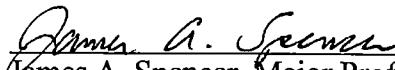
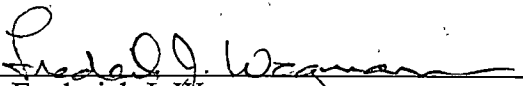


To the Graduate Council:

I am submitting herewith a thesis written by Steven R. Ryan entitled "Military Airfield Conversions: A Survey of Issues that Influence the Planning Process." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science in Planning, with a major in Planning.


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Military Airfield Conversions: A Survey of Issues that Influence the Planning Process

A Thesis
Presented for the
Master of Science in Planning
Degree
The University of Tennessee, Knoxville

Steven Robert Ryan
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Abstract

This research is centered on military bases with airfields which were closed as a result of the downsizing of the US military. An interview survey was conducted to determine the type of issues involved in planning the conversion of those military airfields to civilian airports and whether those issues were common among airfield or isolated at a few bases with similar characteristics.

Financial issues, particularly conversion costs and long-term operating expenses, were cited as the most critical issues in the airfield conversion planning process. Few cases were conversions at the time when a new airport was needed in the region. Many more, however, were converting the facility to a civil airport hoping to attract aviation related businesses. Environmental issues were less prevalent than expected, primarily because the military occupant of the base is responsible for cleanup.

For future conversions, the aviation market must be examined carefully in order to determine short- and long-term potential. Funding sources need to be identified in order to keep the airport operational until such time that it is financially self-sufficient.

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Chapter 1

Introduction

For the past decade, the closing of military installations, as part of the downsizing of the US Armed Forces, has been associated with unemployment and a shattered economy in the local communities around those installations. The facilities left behind by the military have the potential to help restore the losses. This thesis focuses on those installations with airfields present. With the infrastructure of runways, taxiways, parking aprons, and hangars, the former military base can potentially play a role in civilian aviation. The conversion process, though, is not as simple as watching the military aircraft depart and the civilian aircraft land. A careful conversion planning process takes place to ensure the long-term success of a civilian operation. Some communities have found during the planning process that conversion of the military airfield was not feasible and alternative land uses were chosen. Like any type of planning process, several issues and obstacles arise that influence the conversion planning.

This research identifies those issues faced by both the Federal Aviation Administration and local communities in the conversion of military bases with aviation facilities. The approach is from an airport planning point of view rather than the economic development focus of the existing research. In the cases where the military airfield was converted to a non-aviation use, the reasoning behind that decision is examined.

The Process of Determining Which Bases to Close

The US Department of Defense (DoD) began closing domestic military bases shortly after the end of the Korean War. Hundreds of surplus bases of all sizes and types were closed during the 1960's. Upset that it had little control in the base closure decision process, Congress enacted legislation in 1977 that instituted major restrictions when DoD proposed a base closure or realignment (Title 10 US Code, Section 2687). Those restrictions were:

1. Notifying Congress if a facility is being considered for closure;
2. Closings must comply with the reporting and evaluation requirements of the National Environmental Protection Act (NEPA);
3. Economic consequence reports, and;
4. A sixty day response period so that Congress could comment on the above reports.

This effectively stopped the downsizing of DoD installations by adding the element of politics to the decision process. No member of Congress would allow a base to close in his or her district due to the economic ramification on the locality surrounding the base. The need for base closures was also offset by increased spending on defense from 1980 to 1985.¹

The late 1980's marked the beginning of the final stages of the "Cold War" and

¹ Defense Base Closure and Realignment Commission, 1995 Report to the President (Washington DC: US Government Printing Office, 1995) 4-1 - 4-3.

declines in government spending on defense. Realizing that decreases in the budget and in the structure of the military forces had not been accompanied by a decrease in infrastructure, Secretary of Defense Frank Carlucci worked with Congress to enact P.L. 100-526, the Defense Authorization Amendments and Base Closure and Realignment Act of 1988. This act created the Base Realignment and Closure Commission (BRAC) to submit a list of facilities that it deemed no longer necessary to support DoD activities. The list, in its entirety, had to be accepted or rejected by the Secretary of Defense and by a joint resolution of Congress. The BRAC Commission recommended closure of sixteen bases and realignment, or consolidation, of eleven bases. The list was accepted and the closures went into effect.²

