toxic material used in fighter aircraft, poisonous fluids, gases, etc.). One major problem with the C-12 carrying these types of items is that the aircraft's exhaust system was not designed for that

purpose. At MAC's request, AFLC identified certain types of hazardous material that it believed "may be safely carried aboard C-12F aircraft" (underscoring supplied), providing certain procedures are followed (e.g., personnel aboard the aircraft have a full-faced oxygen mask). Other hazardous materials (e.g., incompatible items, poisonous liquids or gases, and toxic materials) may not be carried aboard the aircraft. These AFLC lists and descriptions lacked a desired degree of specificity, according to MAC. MAC, therefore, stated that there were several other concerns that needed to be addressed before airlifting hazardous material on PDS C-12s, which include (1) publishing a list of specific hazardous items to be airlifted, (2) proper placement of such cargo aboard the aircraft, and (3) specific tie-down requirements. These concerns were to be addressed in operational tests and evaluations to be conducted in 1988. However, with the elimination of PDS in March 1988, those tests/evaluations were discontinued before completion. Therefore, the extent to which hazardous items may be safely carried on PDS C-12s and what procedures should be followed are still unclear.

6. The 150 cubic feet achieved by the net and cargo strap modification is still 40 percent below the PDS required 245 cubic feet of space. Also, it is still unclear whether this "simple modification" would pass the operational tests and evaluations that would have been conducted if PDS had not been discontinued.

7. MAC has an extensive airlift system in the Pacific. PDS would take advantage of MAC's common user service to the extent that such transport satisfies requirements, and PDS C-12s cannot provide all the airlift support needed. Therefore, PDS transport becomes another limited emergency system, which is an OSA role. Our limited MICAP analysis during the period September 1987 to August 1988 (app. V) indicated that MAC common user service, augmented by emergency OSA service, satisfied PACAF MICAP needs more rapidly than relying on routine PDS service.

8. The program directives referred only to "GPWS," which one source indicated meant global positioning warning system. Our report has been revised to show that what the PDS desired was a "ground proximity warning system."

9. Discussion changed on page 27 to reflect DOD comments.

Major Contributors to This Report

National Security and International Affairs Division, Washington, D.C.	Paul L. Jones, Associate Director, Air Force Issues, (202) 275-4265 Edward H. Cramer, Assignment Manager William B. Quade, Staff Member
Cincinnati Regional Office	Leonard L. Benson, Evaluator-in-Charge
Far East Office	Mark A. Little, Site Senior
Kansas City Regional Office	Henry A. Murphy, Regional Assignment Manager

Requests for copies of GAO reports should be sent to:

U.S. General Accounting Office
Post Office Box 6015
Gaithersburg, Maryland 20877

Telephone 202-275-6241

The first five copies of each report are free. Additional copies are $2.00 each.

There is a 25% discount on orders for 100 or more copies mailed to a single address.

Orders must be prepaid by cash or by check or money order made out to the Superintendent of Documents.

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

Official Business
Penalty for Private Use $300

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