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## STUDENT REPORT

COST SAVINGS POTENTIAL OF A  
COMMERCIAL RESERVATION SYSTEM FOR  
THE MILITARY AIRLIFT COMMAND

MAJOR RUSSELL J. WHIPP 87-2715

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**REPORT NUMBER** 87-2715

**TITLE** COST SAVINGS POTENTIAL OF A COMMERCIAL RESERVATION  
SYSTEM FOR THE MILITARY AIRLIFT COMMAND

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## PREFACE

The Military Airlift Command (MAC) has seven Passenger Reservation Centers (PRCs) located as follows: Scott Air Force Base (AFB), Illinois; Rhein-Main Air Base (AB), Germany; Hickam AFB, Hawaii; Kadena AB and Yokota AB, Japan; Clark AB, Philippines; and Osan AB, Korea. The PRCs provide international reservations to all Department of Defense (DOD) agencies through the Passenger Reservation and Manifesting System (PRAMS).

This project examines the efficiency, responsiveness, and cost effectiveness of the military reservation system in light of operational and organizational constraints. A proposal is outlined to improve operations by integrating PRAMS with the Scheduled Airlines Traffic Office (SATO) system using a commercially designed Computerized Reservation System (CRS). A second proposal is outlined which organizationally realigns all DOD reservation functions under a unified transportation command. Both proposals result in improvements in efficiency, responsiveness, and cost effectiveness in the DOD reservation system.

There were several individuals who provided outstanding support to my efforts to develop this research project. Mr. Ed Maloney and Mr. James Ballenger, Delta Air Lines, provided a superb technical package of Delta's capability to integrate with the MAC system. Ms Gloria Roberson and Captain Tom Ollie, transportation personnel from Offutt AFB, Nebraska, and Maxwell AFB, Alabama, respectively, provided a great deal of technical assistance. Also, Ms Nancy O'Dea, Headquarters, Military Traffic Management Command, and Senior Master Sergeant Diane Berkebile, Headquarters, Military Airlift Command, provided support materials which were essential to the completion of this report.

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## ABOUT THE AUTHOR

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Major Whipp served three years enlisted service in the transportation career field as a passenger reservation specialist at McChord AFB, Washington. After attending the University of Arizona as an Airman Education and Commissioning Program student, he graduated in July 1974 with a Bachelor of Science degree in Marketing. He received his commission from Officer Training School in October 1974. In November 1974, he was assigned to Charleston AFB, South Carolina, as an Air Terminal Operation Center (ATOC) duty officer. In December 1975, he was assigned to Osan AB, Korea, where he was an ATOC duty officer and assistant air terminal manager. In January 1977, he was assigned to Hellenikon AB, Greece, as officer-in-charge of the ATOC. In August 1978, Major Whipp was selected to attend the University of Tennessee as an Air Force Institute of Technology master's degree candidate. He received a Master of Business Administration degree in transportation. In December 1979, he was assigned to Offutt AFB, Nebraska, as the traffic management officer. In January 1981, he was selected by Headquarters, Strategic Air Command, to work on the headquarters staff as a transportation plans officer. In November 1983, he was assigned to Rhein Main AB, Germany, as the director of the European Passenger Reservation Center. Major Whipp is currently a member of the Air Command and Staff College class of 1987.



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## EXECUTIVE SUMMARY



Part of our College mission is distribution of the students' problem solving products to DoD sponsors and other interested agencies to enhance insight into contemporary, defense related issues. While the College has accepted this product as meeting academic requirements for graduation, the views and opinions expressed or implied are solely those of the author and should not be construed as carrying official sanction.

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**REPORT NUMBER** 87-2715

**AUTHOR(S)** MAJOR RUSSELL J. WHIPP

**TITLE** COST SAVINGS POTENTIAL OF A COMMERCIAL RESERVATION SYSTEM FOR THE MILITARY AIRLIFT COMMAND

I. Purpose: To examine the responsiveness, efficiency, and cost effectiveness of the Department of Defense (DOD) passenger reservation system. The system is reviewed from both operational and organizational perspectives. The objectives are to compare operating capabilities of the Military Airlift Command (MAC) with those of the commercial industry, perform a cost/benefit analysis of alternative reservation systems, and make recommendations to higher headquarters for further review and action.

II. Problem: The MAC passenger reservation system lags behind available technology in the commercial industry. As a result, some travel specialists elect to send military travelers on flights using commercial vice cheaper military rates. In addition, within the DOD, overlapping and duplicative activities cause unnecessary costs and point decisively to the need for a single DOD passenger reservation management agency.

III. Data: There are 242 Passenger Reservation and Manifesting System (PRAMS) request channels in which the MAC tariff rates can be compared with Category Z and commercial tariff rates. On the average, MAC tariff rates are \$137 less than Category Z/commercial rates. In Fiscal Year 1985 (FY 85), there were 1,220,868 DOD international passengers. Only 698,927 of those travelers used MAC airlift while 521,941 DOD travelers used commercial airlift charged to the DOD at the Category Z/

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## CONTINUED

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commercial tariff rates. As a result, the DOD paid out an additional \$71.5 million over the amount MAC would have charged the travelers' organizations for equivalent service. To capture this market, MAC should try to provide services equal to, or better than, the commercial industry. Since there are over 500 Scheduled Airlines Traffic Offices (SATO) located around the world, MAC would benefit by a system in which the DOD traveler went directly to the SATO for travel services. There are commercial firms which have the ability to integrate the PRAMS data base with commercial airlines data bases through the use of a Computerized Reservation System (CRS). However, if MAC wanted to utilize the services of the SATOs, MAC would have to pay a reasonable commission of about 5% for each MAC flight sold, resulting in an annual cost of approximately \$30 million. The issue is further complicated by the existence of two data systems. MAC uses PRAMS while the Military Traffic Management Command (MTMC) uses the Passenger Traffic Management System (PASTRAM). In addition to a duplication of effort, the two systems result in many inefficiencies related to planning, analysis of traffic flows, and negotiations with the airlines.

IV. Conclusions: Operationally, MAC would realize an annual cost avoidance of \$41.5 million by using on-base travel agencies (e.g., SATOs). This cost avoidance would equate to a 6.9 percent reduction in system costs. Although short of the 10 percent savings target used by the DOD when reviewing the cost effectiveness of new DOD projects, the new system would also offer intangible benefits relating to customer service and satisfaction. Organizationally, consolidating the MAC and MTMC reservation functions under a single management agencies would result in many advantages. A single agency would be more responsive to system requirements because of integrated transportation planning. The new organization would be more efficient by eliminating the need for MAC and MTMC coordination of reservation functions and exchange of passenger movement data. Also, DOD would realize a cost avoidance because of cheaper airline rates resulting from the greater leverage a single agency would have in negotiations with the airlines.

V. Recommendations: HQ MAC/TRP should integrate the PRAMS data base with the commercial airlines data bases through a CRS and contract for reservation services from the travel agencies currently located on DOD installations. HQ USAF/LETX should review the MAC and MTMC passenger reservation operations to promote the consolidation of functions under one agency.

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## GLOSSARY

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Category A International Airlift: Transportation of passengers in less than planeload lots on a carrier's regularly scheduled commercial flight. Military Airlift Command (MAC) pays the carrier through direct billing to MAC. Users reimburse MAC at the common user rate.

Category B International Airlift: Transportation of passengers in full planeload lots on other than a carrier's regularly scheduled commercial flights. Payment to carrier via contract with MAC. Users reimburse MAC at the common user rate.

Category Y (Blocked Space) International Airlift: Transportation of passengers in blocks of 20 or more on a carrier's regularly scheduled commercial service, round trip, at round trip Category B passenger rates. Users reimburse MAC at the common user rate.

Category Z International Airlift: Individually ticketed passenger service procured by Government Transportation Request (GTR) by military agencies for their own use on scheduled commercial service. Payment, in accordance with carrier's filed tariff, made directly by user.