Recognizing the success of the method used to close bases in 1988, President Bush signed legislation to create the Defense Base Closure and Realignment Commission (DBCRC). The DBCRC recommended lists of closures and realignments in 1991, 1993, and 1995 (non-federal election years). Each list is submitted to the President, who has fifteen days to accept or reject the entire list of recommendations. Once approved by the President, Congress has the option of passing a joint resolution to reject the recommendations or doing nothing for approval. All three sets of recommendations were accepted by the President and Congress and base closures have gone into effect.³

² Defense Base Closure and Realignment Commission 4-1 - 4-3.

³ Defense Base Closure and Realignment Commission 4-3 - 4-5

The Need for Increased Airport System Capacity

Air travelers often comment on delays that occur when they fly. While this is an inconvenience to air travelers, delay has serious economic consequences. The average delay per aircraft operation in 1992 was 7.1 minutes⁴, which does not seem significant until one considers the fact that the busiest 100 airports in the United States recorded 25,095,189 operations that year. The FAA has calculated the average cost per hour of aircraft operation at about \$1600 (based on a weighted average of aircraft types)⁵. The delay cost at the busiest 100 airports in 1992, therefore, is over 4.6 billion dollars. Aircraft operations at these airports are forecast to increase over 37 percent to 34,556,000 operations by the year 2005.⁶ Passenger enplanements are also forecast to increase over 63 percent, from 473 million to 775 million passengers. These delays will only worsen without improvements to the airport and airspace system.

The FAA's *Airport Capacity Enhancement Plan* focuses on improvements to increase capacity at existing airports although "the largest aviation system capacity gains result from the construction of new airports."⁷ Only two air carrier airports have been built in the United States since 1974: Dallas-Fort Worth International Airport and Denver International Airport. Three factors can be attributed to the lack of new airport construction. First, the capital cost of a new airport is estimated to be more than 3 billion

⁴ Bureau of Transportation Statistics, Transportation Statistics Annual Report, 1994 (Washington DC: US Government Printing Office, 1994) 24.

⁵ Federal Aviation Administration, Airport Capacity Enhancement Plan, 1994 (Washington DC: US Government Printing Office, 1995) 1-1.

⁶ FAA, Airport Capacity A-10.

⁷ FAA, Airport Capacity 2-4.

dollars. Environmental constraints of a new airport can also be difficult to overcome. Implementation is the third factor identified to be a hurdle to new airport development. Public opposition can be high because of the previous two factors as well as political pressures. Citizens are particularly concerned with the noise generated by airports.⁸

Air Force Bases, Army Air Fields, Naval Air Stations, and Marine Corps Air Stations listed for closure have significant infrastructure in place to potentially support civilian aviation. The US aviation system could receive increased capacity without building airports from ground zero, while the local community could have the economic benefits of employment and tax revenue. The obvious reuse of a military airfield would be conversion to a public airport. Several factors, such as operational costs and the market for the airport, may make that choice less clear. This is why a careful conversion planning process is necessary.

The Base Conversion Planning Process

Once an installation has been approved for closure, the reuse planning process begins. The military often does not depart the facility immediately, which gives the community a window in which to plan for base reuse before the property is actually available. The planning process for these bases vary due to individual circumstances.

⁸ Transportation Research Board, Airport System Capacity: Strategic Choices (Washington DC: National Research Council, 1990) 12-14.

