United States General Accounting Office

GAO

Report to the Chairman, Subcommittee on Aviation, Committee on Commerce, Science, and Transportation, U.S. Senate

April 1991

AIRPORT CAPACITY

Civilian Use of Military Airfields Has Added Little to System Capacity

GAO/RCED-91-130

GAO

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

Resources, Community, and
Economic Development Division

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April 18, 1991

The Honorable Wendell H. Ford
Chairman, Subcommittee on Aviation
Committee on Commerce, Science,
and Transportation
United States Senate

Dear Mr. Chairman:

As requested by your office, we have reviewed civilian use of active military airfields, a practice resulting in "joint use" of the airfields. Since 1946, the Congress has supported joint use as a means of adding to the national system of public airports. In 1990 legislation the Congress earmarked federal airport program funds to develop joint-use airfields for the purpose of enhancing airport system capacity in major metropolitan areas and reducing congestion and delays at such airports. Because of the uncertainties about the ability of joint-use airfields to enhance national airport system capacity, you asked us to develop information on

- the extent to which current joint-use airfields are helping to reduce airport congestion and delays, and
- the conditions that would give future joint-use airfields a realistic chance of adding significantly to airport system capacity and mitigating congestion and delays.

Results in Brief

We found that the 20 military airfields currently supporting joint use provide only marginal airport capacity and little relief to congestion and delays at major metropolitan airports. This is primarily because most current joint-use airfields are not located in major metropolitan areas where demand for air travel is high and are not near congested major airports, which the Federal Aviation Administration (FAA) defines as major airports with over 20,000 annual hours of delay. As a result, the 20 joint-use airfields accommodated less than half of 1 percent of all passengers and aircraft take-offs and landings (aircraft operations) in 1989 (see app. I for details on individual airports). However, as surrounding communities grow and air travel demand increases, these joint-use airfields could play a greater role in mitigating congestion and delays.

The experience of existing joint-use airfields provides insight into the potential success of joint-use airfields that may be added in the future. Once a joint-use airfield has been properly sponsored and adequately supported by the surrounding community, three conditions should exist for an airfield to add significantly to airport capacity and relieve congestion at major airports. First, the joint-use airfield must be located in a major metropolitan area and be near enough to a congested airport so that it is a reasonable alternative for air travelers. Second, the airfield should be in demand by either commercial aviation or general aviation (privately owned aircraft operated for business and personal use) that is not currently served by other uncongested airports in the immediate area. Third, the joint-use airfield should not have its particular demand—passenger or general aviation—limited by military restrictions.

Background

A joint-use airfield is one that civilians use under a formal agreement between a local government agency eligible to sponsor a public airport and the military department having jurisdiction over the airfield. The agreement generally specifies the type and amount of civil activity and defines civil and military responsibilities. It is effective for a period long enough—typically 20 years—to amortize the investment in related civil facilities.

Since the 1946 Federal Airport Act (P.L. 79-377), legislation has supported joint use of military airfields. More recently, the September 3, 1982, Airport and Airway Improvement Act of 1982 (P.L. 97-248) required the Secretary of Transportation to consult the Department of Defense (DOD) regarding military installations available for joint use. In addition, the 1982 act required the Comptroller General to evaluate the feasibility of joint use. As a result, in March 1983 GAO concluded that joint use was feasible but problems existed that could hinder establishing additional joint-use airfields.[1] As also required, the Secretaries of Defense and Transportation submitted to the Congress a plan for making military airfields available for joint use in March 1984. While the document contained policy statements and military regulations for evaluating joint-use requests, it did not contain some essential elements of an effective plan, such as program goals, schedules, resource commitments, and expectations for both DOD and FAA.

[1]Potential Joint Civil and Military Use of Military Airfields (GAO/RCED-83-98, Mar. 1, 1983).

To enhance airport and air traffic control system capacity in major metropolitan areas and reduce current and projected flight delays, the Aviation Safety and Capacity Expansion Act of 1990 (P.L. 101-508, sec. 9109) required the Secretary of Transportation to

- distribute not less than 1.5 percent of 1991 and 1992 Airport Improvement Program funds to sponsors of current or former military airfields[2] and
- designate up to eight current or former military airports for participation in the grant program.