Commercial International Airlift: Individually ticketed passenger service procured by individual traveler for own use on scheduled commercial service. Payment made directly by individual traveler to airline's agency. Reimbursement made by the accounting authorization agency to the individual traveler.

(Definitions adapted from Military Airlift Command Regulation 76-1, Volume 1, Chapter 1, Attachment 1, 27 September 1983).

## Chapter One

### THE INTERNATIONAL PASSENGER RESERVATION SYSTEM

#### BACKGROUND

The Military Airlift Command (MAC) is responsible for international airlift procurement over MAC channels. For movement of nine or less passengers, a transportation office contacts MAC directly for a reservation. For a group of 10 or more, the transportation office sends the requirement to the Military Traffic Management Command (MTMC) Travel Support Branch. MTMC determines whether or not a MAC flight exists to meet the requirement, then contacts MAC for a reservation or, if required, procures commercial carrier direct service. The MAC reservation activity is the Passenger Reservation Center (PRC) (2:V-12, V-16).

The seven MAC PRCs are located as follows: Scott Air Force Base (AFB), Illinois; Rhein-Main Air Base (AB), Germany; Hickam AFB, Hawaii; Kadena AB and Yokota AB, Japan; Clark AB, Philippines; and Osan AB, Korea. The bulk of reservation requests and booking transactions are conducted via telephone to provide a prompt, efficient reservation service (9:2). Other communication modes include the Automatic Digital Network (AUTODIN), message, telex, and the Defense Data Network (DDN). Although it appears this should be adequate means of communicating, one of the major problems has been, and continues to be, communications between customers and the PRC. To alleviate this problem, MAC embarked on a concept of a worldwide Passenger Reservation and Manifesting System (PRAMS) to reach out much closer to the customer by providing greater access to the reservation computer data base (10:1).

PRAMS is the MAC worldwide data system used for booking all international flights. In addition to the PRAMS computer at Scott AFB, Illinois, MAC provided PRAMS terminals to all overseas PRC's as well as to some of the major users. Users arranged for dedicated communication to provide connectivity to the computer mainframe. Since over 600 Department of Defense (DOD) transportation offices input air travel requests to the seven PRCs, MAC is unable to provide PRAMS terminals with dedicated lines to all users. As a result, MAC is currently programming for PRAMS connectivity with DDN in order to make PRAMS available to all major users of MAC passenger airlift (9:2-3).

As a supplement to PRAMS, MTMC has its own data system, the Passenger Traffic Management System (PASTRAM). Whereas, PRAMS contains all of the bookings made by MAC that relate to international travel, PASTRAM contains bookings for groups of 10 or more, some Army recruits, and Army passengers traveling in groups of less than 10. As a result, there is some duplication of information in the MAC and MTMC systems. Also, neither system can tap into the data base of the other. This causes a split responsibility for commercial airlift between MAC and MTMC which impedes the integrated planning and analysis of all airlift operations and makes it difficult to evaluate DOD airlift requirements (2:V-16 - V-18). To resolve this problem, MAC provides, via AUTODIN, a daily passenger movement update to MTMC for use in data analysis. Also, MTMC has a PRAMS terminal primarily for booking Army unit port calls (14:1).

## SYSTEM MANAGEMENT

### Operational Issue

Operational control of DOD reservations dates back to a decision made on 7 December 1956. By order of the Secretary of Defense, the Air Force was designated to be the single manager for military airlift services and the Military Air Transport Service (MATS) was named the single manager operating agency for airlift services (1:36). Over the years, MATS evolved into the specified command known as MAC, while PRAMS was developed to provide fast and efficient airlift reservations. The DOD policy is to use MAC for international movement of DOD sponsored passengers when MAC airlift is available and meets mission requirements. When MAC is not available, DOD customers may arrange alternate capability through MAC or directly with commercial carriers (5:1). This policy has become a loophole in which DOD travelers desiring to avoid flying MAC can manipulate the system to fly commercially. In Fiscal Year 1985 (FY 85), only 57.2% of all DOD international travelers used MAC services. Conversely, 42.8% of DOD travelers used commercial or Category Z travel options (11:5). The issue is whether or not MAC can or should attempt to capture the DOD travel market which is not using MAC airlift.

### Organizational Issue

There are many problems and inefficiencies with the current system which indicate that improvements could be made. First, no single agency has visibility over all commercial and military airlift. This could be particularly significant during emergencies and in a wartime crisis when control over all airlift by one agency would enhance the responsiveness and efficiency of the airlift system. Second, both MTMC and MAC interface with the commercial carriers. This dual interface hinders the development of uniform policies concerning the use of commercial airlift. Third, there are built-in inefficiencies

that often result in increased cost. Coordination problems between MAC and MTMC occasionally result in unexpected delays for passengers at the aerial ports or the commercial gateways. Furthermore, the split responsibility sometimes fosters mistakes and poor judgment in selecting travel routes. Still another inefficiency is apparent in the use of two separate data systems by MAC and MTMC. This situation makes it difficult to coordinate reservations and to resolve any problems or errors that occur in the booking process. More importantly, the existence of two separate data systems hinders analysis of traffic patterns and passengers flows since information must be translated from one system to the other (2:V-18, V-19). The issue is whether or not reorganization of the existing passenger reservation system would result in any significant advantages to the DOD in terms of system responsiveness, efficiency, and cost effectiveness.

### ALTERNATIVES

There are two basic alternatives MAC can analyze to find a way to improve the operational capabilities of the reservation system. First, MAC can work to improve the existing system and, in particular, PRAMS. Since MAC already has a number of major efforts underway to do just that, this project will give only a cursory review of some of those efforts. The second approach MAC can take is to analyze commercial system operations to determine if there may be some application to the military reservation system. This second option will receive a detailed analysis.

There are three basic alternatives which the DOD can examine to develop an improved organizational structure. MAC could procure and manage all DOD passenger airlift. MTMC could procure and manage all DOD passenger airlift. A third option would be to realign all international passenger reservation functions under a Unified Transportation Command (UTC). Each of these alternatives will be reviewed in this paper.



## Chapter Two

### MAC VERSUS COMMERCIAL SYSTEM OPERATING CAPABILITIES

#### COST EFFECTIVENESS OF THE CURRENT MAC SYSTEM

An analysis of FY 85 travel statistics reveals that a significant segment of all DOD international travelers use Category Z or commercial travel instead of MAC procured airlift. The following table shows the FY 85 movement figures for all DOD international travel (11:5).

<u>Analysis of DOD International Air Passenger Traffic</u> <u>FY 85 Statistics</u>	
<u>Category of Travel</u>	<u>No. of Passengers</u>
B	529,914
Y	168,547
A	466
Z	438,011
Commercial	83,930
TOTAL	1,220,868

Table 1. FY 85 Statistics

Based on the FY 85 movement figures, it is possible to determine the dollar impact Category Z and commercial travel have on the system. There are 242 PRAMS request channels (see the appendix) in which the MAC tariff rates can be compared with Category Z/commercial rates (note that Category Z rates are categorized as equal to commercial rates). On the average, the MAC tariff rates are \$137 less than Category Z/commercial rates. Therefore, if MAC could have captured the 521,941 travelers that used Category Z and commercial travel, the cost avoidance to the DOD would have been \$71,505,917 (3:1-12). MAC should use a \$71.5 million base line to determine the cost effectiveness of any system that could capture the segment of DOD travelers using Category Z and commercial travel.

## A COMPARISON OF RESERVATION SERVICES

For several years, MAC has addressed the issue of "trying to make MAC's reservation system work very much like a commercial airline's system" (18:3). Although a significant amount of progress has been achieved in recent years by expanding PRAMS worldwide operating capabilities, system shortfalls do remain. Cost and manpower constraints make it impossible for MAC to maintain a system at the leading edge of technology. Each of the following functional descriptions define a capability found in commercial industry reservation systems (21:2-12). The codes preceding each functional description describe MAC's operating capabilities as follows: (1) Available in PRAMS, (2) Limited availability through other MAC-operated systems, and (3) Not available or offered by MAC.