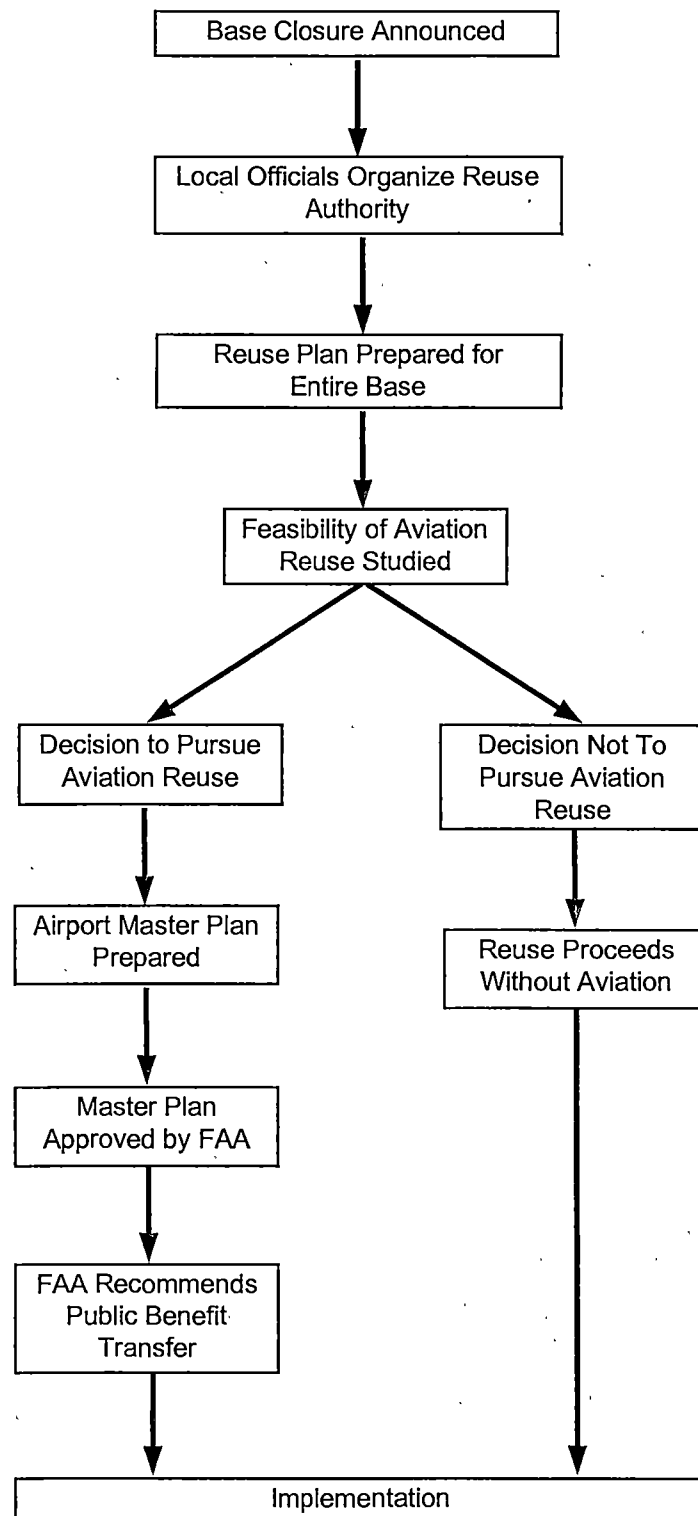
What follows is a general outline of the process of reuse planning at military bases with airfields present. This was developed from the literature review and research results presented in Chapters Two through Four.

The first task for the local community facing a closure is the creation of a recognized Local Redevelopment Authority (LRA). Local officials create the LRA and appoint members to direct it. The organization of the LRA must be approved by the DoD to be the sole planning agency for base reuse. Once the LRA is approved, planning for civilian use of the base can begin. Assistance for reuse planning is provided by DoD's Office of Economic Adjustment (OEA) in the form of technical assistance and planning grants. These plans focus on the creation of new jobs and industry recruitment. The OEA has been in existence since the 1960's to assist community recovery from the military departure.

The airport planning involved takes place within the base redevelopment planning process, summarized in Figure 1. The LRA inventories the existing facilities and evaluates reuse alternatives. At this point some level of analysis is done to determine the feasibility of conversion of the airfield to an civil airport. The feasibility analyses range from a simple evaluation to a detailed market study.

In most cases the airfield conversion, if it is pursued, is one part of the larger base conversion. The preferred reuses are outlined in the final reuse plan, which is submitted to DoD. The DoD environmental cleanup team uses the plan to set priorities and levels

Figure 1. General Planning Process for Bases with Airfields



of restoration. DoD also uses the reuse plan to divide the base into parcels for transfer to the appropriate local agencies.