DOD is required by law to make its facilities available for civil use to the maximum extent feasible after adequately considering national defense requirements. Because DOD's policy states that joint use must not compromise the military security, readiness, and safety of its military installations, the agency considers joint use on a case-by-case basis. DOD protects its mission responsibilities by placing restrictions on civil use at most joint-use airfields. These restrictions include limits on the number of aircraft operations per day and on the type of aircraft allowed to use the airfield.

As part of its aviation system planning, FAA identifies and brings to DOD's attention those military airfields where joint use could provide additional airport capacity. FAA also supports sponsors proposing joint use to DOD by advising them on airspace safety considerations and the eligibility of airport development projects for federal funds. Airport development funds are granted by FAA to sponsors to defray up to 90 percent of the costs to plan and develop aviation facilities.

Joint-Use Airfields Provide Little Capacity and Congestion Relief

Primarily because of their location, current joint-use airfields provide only marginal increases to airport capacity and little relief to airport congestion and delays at major metropolitan airports. Because most current joint-use airfields are not located in major metropolitan areas where demand for air travel is high, civil use of these airfields is generally low. Moreover, military-imposed restrictions on airfield use can preclude some joint-use airfields from serving air travel demand, although DOD considers these restrictions necessary to protect its military mission.

[2]Through this legislation, the Congress also earmarked federal airport development funds for military airfields that have closed. The scope of our review did not include former military airfields.

Civil use, in terms of passengers and aircraft operations, is low overall at most current joint-use airfields. Together, the 20 joint-use airfields accommodate less than half of 1 percent of all passengers served and all aircraft operations. In addition, from 1985 through 1989, 10 joint-use airfields experienced less than a 5-percent growth in aircraft operations, and 9 joint-use airfields also experienced less than a 5-percent growth in the number of passengers served.

Of the 20 current joint-use airfields, only Dillingham Army Airfield, Hawaii, and Rickenbacker Air National Guard Base, Columbus, Ohio, are considered by FAA to reduce air traffic at nearby major airports. Dillingham is 25 miles from Honolulu International and Rickenbacker is 15 miles from Port Columbus International. However, neither Honolulu nor Columbus are considered by FAA to be congested. Our analysis shows the other 18 joint-use airfields do not reduce air traffic or delays at congested airports. This could be because 16 are more than 100 miles from a congested airport (see app. II), which is too great a distance to reduce congestion at a major airport.

The two joint-use airfields within 100 miles of a congested airport—Dover Air Force Base and A.F. (Air Force) Plant #42—do not reduce congestion because either the military host imposes airfield-use restrictions or other airports in the area meet the demand. Civil operations at Dover Air Force Base, 75 miles from Philadelphia International, are limited to 20 operations per day, and aircraft need to obtain permission to land 24 hours before arrival time. Civil use at A.F. Plant #42, 60 miles from Los Angeles, is restricted to 50 operations per day, and general aviation aircraft cannot use the airfield. Because civil use began at A.F. Plant #42 in January 1990, passenger and aircraft operation data are not presented in this report, which covers calendar years 1985 through 1989.

The primary value of current joint-use airfields lies in local economic development and in the potential these airfields offer the national airport system if certain events occur. Events such as local community growth result in increased air travel demand, thereby attracting airline and other commercial aviation interests. Joint use may also provide essential air service to a local community not near an airport offering passenger service. For example, communities near Charleston Air Force Base, South Carolina, and Eglin Air Force Base, Valparaiso, Florida, benefit from the passenger service offered at these joint-use airfields.

As appendix I indicates, several joint-use airfields have experienced growth in passengers served since 1985. For example, although Eglin Air Force Base has experienced a 31-percent reduction in airfield use (aircraft operations), it has experienced a 20-percent increase in the number of passengers served, which indicates an increase in commercial use of the airfield. Similarly, airfield use at Libby Army Airfield, Sierra Vista, Arizona, increased only 4 percent, while the number of passengers served increased substantially—from 89 passengers in 1985 to 11,939 in 1989. Although current joint-use airfields have provided little benefit in reducing current levels of delay at congested major airports, as the surrounding communities grow and air travel demand increases, such joint-use airfields could absorb some growth and mitigate delays as existing airports become congested.