### Functional Descriptions

(3) AUTOMATIC CHECK-IN: Designed to automate all passenger airport check-in procedures, including flight seat assignments on all originating, connecting, and onward destination flights. The system allows for a variety of seating options and agent entries designed to give the passenger their seating of choice.

(3) ADVANCE SEAT ASSIGNMENT: Allows an airline agent to pre-assign a specific seat to a passenger making a reservation or holding an existing reservation, in advance of their departure date. Seats may be pre-assigned up to 30 days prior to the scheduled departure time.

(3) ADVANCE BOARDING PASS: Allows an airline agent to issue an automated advance boarding pass to a passenger. An advance boarding pass may be issued at the time of booking a reservation, if the scheduled flight is no more than 30 days into the future.

(1) BOOKING FORECAST REPORT: Extracts inventory information from the host system and formats the information into user readable reports. Reports contain an inventory of all seats presently being held in the system over various origin and destination points.

(1) REAL TIME SCHEDULE CHANGE: Allows the user airline to perform flight schedule changes in the system on a real time basis. Multiple users may access the system at a given time. All user changes are held in memory until they have completed the schedule inputs and an activation command is given.

(3) SCHEDULE CHANGE AUTOMATIC REACCOMMODATIONS: Allows for automatic reservation reaccommodation based on a previously stored reaccommodation scheme table established by the user.

(3) DOUBLE/TRIPLE CONNECTIONS IN AVAILABILITY: Automatically displays double or triple connections in

availability. The display contains all flight information, times of departure and arrival, connecting cities, aircraft types, meal and classes of service offered as well as elapsed travel time.

(2) FIRST AVAILABLE FLIGHT SEARCH: Allows an agent to locate the first available flight, by class of service, by date range, within a given city pair.

(1) STATION DISPATCH REPORTS: Allows personnel to enter specific flight information into the system for downline station information as well as data collection.

(2) PRE/POST DEPARTURE FUNCTIONS: Helps prepare an agent for check-in and flight processing functions. The system provides flight pre-boarding passenger counts, passenger name lists, and special service requirements lists. In addition, the system allows the agent to automatically book no-show passengers, cancel no-show passengers, display inbound connections, and obtain preliminary and final meal counts.

(1) AIRLINE BOOKING REPORTS: Tracks and stores the number of reservations received in the host system from other carrier systems, and the number sent to other carriers from the host airline. Totals are maintained for each airline system.

(1) TRAVEL AGENCY BOOKING REPORTS: Tracks all bookings made by automated travel agencies. It provides a total number of reservations made into the systems by the agency community.

(3) SEAT INVENTORY CONTROL: Correlates past trends with future bookings. With this information, seat allocation decisions can be improved by accurately predicting the boarding for each departure.

(1) SIMILAR NAME SEARCH: Searches and identifies suspected similar bookings contained within the date range of the reservation system.

(2) ALPHABETICAL PASSENGER NAME LISTS: Alphabetically lists all passengers booked on a given flight.

(1) TRAVEL AGENCY HOSTING: Provides the capability of hosting travel agencies (major users) in the system for direct access and bookings. Users are provided with limited access and capabilities designed to meet the needs of the users.

(3) CURRENCY CONVERSION CAPABILITIES: Allows for foreign currency conversion.

(2) ENCODING/DECODING OF CITY, AIRLINE AND COUNTRY NAMES AND CODES: Provides for the automatic encoding/decoding of codes.

(2) OTHER AIRLINE SCHEDULES AND AVAILABILITY: Contains information as it relates to other airlines in the industry.

(3) ELAPSED FLIGHT TIME IN AVAILABILITY: The system computes and provides the elapsed travel time between time of flight departure and arrival at destination.

(2) INBOUND CONNECTION DISPLAY: Tracks and displays those passengers that are expected to board connecting flights at a given city.

(1) GROUP BOOKING REPORTS: Identifies and tracks reservations made for large groups of passengers. Reports are produced that provide the flight number, destination, date of travel, number of passengers and record locator.

(3) AUTO CONTROL PERCENTAGE OVERBOOKING PROFILE: Automatically controls the percentage of seats overbooked on flights according to historical trends for given city pairs, specific dates, or historical no-shows and load factors.

(1) SOLD NOTIFICATION LEVELS: Reservation control agents are notified when the flights reach a specified booking level.

(1) OVERBOOKING INHIBITORS: Prevents a flight from being oversold once a booking level has been reached.

(1) RETRIEVAL AND MONITORING OF TELETYPE MESSAGES: Designed to assign each message sent through the reservation system with a numerical code that identifies the message.

(3) CREDIT CARD VERIFICATION: Interfaces with a negative file of problem credit cards as reported to the host system from credit card companies.

(2) HOTEL RESERVATION SYSTEM: Designed to interface directly with hotel reservation system, this program allows an agent to quote hotel rates to a passenger and request accommodations and confirmations directly from a hotel property.

(2) CAR RENTAL: Designed to interface directly with automobile rental systems, this program allows an agent to quote car rental rates to a passenger and request accommodations and confirmations directly from a rental agency.

(1) AGENT PRODUCTIVITY PACKAGE: Each reservation agent can be monitored by the system to report total bookings, transactions, etc.

(1) ON-LINE INVENTORY MANAGEMENT REPORTS: A detail or summary on-line report can be requested for specific flights/dates.

## Analysis of Functional Descriptions

A comparison of capabilities in the MAC reservation system to services available in commercial industry systems reveals significant MAC shortfalls. Code (3) functional descriptions reflect services for which MAC has little or no similar capability. When MAC customers compare flying MAC with flying commercial, code (3) shortfalls represent some of the major irritants with MAC. Code (2) functional descriptions reflect those services which MAC has attained a comparable level of operation by integrating PRAMS with other computer systems (i.e., the MAC passenger processing system and commercial airlines' computer terminals located in the PRC). Code (2) services are only marginally effective because of limited accessibility by MAC customers, PRAMS connectivity problems, and MAC's general inability to keep up with rapidly improving technology in the commercial industry. MAC's limited application of code (2) services can be an irritant to MAC customers when the services do not function adequately to meet the travelers' needs. Code (1) functional descriptions reflect those services which MAC has attained a level of quality comparable with the commercial industry. MAC could improve customer satisfaction by adopting technology which would reduce the number of codes (3) and (2) services, thus increasing the number of code (1) services.

An analysis of the functional descriptions reveals some MAC limitations. Only 42 percent of the functions are code (1), while 26 percent are code (2) and 32 percent are code (3). To effectively compete with the commercial airlines, MAC must provide services which are comparable in quality. In other words, MAC must find a way to provide code (3) services such as automatic check-in, advance seat assignment, advance boarding passes, and so on down the list of functional descriptions. MAC must also improve its code (2) services such as first available flight search, pre/post departure functions, alphabetical passenger name lists, and so on, to insure the level of service is sufficient to maintain customer satisfaction. In some cases, the best option is to adopt new technology which raises the service level to a code (1). With a \$71.5 million base line to work from, MAC has a major incentive to improve services in an effort to capture the DOD travel market. However, if military users are satisfied with the reservation system, then the shortfalls may not be significant.

To get the viewpoint of some users of the system, the author interviewed five SATO and traffic management personnel from Maxwell AFB and Gunter Air Force Station, Alabama (24:Int). Responses indicated an overwhelming need for better reservation services. One respondent stated, "We need to change the system. DOD movements are becoming too complex to expect a PRC system to be effective. With the number of commercial bookings, we should require the commercial sector to become actively involved through contracting out." Another respondent put it this way, "The biggest problem is communication with the PRCs. It's

impossible to talk with a passenger, get requirements, confirm reservations, and issue travel documents with just one visit by the passenger to the TMO. In my opinion, the best system would be to use the SATOs to book international travel arrangements for all categories of travel." Based on the author's experience, these comments are typical of those held by travel clerks throughout the system. Both the attitudes of system users and functional services' limitations indicate a need for operational improvements in the DOD reservation system.