The bases with airfields consult with the FAA on the requirements for conversion to a civilian airport. If a civilian airport is one of the preferred alternatives, the FAA will provide funding for an Airport Master Plan to identify aviation related capital improvements that may be necessary. This is required in addition to the base reuse plan for federal funding requirements and for the local community to receive the airport under public benefit transfer laws. In order for an airport to be eligible for capital improvement money under the Airport Improvement Program (AIP)⁹, it must be part of the National Plan of Integrated Airport Systems (NPIAS), in which military airports are not included. To be included in the NPIAS, an airport must have an approved master plan.

Recognizing the potential that closing military airfields can have in adding capacity to the US aviation system, the Military Airport Program (MAP) Office was created under the Aviation Safety and Capacity Expansion Act of 1990. This office focuses on the conversion of military airfields to civil airports in order to add capacity to the aviation system at a relatively low cost. The MAP Office administers capital grants to former military airfields through the dedication of 2.5 percent of AIP funds.¹⁰

⁹ The Airport Improvement Program(AIP) provides funding for capital improvements at airports through the Airport and Airway Trust Fund. This receives revenues from taxes on airline tickets, aviation fuel, and air cargo shipments.

¹⁰ FAA Military Airports Program Office, Federal Aviation Administration Update on Military Airfield Closures (Washington DC: 1995 FAA/DoD Planning Conference, 1995) 9.

Military bases with airfields go through a dual planning process. The base reuse plan typically determines the feasibility of reuse as a civilian airfield as well as other reuses to stimulate the local economy. If a civilian airport is feasible, the airport master plan then focuses on what will be necessary to make that transition. Since the conversion of a military base with an airfield often involves other land uses, other agencies become involved. A high level of coordination between the LRA, the military department, and the myriad of other state and federal agencies is necessary. During this entire process, several issues arise which influence the conversion of the airfield.

Chapter 2

Research Methodology

Literature Review

The majority of existing literature dealing with military base closure and conversion centers on the impact on the local economy and the creation of jobs. Several sources were found that contained limited information pertaining to the conversion of military airfields to civilian airports.

In "Shut Down to Shape Up," the benefits of conversion are outlined as saving time, expense, and environmental consequences involved in building a new airport. The article goes on to say that careful planning is necessary in conversion to a civilian airport. Ronald Newland of Rickenbacker International Airport (Rickenbacker AFB) is quoted as saying "You don't just step in and take over the keys to the front door." Three military airfield conversion cases are briefly discussed. Bergstrom AFB, in Austin, Texas, is a case of the right events occurring at the right time. Shortly after the City of Austin approved money to study a feasible location for a replacement airport to relieve congestion at Robert Mueller Municipal Airport, the BRAC commission announced that Bergstrom would be closed. The money appropriated for the new airport is being used to convert the facilities to civilian use. Environmental problems have been the biggest hindrance to this point. Officials at Bergstrom have close contact with Air Force

environmental restoration personnel to ensure the new airport will open at its target date of 1998.¹¹

The two other airfield conversions discussed in the article are Richards-Gebaur AFB (Kansas City, Missouri) and Rickenbacker AFB (Columbus, Ohio). Rickenbacker's largest problem in planning the conversion of the facility into a commercial airport was the discovery that much of the infrastructure in place was inadequate. Richards-Gebaur planning staff are dealing with differing proposed uses by different levels of government.¹²

Business Executives for National Security (BENS) did a survey of readjustment efforts of 24 major bases in the 1993 round of closures. Of these 24, fifteen have airfields present on the base. This report provided an overview of each base and some insight was gained in the problems and topics faced in converting the military airfields. The Grissom Community Redevelopment Authority (Grissom AFB, Indiana), for example, performed a viability and feasibility study because of the significant costs involved in operating an airport. Blytheville Arkansas, near Eaker AFB, focused its initial efforts in fighting to keep the base open and was very early in the planning stages when the base actually closed. The reuse authority also had problems funding the proposed conversion to a civilian airport. Wurtsmith AFB (Oscada, Michigan), in its reuse planning efforts, projected that the need for retirement housing facilities would be far greater than aviation

¹¹ Karl Bremer, "Shut Down to Shape Up," Airport Magazine March-April, 1995: 7-8.

