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**Report To The Chairman, Subcommittee On
Trade, House Committee On Ways And Means**

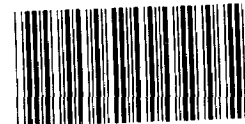
OF THE UNITED STATES

**A Strategy Is Needed To Deal
With Peaking Problems At
International Airports**

The Subcommittee asked GAO to examine the role that controlling the timing of flight arrivals could play in coping with the problem of peaking--multiple arrivals of international flights within a limited time period--which causes traveler delays in clearing the Federal inspection process.

In addressing this question, GAO concluded that because of competition, international relations, and other implications of controlling the timing of flight arrivals, this course of action should only be considered when all else fails in coping with peaking problems.

There is a need to establish criteria for identifying current and anticipated peaking problems affecting international travelers and a concomitant need to gauge the current and potentially enhanced capacity of the Federal inspection operations to overcome these problems. Only then will there be a logical basis for determining the need to control flight arrivals as part of an overall strategy to speed the entry of international travelers.



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

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The Honorable Sam M. Gibbons
Chairman, Subcommittee on Trade
Committee on Ways and Means
House of Representatives

Dear Mr. Chairman:

This report discusses the problem of multiple arrivals of international flights within a limited time period and their effect on the Federal inspection process. It recommends taking action to identify the existence of peaking problems and developing a strategy to deal with them.

As arranged with your office, we plan no further distribution of this report until 3 days from its issue date, unless you publicly announce its contents earlier. At that time we will send copies to the heads of the Federal agencies involved and other interested parties. Copies will be made available to others upon request.

Sincerely yours,

A handwritten signature in cursive script that reads "Charles A. Bowser".

Comptroller General
of the United States

COMPTROLLER GENERAL'S REPORT
TO THE CHAIRMAN, SUBCOMMITTEE
ON TRADE, HOUSE COMMITTEE ON
WAYS AND MEANS

A STRATEGY IS NEEDED TO
DEAL WITH PEAKING PROBLEMS
AT INTERNATIONAL AIRPORTS

D I G E S T

Peaking--multiple arrivals of international flights within a limited time period--contributes to congestion and delays in processing the entry of international travelers. The Federal inspection agencies--the U.S. Customs Service, the Immigration and Naturalization Service, and the Department of Agriculture's Animal and Plant Health Inspection Service--cannot handle the concentrated volume of travelers. In these situations, travelers are confronted with congested inspection areas, long lines, and unacceptable time spent waiting in line for and clearing the inspection process.

Such delays are expected to worsen in the future because of the increasing number of international travelers. Smoothing out the traffic peaks by controlling the timing of flight arrivals for some flights would be one alternative to alleviate congestion. However, because of competition, international relations, and other implications of controlling the timing of flight arrivals, this course of action should only be considered when all else fails in coping with peaking problems.

In recent years, the Federal inspection process has been a concern of the Congress. Spurred by complaints from travelers, the Congress wrote into the Customs Procedural Reform and Simplification Act of 1978 a requirement that GAO study the clearance process for individuals entering the United States and recommend ways to expedite the process without weakening law enforcement. GAO addressed these issues and recommended changes in the inspection process in its 1979 report "More Can Be Done To Speed The Entry Of International Travelers" (GGD-79-84, August 30, 1979). (See p. 3.)

Subsequently, the Chairman, Subcommittee on Trade, House Committee on Ways and Means, asked GAO to examine the role that controlling the timing of flight arrivals could play in coping with the problem of peaking, using one medium-sized airport as an example. GAO selected the Honolulu International Airport.

WHAT CAUSES PEAKING?

Peaking, in part, is a product of how airlines schedule flights. When multiple arrivals of international flights occur, it is normally a result of airlines attempting to satisfy a number of sometimes conflicting considerations, including competition, landing rights, aircraft and crew utilization, maintenance, noise restriction curfews, flight connections, and airport capacities. The most frequently cited considerations that contribute to peaking are curfew restrictions and passenger preferences for travel at certain times of the year, week, and day. Curfews limit flight arrival and departure times and, as a result, tend to concentrate aircraft operations. Many foreign airports set curfews to restrict noise during certain hours of the day. (See p. 2.)

POTENTIAL OF RESCHEDULING

To estimate the potential for reducing peaking problems by rescheduling flight arrivals at the Honolulu International Airport, GAO developed a computerized simulation program. Assuming no change in the Federal agencies' staffing levels, GAO attempted to spread out flight arrivals without violating any airport's curfew and while considering, to some extent, travelers' preferences for arrival and departure times.

Other factors that affect scheduling changes involve aircraft and crew utilization and connecting flights. These factors impact differently on each airline, and, therefore are not readily subject to analysis. GAO agrees that if scheduling changes are necessary these factors must be considered.

Under the alternative simulated flight arrival schedule, the estimated average time spent waiting to complete the inspection process at the Honolulu airport could be reduced to 33 minutes instead of the actual 67 minutes. Over 99 percent of the passengers, rather than the actual 48 percent, could be processed within one hour. (See p. 27.)

To accomplish this change, GAO made simulated scheduling changes. Of the 20 flights involved in Honolulu's peaking problem, rescheduling required no changes in arrival time for 8 flights, changes of less than 1 hour for 9 flights, a 75-minute change for 1 flight, and changes of 4 and 5 hours for 2 flights. The impact of these changes on aircraft and crew utilization and connecting flights is unknown; however, this analysis indicates that rescheduling may not need to be extensive to produce a sharp drop in travelers' waiting time to enter the country. The need for rescheduling, of course, would be impacted by the extent to which other alternatives could be used to speed the entry of travelers.

PRECEDENT FOR RESCHEDULING

Foreign airports have successfully rescheduled flights to reduce airport congestion problems. The regulation of airline schedules grew out of necessity as multiple arrivals of flights at airports began to exceed available capacities. The airports that GAO visited in West Germany, Denmark, Hong Kong, and Japan all used some form of scheduling control. (See p. 9.)

In addition, the Federal Aviation Administration began using scheduling controls on a limited basis in 1968 to keep the air carriers' landing and departure rights during peak periods in line with takeoff and landing capacity at certain congested domestic airports. Air carriers, granted antitrust immunity by the Civil Aeronautics Board, periodically form scheduling committees and decide among themselves how flight arrival and departure slots will be allocated. (See p. 10.)

CUSTOMS' EFFORTS TO PREVENT PEAKING

The U.S. Customs Service generally has the authority to deny landing permission to any airline in the event there would be more flight arrivals at a given time than can be accommodated by the Federal inspection agencies. However, its landing rights policies and procedures have not been effective and have come under increasing attack by the air carriers as being arbitrary and discriminatory. Customs has considered several alternatives, such as scheduling committees or lotteries to control and award landing rights, but none have been adopted. (See p. 12.)

As a first step, the Federal inspection agencies need to establish criteria for identifying current and anticipated peaking problems affecting international travelers and to gauge the current and potentially enhanced capacity of the Federal inspection operations to overcome these problems. Only then will there be a logical basis for determining the need to control the timing of flight arrivals as part of an overall strategy to speed the entry of international travelers. GAO believes that such strategy should provide for Customs to exercise its landing rights authority if timely entry of travelers cannot be improved through other alternatives.

RECOMMENDATIONS

GAO recommends that the Secretary of the Treasury, in cooperation with the other Federal inspection agencies, establish criteria for identifying the existence of peaking problems at airports, based primarily on the number of international travelers that can be efficiently and timely handled by the Federal inspection system--as currently configured or potentially enhanced.

GAO recommends that the Secretary of the Treasury develop a strategy to deal with the problems of peaking. Such strategy should include an assessment of alternatives including controlling the timing of flight arrivals if

timely entry of travelers cannot be improved through other alternatives. Further, the Secretary, in conjunction with the airlines and other concerned Federal agencies, should reconsider the procedures for allocating landing rights.

AGENCY COMMENTS AND
GAO'S EVALUATION

The Department of the Treasury, the Department of Transportation, and the Civil Aeronautics Board commented on GAO's report. The responses, for the most part, did not address the report's recommendations.

The general theme of the agencies' comments was that GAO did not (1) fully recognize and develop the impact of rescheduling flights on aircraft and crew utilization, connecting flights, and aircraft maintenance, and (2) consider alternative methods of processing arrivals as a way to reduce delay. Hence, GAO did not present a convincing case for rescheduling flights.

This report does not advocate an extensive rescheduling of flights at major airports. What the report does suggest is that, failing other measures, controlling the timing of flight arrivals may prove to be the only solution to peaking problems.

Once the existence of peaking problems has been determined, then consideration can be given to the appropriate solution. GAO recognizes that the problem is difficult to solve and that controlling the timing of flight arrivals would require consideration of numerous interrelated factors.

The agencies did not comment on the report's discussion and recommendation concerning the need to establish procedures for assessing demand--the volume of travelers that will arrive during a given time frame--in relation to various capacities of airport facilities; inspection agencies workforce; and the type of

inspection system used. The purpose of determining capacity/demand is to determine where a peaking problem exists. The next step would be to determine how best to deal with it.

GAO does not envision that controlling the timing of flight arrivals will be necessary unless all else fails, but does believe it needs to be considered as one of the alternatives available to deal with processing the increasing number of international travelers through the Federal inspection process. However, GAO believes that the extent of any necessary scheduling changes will not be known until a capacity/demand management system is implemented.

A detailed treatment of the agencies' comments can be found on pp. 18 to 22 and p. 29.

C o n t e n t s

		<u>Page</u>
DIGEST		i
CHAPTER		
1	PEAKING--A CAUSE OF DELAYS IN THE ENTRY OF INTERNATIONAL TRAVELERS	1
	Growth in international air travel	2
	Factors significantly contributing to peaking	2
	Peaking and the Federal inspection process	3
	Objectives, scope, and methodology	4
2	THE STRATEGY FOR ALLEVIATING PEAKING PROBLEMS SHOULD INCLUDE MANAGING THE FLOW OF INTERNATIONAL TRAVELERS	6
	Adjusting the Federal inspection process will provide only limited relief to peaking problem	7
	Controlling the number of flights is an alternative	9
	Attempts to control the arrival of international flights at U.S. airports	12
	Capacity limitations of Federal inspection process need to be considered before controlling the timing of flight arrivals	15
	Conclusions	17
	Recommendations	17
	Agency comments and our evaluation	18
3	ANALYSIS OF PEAKING PROBLEM AT HONOLULU INTERNATIONAL AIRPORT	23
	Honolulu International Airport--an example of the peaking problem	23
	Moderate rescheduling of flights would lessen congestion and delay	24
	Conclusions	29
	Agency comments and our evaluation	29

APPENDIX

		<u>Page</u>
I	Letter dated June 23, 1981, from the Chairman, Subcommittee on Trade, House Committee on Ways and Means	30
II	Sunday arrivals and staffing, August 1981	31
III	Impact of airport curfews on Honolulu flight arrivals, summer schedule 1981	32
IV	Feasible Sunday flight arrival times given airport curfews	33
V	Feasible Sunday flight arrival times given airport curfews and passenger preference constraints	34
VI	Alternative flight arrival schedule	35
VII	GAO's simulation of passenger processing through Customs and Immigration at Honolulu International Airport	36
VIII	Letter dated September 1, 1982, from the Department of the Treasury	44
IX	Letter dated September 21, 1982, from the Department of Transportation	48
X	Letter dated August 27, 1982, from the Civil Aeronautics Board	51

ABBREVIATIONS

AMAS	Airport Model Analysis System
ATA	Air Transport Association of America
AOCI	Airport Operators Council International
CAB	Civil Aeronautics Board
FAA	Federal Aviation Administration
GAO	General Accounting Office
INS	Immigration and Naturalization Service
IATA	International Air Transport Association

CHAPTER 1

PEAKING--A CAUSE OF DELAYS IN THE ENTRY OF INTERNATIONAL TRAVELERS

Peaking--multiple arrivals of international flights and travelers within a limited time period--occurs during certain hours of the day, days of the week, and times of the year. Because Federal agencies' inspectors and/or the airport facilities cannot handle these peak volumes, travelers encounter delays in the Department of Agriculture's Animal and Plant Health Inspection Service, the U.S. Customs Service's, and the Immigration and Naturalization Service's (INS) inspection processes. Space is often not available to accommodate travelers waiting to clear the Federal inspection process and sometimes aircraft must wait for a gate position. Consequently, travelers are held in holding areas until congestion has eased in the Federal inspection area or they are delayed on board aircraft.

The Federal inspection agencies are undertaking cooperative efforts to speed the entry of international travelers. With the increasing number of international travelers seeking entry into the country, the agencies' efforts must attempt to satisfy competing demands--the enforcement of entry laws and regulations and the need to expedite the flow of travelers through the Federal inspection process. The timely processing of international travelers, however, requires the involvement of not only the Federal inspection agencies but also the cooperation of airport operators and the airlines. Although the testing and implementation of alternative inspection systems is part of the solution to handling the increasing number of travelers, scheduling controls over the timing of aircraft arrivals also need to be considered.

In recent years the inspection process has been a concern of the Congress. Spurred by complaints from travelers, the Congress wrote into the Customs Procedural Reform and Simplification Act of 1978 a requirement that we study the clearance process for individuals entering the United States and recommend ways to expedite the process, particularly for air and sea travelers, without weakening law enforcement.