One way MAC can attain operational improvements in the system would be to adopt commercial technology to advance or replace PRAMS. Airlines, travel agencies, and private industry offer some interesting possibilities. The next chapter will analyze the operational system alternatives and a possible combination of some of those unique capabilities into a new system for making airline reservations.

## Chapter Three

### OPERATIONAL SYSTEM ALTERNATIVES

#### Commercial Industry Options

Although PRAMS gives the military a high degree of security for MAC operated or contracted flights, the reservation services provided via the system do not favorably compare with the commercial industry. Airlines, travel agencies, and private corporations promoting advanced reservation systems offer insights into possible improvements for the military system. Delta Air Lines, Inc., agreed to review the feasibility of utilizing Deltamatic systems to replace PRAMS. The SATO at Maxwell AFB, Alabama, provided data to analyze the potential for making MAC reservations directly through the SATOs. CCS Automation Systems, Inc., sent a comprehensive package for an automated reservation and communication systems titled Shared Airline Reservation System (SHARES). Features of these three systems, representative of the airlines, travel agencies, and private industry, respectively, are compared to determine their adaptability to military requirements.

#### FLIGHT AVAILABILITY

##### Airline

The Delta Automated Travel Account System (Datas II) stores and displays only domestic and international scheduled flights; it cannot store any of the MAC flights. However, Delta has a Multi-Host package which MAC could lease. The package would allow MAC Category B flights to be stored and their seat inventory automatically adjusted after each sale. However, Delta points out, this package cannot store or adjust seat inventories for Categories Y or A flights. Since Categories Y and A flights carry an airline designation instead of a MAC flight designation, the flights would not interface with the Multi-Host package (23:1, 2). Delta would need to accomplish significant program changes to ensure the Delta system could handle the capabilities required by MAC.

##### Travel Agency

SATO is the airline owned and operated corporation which provides commercial travel services, both official and

unofficial, for military and DOD civilian personnel. SATO operates approximately 500 office locations throughout the 50 states, the District of Columbia, and Puerto Rico. Each SATO is automated with equipment installed by the vendor/airline operating the individual SATO (25:1). Because of the variety of commercial reservation systems in operation, the SATOs would experience the same flight availability constraints identified for Delta, but the constraints would be further complicated by the multitude of systems.

### Industry

MAC could obtain a partition in SHARES which would allow for input of all MAC flights. The flight availability display can be tailored to meet specific marketing requirements. The system is designed to meet the growing needs of the airline industry (20:2).

## SYSTEM ACCESS

### Airline

Delta has four distinct reservation programs. Due to security reasons, there is no crossing over from one system to another. Because of the four systems and their associated security, access to whichever system MAC happened to be on would be restricted. Therefore, the security restrictions would defeat the theory of providing a larger booking source for the DOD traveler (23:1).

### Travel Agency

The installation transportation officer monitors reservation services provided by the SATO and insures compliance with the memorandum of understanding between the DOD and SATO, Inc. Traffic management personnel may operate a SATO's computerized reservation systems (CRS) to make reservations, to confirm fare levels, and to input customer data (25:3). As a result, the military has direct access to all SATO reservation functions. However, the SATO systems do not have access to Category B flights and only limited visibility over Categories Y and A flights. However, DOD travelers routinely obtain commercial and Category Z reservations through the SATOs.

### Industry

SHARES has been designed to provide an extensive array of software applications for use in both the reservations and airport operations of domestic and international carriers. The system is designed to provide each participant with its individual partition so that data for that particular carrier is accessed only by that airline (19:2). However, each SHARES user has access to over 300 airlines through the Shared Other Airline and Availability Data Base (20:2).



## ADAPTABILITY OF COMMERCIAL SYSTEMS TO MAC REQUIREMENTS

### Airline

The Delta proposal identifies shortfalls in both flight availability and system access. The inability to manage Category Y flights and the security restrictions of Delta's four systems make it unfeasible to adapt the system to MAC requirements. However, Delta has provided computer time to the PRC at Scott AFB, thus giving MAC direct access to Delta's commercial passenger computer reservation system (22:1). Although this access gives MAC visibility over commercial rates, there is no means to load Category B flights into the system.

A partial solution would be to expand the Delta computer access at the PRC by installing more computerized reservation equipment and loading MAC flights into the Delta Multi-Host system. This would give MAC the ability to have visibility over Category B flights in the commercial reservations system. There would be two major deficiencies in this concept. First, since the system would not have visibility over all MAC flights, it would result in the proliferation of computer terminals at the PRC. The PRC would have to maintain all existing computer terminals to manage the flights not in Multi-Host plus have a large quantity of Delta terminals on hand to manage the work load in that system. Second, since the reservation activity would still be centralized at the PRC, this concept would do nothing to alleviate the problem with communications into the PRC.

### Travel Agency

The idea of contracting with SATO, Inc., to have each SATO issue military reservations is attractive. Since there are over 500 SATOs in existence, the infrastructure already exists to make the concept feasible at a low cost to the government. Of major significance, the communication problems associated with military travel offices contacting the PRC would be resolved. Also, since most military travelers are already aware of the services of the SATO, it would be relatively easy to educate the public about the new system. So, on the surface, this seems to be an acceptable solution. Unfortunately, there are some complications.

Using SATOs for military reservations cannot be accomplished with the existing system. The major problem is flight availability. Because of the numerous CRSs involved, it would be nearly impossible to load MAC flights into each commercial reservation system and keep everything current. In addition, since SATOs have no anti-trust immunity, they must bid for SATO locations competitively with other travel agencies. Therefore, it is probable that some SATOs will be replaced with other travel agencies who present a lower bid when the contract at an individual SATO comes up for renewal. Because of these

limitations, it would be impractical to contract with SATO, Inc., for reservation services on MAC flights.

### Industry

SHARES meets both the flight availability and system access requirements necessary to effectively transition the MAC system from a military access only system to a shared access with the commercial industry. However, it does not resolve the communication problems associated with the centralized PRC reservation system.

### AIRLINES RESERVATION SYSTEM (ARS)

HQ MAC/TRP should combine the advantages associated with services provided by a travel agency and computerized support available in private industry to develop a new military reservation system. The new system could be called the ARS. For descriptive purposes, SHARES and SATO are used to describe the new system. However, the proposal is applicable to any substitute activities offering essentially the same capabilities. Under the new concept, the name of the PRC would be changed to Airlines' Reservation Center (ARC). The ARC would be the operational agency designated to manage the new reservation system.

### SHARES

A partition in SHARES would give the ARC the capability to integrate flight data from SATOs, PRAMS, and commercial airlines. SHARES could pull Category B flight data from PRAMS and Categories Y and A data from the commercial airlines. Access to SHARES could be security coded so only the SATOs and selected agencies would have visibility over military flights. When the SATO pulled up a military channel, SHARES would integrate all categories of travel to offer the widest range of possibilities. In turn, SHARES would automatically adjust Categories Y and A seats loaded in the commercial airlines computers and adjust the Categories B, Y, and A seat inventories reflected in PRAMS. Also, SHARES could provide the ARC with data reflecting DOD travel at commercial and Category Z tariff rates. SHARES offers the possibility of a new operational arena in which PRAMS data and the commercial airlines data remain current at all times.