¹² Bremer 9-11.

needs for the region. The airfield will be converted into a retirement housing and recreation complex.¹³

England AFB in Alexandria, Louisiana has been cited as one of the most successful base conversions into a civilian airport. An article in Industrial Week cites that the new England Industrial Airpark has 22 private sector tenants employing 850 people. Problems in the planning process stemmed from the Air Force "bureaucracy" and trying to bring tenants in between the time the base officially closed and the completion of environmental clean-up. The Department of Defense only approved one of seventeen interim lease requests.¹⁴

Myrtle Beach AFB (South Carolina) had a market for civilian aviation uses long before the military decided to close the base. Two commercial airlines had agreements to land at the base to provide air service to this popular resort. The reuse planning was influenced by conflicts between the city and county. The county proposed, with support from the FAA, converting the base into a regional airport. The city argued that in order to replace lost jobs the land should be used as resort property. The Department of Defense had to step in to settle the conflict providing part of the base for a proposed theme park and convention center, while allowing the airport to remain in operation.¹⁵

The FAA's MAP Office (described in Chapter 1) is required to report to Congress on the effects of military airfield closures on the aviation system. Since the MAP Office

¹³ Keith Cunningham, ed., Base Closure and Reuse: 24 Case Studies (Washington DC: Business Executives for National Security, 1993) 13-27.

¹⁴ William H. Miller, "Turning Panic Into Promise," Industrial Week December 4, 1995: 57-59.

¹⁵ Eric Minton, "When Johnny Goes Marching Home," Planning November 1994: 18-22.

was not created until after the 1991 list of base closures was released, these reports were only prepared for 1993 and 1995 lists of closures. These reports approach the closures from the point of view of what increases in operational costs the FAA will incur. Radar and navigation aids owned by DoD are used to support civilian aviation in some areas. When a base is closed, the FAA must link those functions to existing facilities or put personnel in place at the closing military base. The FAA also becomes responsible for maintenance of those facilities. The report to Congress also estimates costs to provide air traffic control if the base is converted to a primary airport.¹⁶

While these two reports do not contain the planning details for closing they do reveal some factors that may influence the planning process. Dallas NAS, situated eight miles south of Dallas-Ft. Worth International Airport and eight miles west of Love Field, is severely restricted by airspace constraints. The report states that the airspace capacity would be enhanced if Dallas NAS was not converted to an civilian airport.¹⁷

Glenview NAS, in a suburb north of Chicago, supports several civil airports with weather reporting services which the FAA will have to replace when the military departs. The FAA reports that, although "excellent infrastructure" is in place, the facility does not have a sponsor (state, municipality, or redevelopment authority) to accept the property for

¹⁶ The FAA classifies airports in one of four categories. An airport with more than 2,500 passenger enplanements per year is classified as a "commercial service" airport. A "primary commercial service" airport has more than 10,000 enplanements per year. "Reliever" airports are near primary airports and serve as a less congested alternative for non commercial aircraft. "General aviation" airports include the remaining airports with less than 2,500 enplanements per year.

¹⁷ Federal Aviation Administration, Report to Congress on 1993 DoD Military Base Closures and Realignments (Washington DC: Department of Transportation, 1994) TX-1.

use as a public airport. The surrounding community is supporting reuse as housing and open space. Community support, or lack thereof, may play a very important role in determining if the military airfield is converted to a civilian airport, regardless of the actual need for such a facility.¹⁸

One aspect that may have an impact on the conversion of military airfields into public airports is location. In a study of base closures between 1969 and 1988, Stenburg and Rowley found that, in general, rural communities had a harder time recovering from base closures than metropolitan areas. The lack of a diversified economy and slower employment growth are two factors that contributed to this lack of recovery.¹⁹ These results may also be true with airfield conversion. Those installations lying in rural areas may lack market support and operational expenses for conversion to a civilian airport. Those in metropolitan and suburban areas might be better suited to operate an airport if public support is present.

No single source was located that approaches military airfield conversions from the issues that were encountered during the planning process. The literature review revealed that several issues clearly do influence the conversion planning process to some extent. These issues can be summarized into six categories:

1. Environmental contamination
2. Conversion costs

¹⁸ Federal Aviation Administration, Report to Congress on 1993 DoD Military Base Closures and Realignments (Washington DC: Department of Transportation, 1994) IL-1.