In Addition to Cooperation Among Sponsor, Community, and DOD, Three Conditions Are Critical to Meet Congressional Goal

Establishing additional joint-use airfields depends greatly upon the support for joint use by the sponsor, the local community, and DOD. However, according to an FAA official, the issue of increased aircraft noise has significantly deterred potential sponsors from exploring joint use, especially those in major metropolitan areas where the residential populations have begun to encroach upon military airfields. The willingness of a local government agency to sponsor a joint-use airfield does not necessarily result in joint use because DOD and local community opposition could still preclude implementing it. For example, DOD has repeatedly denied local government agencies' requests for joint use at Homestead Air Force Base near Miami, Florida, and El Toro Marine Corps Air Station and Miramar Naval Air Station in the congested southern California area. DOD opposes joint use at these locations because it would be incompatible with military missions at those facilities. In addition, communities surrounding these military airfields adamantly oppose joint use because of aircraft noise concerns.

Assuming that a local government agency and community are willing to sponsor and support joint-use and that DOD is willing to approve the practice, three additional conditions must be met if the airfield is to add capacity and mitigate congestion and delays at major metropolitan airports. These conditions are the airfield's location relative to a major metropolitan area and congested major airport, sufficient levels of passenger and general aviation demand, and minimal restrictions imposed on civil use of the airfield. Representatives from airline and general aviation associations also believe that these three conditions must be present to attract their members to the military airfield.

Location of the Airfield Plays a Primary Role

As indicated by the experience of existing joint-use facilities, future joint-use airfields must be located within a major metropolitan area and reasonably near a congested major airport to meet the Congress' goal. FAA and aviation industry representatives state that 30 minutes or 30 miles is a reasonable distance. Location near a major metropolitan area helps ensure that demand for air travel will be sufficient to support an airport that can add to national airport capacity. And to mitigate congestion, the joint-use airfield should be near enough to a congested airport that some traffic would find it just as convenient to be based at the military airfield as at the major airport. Although no studies have been conducted to determine how far individuals are willing to drive to an airport, airline representatives explained that most individuals want to fly out of airports convenient to them. However, financial incentives could induce travelers to drive more than 30 miles to obtain lower airfares.

An airline representative also explained that locating an airfield at distances over the 30-minute/30-mile criterion usually deters airline interest for some period of time. For example, Stewart International, 60 miles outside of New York City, has only recently experienced airline investment even though the airfield has been operating for many years and is a reasonable alternative to three congested major airports. Even though potential demand had been demonstrated, for almost 20 years, the airlines were hesitant to establish service in an untested market. Thus, in establishing future joint-use airfields, potential airline interest should also be determined.

Sufficient Demand Is Necessary

A joint-use airfield cannot achieve the Congress' goal of adding capacity and reducing congestion unless one of two types of air travel demand exists nearby. The first type of demand that joint use can address is origination and destination (O&D) demand. This demand is defined as a large number of people who want to begin or end their travel at a specific location. According to airline association representatives, the airlines are currently interested in areas where O&D demand is high so they can establish new "spokes" to connect to their established "hub" airports.[3] Charleston Air Force Base, South Carolina, is an example of a joint-use airfield with high O&D demand that serves as a spoke for hub operations in Atlanta and Raleigh-Durham. As a result, Charleston has served over 600,000 passengers per year since 1985. Joint-use airfields,

[3]Under a hub and spoke system, airlines bring many flights from "spoke" cities into a central "hub" airport, interchange the traffic, and send the flights back out to the final destinations.

however, would not make good hub airports themselves because of the potential for termination of civil operations during a national emergency and because of the airfield-use restrictions usually imposed.

The second type of demand that can be addressed through joint use is that created by general aviation. Some relief to congestion and delays can be provided to major airports, as well as others, where general aviation usage is high by attracting general aviation away from the congested airport to the joint-use airfield. According to an official at the Aircraft Owners and Pilots Association, general aviation pilots prefer to use airports where they are not competing with large commercial aircraft. Thus, establishing joint-use airfields in locations where demand for additional general aviation facilities exists can provide additional airport capacity and reduce congestion and delays.