### The ARC

The ARC would retain many of the functions that the PRC performs today. It would retain its Capability Control Branch to manage and do reservations on all Categories B, Y, and A seats in PRAMS. Installation transportation offices would refer complex reservation problems directly to the Capability Control Branch for resolution and bookings. The Plans and Analysis

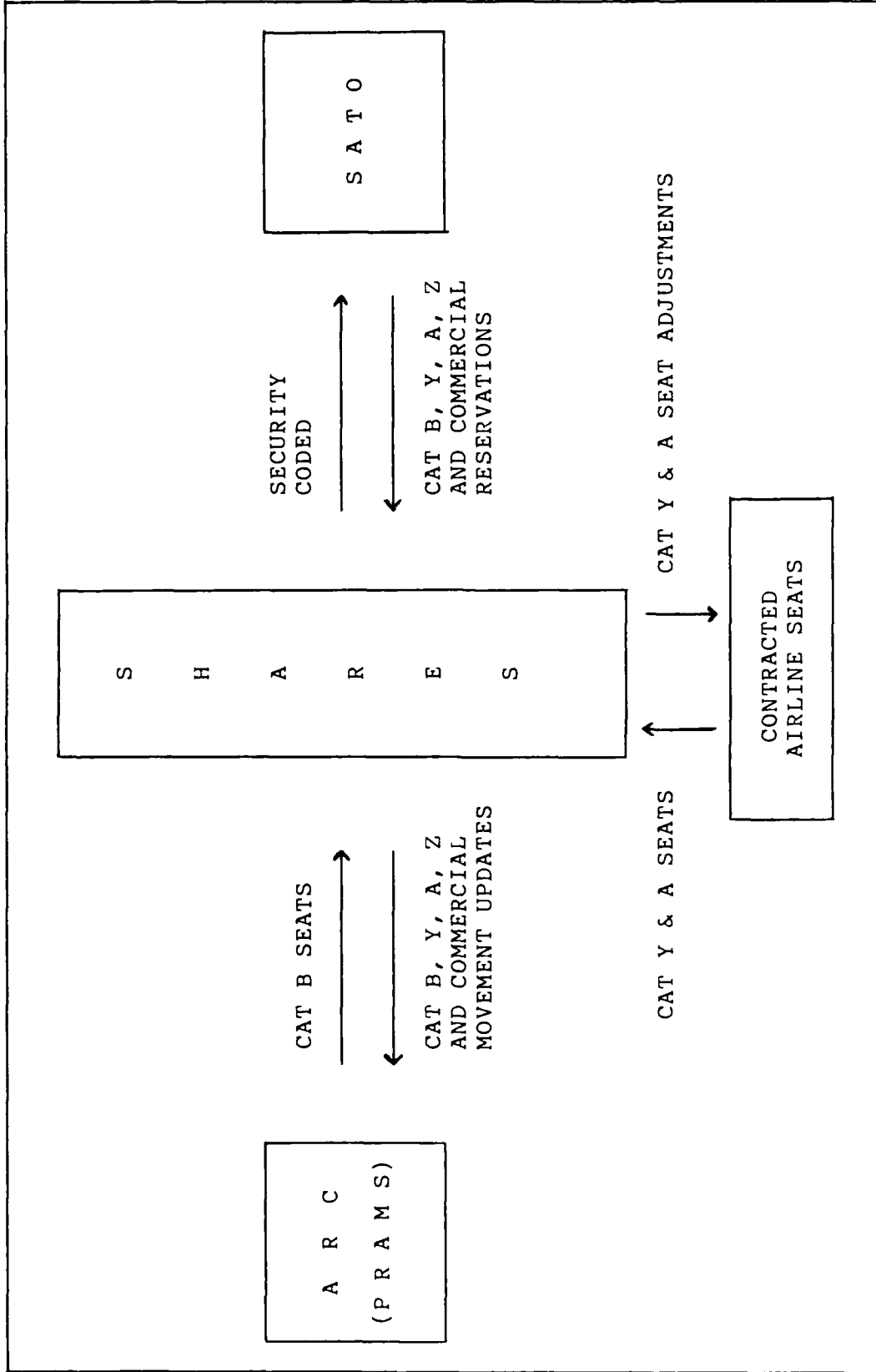


Figure 1: Airlines Reservation System (ARS)

Branch would continue to plan for future advancements and conduct passenger movement statistical analysis. The Customer Programs/Training Branch would work directly with the SATOs in order to resolve problems and provide training as required. Since the SATO would be making most reservations, the Reservation Branch would be eliminated. For those unique movement requirements which the SATO refers to the ARC, the Capability Control Branch would have the responsibility to make those reservations. Essentially, the ARC would parallel the functions of the PRC except for the elimination of the Reservation Control Branch.

#### Contracted Airline Seats

SHARES would be designed to automatically pull any military block of seats contracted on commercial airlines (Categories Y and A). The block of seats would be made available to the SATO for booking. When the SATO completed the transaction, SHARES would automatically adjust the seat availability and assign the passenger's name in the commercial airline data base as well as the PRAMS data base. In this way, SHARES would resolve the problem MAC has with updating Categories Y and A flight information.

#### SATO

The SATO would have controlled access to the military flight information in SHARES. In order to implement this system, the SATO contract would have to be rewritten to require SATO employees to utilize seats available through SHARES before a commercial seat could be sold. MAC would have to pay SATO a commission on every SHARES seat "sold." A reasonable commission would be 5% of the MAC tariff rate. Since the MAC system does approximately \$600 million annually in passenger airlift business, MAC would pay out about \$30 million annually in commissions. This cost would be offset by the improved utilization of MAC airlift, reduced manpower in the ARC as compared to the PRC, and leverage by MAC to obtain lower rates. By applying the \$71.5 million cost effectiveness base line, MAC could realize a \$41.5 million cost avoidance under this proposal. Also, using the SATO for military reservations would result in a dramatic improvement in customer service compared with the existing military reservation system.

#### ARS Advantages

"In Oct 85, the MAC PRC took action to bring DOD passengers back to MAC" (6:1). Creation of the ARS could be a significant step in MAC's efforts to capture the DOD market. The major advantage of the system would be the significant improvement in operations from the perspective of the traveler. The traveler would experience the one-stop convenience of going to the SATO for all movement requirements. This concept would blend particularly well with MAC's "Port Call Enhancement Program"

aimed at reducing the DOD member's waiting time to receive a port call (13:1-2). MAC is in the process of converting many of the Category B channels to Category Y channels (16:1-2). As the conversion gains momentum, travelers going to the ARS would perceive they are flying commercial while in fact receiving a Category Y reservation. The result would be that most DOD passengers would fly in the MAC system.

The ARS concept offers distinct improvements in the peacetime operation of the PRC. Plus, it would enhance the contingency/wartime requirements of the reservation system. Air Force guidance states, in a contingency/wartime scenario, "the existing SATO system will continue to be used for official travel and specifies that SATOs may be obtained for new locations where a contingency or wartime mission has been identified" (17:1). The ARS would integrate perfectly with the use of SATOs in a contingency/wartime environment while creating a back-up system for a worst case scenario. PRAMS would offer a stand-alone operating capability if SHARES became inoperable. In turn, SHARES would provide a limited operating capability if PRAMS temporarily went down. ARS makes sense from both a peacetime and contingency/wartime operating perspective.

## Chapter Four

### ORGANIZATIONAL STRUCTURE ALTERNATIVES

#### RATIONALE FOR REORGANIZATION

There are two systems involved in the issuance of military reservations. MAC uses PRAMS to monitor the procurement and management of long-term airlift and MAC-channel international airlift. MTMC uses PASTRAM to monitor the procurement of short-term domestic airlift and for coordinating group requirements (10 or more) of international airlift. This split responsibility for commercial airlift between MTMC and MAC impedes the integrated planning and analysis of all airlift operations and makes evaluation of the DOD airlift requirements in its totality very difficult. The dual interface of MAC and MTMC with the commercial airlines results in a failure to maximize DOD leverage with the carriers for negotiation of rates and conditions of service. Also, two separate data systems are used by MAC and MTMC. In order to perform analysis of traffic patterns and passenger flows, information must be translated from one system to the other through a subsystem. The use of two computer systems results in duplication of effort and overall inefficiencies in the military reservation system as a whole (2:V-1 - V-19). Clearly, DOD should review available options to eliminate organizational problems in the current reservation system.

DOD should critically review the organizational structure in light of potential alternative formations. First, DOD could designate MAC to be the single agency for all DOD passenger airlift reservations. Second, DOD could direct MTMC to enhance the PASTRAM system in order to handle all DOD passenger airlift reservations. Third, DOD could realign all reservation functions under the UTC. Each option has pros and cons. Finally, DOD could maintain the status quo if no major improvements can be achieved through reorganization. This report will analyze the three organizational alternatives to determine which one could most effectively replace the existing system.