Subsequently, the Chairman, Subcommittee on Trade, House Committee on Ways and Means, asked us to examine the problem of peaking, using one medium-sized airport as an example. We selected the Honolulu International Airport. Specifically, we were asked to determine how much flexibility the airlines would have in spreading out flight arrival times to obtain a more even flow of traffic. (See app. I.)

GROWTH IN INTERNATIONAL AIR TRAVEL

In fiscal year 1981, about 31 million international travelers entered the United States by air. Customs projects that international air travel will increase 42 percent, to about 44 million travelers, by 1987.

The Airport Operators Council International (AOCI) has studied the adequacy or inadequacy of Federal inspection services at United States airports. In its June 1981 report, AOCI claimed that peaking of flights is a factor in the adequacy of the inspection process. At 14 major airports that handle 64 percent of the international travelers, AOCI found that travelers judged the time spent waiting to complete the Federal inspection process as too long. In contrast, the inspection process time was judged adequate at 11 small airports that handle 14 percent of the travelers. Factors contributing to congestion in the inspection process as cited by AOCI "are airline peaking of flights and inadequate facilities in airport arrival halls to handle all the travelers aboard jumbo jets that often arrive simultaneously."

FACTORS SIGNIFICANTLY CONTRIBUTING TO PEAKING

Peaking, in part, is a product of how airlines schedule flights. The multiple arrivals of scheduled international flights occur as a result of airlines attempting to satisfy a number of conflicting considerations, including competition, landing rights, aircraft and crew utilization, maintenance, noise restriction curfews, flight connections, and airport capacities.

The most frequently cited considerations that contribute to peaking are curfew restrictions and passenger preferences for travel at certain times of the year, week, and day. According to the Air Transport Association of America (ATA), the public's desire to depart and arrive at convenient times must be satisfied for airlines to remain competitive.

Many foreign airports set curfews to restrict noise during certain hours of the day. Curfews limit flight arrival and departure times and, as a result, tend to concentrate aircraft operations. Curfews restricting flight arrival and departure times at one airport affect flight operations at other airports.

PEAKING AND THE FEDERAL
INSPECTION PROCESS

The Federal inspection agencies' responsibilities are:

- The Immigration and Naturalization Service, an agency of the Department of Justice, which determines the admissibility of each individual seeking entry into the country.
- The Customs Service, an agency of the Department of the Treasury, which collects revenue on imported products, interdicts and seizes contraband (including narcotics and illegal drugs), and enforces more than 400 provisions of laws for 40 other Federal agencies.
- The Animal and Plant Health Inspection Service, an agency of the Department of Agriculture, which prevents the entry of diseased or infected plants, foods, and animals.

To varying degrees, travelers are inspected by officers of one or more of these Federal agencies.

At the Honolulu International Airport the time needed for Federal inspectors to administer the primary inspection requirements, such as asking questions regarding the travelers' citizenship, itinerary, dutiable items, etc., generally takes about 3 minutes. However, the time required for the entire process--waiting to claim baggage, waiting in inspection lines, and actually being inspected--is directly related to the congestion created by peaking and can vary considerably.

In a 1979 report ^{1/} on the processing of international travelers, we pointed out how peaking increased the time required to complete the Federal inspection process at several locations as shown on the following page.

^{1/}"More Can Be Done To Speed The Entry Of International Travelers" (GGD-79-84, August 30, 1979).

<u>Location</u>	<u>Nonpeak time</u> (minutes)	<u>Peak time</u> (minutes)	<u>Percent increase</u>
Los Angeles	66	103	56
Miami	42	72	71
New York	35	69	97

Our report disclosed that travelers are dissatisfied with the inspection process if it takes too long. An analysis of air travelers' responses to our questionnaire showed they become less satisfied as processing time exceeds 45 minutes. In response to the concerns expressed in our report, the Federal inspection agencies tested an alternative one-stop inspection system. In a March 1982 report ^{2/}, we concluded that the one-stop inspection system speeds the entry of international travelers.

The processing of international travelers requires both the involvement of the Federal inspection agencies and the cooperation of airport operators and the airlines. Although the testing and implementation of different inspection systems is part of the solution to handling the increasing number of travelers, other solutions to the peaking problem also need to be identified and considered.

OBJECTIVES, SCOPE, AND METHODOLOGY

Our objectives were to (1) determine the extent peaking contributed to delays in the Federal inspection process, (2) evaluate the potential of rescheduling flight arrival times to avoid peaking, (3) determine the impact rescheduling would have on the Federal inspection process, and (4) assess alternative solutions that have either been implemented or proposed to alleviate peaking problems.

In analyzing the impact of peaking at the Honolulu International Airport we (1) interviewed officials of the Federal inspection agencies and the State government, (2) reviewed policies, procedures, and internal reports concerning the inspection process, and (3) observed inspections. The Honolulu International Airport was selected on the basis that it was a representative medium-sized airport experiencing delays in the Federal inspection process during peak periods.

We also visited international airports in West Germany, Denmark, Hong Kong, and Japan where we discussed the extent of

^{2/}"One-Stop Inspection System Speeds The Entry Of International Travelers" (GGD-82-62, March 22, 1982).

peaking and its impact on available airport capacities. In these countries we also discussed alternative solutions that have been implemented or proposed to alleviate the impact of peaking. We met with foreign ministry officials responsible for international aviation policies concerning air traffic and international airport authority representatives and officials of the customs and immigration agencies.

In Canada we met with representatives of the International Civil Aviation Organization and the International Air Transport Association who over the past few years have been examining the nature and extent of airport traffic peaking around the world.

Our review work was conducted during the period August 1981 to August 1982, although we relied on internal surveys and fiscal year 1981 statistical data provided by the inspection agencies.

This audit was performed in accordance with generally accepted Government auditing standards.

Methodology

We also constructed a computer model enabling us to simulate the Federal inspection process at the Honolulu International Airport and to determine whether international travelers could be processed more quickly if flight arrivals were spaced more evenly. Through computerized simulation, the potential reduction of travelers' waiting time using rescheduling was compared to that of increasing the inspection staff. For a more detailed explanation of our methodology see appendix VII. We met with representatives of various United States airlines having international flights and committees of airline representatives located at the Honolulu International Airport to determine the extent of the peaking problem.

CHAPTER 2

THE STRATEGY FOR ALLEVIATING PEAKING PROBLEMS

SHOULD INCLUDE MANAGING THE FLOW

OF INTERNATIONAL TRAVELERS

Basically, there are two approaches for solving congestion in the Federal inspection process caused by peaking. First, a number of actions can be taken regarding the inspection process. This would involve either expanding the airport inspection facilities as needed, increasing the staffing levels of Federal inspectors, and/or using alternative inspection systems to process the increased number of travelers during peak periods (accommodating the peaks). The second approach would involve controlling the number of flights so that the number of arriving passengers does not exceed the Federal inspection agencies' capacity to process travelers (managing the flow) in a timely manner. Inspection agencies' representatives say that, considering enforcement requirements, they are close to maximizing the benefits of various alternative inspection systems. And, because of budget constraints, the increase in the number of inspectors, if any, will probably not keep pace with the increasing number of international travelers. Also, expanding Federal inspection facilities is a costly, long-term, and sometimes physically limited solution.

Under these circumstances, the alternatives for handling congestion caused by peaking seems limited. In fact, managing the flow of traffic is the next step to be considered in an overall strategy to speed the entry of international travelers. This would involve limiting the number of international flight arrivals within specified time periods, which can be done by Customs through its granting of landing rights to the airlines. Past efforts by Customs to convince airlines to voluntarily reschedule flights have not been successful. The airlines claim there are simply too many problems associated with rescheduling.

However, before controlling the timing of flight arrivals is considered, Customs, in cooperation with the other Federal inspection agencies, must first establish criteria for identifying the existence of peaking problems at airports, primarily on the basis of the number of international travelers that can be efficiently and timely handled by the Federal inspection system. Only then will there be a logical basis for determining the need to control flight arrivals as part of an overall strategy to speed the entry of international travelers.

ADJUSTING THE FEDERAL INSPECTION
PROCESS WILL PROVIDE ONLY LIMITED
RELIEF TO PEAKING PROBLEM

By and large, the number of changes to elements of the inspection process that can be made to accommodate the flow of travelers is diminishing. Various inspection alternatives have been tested and put into operation; there is little likelihood of an increase in inspection staffing; and there is simply a physical limit to airport modification and expansion. Hence, the prospect is limited for changes in these factors which would greatly ease the congestion of international travelers.

During the past few years, Federal inspection agencies have been attempting to accommodate the surge of travelers during peak periods by improving and streamlining inspection procedures. For example, INS and Customs use a citizen bypass system whereby returning U.S. citizens bypass the immigration inspection, thus speeding the inspection process to some extent for all international travelers. Customs has been developing, testing, and implementing a number of other systems designed to facilitate the processing of travelers.

For example, in August 1981 at the Miami and Los Angeles International Airports the Federal inspection agencies began a 6-month test of a one-stop inspection, conducted before travelers claimed their checked baggage, rather than the traditional two-stop process. Our review ^{1/} of the test showed that the one-stop system reduces travelers' time spent waiting in line for and clearing the primary inspection process and results in more efficient use of Customs and INS inspectors. On the other hand, its effect on the enforcement of entry laws and regulations is unclear. However, because of the clearly demonstrated gains of the one-stop system regarding timeliness and efficiency and the uncertain and perhaps nonexistent drawbacks from a law enforcement standpoint, we expressed the opinion that the one-stop inspection system is an improvement over the procedures used in the past.

Another inspection option is the use of the preclearance program. Under this program Federal inspection agencies'

^{1/}"One-Stop Inspection Speeds The Entry Of International Travelers" (GGD-82-62, March 22, 1982).

staff located in foreign countries process U.S. bound travelers. Preclearance operations are located at Toronto, Montreal, Winnipeg, Vancouver, and Calgary in Canada; Bermuda; and Nassau and Freeport, Bahamas. Presently, 23 percent of international travelers entering the United States have been precleared.

Processing these travelers after arrival in the United States would add to an already crowded situation. There are other advantages:

- Immigration can deny entry to individuals before they depart for the United States.
- Agriculture can intercept unwanted goods before they enter the United States.
- Travelers are more receptive to the inspection process at the beginning of the trip when they are not tired.

Unfortunately, there are also significant disadvantages. Preclearance is expensive and entails moving inspectors to foreign countries and payment of supplemental allowances while they live there. Although Customs is reimbursed by the airlines for the supplemental costs, the other inspection agencies absorb the costs. Another disadvantage is the need for Customs to rely on the host country to take enforcement steps when a violation is discovered. U.S. Customs officers have no enforcement authority in foreign countries. Finally, the inspection agencies must rely on foreign airport operators for suitable space.

Although more inspectors are still needed at many airports and would help speed the entry of travelers, there is little likelihood of a staffing increase. Budgetary reasons are the major restraints. For example, under the fiscal year 1983 budget request for Customs, the number of inspectors would be reduced by 678 positions. This would reduce the total number of inspectors to 3,696 or 704 less than the peak level of 4,400 in fiscal year 1975. INS' inspector workforce was reduced by 200 positions from fiscal year 1981 to 1982, and no change is planned for 1983.

In addition, the facilities used by the Federal inspection agencies, with the exception of Washington National Airport and Dulles International Airport, are owned by local airport authorities. Therefore, decisions to modify or expand these facilities to expedite processing must be negotiated between the Federal inspection agencies and the airport authorities.

CONTROLLING THE NUMBER OF FLIGHTS IS AN ALTERNATIVE

As the alternatives for better accommodating travelers diminish, the next step to be considered would involve managing the flow of travelers by controlling the timing of flight arrivals to reduce congestion in the Federal inspection process. Before any flights are rescheduled, Customs must determine the number of flight arrivals that the Federal inspection agencies can process during a specific period of time at airports experiencing peaking problems and a mechanism for allocating the landing rights must be developed.

Customs efforts to convince the international air carriers to reschedule international flight arrivals have been unsuccessful. The airlines contend that the factors contributing to peaking, such as curfews and traveler preferences, are beyond their control, and therefore it is very difficult, if not impossible, to reschedule flights. In addition, State Department officials expressed concern that depending on the circumstances, foreign governments could complain that the rescheduling denied their airlines effective use of route rights granted them in bilateral agreements with the U.S., or that it discriminated in favor of competing U.S. airlines.

A massive rescheduling of flights would likely produce many problems. However, a simulation program for international flight arrivals indicates that rescheduling of a few flights at the Honolulu International Airport (see ch. 3) could significantly reduce the average processing time of international travelers.

Using this program, we attempted to spread out flight arrivals without violating any airports' curfews and while considering to some extent, travelers' preferences for arrival and departure times. Other factors that affect scheduling changes such as those involving aircraft and crew utilization and connecting flights were not considered. If scheduling changes are necessary these factors must be considered; however, they are factors that airlines continually deal with in making scheduling changes. Rescheduling of flights has also been used successfully in some foreign airports and at certain United States airports to overcome or alleviate peaking problems.