Developing joint use in an area where air travel demand is being satisfied by an existing airport probably would result in little commercial or general use of the facility, at least not in the near future. This is because an existing airport has the necessary facilities in place, and airport users have made financial investments and contractual commitments that make relocation impractical. However, officials with the airline associations believe that as these communities and air travel demand grows and the established airports reach capacity, joint use of the military airfield could be more attractive.

Restrictions Must Be Minimal

At most joint-use airfields, DOD restricts civil use in several ways to protect its ability to carry out its military mission (see app. II). For example, DOD imposes restrictions on

- the number of civil aircraft operations per day at some joint-use airfields to ensure military priority over access to the runways and airspace without delay and
- use of the airfield by type of aircraft, such as general aviation or cargo, because flight characteristics (speed, wake vortex, time on taxiway) of tactical military aircraft are different from those of commercial civil aircraft.

These restrictions limit the ability of a joint-use airfield to meet current demand and limit the airfield's ability to accept increasing amounts of air traffic. For example, if joint use were to be implemented in southern California, where passenger demand is currently high and projected to grow significantly, restrictions prohibiting commercial use or limiting

operations to 20 per day would affect the airfield's ability to adequately meet passenger demand levels. Thus, creating an effective airport that can provide capacity and reduce delays will depend on the nature and extent of the restrictions the sponsor negotiates with DOD.

An official of the Air Transport Association told us that the airlines are hesitant to invest in a joint-use airfield where there are use restrictions, especially those with strict limitations on the number of aircraft operations per day. Because this limitation restricts the growth potential of the airfield, the airlines would prefer to invest in nearby regional airports. However, because some airlines operate at joint-use airfields with use restrictions (see app. II), this official believes that the potential exists for some commercial use at any future joint-use airfield, even one with restrictions. Moreover, a general aviation association official explained that although unrestricted use is preferred, any amount of additional capacity provided to general aviation is highly beneficial.

Scope and Methodology

We discussed joint-use issues with responsible officials at FAA's headquarters in Washington, D.C., and FAA's Western-Pacific region, as well as with DOD officials in Washington, D.C., and Marine Corps officials at El Toro Marine Corps Air Station. In addition, we analyzed passenger enplanement and aircraft operation data of all current joint-use airfields, as of June 1990, for calendar years 1985 through 1989. We also discussed joint use with and analyzed data from the public officials, or sponsors, responsible for operating civil operations at 16 joint-use airfields, 3 sponsors currently seeking joint use, and 6 sponsors denied joint use at local military airfields. We also contacted representatives of six aviation industry groups, including the Air Transport Association of America and the Aircraft Owners and Pilots Association.

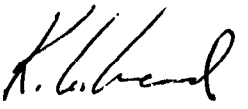
We discussed information in this report with FAA and DOD officials. The officials agreed with the factual information, and we incorporated their comments where appropriate. As requested, we did not obtain official agency comments on a draft of this report. Our work was conducted from June 1990 to February 1991 in accordance with generally accepted government auditing standards.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 15 days from

the date of this letter. At that time, we will send copies to the Secretaries of Transportation and Defense; the Administrator, Federal Aviation Administration; and other interested parties. If you have any questions about this report, please contact me at (202) 275-1000.

Major contributors to this report are listed in appendix III.

Sincerely yours,



Kenneth M. Mead
Director, Transportation Issues

Contents

Abbreviations

AAF	Army Airfield
AFB	Air Force Base
DEW	Defense Early Warning
DOD	Department of Defense
DOT	Department of Transportation
FAA	Federal Aviation Administration
GAO	General Accounting Office
MCAS	Marine Corps Air Station
NAS	Naval Air Station

Total Civil Aircraft Operations and Passengers Served at 20 Current Joint-Use Airfields, Calendar Years 1985-1989[a]