#### MAC: A SINGLE MANAGER FOR ALL DOD RESERVATIONS

By establishing MAC as the single manager for all DOD reservations, the MAC PRC would have better visibility and

control over commercial and military airlift, thus enabling the DOD reservation system to respond more rapidly to requirements during peacetime, emergency, and wartime. The PRC's improved visibility over airlift would facilitate the consolidation of passenger requirements and the development of a more rational configuration of routes. The PRC is currently attempting to improve routes through the expansion of Category Y channels (4:1). Substantial cost savings would result from consolidation of passenger flows. MAC would probably be able to negotiate reduced rates for military travelers as a result of the leverage associated with the larger volume of business (2:V-24, V-25). This alternative thus offers some important peacetime and contingency/wartime advantages.

There are some drawbacks as well to the proposal to make MAC the single manager for all DOD reservations. The existing reservation system works reasonably well. The overall impact of a single manager for DOD reservations on the responsiveness of the system would probably be minimal. In addition, MTMC would still be responsible for mode selection for groups of 10 or more while MAC would perform the procurement, routing, and booking functions. Thus, MTMC and MAC would still have to maintain close coordination for groups of 10 or more (2:V-24, V-25). Although these disadvantages should be considered, they are fairly insignificant compared to the advantages.

#### MTMC: A SINGLE MANAGER FOR ALL DOD RESERVATIONS

There are numerous advantages associated with making MTMC the single manager for all DOD reservations. MTMC would have improved visibility over commercial and military airlift. This would permit more integrated transportation planning and facilitate the interchange of commercial and military aircraft during emergencies and war. Having a single manager for DOD reservations would lead to improved coordination with the airlines. This concept would also eliminate the need for the close coordination between MTMC and MAC. It would also result in more passenger movement consolidation and probably an improved system of routes. There is the potential for cost savings resulting from passenger consolidation and improved routes (2:V-25 - V-27). For all of these reasons, this is an attractive alternative.

On the negative side, MTMC might experience difficulty in adapting to the new requirements. MTMC would have to upgrade its PASTRAM system to handle a significant increase in volume. A large increase in personnel would be needed to handle the workload although the number would probably be offset by a decrease in MAC PRC personnel. All MAC's expertise and support systems that are currently used for international airlift management would be dismantled with no guarantee that the expanded MTMC organization could manage the airlift function efficiently (2:V-26, V-27). These drawbacks, although they

could be worked around, make this alternative somewhat unattractive.

## UTC: A SINGLE MANAGER FOR ALL DOD RESERVATIONS

### Background

In January 1987, the Chairman of the Joint Chiefs of Staff approved the creation of the UTC to provide global sea, land, and air transportation to meet the strategic mobility requirements of the United States in support of national security objectives (12:5). Although not yet signed by the President, the creation of a UTC is highly probable. Scott AFB, Illinois, is the planned site for the UTC (8:1). The three Transportation Operating Agencies, MAC, MTMC, and Military Sealift Command (MSC), will become the component commands of the UTC (15:3). The UTC will have a major impact on many aspects of transportation operations.

The UTC's concepts of operations identify a potential impact for the MAC PRC. The UTC will "set policy, in coordination with the services, and supervise booking and reservation systems" (12:13). In peacetime, the UTC will exercise directive authority over MAC, MSC, and MTMC for strategic mobility planning, mode optimization, and integration of automated information systems for transportation and deployment planning and execution (15:4). In wartime, the UTC will "direct, coordinate, and monitor wartime transportation system operations" (15:6). Both the peacetime and wartime operational concepts allow for the integration of the PRC into the UTC to meet mission requirements. However, the current plans are for the services to retain their passenger reservation functions (7:2).

### Consolidation of Reservation Functions Under the UTC

Improved responsiveness: Having all reservation functions under the UTC would permit integrated transportation planning for commercial and military airlift. The result would be a more responsive airlift system to meet both peacetime and contingency/wartime requirements. The UTC could become the single agency to interface with the commercial airlines; thus, it would eliminate the duplication of effort and lack of coordination which sometimes occurs when MAC and MTMC both deal with the airlines. The airlines would probably be more responsive to a single transportation agency especially if the UTC developed more uniform policies concerning the use of commercial airlift. The UTC could use its authoritative position to enhance the CRAF concept by directing larger quantities of business to CRAF airlines.

Improved efficiency: Consolidating reservation activities under the UTC would eliminate the need for MTMC and MAC to coordinate reservation activities and exchange passenger



movement data. There would be only one management information system for reservation services; thus, automated data processing requirements would be reduced. Furthermore, the UTC would be able to make a comprehensive evaluation of worldwide passenger flows and identify opportunities for new routes. This would help to eliminate some of the inefficiencies of circuitous travel often resulting from the present route structures.

Cost effectiveness: The DOD could realize a substantial cost avoidance by improved route structures that prevent the necessity for circuitous travel which sometimes results in overnight lodging at airports, expensive commuter flights to get to a final destination, and a negative impression by the traveler who resolves never to fly MAC again. In addition, the UTC may be able to obtain reduced rates from the airline because of the volume of business it would conduct.

#### ORGANIZATIONAL STRUCTURES PRIORITIZED

The recommended organizational structure would be to realign the MAC and MTMC reservation functions under the UTC. This alternative offers the greatest advantages when analyzed from responsiveness, efficiency, and cost effectiveness perspectives. Since "the primary goal of the command is transportation system readiness for wartime operations" (15:1), a realignment of all reservation functions under the UTC would provide the best operational alternative to meet wartime requirements

The second best organizational structure would be to realign MTMC reservation functions under MAC. Although this would not resolve all passenger movement issues between the two commands, it would result in some advantages in responsiveness, efficiency and cost effectiveness in overall system operation. It would also make it easier for the UTC to integrate the reservation system into wartime plans. To designate MAC as the single manager for reservation activities would work reasonably well.

The third best organizational structure would be to realign MAC reservation functions under MTMC. This alternative is less attractive than the first two since it would require a major upgrade of MTMC's PASTRAM system, a large increase of MTMC transportation personnel, and would result in the dismantling of PRAMS. Nevertheless, it would result in some improvements in responsiveness, efficiency, and cost effectiveness. To designate MTMC as the single manager for reservation activities could be made to work.

The existing structure for DOD reservations works reasonably well. It is, however, the least attractive alternative. To improve peacetime operations and to fulfill wartime mission requirements, now is the right time to consolidate all reservation functions under one single manager.

## Chapter Five

### SUMMARY

#### CONCLUSIONS

The international passenger reservation system is plagued with a number of shortfalls. Operationally, the system lags behind the technology of the commercial industry. As a result, the MAC system is often unfavorably compared with features found in the commercial reservation industry. Organizationally, MAC and MTMC have individual reservation systems. The two operations result in some lack of responsiveness and inefficiency in the overall system in dealing with both the MAC customer and the airline industry. Both the operational and organizational shortfalls need to be addressed by the DOD to insure the most efficient reservation system is maintained.

The use of Delta Air Lines, SATO, and SHARES throughout this research project was intended to be representative of their respective industries. Delta could have been replaced with any airline. SATO could have been replaced with any travel agency operating under DOD contract. SHARES could have been replaced with any commercial firm offering computerized reservation services for use by the airline industry. Although the commercial airlines cannot effectively interface with the MAC reservation system, travel agencies and newly developed computerized reservation systems offer some interesting possibilities.