Precedent for scheduling controls

Foreign airports have rescheduled flights to successfully reduce airport congestion problems. The regulation of airline schedules grew out of necessity as peak demands--multiple arrivals and departures of flights--at airports began to exceed

available capacities. Scheduling authorities responsible for the regulation of airline schedules were formed gradually at a number of busy foreign airports during the past several years. The airports we visited in West Germany, Denmark, Hong Kong, and Japan allow some form of scheduling control over flights. In the United States, the Federal Aviation Administration (FAA) uses scheduling controls to limit the arrival and departure of flights at certain congested airports.

Generally, scheduling controls at the foreign airports require airlines to submit their flight schedules for the upcoming season to a scheduling authority for approval. Schedule requests are then compared to available arrival and departure time slots on the basis of the airports' capacity. If enough capacity exists, all schedule requests are approved; if not, some requests are denied.

Although scheduling coordination authorities at foreign airports are responsible for approving or denying airlines' scheduling requests, it is the airlines themselves who meet in negotiation sessions and successfully negotiate their flight scheduling requirements. These negotiations are important, especially in those cases where an airline has been denied a specific time slot because of insufficient airport capacity.

Scheduling adjustments are for the most part negotiated at the International Air Transport Association (IATA) timetable meetings held twice a year. These meetings provide an international forum at which airline coordinators and scheduling experts discuss and negotiate schedule changes. The meetings were initially developed to optimize interline flight connections, but as airport congestion problems increased, they have become progressively more of an international forum for the scheduling and coordination of international flights among the air carriers.

At these meetings, flight schedules are adjusted by the airlines, primarily on the basis of discussions with official airport scheduling coordinators, in accordance with airport capacity limitations. A flight scheduling change at one airport automatically results in a change at other airports. An important feature of the IATA meetings is that all interested parties are available to process such chain reactions quickly and efficiently. Officials at the four airports we visited stated the negotiations at IATA meetings have been successful in resolving disputes between the airlines over arrival and departure times.

The committee format for the scheduling of flights is also being used in the United States. The FAA began using scheduling controls on a limited basis in 1968 to keep the air

carriers' landing and departure rights during peak periods in line with takeoff and landing capacity at certain congested airports. Federal regulations now designate four airports (New York's Kennedy and La Guardia; Chicago's O'Hare; and Washington's National) as high-density traffic airports ^{2/} and allocate the total flight arrivals and departures permitted per hour. Air carriers periodically form scheduling committees and decide among themselves how arrival and departure slots will be allocated. ^{3/}

Because of the antitrust implication of scheduling committees' agreements, the air carriers have submitted the agreements to the Civil Aeronautics Board (CAB) for approval in accordance with 49 U.S.C. §1382(a)(1) and have been granted antitrust immunity by CAB under 49 U.S.C. §1384. CAB is currently conducting an investigation to determine whether it should continue to approve the agreements in effect at the four high-density traffic airports.

At the four airports, airline scheduling committees have facilitated compliance with the FAA's flight arrival and departure controls since 1968. There are separate scheduling controls for each of the four airports affected, and each airport has its own committee. Each committee's membership is composed of all certificated air carriers serving that airport.

The sole purpose of the scheduling committee is to negotiate a voluntary allocation of flights that complies with the FAA's scheduling controls. Committee members voluntarily change individual arrival and departure schedules so that the total number of flights does not exceed the FAA controls. Voluntary adjustments in air carriers' flight schedules must receive unanimous consent of the member carriers, or the committee defaults and the FAA becomes responsible for allocating landing and departure rights.

^{2/}See 14 C.F.R. §§93.121-.133(1982) for Federal regulation of high-density traffic airports.

^{3/}The operations of the committees have been suspended because the 4 airports are included in the 22 major airports where slot allocations are being controlled by FAA as a result of the air traffic controllers strike.

ATTEMPTS TO CONTROL THE ARRIVAL
OF INTERNATIONAL FLIGHTS AT U.S.
AIRPORTS

The peaking problem, as discussed in chapter 1, attests to the fact that Customs has not successfully controlled the arrival of international flights. Customs' attempts to use its landing rights authority to control flight arrivals have been questioned by air carriers as being arbitrary and discriminatory. Customs can exercise its landing rights authority at all airports not formally designated as international airports. The word "international" in the names of major airports, e.g. Chicago, Honolulu, Houston, J.F.K., Los Angeles, and San Francisco International Airports is actually a misnomer (with the exception of the Miami International Airport). At these airports Customs can exercise its landing rights authority. ^{4/}

Because Customs does not have specific procedures, standards, or criteria for determining the appropriate number of landing rights and how they should be distributed, Customs' district officials have had difficulty in supporting its decisions to deny landing rights to airlines requesting them during peak arrival times. For example, Customs officials at Honolulu told us that airlines are usually able to have a decision to restrict landing rights overruled by headquarters officials. However, Customs has no overall statistics on the number of decisions that have been made to restrict landing rights or how many of those decisions have been overruled.

Airlines' objections to Customs'
current practice regarding landing
rights approval

The Secretary of the Treasury is authorized to designate airports of entry and to apply Customs laws and regulations to airlines using such airports. All air carriers, domestic and foreign, must submit to Customs an advance schedule of their proposed international flights and must obtain advance permission before commencing service to the United States. The airlines are required to indicate the flight arrival times and passenger capacity on their requests to Customs.

^{4/}The Secretary of the Treasury is authorized to grant landing rights authority provided in 49 U.S.C. §1509. This landing rights authority has been delegated to Customs under 19 U.S.C. §1644 and 19 C.F.R. §6.2(a).

Although its policy is to grant a request for landing rights if the flight can be processed within existing staffing levels and without excessive delays to travelers, Customs presently does not have standards or procedures for its allocation of landing rights. Customs' practice has been to allow an air carrier's existing landing rights authority to remain in effect as long as the flight continues to operate in accordance with the schedule. Air carriers have advised Customs that this practice is discriminatory because their requests for peak time landing rights are sometimes preempted by other carriers' previously established flight schedules and landing rights approval. These carriers believe there is need for more equitable procedures for granting peak time landing rights.

Proposed landing rights procedures not implemented

Customs recognized the problems caused by the lack of specific procedures for allocating landing rights and began a study in February 1979 to establish such procedures. However, Customs has not implemented any procedures other than to require that denials of landing rights requests must be submitted to the Commissioner or Deputy Commissioner for final determination. Various methods for allocating landing rights studied by Customs are discussed in the following sections.

Committees

Representatives of the airlines that intended to use a given airport would meet periodically to allocate the predetermined number of landing rights. This method for allocating landing rights is recommended by the Airport Association Coordinating Council, the International Air Transport Association, and the International Civil Aviation Organization and favored by the airlines. However, because of the antitrust implications of a scheduling agreement among the airlines, Customs officials told us that the airlines would probably need some assurance that they would be given an exemption by the CAB from antitrust laws before agreeing to this method.

Auctions

A predetermined number of landing rights would be auctioned to the highest bidders. Landing rights in such cases would be granted in a completely competitive manner, consistent with the goal of Federal deregulation. Revenue collected would be deposited in either the U.S. Treasury or in an airport development fund for the particular airport. The auction

system was recommended by a consultant commissioned by CAB and FAA to study some of the problems raised by quotas and by the Department of Justice, which opposes the use of scheduling committees as being seriously anticompetitive.

The international air carriers oppose this alternative, however, because they may have to bid against foreign carriers many of which are government owned and have large financial resources. Simply put, less affluent carriers would be at a financial disadvantage.

Lotteries

The drawing or lottery means of awarding landing rights has the advantage of being nondiscriminatory since the rights are awarded by chance. However, the Air Transport Association of America is opposed to a lottery because it feels that such a system would excessively hamper airline management in that important decisions concerning scheduling of flights would be made not by government officials and airline managers cognizant of business and international realities, but by a game of chance.

Unregulated scheduling

Under this method, landing rights would be granted to all carriers making requests that could be safely, if not expeditiously, handled. When the number of arriving travelers exceeded the Federal inspection agencies' capacity, they would be held on the aircraft, and then allowed to deplane on a first-come-first-served basis. Although this may seem to be in accordance with the general theme of deregulation, it could be expected to increase congestion and delay processing times. In theory, granting landing rights for all requests would result in excessive congestion and delays and have an adverse effect on air travel. This condition would presumably encourage the airlines to reschedule flights. The peaking problem would then, it is theorized, be self-correcting.

Peak period pricing

When requests for landing rights exceed capacity, increased landing fees would be assessed on all international flights during peak periods. The costs presumably would encourage carriers to schedule flights during off-peak hours. If the high landing fees were reflected in the price of only peak period fares, passengers may find it more attractive to fly at other times. However, the extra costs might be evenly distributed by the carriers, thus increasing all fares while

not alleviating the problem. Under this system, the less affluent carriers may be at an economic disadvantage.

Customs initially favored the use of scheduling committees. But CAB strongly opposed this method because carriers determining scheduling of flights among themselves had overtones of restraint of open competition and antitrust. Therefore, in June 1979 Customs decided to implement a lottery system; the system was never implemented. Customs officials could not provide us reasons why and advised us that Customs was not considering any procedure for allocating landing rights.

CAPACITY LIMITATIONS OF FEDERAL
INSPECTION PROCESS NEED TO BE
CONSIDERED BEFORE CONTROLLING THE
TIMING OF FLIGHT ARRIVALS

Customs has established inspector-to-passenger ratios for determining how many inspectors should be available for anticipated workloads. Although these ratios are used as a basis for staffing, they could also be used as a basis for developing a strategy for dealing with peaking problems which would include Customs exercising its landing rights authority. However, to effectively control scheduling, in cooperation with the other inspection agencies, Customs needs to establish procedures for assessing demand--the volume of travelers that will arrive during a given time frame--in relation to various capacities of airport facilities, inspection agencies workforce, and the type of inspection system used. Such procedures are essential for Customs to be in a position to use its landing rights authority and to minimize the impact of scheduling and/or rescheduling flights.

The need for establishing capacities of the Federal inspection facilities was recognized in a report concerning the timely processing of air travelers issued by Customs' San Francisco Regional Office in August 1980. The report contained the following recommendation:

"In cooperation with airport operators and other Federal inspection agencies, the maximum number of persons each facility is capable of efficiently processing should be determined. The cumulative effects of "peaking" severely impact our ability to timely process arriving persons. Additionally, baggage delivery problems and facility overcrowdings are seen by the public as an inspection caused problem, and thus, no matter how rapidly we process air travelers, these problems preclude alleviation

of the public's complaints. Capacity levels would alleviate past problems encountered in adjusting or denying landing requests."

In 1976, the International Civil Aviation Organization, a United Nations Organization responsible for fostering safe, regular, efficient, and economical air transportation, investigated the impact of peaking at several international airports around the world. The study, completed in 1977, concluded among other things that during extreme peaking periods both the airport facilities and services were over burdened creating severe congestion problems and lengthy processing times for aircraft and travelers. Conversely, during nonpeak periods airport facilities and services were drastically underutilized resulting in an inefficient and wasteful allocation of resources. Even though the study was successful in identifying the nature and extent of the peaking situation, the study was inconclusive as to the most desirable means of solving the problem.

The Airport Associations Coordinating Council and IATA also collaborated on an examination of the impact of peaking. They concluded in their November 1981 report that one effective and appropriate means of dealing with peaking and airport congestion is through the use of some form of airport capacity/demand management. The philosophy behind capacity/demand management is that flight rescheduling should be considered as a last resort--only when capacity cannot be expanded or when, pending expansion, demand for facilities exceeds availability and results in unacceptable levels of congestion.

Under this approach, airport capacity limitations would be defined and declared by airport authorities, in consultation with other involved government agencies and the airlines, using agreed upon levels of service criteria and methodologies for evaluating capacities. According to the study a number of methods are currently employed to assess the capacity of an airport and its subsystems, including direct observation, comparison, and mathematical modeling.

According to the report, regardless of which method is used, success in controlling airport congestion through capacity/demand management must recognize two factors. First, the comfort and convenience of airport users are directly related to the capacity and level of services provided; and secondly, the capacity and demand for services are interrelated and must always be considered together. For example, a particular airport subsystem such as the inspection facility might be able to process 1,000 travelers per hour at a good level of service, or 1,500 travelers per hour at a poor level of service

(i.e., greater congestion). Once acceptable capacity and service levels have been identified they serve as a basis for determining when unacceptable levels of congestion are reached.

To determine whether congestion exists or is anticipated, two steps must be taken. First, accurate data on the number of international air travelers on a daily and hourly basis is needed in order to identify typical peaks. Second, the peak demand profiles must then be compared to the inspection facilities' capacities to identify the likelihood of congestion developing.

CONCLUSIONS

Prospects are limited for alleviating airport congestion by "accommodating" the flow of travelers through such means as increasing the number of Federal inspectors, expanding facilities, and changing inspection procedures. Smoothing out the traffic peaks by controlling the timing of flight arrivals for some flights would be one alternative to alleviate congestion. However, because of competition, international relations, and other implications of controlling the timing of flight arrivals, this course of action should only be considered when all else fails in coping with peaking problems.

Scheduling controls over flights to alleviate peak period congestion are used in many foreign airports. Scheduling controls are also used at four domestic airports designated by the FAA as high-density traffic airports. Although Customs' landing rights authority allows it to control flight arrivals, it has not effectively exercised this authority.