	Aircraft operations				
Airfield[b]	**1985**	**1986**	**1987**	**1988**	**1989**
A.F. Plant #42[c]	•	•	•	•	•
Guam NAS	34,000	35,000	35,000	37,000	29,000
Barter Island DEWS	5,000	5,000	5,000	5,000	5,000
Bermuda NAS[d]	d	d	d	d	d
Blackstone AAF[e]	Unknown	Unknown	Unknown	Unknown	Unknown
Charleston AFB	75,023	79,879	82,545	75,585	67,165
Dillingham AAF	60,494	62,976	65,756	70,836	73,382
Dover AFB[g]	Unknown	Unknown	Unknown	732	436
Eglin AFB	15,580	14,986	15,382	9,970	10,718
Ford Island NAS	85,102	75,429	72,748	77,456	80,193
Grayling AAF	1,000	1,000	1,000	1,000	1,000
Libby AAF	21,526	22,816	20,413	25,058	22,367
McCoy AAF[h]	•	•	•	792	1,200
Myrtle Beach AFB	14,062	15,754	17,580	19,093	16,036
Point Lay DEWS[e]	Unknown	Unknown	Unknown	Unknown	Unknown
Rickenbacker ANGB	6,806	11,672	19,614	23,005	19,594
Sheppard AFB	29,300	30,750	31,000	34,356	32,555
Sherman AAF	7,000	7,000	7,000	7,000	13,128
Westover AFB	5,217	6,085	6,819	8,472	7,808
Yuma MCAS	62,000	64,000	56,000	63,298	60,000
Total Joint Use	**422,110**	**432,347**	**435,857**	**458,653**	**439,582**
Total U.S.	**155,807,000**	**156,417,000**	**153,086,000**	**153,058,000**	**154,755,000**

Percent change, 1985 - 1989	Passengers served					Percent change, 1985 - 1989
	1985	1986	1987	1988	1989	
[c]	•	•	•	•	•	[c]
− 15	457,576	527,500	643,903	754,340	905,600	+ 98
0	992	2,544	3,788	1,444	1,742	+ 76
[d]	[d]	[d]	[d]	[d]	[d]	[d]
[e]	0	0	0	0	4	[f]
− 11	622,714	654,728	738,659	718,478	639,502	+ 3
+ 21	0	0	0	0	0	0
[g]	0	4	850	383	170	[f]
− 31	126,615	139,337	159,260	140,430	152,505	+ 20
− 6	0	0	0	0	0	0
0	169	149	34	8	7	− 96
+ 4	89	432	2,591	8,623	11,939	+13,314
[h]	•	•	•	0	0	[h]
+ 14	196,672	232,754	262,684	269,267	272,081	+ 38
[e]	901	1,093	1,680	1,306	1,303	+ 45
+188	0	0	0	0	343	[f]
+ 11	64,490	54,794	57,800	50,430	58,222	− 10
+ 88	56	0	0	0	0	[f]
+ 50	500	194	76	2,026	3,273	+555
− 3	46,473	50,913	74,048	71,265	60,105	+ 29
+ 4	**1,517,247**	**1,664,442**	**1,945,373**	**2,018,000**	**2,106,796**	**+ 39**
− 7	**405,562,334**	**442,411,011**	**475,673,671**	**481,313,813**	**485,308,863**	**+ 20**

[a]Aircraft operation (take-offs and landings) data provided by FAA's Office of Aviation Policy and Plans and airport officials. Passenger data provided by FAA's Office of Airport Planning and Programming.

[b]Abbreviations in this column: A.F., Air Force; NAS, Naval Air Station; DEWS, Defense Early Warning Station; AAF, Army Airfield; AFB, Air Force Base; ANGB, Air National Guard Base; MCAS, Marine Corps Air Station.

[c]Joint use was not approved for this airfield until January 1990.

[d]Data on aircraft operations and passengers is not available.

[e]Aircraft operation data was not tabulated; however, responsible officials believe that less than a 5-percent growth has occurred during the years 1985 through 1989.

[f]As shown by data, this airfield has experienced insignificant passenger activity during the years 1985 through 1989.

[g]Data on aircraft operations was not tabulated for the years 1985 through 1987; therefore, percent change from 1985 through 1989 was not computed.