¹⁹ Peter L. Stenburg and Thomas D. Rowley, "A Comparison of Military Base Closures in Metro and Nonmetro Counties," Government Finance Review October 1993: 11-15.

3. Operating costs (long term)
4. Lack or presence of markets/tenants
5. Problems with property transfer delays or “red tape”
6. Conflicts during the planning process over land uses.

The literature reviewed site specific instances where issues or obstacles occurred, but there is no indication if these are trends that occur. These trends could be regional or national, by facility type (Air Force, Navy, etc.), and urban or rural. No research has been done that explores all of the military airfield closures and the issues that they face from an airport planning perspective.

The primary question to be answered through this research is: What factors influence the planning of the conversion of military airfields to civilian uses (airport or non-airport)?

Several questions related to the primary question will also be explored. Are the issues facility specific or is there a trend of recurring issues at several conversion locations? How did the planning process address the issues? For those facilities that abandoned the airfield infrastructure for other uses, what was the primary reason for the decision? What was the process from which this decision was made?

Research Methodology

Given the nature of the issues to be explored, a qualitative survey was most appropriate. Data was collected by contacting and interviewing personnel involved in

planning the conversion of military airfields. This was done on two levels. At the federal level, personnel in the FAA Military Airports Program Office were interviewed. The second level was through contact with planners involved in airfield conversions. The bases to be studied was limited to those airfields closed by the Defense Base Closure and Commission in 1988, 1991, and 1993. The total number of facilities in the study pool is thirty four.

The interviews with the staff of the Military Airports Office were done personally with travel to Washington DC. The purpose of these interviews was to gather information on their experience with base conversions and the issues that have been encountered at the federal level.

The interview process with individual bases was done by telephone. The following interview schedule outlines the format of the interview. The questions are open ended to gather specific information but focused to remain within the scope of the proposed study.

1. Introduction. A brief description of the purpose and scope of the study will be given and any clarifying questions answered. Permission to record the interview strictly for note taking and recollection of information was requested.
2. What issues or factors shaped the planning of the conversion of the military airfield? For example, environmental contamination, lack of a market for an airport, conversion costs, etc.
3. For each issue, do you feel this is something specific to this facility or would you foresee it as an issue at other airfield conversions.

4. What was done to address, solve, or overcome each issue or problem?
5. Would you please send a copy of the any relevant documentation of the planning process(feasibility/viability study, master plan, base reuse plan), if possible?
6. Concluding comments and acknowledgment of gratitude.

Other probative and clarifying questions were asked when needed to expand on any previous answer or to keep the interview in focus.

For those facilities with airfields that have planned to convert the facility into a non-aviation use, the approach to reach this decision is of concern. By interviewing the planners involved in these cases it was possible to examine whether the airfields were abandoned because of the lack of its feasibility or if some other use provided more opportunity for economic revitalization.

Scope and Limitation of Research

This research focuses strictly on those military installations with aviation facilities. The research is limited to the thirty four facilities on the 1988, 1991, and 1993 lists of the Defense Base Closure and Realignment Commission. The research does not include those bases closed by DoD from 1960 to 1988. Survey results using the 1988 to 1993 closures are comparable because of the limited time frame and consistent national climate (political, funding levels, etc.) under which the closures are taking place. Another reason to limit the scope of this study is the lack of reliable contacts involved with military airfield conversions of the 1960's and 1970's. These facilities have been in

public hands for a number of years, some with much success, others not so fortunate. Planners involved with these conversions have likely moved to other locations or retired. Tracking them down for the purpose of this survey would be expensive and time consuming.

The six bases with airfields on the 1995 list of closures were not included in this research. At the time, the LRA's for these bases were in the organization stages and no formal planning efforts have begun.

The seven bases that have planned to convert the existing military airfields into non-aviation uses will be included to identify issues surrounding the decision and the planning process leading to that decision. Six bases will not be included which involve property adjacent to existing public airports. While this space will be beneficial to airport expansion it falls outside the scope of this study because of the presence of a public airport and the lack of conversion planning for the entire airfield.