As a first step, the Federal inspection agencies need to establish criteria for identifying current and anticipated peaking problems affecting international travelers and to gauge the current and potentially enhanced capacity of the Federal inspection operations to overcome these problems. Only then will there be a logical basis for determining the need to control the timing of flight arrivals as part of an overall strategy to speed the entry of international travelers.

RECOMMENDATIONS

We recommend that the Secretary of the Treasury, in cooperation with the other Federal inspection agencies, establish criteria for identifying the existence of peaking problems at airports, based primarily on the number of international travelers that can be efficiently and timely handled by the Federal inspection system--as currently configured or potentially enhanced.

We recommend that the Secretary of the Treasury develop a strategy to deal with the problems of peaking. Such strategy should include an assessment of alternatives including controlling the timing of flight arrivals if timely entry of travelers cannot be improved through other alternatives. Further, the Secretary, in conjunction with the airlines and other concerned Federal agencies, should reconsider the procedures for allocating landing rights.

AGENCY COMMENTS AND OUR EVALUATION

The Department of the Treasury, the Department of Transportation, and the CAB commented on our report. (See app. VIII, IX, and X.) The responses, for the most part, did not address the report's recommendations.

The general theme of the agencies' comments was that GAO did not (1) fully recognize and develop the impact of rescheduling flights on aircraft and crew utilization, connecting flights, and aircraft maintenance, and (2) consider alternative methods of processing arrivals as a way to reduce delay. Hence, GAO did not present a convincing case for rescheduling flights.

This report does not advocate an extensive rescheduling of flights at major airports. What the report does suggest is that, failing other measures, controlling the timing of flight arrivals may prove to be the only solution to peaking problems.

Once the existence of peaking problems has been determined, then consideration can be given to the appropriate solution. We recognize that the problem is difficult to solve and that controlling the timing of flight arrivals would require consideration of numerous interrelated factors.

The agencies did not comment on the report's discussion and recommendation concerning the need to establish procedures for assessing demand--the volume of travelers that will arrive during a given time frame--in relation to various capacities of airport facilities; inspection agencies' workforce; and the type of inspection system used--the essence of a capacity/demand management system. The purpose of capacity/demand management is to determine where a peaking problem exists and how best to deal with it.

We do not envision that controlling flight arrivals will be necessary unless all else fails, but do believe it needs to

be considered as one of the alternatives available to deal with processing the increasing number of international travelers through the Federal inspection process. However, we believe that the extent of any necessary scheduling changes will not be known until a capacity/demand management system is implemented.

Our response to these and other comments of the agencies are presented below.

Airline rescheduling problems

All the agencies commented that the report should deal more with the problems (connecting flights, aircraft and crew utilization, etc.) that the airlines would face by rescheduling flights. We recognized that rescheduling flights presents problems; however, these types of problems are faced continually by airlines in making schedule changes. Furthermore, the airlines (both domestic and foreign) have successfully dealt with rescheduling, whether imposed for safety purposes or adopted by the airlines for other purposes.

Also, the extent of the airlines' rescheduling problems are not known. Treasury stated that severe peaking exists at about 10 U.S. airports. We note in chapter 3 that the simulated scheduling changes needed at one busy U.S. airport--Honolulu--to sharply reduce travelers' waiting time to enter the country seemed to us to be moderate. The need for rescheduling, of course, would be impacted by the extent to which other alternatives could be used to speed the entry of travelers and by changes involving aircraft and crew utilization and connecting flights.

Under these circumstances, as noted previously, the extent of the need to reschedule flights cannot be determined until the action necessary to implement our recommendation to adopt a capacity/demand management system is taken.

Alternative processing methods

All the agencies contended that to limit harm to airlines from rescheduling flights, "accommodating" the passenger flow mechanisms (increased staffing, speedier inspection procedures, airport facility modification) should be fully explored before "managing" the flow (controlling flight arrivals) takes place. We do not disagree with this position. In fact, several of our prior reports have been instrumental in having new, speedier procedures tested and adopted at major airports.

Furthermore, as previously discussed, this report recommends that a capacity/demand management system be implemented

to determine what can be done to alleviate congestion. The philosophy behind capacity/demand management is that controlling flight arrivals should be used when all else fails.

International repercussions as a result of scheduling controls

CAB and the Department of Transportation commented that controlling flight arrivals would impact on United States policy in international negotiations. We recognize that scheduling changes are a factor to be considered, but we are not in a position to assess the degree to which the control over flight arrivals would influence international negotiations. We do wish to point out, however, that the standard U.S. Air Agreement with other governments makes provision for the control of flight arrivals. The provision states:

"Neither party shall unilaterally limit the volume of traffic, frequency or regularity of service * * * except as may be required for customs, technical, operational, or environmental reasons * * *." [emphasis added]

Therefore, where necessary, the United States can exercise control over flight arrivals for the reasons described in the agreement. Moreover, some form of scheduling control over flight arrivals and departures--including U.S. flag carriers--is currently used by most foreign countries.

Method for allocating landing rights

Both Treasury and CAB commented on the importance of determining which method should be used to allocate landing rights and suggested the report contain a full treatment of this subject. The report does note and comment on various allocation options. If the comments were meant to imply that GAO should recommend a specific allocation method, then we must take exception. We believe such responsibility rests with Treasury. We have noted in the report, however, that the allocation method most frequently used and preferred by the airlines is some form of scheduling committee whereby the airlines make the ultimate decision.

Recommendations not in harmony with aviation policy

CAB contends that GAO is recommending "a whole new regulatory scheme" which is out of harmony with respect to the aviation policy of deregulation and reliance on competitive market forces. We do not agree. We are not recommending that

Customs' landing rights authority deny airlines access to a given airport. If Customs determines that the Federal agencies' inspection processing capacity will be exceeded and a request for a particular time slot cannot be granted, then Customs could grant an alternative flight arrival time, as reasonably close as possible to the original request.

Need for cost/benefit study

CAB stated that a cost/benefit analysis of controlling flight arrivals should be made before the report makes any recommendations. The agency's implication that appropriate cost/benefit studies are doable is conjectural. Certain elements of the peaking problem involve policy considerations that will impact on the results of any cost/benefit studies that may ultimately have to be made. These are (1) that period of time beyond which an international traveler will not be asked to wait to clear the inspection process, (2) the type of inspection system used, and (3) the flight allocation methods. Nevertheless, even if CAB believes acceptable cost/benefit studies can be performed, before one can be undertaken, the Secretary of the Treasury must first adopt our recommendation to establish criteria for determining an acceptable level of service for processing travelers.

Responsibility for implementation of change

Regarding the responsibility for implementing our recommendations, Treasury stated that the report's contention that Customs can solve the peaking problem by asserting its authority to restrict landing rights is too simplistic and unrealistic. Treasury's position is that Customs cannot act unilaterally but must attempt to reach reasonable compromises with all concerned parties.

We agree that any procedures for allocating landing rights must be developed in conjunction with all concerned parties and our recommendation calls for this approach. However, Customs has the authority to develop allocation methods and, therefore, must initiate any action to do so. In this sense, Customs must act unilaterally.

Extent of Customs' landing rights authority

Treasury, in its comments, raised the point that Customs has no authority under its regulations to deny landing rights

at airports formally designated as international airports; Miami International Airport, where about 12 percent of all arriving passengers are processed annually, is one of those airports. However, it is the only major airport so designated. The word "international" in the names of other major airports, e.g., Chicago, Honolulu, Houston, J.F.K., Los Angeles, and San Francisco International Airports is actually a misnomer (with the exception of the Miami airport). At these airports Customs can exercise its landing rights authority.

- - - -

In summary, we contend that alleviating congestion at airports is not a matter of "whether" to make any necessary scheduling changes but of being properly prepared to control the timing of flight arrivals "when" it must be done.

For example, an increase in international travelers from 1.2 to 2.2 million is expected at the Honolulu airport over the next 4 years. If any form of inspectional control is to be maintained, it is highly unlikely that increases of that magnitude can be absorbed by passenger inspection systems which are already greatly overtaxed during peak periods (e.g., present travelers' clearance time at Honolulu is 2 to 4 hours).

We see nothing in the agencies' comments that convinces us to change our conclusion that congestion at some airports is expected to worsen unless efforts to control the timing of flight arrivals are included in a strategy to deal with the increasing number of international travelers.

For that reason, we believe that controlling the timing of flight arrivals is an essential element in an overall strategy for easing congestion in the Federal inspection process. Therefore, we are recommending, that in order to be prepared to handle future scheduling and/or rescheduling changes, the Secretary of the Treasury begin now to establish criteria to determine at what passenger capacity level peaking problems will occur.

CHAPTER 3

ANALYSIS OF PEAKING PROBLEM AT HONOLULU INTERNATIONAL AIRPORT

Accompanying the growth of international flights at Honolulu will be continued congestion and delays caused by the arrival of more travelers than can be accommodated by the Federal inspection services. In 1981 about 1.2 million international travelers arrived at Honolulu. The number is expected to exceed 2.2 million by 1985. In terms of number of arrivals, the Honolulu International Airport is the fourth largest in the United States.

Currently, the majority of the daily international flights arriving at Honolulu do so within a 5-hour period. Although most flights are affected by curfews (certain foreign countries restrict flight departure times, hence arrival times are affected), such curfews do not unduly restrict rescheduling possibilities as a means of reducing congestion. What appears to be a moderate adjustment in scheduling flight arrivals could make a significant--about 50 percent--improvement in the average processing time of travelers at Honolulu. The need for rescheduling, of course, would be impacted by the extent to which other alternatives could be used to speed the entry of travelers and by changes involving aircraft and crew utilization and connecting flights.

HONOLULU INTERNATIONAL AIRPORT--AN EXAMPLE OF THE PEAKING PROBLEM

Honolulu International Airport has perhaps the most unbalanced schedule of daily international flight arrivals of any U.S. airport. More than 86 percent of the international flights are scheduled to arrive between 6:00 a.m. and 11:00 a.m.

The surge of international travelers during peak periods far exceeds the capacity of the international arrivals terminal and the processing capabilities of the Federal inspection agencies. On certain days of the week, for example, five international flights are scheduled to land within a 5-minute period. Those five flights sometimes discharge as many as 1,400 people, almost simultaneously when the flights are on time. As a result, many travelers must stay on the aircraft, up to an hour at times, waiting for space to become available in the inspection facility.

In some cases, as many as 1,800 international travelers will arrive within a 60-minute period to be processed in an inspection facility designed to process 1,200 passengers per hour. During these "peak" periods, travelers are confronted

with congested baggage claim and inspection areas. There are long lines and lengthy waiting times that stretch to 2, 3, and even 4 hours in extreme cases, for an inspection that frequently will take only a few minutes. According to a 1980 evaluation,^{1/} if improvements are not made, the average time to clear the Federal inspection process is expected to exceed 3 hours by 1985 and over 4 hours by the year 2000.

The results of peaking are inconvenience to international travelers, detained departing flights, and missed connecting flights. On the other hand, for most of the nonpeak hours of the day, there are no scheduled international flight arrivals, and the international terminal is not used.

To cope with these problems, the Federal inspection agencies have taken measures to streamline and improve both facilities and inspection services. Despite these efforts, however, the improved facilities and new inspection systems cannot accommodate the peak surge of international travelers in a timely fashion.

MODERATE RESCHEDULING OF FLIGHTS WOULD LESSEN CONGESTION AND DELAY

If some international flights at Honolulu were rescheduled, congestion and delay in the Federal inspection process would be reduced and existing facilities would be utilized better. Although any rescheduling would likely produce some problems, our analysis of international flight arrivals at Honolulu International Airport suggests that a moderate rescheduling of flights may result in less congestion and delay.

To estimate the potential for reducing peaking problems by rescheduling Honolulu flight arrivals, we developed a computerized simulation program. A detailed description of the methodology is included in appendix VII. Through computerized simulations, we compared the potential reduction of time spent waiting to clear the inspection process under two scenarios: (1) rescheduling and (2) an increased inspection staff. The computer program provided the estimates of the processing times of travelers arriving on a typical Sunday--one of the busiest days of the week--during August 1981 for each of the following three assumptions:

--Actual flight arrival schedule and actual staffing level.

--Revised flight arrival schedule and actual staffing level.

^{1/}"Modifications to the International Arrival Facilities and Expansion of International Arrivals Facilities to the Year 2000," George R. Ariyoshi, Governor, Department of Transportation, Airports Division, State of Hawaii, December 1980.

--Actual flight arrival schedule and full staffing.

Actual peaking situation

The flight arrival schedule, passenger loads, and staffing levels used to illustrate a peak day are shown in appendix II. The schedule is for flight arrivals on a typical Sunday during August 1981. The number of travelers on each flight and inspection staffing data were obtained from agency reports.