[h]Joint use was not approved until 1988; therefore, percent change from 1985 through 1989 was not computed.

Information on 16 Joint-Use Airfields[a]

Airfield and city[b]	Miles to nearest airport	1988 hours of delay at nearest airport
A.F. Plant #42, Palmdale, Calif.	60 miles from Los Angeles International	50,000 - 99,999
Blackstone AAF, Blackstone, Va.	50 miles from Byrd Flying Field, Richmond, Va.	Less than 20,000
Charleston AFB, Charleston, S.C.	113 miles from Columbia Metropolitan	Less than 20,000
Dillingham AAF, Hawaii	25 miles from Honolulu International	Less than 20,000
Dover AFB, Dover, Del.	75 miles from Philadelphia International	20,000 - 49,999
Eglin AFB, Valparaiso, Fla.	55 miles from Pensacola Regional	Less than 20,000
Ford Island NAS, Hawaii	2 miles from Honolulu International	Less than 20,000
Grayling AAF, Grayling, Mich.	50 miles from Cherry Capital Airport, Traverse City, Mich.	Less than 20,000
Libby AAF, Sierra Vista, Ariz.	75 miles from Tucson International	Less than 20,000
McCoy AAF, Sparta, Wis.	90 miles from Truax Field, Madison, Wis.	Less than 20,000
Myrtle Beach AFB, S.C.	60 miles from New Hanover County Airport, Wilmington, N.C.	Less than 20,000
Rickenbacker ANGB, Columbus, Ohio	15 miles from Port Columbus International	Less than 20,000
Sheppard AFB, Wichita Falls, Tex.	120 miles from Will Rogers World, Oklahoma City, Okla.	Less than 20,000
Sherman AAF, Leavenworth, Kans.	25 miles from Kansas City International	Less than 20,000
Westover AFB, Chicopee, Mass.	30 miles from Bradley International	Less than 20,000
MCAS Yuma, Yuma, Ariz.	155 miles from San Diego International	Less than 20,000

Airfield-use restrictions	Type of aircraft operations	Dates of joint use	
		Start	Expiration
No general aviation, 50 operations per day	Air carrier	03-23-89	10-31-17
None	General aviation	May 1983	Indefinite
No civil training	Commuter, general aviation	01-12-56	02-20-08
Only aircraft 12,500 pounds or less, day flights only	General aviation, charter	01-02-62	02-15-08
20 operations per day, only multiengine aircraft, 24-hr. prior landing permission, no civil training	General aviation	06-18-82	10-29-07
No general aviation, cargo, or charter, 50 operations per day	Air carrier, commuter	08-28-72	01-09-12
No air carriers or charter, only aircraft less than 6,000 pounds, touch-and-go operations only	General aviation	1970	06-30-91
None	General aviation, charter	06-19-61	06-01-93
None	Air carrier, general aviation, charter	06-08-72	Indefinite
No experimental aircraft	General aviation	02-01-87	01-31-37
No general aviation, 92 operations per day, tower hours 6 a.m. to 12 p.m.	Air carrier, commuter, cargo, charter	06-05-75	04-03-15
No air carrier	General aviation, cargo	01-21-82	01-21-22
No civil training	Commuter, general aviation, charter	08-12-59	05-14-09
No air carriers, only aircraft 12,500 pounds or less	Commuter, general aviation, charter	01-01-59	12-31-94
Tower hours, 7 a.m. to 11 p.m., no civil training	General aviation, charter	02-04-81	02-04-06
Tower closes at 12 a.m., no civil training	Air carrier, commuter, general aviation, charter	02-14-56	Indefinite

[a]We did not collect detailed information for Bermuda NAS; Guam NAS; Barter Island DEWS, Alaska, and Point Lay DEWS, Alaska, because these airfields are not near major metropolitan airports and, therefore, would not affect national airport capacity and delays. In addition, the two airfields in Alaska are small and have runways with single gravel strips.

[b]Abbreviations in this column: A.F., Air Force; AAF, Army Airfield; AFB, Air Force Base; NAS, Naval Air Station; ANGB, Air National Guard Base; MCAS, Marine Corps Air Station.

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