Chapter 3

The Federal Perspective on Airfield Conversions

Within the FAA, the Military Airports Program (MAP) Office deals with several facets of the military-civilian aviation connection. This office was created in 1991 with the recognition that airfield conversions have unique needs in terms of planning and grants. The MAP Office's basic functions are: 1. Assistance in airfield conversion by acting as a liaison between the conversion agency and other FAA offices; 2. Administration of the MAP set-aside portion of the AIP grants; 3. Assistance in establishing joint use (civilian and military) airports. Mr. Jim Mottley, Program Manager with the MAP Office, was interviewed to gain insight into the FAA perspective of airfield conversions.

While assistance is provided to individual airfields in conversions, the FAA looks at conversion from a system point of view. The MAP Office stresses the potential that airfield conversions hold and the impact on the aviation system. The capacity for over two million annual aircraft operations could be added to the system by converting airfields listed for closure on the BRAC lists between 1988 and 1995.

When the closure lists are finalized, the MAP Office makes a preliminary evaluation of those bases with airfields present. In the context of the National Plan of Integrated Airport Systems (NPIAS) each airfield is classified as to the *potential* role it could have in civil aviation (air carrier, reliever, or general aviation). For example, those

airfields near metropolitan areas with congested airports could have the potential to serve as an air carrier airport. In a rural area, without a large population base, the role of a converted airfield may be limited to general aviation.

One of the primary concerns of the MAP Office is the need for a long-range outlook in airfield conversions. Local communities, in their reuse evaluations, often find that the cost of operating an airport (with no tenants initially) greatly exceeds the benefits of the direct revenues and the economic gain from job creation in the short term. But when looked at in the context of the reuse of the entire base, it could take as long to attract other industries. Many LRA's are hesitant to convert to an airport because of the amount of money it will take to keep it operational in the short term. The MAP Office believes that, given enough time, many of these facilities will contribute both to the capacity of the aviation system and the local economies. The problem is keeping those airports open until they are financially self sufficient.

Currently, the MAP grants from the AIP are only for capital improvements. There is no federal source of money for operational expenses. This places the responsibility on local communities to keep the airport operational. The MAP Office recognizes the need and is lobbying for some type of "start up" or seed money that could be used for whatever the airport needed to keep the facility open. This could range from maintenance to marketing. The first three to five years after opening as a civil airport are viewed as the most critical. If the facility can sustain through these years then it can probably remain open for the long term.

Some LRA's are finding subsidies through local and state governments and the Economic Development Administration (EDA) to keep the airport operational. Other LRA's are raising revenues in innovative ways. One of these is the use of the facilities by non-aviation tenants until a market for aviation related tenants develops.

Two airports are leasing unused apron space to truck driver training schools. These large, open areas of pavement are ideal for this type of training and require little, if any, improvements. The revenue helps to keep the remainder of the airport operational and in good maintenance. That apron space is still available for aircraft parking at the time when demand dictates.

Another area of concern for the FAA is the ability of the LRA to obtain either outright ownership or a long term lease agreement for the airfield. Federal regulations dictate that a converted airport, or any airport for that matter, to receive the capital improvement grants, the local owner must sign a contract assuring operation for twenty years. This ensures that the investment in capital by the FAA will not be wasted if local officials decide to close the airport. DoD, though, will not release the property until the environmental cleanup is complete. Regulations passed to speed the entire conversion process will allow an interim lease in cases where cleanup is expected to be complete within five years and the use of the property would not hinder cleanup efforts. Only a few of these leases have received approval from DoD which limits the number of eligible airfields which the MAP office can assist with capital grants.

The issue of finding a local "sponsor" was a more serious concern for the MAP Office in the past but is not as prevalent now. In order for the FAA to recommend the public benefit transfer, a local agency must be willing to take responsibility for the airport. In working with LRA's the MAP Office recommends that an airport authority or commission be created to oversee the airport itself and would work in conjunction with the LRA. After the conversion is complete and economic recovery is underway, the LRA could be abolished. With a separate controlling body, the airport would still have a stable organization behind it.