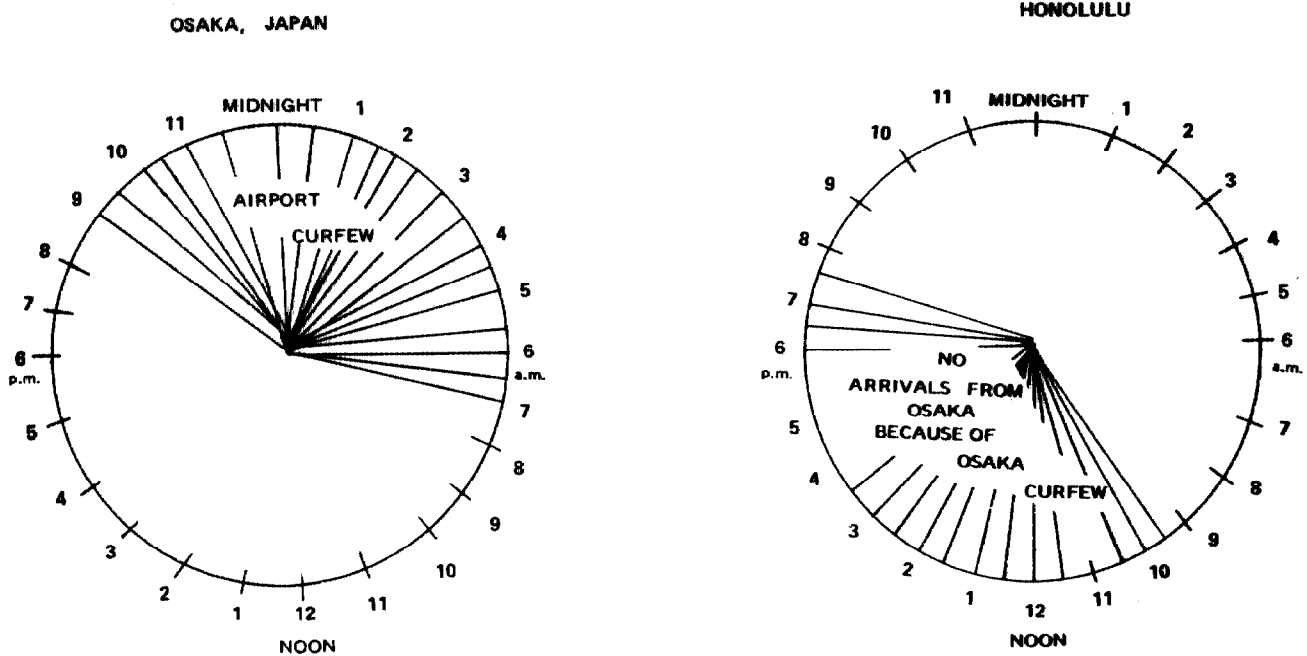
Of the 20 flights listed in appendix II, 18 were scheduled to arrive between 5:45 a.m. and 11:00 a.m. Three flights were scheduled to arrive during the 10-minute period between 6:05 a.m. and 6:15 a.m., three flights between 6:40 a.m. and 6:50 a.m., and four flights between 9:00 a.m. and 9:05 a.m. Using the computer program described in appendix VII, we estimated that it would take travelers an average of 67 minutes to clear Customs and INS, given the arrival times and the staffing levels shown in appendix II. In this example, only 48 percent of the travelers were estimated to have been cleared within an hour.

Simulated rescheduling of selected international flights

To estimate the potential that rescheduling flight arrivals has for reducing the time travelers spend waiting to clear the inspection process at Honolulu International Airport, we developed an alternative schedule. The revised schedule attempted to spread out flight arrivals while not violating any airport's curfew and while considering, to some extent, travelers' preferences for arrival and departure times. However, other factors that affect scheduling changes involve aircraft and crew utilization and connecting flights. These factors impact differently on each airline, and, therefore are not readily subject to analysis. If scheduling changes are necessary these factors must be considered; however, they are factors that airlines continually deal with in making schedule changes.

Most of the international flights to Honolulu use at least one airport with curfew restrictions (see app. III). Because of these curfews the flight arrival times at Honolulu International Airport are limited. For example, the airport curfew in Osaka, Japan, runs from 9:00 p.m. to 7:00 a.m. Therefore, the latest that a flight could leave Osaka is 9:00 p.m. (2:00 a.m. Honolulu time). The flying time between the two cities is 7-1/2 hours, thus the scheduled arrival time in Honolulu would be 9:30 a.m. Because flights cannot leave

Osaka during the 10-hour curfew no flights can arrive in Honolulu during the 10-hour period from 9:30 a.m. (the time the last flight from Osaka arrives in Honolulu) until 7:30 p.m., as shown below.



Although the scheduling of most flights into Honolulu is affected by curfews, such curfews do not unduly restrict the possibilities for rescheduling.

Curfews make it impossible for most flights to be scheduled for arrival at Honolulu during the afternoon. Nevertheless, if curfews were the only constraint on rescheduling, flights could be scheduled so that no more than one flight landed per hour. Appendix IV shows scheduled and feasible arrival times for Sunday flights during the summer of 1981. The patterns for the other days of the week are similar.

Travelers' preferences also constrain rescheduling since airlines try to schedule flights at times which are convenient for passengers. Passengers on some air routes might prefer to depart in the morning while those on other routes might prefer the afternoon. Having desirable departure and arrival times provides a competitive advantage to an airline, especially when more than one carrier services the same route on that day.

The travelers' preferences that we considered in our simulated rescheduling relate to night traveling. Obtaining transportation and checking into hotels during the middle of the night were assumed to present problems. We therefore assumed that travelers would be unwilling to depart or arrive between midnight and 6:00 a.m., unless the current flight schedule already included such a departure or arrival. This restriction, in addition to the airport curfews, reduced the number of feasible arrival times for each flight, as shown in appendix V. Using information from appendix V, we developed an alternative flight schedule.

The alternative schedule spreads flights more evenly throughout the morning without violating the airport curfews and travelers' preference constraints discussed above. The alternative schedule moves the arrival times of two early morning flights to the late morning--changes of 4 and 5 hours. Eight of the 20 flights were not rescheduled, 1 flight was scheduled to arrive 75 minutes later, and arrival times for 9 flights were changed by less than 1 hour. Without increasing the Federal agencies' inspection staff and using the alternative flight arrival schedule (see app. VI), the estimated average time spent waiting to complete the inspection process was 33 minutes instead of 67 minutes; and over 99 percent, rather than 48 percent, of the travelers could be cleared within 1 hour. Estimates assume planes arrive on time; deviations from the schedules would probably affect processing time.

Full staffing not as
beneficial as rescheduling

Neither Customs nor INS had staffed all inspection lanes at the Honolulu facility at the time of our fieldwork. But even if budgetary constraints allowed full staffing, the impact on easing congestion would not be as great as the relatively moderate amount of rescheduling previously discussed. A comparison of the number of inspection lanes available with the number actually staffed during a typical Sunday peak period of August 1981, is shown on the following page.

	<u>Number of lanes staffed</u>	<u>Total inspection lanes available</u>
INS primary	11	19
Customs primary	19	24
Customs secondary	18	28

Assuming full staffing and actual flight arrival times, our simulation program estimated that the average time spent waiting to complete the inspection process could be reduced from 67 minutes to 46 minutes, and that 77 percent of the travelers, instead of 48 percent, could have cleared Customs within an hour. Although full staffing offers considerable potential for reducing the time needed to clear the inspection process, rescheduling of flight arrival times could do even more, as shown by the following results of our simulation program.

Cumulative Percent of Travelers Processed

<u>Hours</u>	<u>Actual staff and flight schedule</u>	<u>Full staff/ actual flight schedule</u>	<u>Actual staff/ revised flight schedule</u>
1/2	14	30	46
1	48	77	99+
1-1/2	73	98	100
2	92	99+	-
2-1/2	99+	99+	-
Average time needed to clear inspection process	67	46	33

As shown above, we estimate that if flight arrivals could be rescheduled, virtually all travelers could be processed within 1 hour and close to half would be finished in a half hour. Staffing all the inspection lanes could also reduce processing time, but not as dramatically.

CONCLUSIONS

Our rescheduling simulation program illustrates the potential that a moderate change in scheduling flight arrivals for Honolulu might achieve--a 50-percent reduction in the average time required to clear the inspection process. The Honolulu case study suggests that the benefits of rescheduling--reduced congestion and delays--could be achieved within the curfew and passenger preference constraints. The need for rescheduling, of course, would be impacted by the extent to which other alternatives could be used to speed the entry of travelers and by changes involving aircraft and crew utilization and connecting flights.

AGENCY COMMENTS AND OUR EVALUATION

Regarding our simulated rescheduling of flights, Treasury commented that to obtain the indicated benefit would require strict adherence to the revised schedule. They questioned this adherence because of aircraft delays due to mechanical failures, weather, and other factors, or early arrivals because of favorable prevailing winds. We agree that while all airline flights are scheduled to arrive at a precise time, obviously this will not always happen because of the factors cited. However, scheduling flight arrivals that are spaced to reduce congestion appears better than doing nothing. If flight arrivals are missed more often than met, obviously a schedule adjustment would be needed.

The CAB also expressed concern with the accuracy of our computer program's estimates and the fact that the estimates assumed that flights would have arrived on time. They point out that in the test of the program "the program's estimate of the percentage of travelers processed within 1-1/2 and within 2 hours varied widely from Customs' observations." In our opinion, their concern is unfounded.

The program's estimate of travelers processed within 1-1/2 hours was 11 percent below Customs' observations while the estimate for those processed within 2 hours was 4 percent over. (See p. 39.) Although our program estimates fewer people being processed between 1 and 1-1/2 hours of arrival and more being processed between 1-1/2 and 2 hours after arrival, both our program and Customs' observations agree that about 45 percent of the people were processed between 1 and 2 hours after arrival (Customs' observation 44 percent; our program 46 percent). In addition to agreeing on the percent of people processed between the first and second hour after arrival, our program's estimates and Customs' observations were quite close with respect to the percent processed in the first hour after arrival and the overall mean processing times.

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June 23, 1981

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General Accounting Office
441 G Street, N.W.
Washington, DC 20548

Dear Mr. Socolar:

As you know, the General Accounting Office has been working with the Subcommittee on Trade on ways to facilitate the arrival of passengers and cargo through Customs and INS border inspections. Despite our best efforts, however, due to the tight budgets for Customs and INS, we are likely to see several years of very long lines and delays at our Nation's gateway airports.

The airlines have always contended, of course, that it is very difficult, if not impossible, to stagger the time of arrival of flights and that there is nothing that can be done about the phenomena of three or four jumbo jets arriving within minutes of each other. It is alleged that foreign regulations governing jet noise and take-off times, etc., provide very "narrow windows" which cause international flights to be grouped. This, of course, places enormous strains on the federal inspection services.

I would like to request the assistance of the GAO in examining the validity of the airlines' contention that they cannot do more to stagger flights. I ask that the GAO look at the flights arriving at one medium-sized airport (to make the study manageable and able to be completed this summer) where there is some degree of "bunching" and determine how much flexibility the airlines would have in spreading out the arrival times (i.e., departure times from the foreign country) so as to cause a more even flow of arriving traffic (assuming aircraft are on time, of course).

Thank you for your assistance in this brief review.

Sincerely,


Sam M. Gibbons
Chairman

SMG:WKVc

Sunday Flight Arrivals and Staffing
August 1981

<u>F l i g h t a r r i v a l s</u>					<u>S t a f f i n g</u>		
<u>Hour of day</u>	<u>Flight number</u>	<u>Scheduled time</u>	<u>Passengers</u>		<u>INS primary</u>	<u>Customs primary</u>	<u>Customs secondary</u>
			<u>Total</u>	<u>Alien</u>			
00-01	1	12:20	031	024	01	03	01
01-02					01	03	01
02-03					00	03	01
03-04					00	00	00
04-05					00	00	00
05-06	2	5:45	239	169	05	07	04
06-07	3	6:05	328	229	11	19	21
	4	6:10	390	237			
	5	6:15	242	139			
	6	6:40	401	351			
	7	6:45	362	268			
	8	6:50	257	189			
07-08	9	7:00	221	186	11	19	21
	10	7:10	088	079			
08-09	11	8:20	147	147	11	19	18
09-10	12	9:00	169	136	11	19	18
	13	9:05	117	098			
	14	9:05	343	208			
	15	9:05	145	089			
	16	9:20	116	080			
10-11	17	10:05	151	149	11	19	18
	18	10:50	383	246			
11-12	19	11:00	381	254	11	19	18
12-13					11	19	18
13-14					11	13	17
14-15					00	00	01
15-16					00	00	01
16-17					00	00	01
17-18					00	00	01
18-19					00	00	01
19-20					00	00	01
20-21					01	00	00
21-22	20	9:15	070	027	01	03	01
22-23					01	03	01
23-24					00	00	00

SOURCE: Flight arrivals and staffing data are from agency records for August 1981.

NOTE: For purposes of the program, at least one Customs and one Immigration lane were assumed to be open at all times to avoid travelers becoming stranded in the system.

IMPACT OF AIRPORT CURFEWS
ON HONOLULU FLIGHT ARRIVALS
SUMMER SCHEDULE 1981

Auckland, New Zealand

1:00 a.m. - 6:00 a.m.	Auckland curfew
3:00 a.m. - 8:00 a.m.	Equivalent Hawaii time
9 hours	Flight time from Auckland
12:00 noon - 5:00 p.m.	Effective curfew in Hawaii <u>1/</u>

Hong Kong, B.C.C.