If MAC adopted the ARS concept of operations, a significant cost avoidance could be realized. In FY 85, 521,941 DOD travelers used Category Z and commercial travel at an additional expense to the DOD of approximately \$71.5 million. By using the ARS concept, MAC payments to travel agencies would have been \$30 million. If the Category Z and commercial travelers had used MAC-procured airlift under the ARS concept, MAC would have realized a net cost avoidance of \$41.5 million. Although the net result, a 6.9% reduction in system costs, falls short of the 10% cost savings target for DOD projects, other factors should be considered. The ARS would simplify the passenger reservation system in the eyes of the DOD traveler resulting in higher customer satisfaction. Also, there would be an additional cost avoidance resulting from a reduction of MAC passenger reservation clerks since most of the reservation functions would be accomplished by the SATOs. From an operational perspective, the ARS concept offers both tangible and intangible benefits.

From an organizational perspective, consolidating the MAC and MTMC reservation functions under the UTC would result in responsiveness, efficiency and cost effectiveness benefits. Responsiveness would be improved through integrated transportation planning. Efficiency would be improved by eliminating the need for MAC and MTMC to coordinate reservation functions and exchange passenger movement information. The DOD would realize a cost avoidance by improved route structures and cheaper airline rates because of greater leverage in negotiations with the airlines. From an organizational perspective, consolidating MAC and MTMC reservation functions offers both tangible and intangible benefits.

#### RECOMMENDATIONS

HQ MAC/TRP should initiate action to analyze the feasibility of an ARS to replace the existing reservation system. This would require review of the DOD contracts with travel agencies on military installations to determine the applicability of giving commissions to travel agencies for "selling" MAC flights. It would also require review of commercial industry computerized reservation services to determine whether or not any system would effectively interface with MAC PRAMS.

HQ USAF/LETX should review the feasibility of combining all military reservation functions under the operational control of the UTC.

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## APPENDIX

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MAC VERSUS COMMERCIAL TARIFFS COST COMPARISONS



APOE	TYPE SVC B Y M A	MAC TARIFF *	CAT Z/ COML TARIFF *
ADANA, TURKEY			
J F KENNEDY IAP NY	M/Y	429	600
PHILADELPHIA PA	M/B	429	634
ANCHORAGE AK			
SEATTLE WA	Y	119	169
ASCENSION ISLAND			
PATRICK AFB FL	M	435	N/A
ATHENS GR			
NORFOLK VA	B	444	536
PHILADELPHIA PA	B	412	499
ATLANTA GA			
FRANKFURT GE	Y	322	473
HONOLULU HI	Y	279	292
LONDON UK	Y	295	433
AVIANO IT			
PHILADELPHIA PA	B	281	391
BRADLEY IAP, WINDSOR LOCKS CT			
PRESTWICK, SCOTLAND	B	370	397
CHARLESTON SC			
HOWARD AB PN	B/M	150	286
PALMEROLO, HONDURAS	M	112	235
PRESTWICK, SCOTLAND	B	470	472
RHEIN-MAIN AB GE	B	305	459
CIGLI, TURKEY			
J F KENNEDY IAP NY	M/Y	451	585
PHILADELPHIA PA	M/B	451	619

\* As of 1 Oct 86

APOE	TYPE SVC B, Y, M, A	MAC TARIFF	CAT Z/ COML TARIFF
CLARK AB RP			
GUAM	B/M	134	218
HONOLULU HI	B/M	418	526
LOS ANGELES CA	B	500	603
OAKLAND CA	B	479	603
SAN FRANCISCO CA	B	479	719
ST LOUIS MO	B	629	861
DALLAS-FT WORTH TX			
FRANKFURT GE	Y	338	527
HONOLULU HI	Y	245	279
LONDON UK	Y	312	359
DIEGO GARCIA			
LOS ANGELES CA	M/B	821	N/A
OAKLAND CA	M/B	799	N/A
PHILADELPHIA PA	B	934	N/A
NORFOLK VA	B	953	N/A
FRANKFURT GE			
ATLANTA GA	Y	322	473
DALLAS-FT WORTH TX	Y	338	527
J F KENNEDY IAP NY	Y	269	396
LOS ANGELES CA	Y	382	575
O'HARE IAP IL	Y	323	470
PHILADELPHIA PA	Y	269	405
SAN FRANCISCO CA	Y	382	582
ST LOUIS MO	Y	323	486
WASHINGTON DC	Y	321	398
GOOSE BAY, NEWFOUNDLAND			
MCGUIRE AFB NJ	M	93	308
GRAND BAHAMA IS, BAHAMAS			
PATRICK AFB FL	M	25	78
GUAM			
CLARK AB RP	B/M	134	218
HONOLULU HI	B/Y	278	313
LOS ANGELES CA	B/Y	346	423
MANILA RP	Y	134	218
OAKLAND CA	Y	346	423
SAN FRANCISCO CA	Y	346	423

APOE	TYPE SVC B Y M A	MAC TARIFF	CAT Z/ COML TARIFF
GUANTANAMO, CUBA			
NORFOLK VA	B	125	N/A
HAMBURG GE			
J F KENNEDY IAP NY	Y	299	396
HONOLULU HI			
ATLANTA GA	Y	279	292
CLARK AB RP	B/M	418	526
DALLAS-FT WORTH TX	Y	245	279
GUAM	B/Y	278	313
J F KENNEDY IAP NY	Y	282	297
LOS ANGELES CA	B/Y	135	143
MANILA RP	Y	418	526
NAHA JA	Y	365	438
NARITA IAP JA	Y	304	394
OAKLAND CA	Y	127	137
SAN FRANCISCO CA	Y	127	137
SEATTLE WA	Y	194	236
SEOUL, KOREA	Y	359	470
ST LOUIS MO	Y	271	313
HOWARD AB PN			
CHARLESTON SC	B	150	286
IWAKUNI JA			
LOS ANGELES CA	M/Y	460	589
J F KENNEDY IAP NY			
ADANA TU	Y/M	429	600
CIGLI TU	Y/M	451	585
FRANKFURT GE	Y	269	396
HAMBURG GE	Y	299	396
HONOLULU HI	Y	282	297
LONDON UK	Y	240	356
MADRID SP	A	287	370
MUNICH GE	Y	291	402
STUTT GART GE	Y	282	396
TEGEL APT, BERLIN GE	Y	303	408

APOE	TYPE SVC B Y M A	MAC TARIFF	CAT Z/ COML TARIFF
KADENA AB, OKINAWA JA			
LOS ANGELES CA	B	480	661
OAKLAND CA	B	459	606
ST LOUIS MO	B	610	770
KEFLAVIK, ICELAND			
NORFOLK VA	B	260	275
PHILADELPHIA PA	B	238	277
KUNSAN AB, KOREA			
OAKLAND CA	B	413	604
ST LOUIS MO	B	532	745
KWANGJU AB, KOREA			
OAKLAND CA	B	419	604
ST LOUIS MO	B	535	745
LAJES, AZORES			
MCGUIRE AFB NJ	M	232	593
PHILADELPHIA PA	B	232	494
LONDON UK			
ATLANTA GA	Y	295	433
DALLAS-FT WORTH TX	Y	312	359
J F KENNEDY IAP NY	Y	240	356
LOS ANGELES CA	Y	352	538
PHILADELPHIA PA	Y	240	356
SAN FRANCISCO CA	Y	352	532
WASHINGTON DC	Y	277	358
LOS ANGELES CA			
CLARK AB RP	B	500	603
DIEGO GARCIA	B/M	821	N/A
FRANKFURT GE	Y	382	575
GUAM	B/Y	346	423
HONOLULU HI	B/Y	135	143
IWAKUNI JA	B/Y	460	589
KADENA AB, OKINAWA JA	B	480	661
LONDON UK	Y	352	538
MANILA RP	Y	500	753
NAHA JA	Y	480	661
NARITA, TOKYO JA	Y	382	562
OSAKA JA	Y	460	589
SEOUL, KOREA	Y	430	638