12 midnight - 6:30 a.m.	Hong Kong curfew
6:00 a.m. - 12:30 p.m.	Equivalent Hawaii time
10-1/2 hours	Flight time from Hong Kong
4:30 p.m. - 11:00 p.m.	Effective curfew in Hawaii <u>1/</u>

Tokyo, Japan (Narita airport)

11:00 p.m. - 6:00 a.m.	Narita curfew
4:00 a.m. - 11:00 a.m.	Equivalent Hawaii time
7 hours	Flight time from Tokyo
11:00 a.m. - 6:00 p.m.	Effective curfew in Hawaii <u>1/</u>

Osaka, Japan

9:00 p.m. - 7:00 a.m.	Osaka curfew
2:00 a.m. - 12:00 noon	Equivalent Hawaii time
7-1/2 hours	Flight time from Osaka
9:30 a.m. - 7:30 p.m.	Effective curfew in Hawaii <u>1/</u>

Seoul, Korea

10:00 p.m. - 7:30 a.m.	Seoul curfew
3:00 a.m. - 12:30 p.m.	Equivalent Hawaii time
8 hours	Flight time from Seoul
11:00 a.m. - 8:30 p.m.	Effective curfew in Hawaii <u>1/</u>

Sydney, Australia

11:00 p.m. - 6:00 a.m.	Sydney curfew
3:00 a.m. - 10:00 a.m.	Equivalent Hawaii time
9-1/2 hours	Flight time from Sydney
12:30 p.m. - 7:30 p.m.	Effective curfew in Hawaii <u>1/</u>

1/No flight arrivals at Honolulu from originating airports during these time periods.

FEASIBLE SUNDAY FLIGHT ARRIVAL TIMES
GIVEN AIRPORT CURFEWS

FLIGHT NO.	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	A	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
3	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
4	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
5	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
6	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
7	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
8	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
9	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
10	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
11	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
12	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
13	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
14	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
15	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
16	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
17	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
18	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
19	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

33

* FEASIBLE FLIGHT ARRIVAL TIME GIVEN AIRPORT CURFEWS
A ACTUAL SCHEDULED FLIGHT ARRIVAL TIME DURING THE SUMMER OF 1981

FEASIBLE SUNDAY FLIGHT ARRIVAL TIMES
GIVEN AIRPORT CURFEWS AND TRAVELER PREFERENCE CONSTRAINTS

FLIGHT NO.	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	A																							
2		A																						
3			A																					
4				A																				
5					A																			
6						A																		
7							A																	
8								A																
9									A															
10										A														
11											A													
12												A												
13													A											
14														A										
15															A									
16																A								
17																	A							
18																		A						
19																				A				
20																					A			

* FEASIBLE FLIGHT ARRIVAL TIME GIVEN AIRPORT CURFEWS AND TRAVELER PREFERENCE CONSTRAINTS
A ACTUAL SCHEDULED FLIGHT ARRIVAL TIME DURING THE SUMMER OF 1981

ALTERNATIVE FLIGHT ARRIVAL SCHEDULEARRIVAL TIME ^{2/}

<u>Flight number as shown on Appendix II</u>	<u>Alternative</u>	<u>Actual</u>
1	12:20	12:20
2	5:45	5:45
4	6:10	6:10
7	6:45	6:45
8	7:10	6:50
5	7:30	6:15
9	7:45	7:00
10	8:05	7:10
11	8:20	8:20
12	8:40	9:00
13	9:05	9:05
15	9:15	9:05
16	9:25	9:20
17	9:35	10:05
14	9:50	9:05
6	10:15	6:40
18	10:45	10:50
19	11:00	11:00
3	11:35	6:05
20	9:15 p.m.	9:15 p.m.

^{2/}Times are "a.m." unless otherwise noted.

GAO'S SIMULATION OF TRAVELER PROCESSING
THROUGH CUSTOMS AND IMMIGRATION AT
HONOLULU INTERNATIONAL AIRPORT

How much less time would it take for international travelers to clear Immigration and Customs if the flight arrivals were spaced more evenly? How much less time would it take if the Immigration and Customs staff were increased? To answer these questions a computer program was written to simulate the processing of travelers through Immigration and Customs.

The processing times provided by the program are only approximate. The program assumes that each traveler is processed in the average time. This approach does not explicitly account for situations where

- some travelers get stuck in line behind a passenger who takes an exceptionally long time to process,
- some inspectors work more quickly than others, or
- some types of travelers are processed more quickly than others.

Also, some input parameters required by the program were based on limited empirical data. However, since we are interested in the relative effects of changes in flight schedules and staffing, variations in input data should not significantly affect our conclusions.

Although the results are approximate, we believe the program is accurate enough to be useful in examining the relative effects of changes in flight arrival schedules and staffing. This belief is based on the results of a comparison of actual inspection processing times for May 30, 1981, to processing times provided through the use of the simulation program.

The following sections give an overview of the processing of international travelers arriving at Honolulu International Airport, the input required to simulate this process, and the results of the validation for May 30, 1981.

Traveler movements

After an aircraft arrives, travelers board buses which take them to the international terminal. When travelers arrive at the terminal they go to the Immigration inspection area. U.S. citizens bypass the normal Immigration inspection and proceed to the baggage area. After picking up their bag-

gage, travelers proceed to Customs. Once travelers have cleared Customs, they are free to leave the terminal. Each of these steps is explained in more detail below and is illustrated in Figure I.

- A. AIRCRAFT ARRIVAL--Once an aircraft arrives at a gate, the travelers board buses which take them to the terminal. According to data from Customs' Airport Model Analysis System (AMAS), it took about 8 minutes from the time a plane was blocked in until the first traveler entered the terminal for arrivals on May 30, 1981. From the same study it appears that travelers enter the terminal at a rate of 11 declarations per minute. (Each family fills out a Customs declaration. Since Customs' work unit is a declaration rather than a traveler, the model processes declarations rather than travelers. AMAS data shows an average of 1.56 travelers per declaration.) While travelers are moving toward the terminal, the baggage is unloaded. Baggage is taken to the basement of the terminal where conveyor belts move it onto the baggage carousels. AMAS data indicates that it takes about 13 minutes for the first bag to arrive and that bags from about 8.5 declarations arrive each succeeding minute.
- B. IMMIGRATION--After arriving at the terminal, travelers take one of two escalators down to the Immigration inspection room. According to a time study published in 1978, this trip takes about 2 minutes. ^{3/} U.S. citizens bypass the inspection and proceed to the baggage claims area. Noncitizens join one of, at most, 19 lines so that Immigration officials can check their passports and visa. This process takes, on average, about 2 minutes, according to Honolulu Immigration officials. Immigrants, refugees, and those travelers whose papers do not appear to be in order are referred for a secondary inspection. Immigration officials told us that a very small percentage are referred for this time-consuming secondary inspection. Because they happen so infrequently, secondary Immigration inspections are not included in the computer program.
- C. BAGGAGE PICK-UP--After clearing Immigration, the travelers proceed to the baggage pick-up area. Timing studies indicate that it takes about 2 minutes to

^{3/}A Computer Simulation Model for Traffic Flow Analysis
International Arrivals Building, Honolulu International
 Airport: State of Hawaii, Department of Transportation;
 February 1978.

reach the baggage area from the Immigration room. The travelers then assemble their baggage and go to Customs.

The computer simulation program accounts for the possibility that some travelers will arrive at the baggage carousels before their baggage and therefore have to wait before joining a Customs inspection line. After baggage has arrived, timing studies indicate that it takes about 2 minutes to gather one's bags and join a Customs inspection line.

- D. CUSTOMS' PRIMARY INSPECTION--Upon arriving, travelers join one of, at most, 24 lines for a primary Customs inspection. The purpose of this inspection is to determine if there are dutiable goods, to prevent smuggling, particularly drugs, and to keep diseased agricultural products out of the country. The primary inspection takes an average of 1.675 minutes according to studies done by Customs personnel at Honolulu airport during May 1981. If travelers have no dutiable goods and are not selected for further investigation, they are free to leave the terminal after completing the primary inspection; if not, they proceed to a secondary Customs inspection.
- E. CUSTOMS' SECONDARY INSPECTION--About 25 percent of the travelers are referred for secondary Customs inspections. These inspections last about 5.75 minutes according to AMAS data of May 30, 1981. A higher proportion of U.S. citizens than noncitizens receives secondary inspections. Part of the reason for this is that travelers with dutiable goods are referred to Customs' secondary where the amount of tax owed is calculated. The ratios of U.S. citizens' to noncitizens' declarations referred to secondary from three recent AMAS studies are given on the following page.

<u>Study date</u>	<u>Ratio</u>
March 7, 1980	1.51
March 8, 1980	2.06
May 30, 1981	2.59

For our simulation program, we assumed that twice as many U.S. citizens would be referred to Customs' secondary.

After Customs' secondary, travelers may leave the terminal unless they have to pay duty. Those owing taxes proceed to

the cashier. The process of paying the cashier was not included in our simulation program because of insufficient data on the average length of transaction and the number of cashiers working each hour of the day. The omission of time spent paying duty makes our estimates of time in processing lower than they should be. However, since a relatively small percentage of travelers pay duty, the average time should not be materially underestimated.

Testing of our simulation program

We tested our program using input data appropriate for arrivals at Honolulu International Airport on May 30, 1981. Test results were compared with those actually observed by Customs on that day. The program results are reasonably close to those observed.

On May 30, 1981, 22 international flights arrived carrying 5,136 travelers. The input data used to simulate the processing of these passengers are shown on figures II and III.

The data used to check the program's results were collected by the Customs Service. Customs attempted to record the processing times of all travelers on May 30, 1981. Customs officials recorded times for about 87 percent of the arrivals. Whether the missed travelers were processed in less time, more time, or about the same amount of time as those whose times were recorded is not known. Both the actual times recorded and the simulation times show about 50 percent of the travelers were processed within 1 hour. The average actual processing time was 65.6 minutes ^{4/} while the program estimated 66.4 minutes. The distribution of actual and program times are shown on the following page.

^{4/}Customs data does not provide processing time distributions which include secondary Customs inspections, although they do indicate that about 21 percent of the arrivals were referred to secondary inspections which lasted an average of 5.75 minutes per inspection. Secondary inspections were excluded from the program for this run so that the results would be comparable to available validation data.

Cumulative percent of
travelers processed




<u>Hours since block time</u>	<u>Customs observations</u>	<u>Program estimate</u>
1/2	14.7	14.6
1	49.3	51.0
1-1/2	77.0	68.4
2	93.6	97.1
2-1/2	98.8	99.9+
3	99.9	99.9+
3-1/2	100.0	99.9+
4 or more	-	100.0

The key statistics were average processing times and the proportion of travelers processed within 1 hour of arrival. Since these statistics were relatively close, we concluded that our simulation program was adequate for evaluating alternative flight arrival schedules and staffing levels.

Figure 1.

Passenger Flow

LEGEND:

-  Citizen Movement
-  Non-citizen Movement
-  Baggage Movement
- T =** Minutes to travel from one place to another
- R =** Rate of flow -- Declarations / Minute

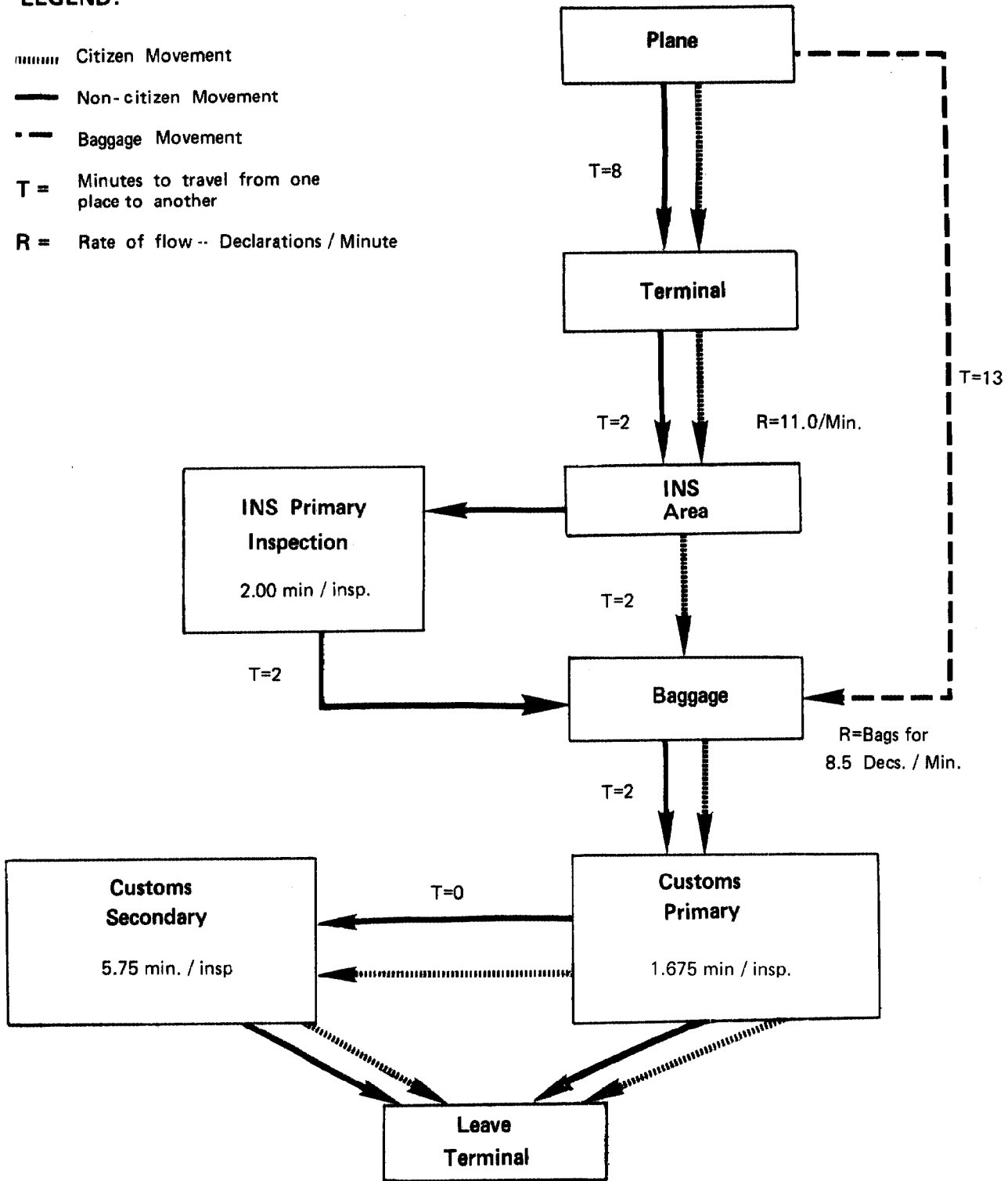


FIGURE II
Input Data On Flight Arrivals and Staffing
Saturday, May 30, 1981

<u>Hour of day</u>	<u>Flight number</u>	<u>Scheduled time</u>	<u>Declarations</u>		<u>Staffing</u>	
			<u>Total</u>	<u>Alien</u>	<u>INS primary</u>	<u>Customs primary</u>
00-01	01	0048	153	100	03	06
01-02					03	08
02-03					03	08
03-04					00	00
04-05					00	00
05-06	02	0520	110	49	03	04
06-07	03	0615	224	93	08	17
	04	0625	152	55		
	05	0630	188	165		
	06	0630	135	115		
	07	0640	244	208		
	08	0650	090	75		
	09	0655	043	11		
07-08					13	20
08-09	10	0800	089	63	13	22
	11	0840	033	23		
	12	0852	053	46		
	13	0855	144	119		
	14	0855	067	50		
	15	0856	177	141		
09-10	16	0905	146	110	15	20
	17	0905	314	192		
	18	0930	258	185		
10-11	19	1005	147	84	15	18
	20	1015	235	212		
	21	1030	109	69		
11-12					15	18
12-13	22	1231	187	177	09	18
13-14					09	18
14-24					00	00

SOURCE: Arrival data are from AMAS data for May 30, 1981. Staffing data was estimated from agency records for May 30, 1981.

NOTE: For purposes of the program, at least one Customs and one Immigration lane was assumed to be open at all times to avoid travelers becoming stranded in the system.

FIGURE III
OTHER INPUT DATA

<u>Value</u>	<u>Description</u>	<u>Source</u>
<u>Arrival Data</u>		
8	PD=Minutes from plane to terminal door	AMAS
11.0	RE=Rate at which declarations enter building (DECS/MIN)	AMAS
<u>Immigrations Data</u>		
2	DM=Minutes from terminal door to INS inspection line	TIMING
2.00	STM=Average length of INS interview	INS
2	MB=Minutes from Immigration to baggage	TIMING
<u>Customs Data</u>		
4	DC=Minutes from door to baggage	TIMING
1.675	STC=Average length of Customs Primary inspection-mins.	CUSTOMS
<u>Baggage Claims Data</u>		
13	PB=Time from arrival to first bag available	AMAS
8.5	RB=Rate of baggage arrival (number of declarations whose baggage arrives per minute)	AMAS
2	BC=Minutes to gather bags and join Customs queue	TIMING
<u>Secondary Customs Data</u>		
.21 a/	PSEC=Proportion of decs. to be referred to Customs Secondary	AMAS
2.0	ODDS=Probability of U.S. Secondary/probability of alien secondary	AMAS
5.75	SEC=Average length of Secondary Customs inspections-mins.	AMAS

NOTE: AMAS=Customs Airport Model Analysis System data for Honolulu International Airport, May 30, 1981.
TIMING=Timings from a computer simulation model for traffic flow analysis International Arrivals Building, Honolulu International Airport, February, 1978.
CUSTOMS=Timing study of May 12-17, 1981, performed by Honolulu Customs employees.
INS=1981 estimates made by Honolulu Immigrations Official.

a/For the simulation for Sunday flight arrivals during August 1981, .27 was used as the proportion of declarations referred to Customs' secondary.



DEPARTMENT OF THE TREASURY
WASHINGTON, D.C. 20220

ASSISTANT SECRETARY

SEP - 1 1982

AUD-5-02-IC:P HWC

Dear Mr. Anderson:

At your request, we have reviewed the GAO draft report "Customs Should Use Its Landing Rights Authority to Speed the Entry of International Travelers". The report has the potential to be very useful, but we believe extensive efforts need to be expended in the following areas to make it realize that potential:

- (1) It must more adequately address the requirements established by the Chairman of the House Subcommittee on Trade;
- (2) It must clarify the practical limits of Customs landing rights authority; and
- (3) It must include a discussion on changes in processing methodology and organization.

The Chairman of the Subcommittee on Trade requested GAO to assist "in examining the validity of the airlines' contention that they cannot do more to stagger flights" and to "determine how much flexibility the airlines would have in spreading out the arrival times... to cause a more even flow of arriving traffic." GAO delineates the reasons why the airlines contend they cannot stagger flights, but there is no discussion or data provided to support or refute the validity of their rationale. Indirectly, it is alluded that because the governments of West Germany, Japan, Denmark, and Hong Kong have been able to achieve scheduling changes, the airlines' contentions are not substantive. We disagree, at least in part. The airlines and especially U.S. airlines are experiencing financial strains, in the case of the Braniff Airlines bankruptcy insurmountable strains. These strains exist in, essentially, an uncontrolled scheduling environment, according to GAO. To add further rigor to the system without assessing the impact of equipment and crew utilization, connecting flights, airport capacities, departure slotting, and competition on scheduling decreases the report's usefulness.

Once the validity of the airlines arguments are assessed, it is a simple matter to determine the flexibility the airlines would have in spreading out their arrival times. Assuming some of the airline arguments are valid, the method used to determine which airlines will and which will not be rescheduled is important. Do you use a first-come/first-serve, a lottery,

an auction, a scheduling committee, or other method? The national and international importance of the selection methodology cannot be underestimated, and a full discussion of this would properly address the chairman's request. It would also provide the Chairman with the necessary background to judge whether or not Customs should exercise greater control over landing rights applications. The importance of making these assessments can be illustrated by citing the 1977 case of an airline's landing rights application at Chicago.

Using a first-come/first-serve approval procedure and a 1,000 passenger per hour ceiling, Customs Chicago Region denied the airline's landing rights request on April 5, 1977. Then began an intense lobbying campaign by the airline's management to gain acceptance of its 3:30 P.M. arrival time, even though Customs had offered to approve alternate arrival times. Many of the arguments cited in the GAO report were used by the airline, specifically, connecting flights, passenger preference, competition, and additional costs. In addition, the airline raised the issue of whether or not a foreign flag aircraft should be given preference over a U.S. flag carrier. Customs countered with projections that the addition of 747 nonstop service (previous flights used smaller equipment and stopped in Anchorage) would insure that the capacity of the facility would be exceeded, if it arrived at 3:30 P.M. This would further jeopardize the health and safety of arriving passengers. The airline's management contested these arguments. Due to intense political pressure, Customs granted landing rights on a month-by-month basis for a 3:30 P.M. arrival. Its prediction that passenger volumes would exceed established limits was realized. Fortunately, no elderly or infirmed passengers experienced any dire problems as a result of being forced to process through the Federal inspection system during this congested period. After the summer peak, the airline did adjust its schedule to arrive earlier.

For an airline to lobby so intensely for a specific arrival time, based upon many of the arguments cited in the report, makes detailed examination of their validity essential. Part of the evaluation should be to obtain a detailed impact assessment from those airlines identified in the report for rescheduling at Honolulu.

In the report, GAO indicates that further improvements in the Federal inspection system through staffing increases, facility changes, and streamlined procedures would be marginal or not as significant as adjusting arrival schedules. If flights could be spaced to meet the processing capability of each airport, Customs agrees significant processing delays would be eliminated. However, Customs also believes that significant reductions of peaks can be made through internal adjustments, if the Federal Inspection Services reevaluate and modify current procedural and administrative requirements, in the context of the actual and potential enforcement threat posed at U.S. airports. In addition to the alternatives presented in the report, GAO should include an assessment of benefits to be derived from fundamental changes in the system.

Severe congestion problems exist at only about 10 U.S. airports. If there is Federal funding to renovate or construct adequate facilities for these critical airports, in GAO's estimation, what impact would this have on the peaking problem? In addition, GAO should address the impact a consolidation of the inspection function into one Federal agency would have on improving processing efficiency, and therefore reducing peaks.

The suggested additions to the report would significantly enhance it. Customs has indicated that it would be glad to assist in the additions in any way possible.

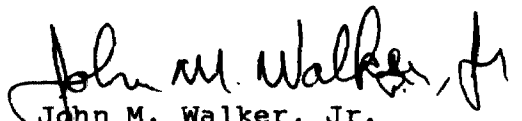
It should be recognized that rescheduling has its limitations. When aircraft are delayed, because of departure congestion, mechanical failures, weather, or when they arrive early because of favorable prevailing winds, congestion will still occur. To obtain the benefits GAO outlines would require strict adherence to schedules, which because of the factors indicated is a practical impossibility. In addition, Customs has no authority under its regulations to deny landing rights at airports formally designated as international airports. Miami International Airport is one of those airports, and about 12 percent of all arriving passengers are processed there annually. This fact should be indicated in the report.

The title and the main contention of the report is that Customs can solve the peaking problem by asserting its authority to restrict landing rights. I believe this position is too simplistic and unrealistic, particularly, in light of the discussion above and GAO's own comments in the report such as: "The Federal Government will need to develop procedures, in conjunction with the airlines, and if necessary, the Civil Aeronautics Board for allocating landing rights," and "However, the Secretary cannot do it alone. Other Federal agencies, the airlines, and perhaps the Civil Aeronautics Board must cooperate in the effort." It is evident, that Customs can not act unilaterally, but instead must attempt to find reasonable compromises with all concerned parties and within the context of the political and economic environment Customs finds at U.S. airports.

If GAO would broaden its considerations to the items identified above, I am convinced that GAO's report could be more effective in helping Congress to understand the difficulties we presently face and to develop legislation which would help the Federal Government resolve these problems.

If you have any further questions please feel free to call me.

Sincerely,



John M. Walker, Jr.
Assistant Secretary
(Enforcement and Operations)

Mr. William J. Anderson
Director, General Government Division
United States General Accounting Office
Washington, D. C. 20548



U.S. Department of
Transportation

Assistant Secretary
for Administration

400 Seventh St., S.W.
Washington, D.C. 20590

SEP 21 1982

Mr. Henry Eschwege
Director, Community and Economic
Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

We have enclosed two copies of the Department of Transportation's (DOT) reply to the General Accounting Office (GAO) draft report, "Customs Should Use Its Landing Rights Authority to Speed the Entry of International Travelers," dated July 28, 1982.

GAO found that flight operations peaking at U.S. International Airports was causing delays of passengers. GAO concluded that these peaking problems might be alleviated if Customs used its authority to allocate landing rights to airlines to smooth out the peaks.

The Department disagrees with the findings of the report and believes that it would be enhanced considerably if expanded to take into account a number of practical operating considerations vital to airlines. For instance, the report should consider factors such as the possibility of international repercussions should Customs exercise its authority to restrict flight schedules of foreign air carriers; the impact of rescheduling on runway, taxiway, gate and terminal capacity; and the possible economic impact on air carriers. We also believe that the report does not sufficiently address Customs' ability to improve its own system, such as streamlining its inspection procedures.

In short, DOT believes that, lacking further analysis, the report does not justify GAO's findings and recommendations.

If we can further assist you, please let us know.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert L. Fairman".
Robert L. Fairman

Enclosures

DEPARTMENT OF TRANSPORTATION
STATEMENT ON GENERAL ACCOUNTING OFFICE (GAO) REPORT

I. TITLE:

"Customs Should Use Its Landing Rights Authority to Speed the Entry of International Travelers."

II. SUMMARY OF GAO FINDINGS AND RECOMMENDATIONS:

GAO found that flight operations peaking at U.S. international airports was causing delays of passengers. GAO concluded that these peaking problems might be alleviated if Customs used its authority to allocate landing rights to airlines to smooth out the peaks. GAO conducted a one day simulation of such an allocation system at Honolulu International Airport and determined such an allocation system would require "relatively minor" scheduling changes. It defended the use of Customs authority for landing slot allocation on the basis that a similar system is being used by the Federal Aviation Administration.

III. SUMMARY OF DEPARTMENT OF TRANSPORTATION POSITION:

We have reviewed the General Accounting Office report entitled "Customs Should Use Its Landing Rights Authority to Speed the Entry of International Travelers" and have the following comments.