APOE	TYPE SVC B, Y, M, A	MAC TARIFF	CAT Z/ COML TARIFF
MADRID SP			
J F KENNEDY IAP NY	A	287	370
MANILA RP			
GUAM	Y	134	218
HONOLULU HI	Y	418	526
LOS ANGELES CA	Y	500	753
OAKLAND CA	Y	479	719
SAN FRANCISCO CA	Y	479	719
SEATTLE WA	Y	522	687
ST LOUIS MO	Y	629	861
MCGUIRE AFB NJ			
GOOSE BAY, NEWFOUNDLAND	M	93	308
LAJES, AZORES	M	232	593
SONDRESTROM AB, GREENLAND	M	170	481
ST JOHN'S, NEWFOUNDLAND	M	99	275
THULE AB, GREENLAND	M	234	N/A
MILDENHALL AB UK			
PHILADELPHIA PA	B	240	356
MISAWA, JAPAN			
OAKLAND CA	M/B	384	664
ST LOUIS MO	M/B	505	783
MUNICH GE			
J F KENNEDY IAP NY	Y	291	402
WASHINGTON DC	Y	335	426
NAHA JA			
HONOLULU HI	Y	365	438
LOS ANGELES CA	Y	480	661
OAKLAND CA	Y	459	606
SAN FRANCISCO CA	Y	459	606
SEATTLE WA	Y	452	595
ST LOUIS MO	Y	610	770
NAPLES IT			
PHILADELPHIA PA	B	271	509

APOE	TYPE SVC B, Y, M, A	MAC TARIFF	CAT Z/ COML TARIFF
NARITA IAP, TOKYO JA			
HONOLULU HI	Y	304	394
LOS ANGELES CA	Y	382	562
OAKLAND CA	Y	359	528
O'HARE IAP, CHICAGO IL	Y	480	646
SAN FRANCISCO CA	Y	359	528
SEATTLE WA	Y	378	496
ST LOUIS MO	Y	480	647
WASHINGTON DC	Y	534	708
NORFOLK VA			
ATHENS GR	B	444	536
DIEGO GARCIA	B	953	N/A
GUANTANAMO, CUBA	B	125	N/A
KEFLAVIK, ICELAND	B	260	275
ROTA, SPAIN	M	297	452
SIGONELLA IT	B	355	547
OAKLAND CA			
CLARK AB RP	B	479	603
DIEGO GARCIA	B/M	799	N/A
GUAM	Y	346	423
HONOLULU HI	Y	127	137
KADENA AB, OKINAWA JA	B	459	606
KUNSAN AB, KOREA	B	413	604
KWANG JU AB, KOREA	B/M	419	604
MANILA RP	Y	479	719
MISAWA AB JA	B/M	384	664
NAHA JA	Y	459	606
NARITA IAP, TOKYO JA	Y	359	528
OSAN AB, KOREA	B	407	604
SEOUL, KOREA	Y	407	604
TAEGU AB, KOREA	B/M	403	604
YOKOTA AB JA	B	359	528
OSAKA JA			
LOS ANGELES CA	Y	460	589
SAN FRANCISCO CA	Y	439	536
OSAN AB, KOREA			
OAKLAND CA	B	407	604
SAN FRANCISCO CA	B	407	604
ST LOUIS MO	B	528	745

APOE	TYPE SVC B Y M A	MAC TARIFF	CAT Z/ COML TARIFF
PALMEROLO, HONDURAS			
CHARLESTON SC	M	112	235
PATRICK AFB FL			
ASCENSION ISLAND	M	435	N/A
GRAND BAHAMA IS, BAHAMAS	M	25	78
ST JOHN'S, ANTIGUA	M	116	260
PHILADELPHIA PA			
ADANA, TURKEY	B/M	429	634
ATHENS GR	B	412	499
AVIANO AB IT	B	281	391
CIGLI TU	B/M	451	619
DIEGO GARCIA	B	934	N/A
FRANKFURT GE	Y	269	405
KEFLAVIK, ICELAND	B	238	277
LAJES, AZORES	B	232	494
LONDON, UK	Y	240	356
MILDENHALL AB UK	B	240	356
NAPLES IT	B	271	509
RHEIN-MAIN AB GE	B	269	405
ROTA SP	B	287	433
SIGONELLA IT	B	355	432
ST JOHN'S, NEWFOUNDLAND	B	99	264
PRESTWICK, SCOTLAND			
BRADLEY IAP CT	B	370	397
CHARLESTON SC	B	470	472
RHEIN MAN AB GE			
CHARLESTON SC	B	305	459
PHILADELPHIA PA	B	269	405
ST LOUIS MO	B	323	486
ROTA SP			
NORFOLK VA	M	297	452
PHILADELPHIA PA	B	287	433

APOE	TYPE SVC B, Y, M, A	MAC TARIFF	CAT Z/ COML TARIFF
SAN FRANCISCO CA			
CLARK AB RP	B	479	719
FRANKFURT GE	Y	382	582
GUAM	Y	346	423
HONOLULU HI	Y	127	137
LONDON UK	Y	352	532
MANILA RP	Y	479	719
NAHA, OKINAWA JA	Y	459	606
NARITA IAP, TOKYO JA	Y	359	528
OSAKA JA	Y	439	536
OSAN AB, KOREA	B	407	604
SEOUL, KOREA	Y	407	604
YOKOTA AB JA	B	359	528
SEATTLE WA			
ANCHORAGE AK	Y	119	169
HONOLULU HI	Y	194	236
MANILA RP	Y	522	687
NAHA, OKINAWA JA	Y	452	595
NARITA IAP, TOKYO JA	Y	378	496
SEOUL, KOREA	Y	433	571
SEOUL, KOREA			
HONOLULU HI	Y	359	470
LOS ANGELES CA	Y	430	638
OAKLAND CA	Y	407	604
O'HARE IAP, CHICAGO IL	Y	528	721
SAN FRANCISCO CA	Y	407	604
SEATTLE WA	Y	433	571
ST LOUIS MO	Y	528	745
WASHINGTON DC	Y	594	783
SIGONELLA IT			
NORFOLK VA	B	355	547
PHILADELPHIA PA	B	355	432
SONDRESTROM AB, GREENLAND			
MCGUIRE AFB NJ	M	170	481
ST JOHN'S, ANTIGUA			
PATRICK AFB FL	M	116	260



APOE	TYPE SVC B Y M A	MAC TARIFF	CAT Z/ COML TARIFF
ST JOHNS, NEWFOUNDLAND			
MCGUIRE AFB NJ	M	99	275
PHILADELPHIA PA	B	99	264
ST LOUIS MO			
CLARK AB RP	B	629	861
FRANKFURT GE	Y	323	486
HONOLULU HI	Y	271	313
IWAKUNI JA	B/M	579	698
KADENA AB, OKINAWA JA	B	610	770
KUNSAN AB, KOREA	B	532	745
KWANG JU AB, KOREA	B/M	535	745
MANILA RP	Y	629	861
MISAWA AB JA	B/M	505	783
NAHA JA	Y	610	770
NARITA IAP, TOKYO JA	Y	480	647
OSAN AB, KOREA	B	528	745
RHEIN-MAIN AB GE	B	323	486
SEOUL, KOREA	Y	528	745
TAEGU AB, KOREA	B/M	519	745
YOKOTA AB JA	B	480	647
STUTTGART GE			
J F KENNEDY IAP NY	Y	282	396
WASHINGTON DC	Y	326	416
TAEGU AB, KOREA			
OAKLAND CA	B	403	604
ST LOUIS MO	B	519	745
TEGEL APT, BERLIN GE			
J F KENNEDY IAP NY	Y	303	408
WASHINGTON DC	Y	342	426
THULE AB, GREENLAND			
MCGUIRE AFB NJ	M	234	N/A

APOE	TYPE SVC B, Y, M, A	MAC TARIFF	CAT Z/ COML TARIFF
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WASHINGTON DC

FRANKFURT GE	Y	321	398
LONDON UK	Y	277	358
MUNICH GE	Y	335	426
NARITA IAP, TOKYO JA	Y	534	708
SEOUL, KOREA	Y	594	783
STUTTGART GE	Y	326	416
TEGEL APT, BERLIN GE	Y	342	426

YOKOTA AB JA

OAKLAND CA	B	359	528
SAN FRANCISCO CA	B	359	528
ST LOUIS MO	B	480	647

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