1. There is no mention in the report of U.S. commitments under bilateral air transport agreements not to restrict flights operated over the routes exchanged by the two contracting parties. Most U.S. air transport agreements have prohibitions of this nature. The current FAA slot allocation system does not violate these bilateral commitments because foreign air carrier schedules are exempted. The study should be expanded to include some discussion of the international repercussions which are likely to occur should Customs use its landing rights authority to restrict flight schedules of foreign air carriers. Also, it is one issue to allocate landing slots because of safety reasons and quite another to do so because of passenger convenience reasons.
2. The analysis of the impact of rescheduling is inadequate by virtue of the limitation of the analysis to the inspection facilities and by the willingness to base a conclusion upon the observation/analysis of one day of operations at one airport in 1981. An airport has several critical service functions which are capacity-linked and which also become congested by peak demands. Accordingly, to analyze flows and service rates at one subsidiary facility and proceed

to a conclusion that rescheduling can be accomplished with little trouble to produce net benefits to the traveling public, without considering the impact on runway, taxiway, gate and terminal capacity is to base the conclusion on incomplete analysis.

3. The analysis is also faulty by the complete failure to take into account the economic impact on air carriers. Failing to factor in such vital variables as crew and equipment scheduling and connecting flights could cost airlines substantial amounts of cash. On long-haul segments, crews could run out of available duty time (governed by labor contracts and Federal Aviation Regulations which are unbreachable).

Additionally, widebody equipment must be scheduled for high utilization or it becomes uneconomic. A one hour delay could cause an aircraft to be grounded at an airport overnight.

4. The analysis is incomplete in its failure to examine the potential impact upon airports, carriers and travelers if the recommended traffic management regulations are imposed at all of the referenced 14 airports that handle 64 percent of international travelers. In addition, the failure to consider the potential impact of the recommended action in 1987, when as cited in the report, demand is forecast to be 42 percent higher, seriously undermines the credibility of the analysis and therefore the justification for the strength of the study recommendations.
5. The report does not address the need for the U.S. Customs Service to modernize and streamline its inspection procedures prior to placing an economic burden on air carriers. Although it states that Customs says "they are close to maximizing the benefits of various alternative inspection systems" it does not speak to the fact the Customs has always resisted using a red/green honor system for passengers which is used effectively in several major foreign countries' airports (London Heathrow, Paris Charles De Gaulle and Orly). Further, the report does not discuss the improved flow of the one-stop inspection system which was being used experimentally at Los Angeles International and Miami International Airports.

In short, the Department believes the report fails to take into account vital practical operating considerations for airlines and accepts at face value Customs' contention that it can make no improvements in its own systems or procedures. We disagree on both grounds.



CIVIL AERONAUTICS BOARD

WASHINGTON, D.C. 20428

August 27, 1982

IN REPLY REFER TO:

B-1-39

Honorable Henry Eschwege
 Director, Community and Economic
 Development Division
 General Accounting Office
 Washington, D. C. 20548

Dear Mr. Eschwege:

The Civil Aeronautics Board has reviewed the General Accounting Office's draft report, "Customs Should Use Its Landing Rights Authority to Speed the Entry of International Travelers." For the reasons discussed below, we strongly object to the report's recommendations.

Our concern with the proposal is heightened by the problems already facing the aviation industry. Foremost among these are the scheduling problems carriers face as a result of the capacity constraints imposed by the Federal Aviation Administration in response to the Professional Air Traffic Controllers' job action. These constraints have severely limited airlines' ability to schedule flights to reflect consumer demand. Adding still another variable to carriers' scheduling problems could not come at a worse time for airlines or passengers.

The current state of the economy is threatening the very existence of many airlines. The Board has attempted to respond by removing regulatory barriers. The report's recommendation would place a new barrier in the path of carriers providing foreign air transportation. This could make it more difficult for these carriers to compete and even jeopardize the existence of some carriers.

The recommendation is also out of harmony with this country's aviation policy.

Congress directed far-reaching deregulation of the airlines in 1978, including the placement of maximum reliance on competitive market forces. The report's recommendation of a whole new regulatory scheme is inconsistent with Congress' directive. The government's experience in slot allocation after the PATCO job action confirms that governmental allocations create a host of problems that will never be dealt with to all parties' satisfaction.

ANALYSIS OF SOLUTIONS

The report seems to dismiss alternative methods of processing arrivals as a way to reduce inspection delays. While there are serious budget constraints to be faced, some changes in inspection procedures, such as one-stop inspection and Red Door/Green Door processing, may reduce delays with little or no extra budget

Hon. Henry Eschwege (2)

expenditures. Close to 40 countries have adopted red/green customs clearance with success. A number of them have indicated that red/green has not only decreased the time needed to process passengers, but has reduced staff expenditures and increased the amount of revenue collected. The report should assure that all reasonable efficiency improvements have been made before the taxpayers, travelers or airlines are asked to bear the burden of other alternatives. Also, a cost/benefit analysis which quantifies the cost of inspection delays might reveal that the benefits of reduced congestion so greatly outweigh the costs of increasing capacity that Congress should appropriate funds for expansion.

We favor efforts to streamline inspection procedures. We believe correcting this system would be far preferable to the other alternatives discussed by the report. As the report acknowledges (at page 12), the peaking problem is, at least in theory, self-correcting because carriers have an incentive to schedule flights in a manner which is most convenient to passengers and makes the most efficient use of the carriers' resources. While rescheduling could reduce Inspection Service delays, the carriers must determine whether rescheduling would entail other passenger inconveniences and/or operating inefficiencies which outweigh the benefits of reduced congestion. For example, while a delay of 45 minutes in arrival may save passengers twenty minutes in being processed by the Inspection Services, it may prevent many of them from making a connecting flight. The delay may also prevent the carrier from using that aircraft to operate several flights later in the day at times which are most convenient to passengers. Market forces dictate that carriers schedule arrivals to best serve the public and to most efficiently use resources, even if the arrivals do not minimize Inspection Service delay.

METHODOLOGY

The Board has a number of problems with the methodology employed by the report. Most fundamentally, the report attempts no cost/benefit analysis of the alternatives. Thus, rather than attempting to weigh the benefits of reducing congestion against the costs of the alternatives considered, the report implicitly assumes that reducing congestion will have benefits which justify any costs involved. Since this assumption is inaccurate, the failure to conduct a cost/benefit analysis casts doubt over all of the report's recommendations.

While Inspection Service delays inconvenience passengers, re-scheduling arrivals is likely to inconvenience both passengers and airlines. The report makes no attempt to determine whether these costs of rescheduling, which include forcing passengers to fly at less desirable times and interfering with airlines' ability to make the most efficient use of their resources, are less than the benefits of reducing

Hon. Henry Eschwege (3)

Inspection Service delays. Without such a determination, there can be no reasonable basis for concluding that rescheduling would result in a net benefit to the public.

Our second problem is with the report's insensitivity to passenger and carrier scheduling preferences. The report openly ignores all but the most basic constraints on scheduling -- the airlines' need to comply with foreign countries' curfews and passengers' desire not to depart or arrive between midnight and 6 A.M. In brushing aside the many other scheduling considerations which confront carriers and passengers, the report says simply that these problem factors "are of the kind continually faced by airlines in making schedule changes." One could just as easily say that congestion is a problem continually faced by travelers and that we therefore need not be concerned by Inspection Service delays. Clearly, the report's recommendations should not be based on either of these premises.

Only this insensitivity to the scheduling needs of carriers and passengers allows the report to characterize the rescheduling it proposes as "moderate." Changing the arrival times of 12 of 20 flights is likely to cause many passengers to miss their connections and wreak havoc on airlines' efficient use of their resources. An average change in arrival time of over an hour and an average delay in arrival of nearly 1-1/2 hours simply cannot be characterized as moderate by anyone sensitive to the scheduling needs of passengers and airlines. Any recommendations for rescheduling should take into account that even "minor" changes in arrival times can be very costly to airlines and seriously inconvenience passengers, particularly those who must catch a connecting flight.

The proposed scheduling limitations would undermine U.S. policy in international negotiations which seeks to maintain market forces as the primary determinant of scheduling. We often find ourselves pressed by foreign governments to limit arrivals and departures for U.S. flag carriers in order to protect the scheduling of their carrier operations from competition. In addition, some governments are likely to be encouraged by Customs' rescheduling to begin or increase rescheduling at their end of international flights. Some governments are also likely to feel their carriers have been rescheduled unfairly, prompting them to take retaliatory action against U.S. carriers. These reactions will only further complicate carrier scheduling problems, possibly resulting in incompatible controls at both ends of international flights. There is also a danger that the only way to allay the fears of foreign governments will be to give their carriers preferential treatment, putting U.S. carriers at a competitive disadvantage.

Our third objection to the report's methodology is that it does not adequately consider the difficulty of developing the allocation scheme it recommends. While relying on the existence of scheduling committees at several congested U.S. airports, the report also

Hon. Henry Eschwege (4)

acknowledges that the Board has expressed concern about such committees and is still considering whether it should continue its approval of them. Similarly, while the report relies on the rescheduling powers exercised by foreign governments at their airports, it does not consider whether such action may have serious anticompetitive consequences which are inconsistent with our government's economic philosophy. Nor does the report consider the many problems the Federal Aviation Administration has encountered in developing an allocation system for landing rights.

Before making any recommendation, the report should therefore examine the costs of various allocation schemes. These costs include both the administrative costs in establishing and running the system and the indirect costs associated with any anticompetitive effects of various allocation schemes. Allocation schemes which do not allocate arrival rights in a manner which considers passenger and airline scheduling needs also impose indirect costs on passengers (who miss connections or fly at times which are not convenient) and on carriers (which will be forced to raise fares if they cannot make the most efficient use of their crews and aircraft).

In short, the decision of whether an allocation scheme should be established may depend on which allocation scheme would be used. Because the costs and benefits of the different allocation schemes vary greatly, the report should consider these costs and benefits before making any recommendation.

Our final objection concerns technical faults with the report's methodology. Most importantly, we believe that Honolulu International Airport is not a good model on which to base recommendations for changes to the entire international aviation system. A major consideration is the effect scheduling changes would have on the airlines' elaborate system of connecting flights. Since Honolulu is not a major gateway for connecting flights into the United States, it does not provide a basis for assessing the impact of schedule changes on connecting flights.

The report should also recognize that differences between types of airports preclude basing a systemwide recommendation on a study of only one type of airport. If the report studies only medium sized international airports, it should recommend changes only for that type of airport.

We are also concerned that the computer program relied upon by the report is not as accurate as the report contends it is. Although the program's estimate of average processing time on a sample day was close to the actual average processing time observed by Customs on

Hon. Henry Eschwege (5)

that day, this may be the result of the program's mistakes cancelling each other out when the average is computed. Page 32 of the report shows that the program's estimate of the percentage of travelers processed within 1-1/2 and within 2 hours varied widely from Customs' observations. Because these variations were in opposite directions, however, they cancelled each other out when the average time was computed.

We are equally skeptical of the significance of the narrow gap between the program's estimate of travelers processed within one hour and Customs' observation. As noted above, the difference between the program's estimate and Customs' observation of passengers processed within 1-1/2 and within 2 hours is quite large. Since it is not clear that being processed within one hour is far more important than being processed within 1-1/2 or 2 hours, we cannot agree that the program necessarily provides an accurate estimate upon which recommendations for change should be based.

While we are aware that Congressman Gibbons suggested that the study assume arrivals occur as scheduled, this assumption seriously undermines the report's findings. Since a large number of international arrivals are late by at least a few minutes, the report should make an effort to take that fact into account. This is especially true in light of the report's conclusion that changing arrival times of some flights by as little as 5 or 10 minutes can significantly affect Inspection Service congestion.

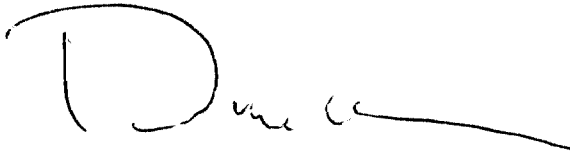
CONCLUSION

In order to properly evaluate the alternatives for reducing Inspection Service congestion, the report should consider both the costs and the benefits of each option. This analysis should include options involving alternative methods of processing arrivals to assure that all reasonable efficiency improvements have been made before the taxpayers, travelers or airlines are asked to bear the burden of other alternatives. If a sample airport is used to study the various alternatives, it should be one with a significant number of connecting flights to allow adequate evaluation of the burden each alternative imposes on passenger and carrier scheduling preferences. If, after conducting this cost/benefit analysis, the report still concludes that rescheduling is the preferred alternative, it should go on to determine which allocation scheme serves the purpose intended at the least net cost to the public and industry.

Hon. Henry Eschwege (6)

The Board applauds the efforts to analyze this problem and seek solutions. But the Board suggests that the proposed cure should not be more painful and longlasting than the disease. To alleviate the problem without creating a problematic new regulatory scheme, the inspection procedures should be improved.

Sincerely,

A handwritten signature in black ink, appearing to read "Dan McKinnon". The signature is written in a cursive style with a large initial "D" and a long horizontal stroke extending to the right.

Dan McKinnon
Chairman

(263900)



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