The initial role of the airfields in rural areas will likely be general aviation. The MAP Office cautions against underestimating the potential that these bases also have. It is true that these areas lack the population base for commercial airlines to service. But these rural communities have several advantages which are likely to help attract larger tenants such as air cargo and merchandise distribution. The first is the facility itself, with infrastructure already in place with little to no congestion. The other is the quality of life available in rural communities for employees and their families. This factor is becoming increasingly important in location decisions for corporations.

The final issue discussed during the interview was that of the radio navigation aids which provide guidance for aircraft landing in inclement weather. The criteria the FAA uses for the addition and upgrade of the "NavAids" is based on traffic levels. It makes sense that the busiest airports receive the most money for navigation equipment. Initially, most converted airfields do not have the level of traffic to qualify for money to

convert the military navigation beacons. Some LRA's are choosing to pay for the conversion of these facilities with local dollars in order to make the airport attractive to tenants.

As the first part of this research, the interview with Mr. Mottley of the Military Airports Program Office proved very informative. This office wants to take advantage of the availability of infrastructure and capacity for future use. The FAA view on airfield conversions, not surprisingly, is from a system capacity standpoint. The major issues encountered at this level are keeping a long term outlook and keeping the converted airport operational until it is self sufficient. Unfortunately, there is no mechanism within the FAA to provide any kind of money for the initial operating costs after conversion.

Although it functions at the national level, the issues faced by the FAA's MAP Office are at the local level and throughout the planning process. Summarized sequentially by where they might be faced in the planning process, these issues are: finding a sponsor for airport conversion, securing long term "control" of the property, keeping the airport operating until it is financially self-sufficient, and marketing the facilities to tenants. The theme throughout is the idea of keeping a long term outlook. This can especially difficult for communities where financial difficulties are in the present.

Chapter 4

Airfield Conversion Planning Issues at the Local Level

Characteristics of Respondents

As previously described in detail, this stage of research involved contacting planners at military airfields being closed and converted to civilian uses. There are thirty four bases with military airfields on the 1988, 1991, and 1993 approved BRAC lists. Of these, twenty six complete and usable surveys were conducted. The remaining eight bases were contacted but did not respond. Those who participated provided valuable information about their particular experience which was used to identify recurring issues that were encountered during the conversion planning. Table 1 lists those bases represented in the survey as well as the location and the year the base was listed for closure by the BRAC. The geographic locations of these bases is illustrated in Figure 2. Regionally, there is a concentration of bases on the west coast as well as in the northeastern part of the US.

The surveyed bases were further classified by military branch, BRAC list year, and whether or not the facility is converting to an airport. This information is summarized in Table 2. It is not surprising that Air Force Bases represent the majority of respondents since airfields are a direct requirement of their mission. The Army, Navy, and Marine

Table 1
Base Conversion Interviews

Facility	Location	BRAC Year	Interview Respondent	Organization	Interview Date
Bergstrom AFB	Austin, TX	1991	Holland Young	Austin Bergstrom New Airport Project Team	3-6-96
Castle AFB	Merced, CA	1991	Marla Courtney	Castle Joint Powers Authority	3-1-96
NAS Cecil Field	Jacksonville, FL	1993	Herb McCarthy	Cecil Field Development Commission	3-5-96
Chanute AFB	Rantoul, IL	1988	Ray Beaudreux	City of Rantoul	3-1-96
NAS Chase Field	Beeville, TX	1991	Brad Arvin	Chase Redevelopment Authority	3-9-96
NAS Dallas	Dallas, TX	1993	Thea Walker	NAS Dallas Redevelopment Office	3-9-96
Eaker AFB	Blytheville, AR	1991	Joe Gurley	Blytheville Gosnell Regional Airport Authority	3-5-96
MCAS El Toro	Orange Co., CA	1993	Ruby Muldanado	Orange County	3-7-96
Fritzsche AAF	Monterey, CA	1991	Dick Goblirsch	City of Marina, Economic Development	3-5-96
George AFB	Victorville, CA	1988	Ken Hobbs	Victorville Economic Development Authority	2-29-96

Table 1 (continued)
Base Conversion Interviews

Facility	Location	BRAC Year	Interview Respondent	Organization	Interview Date
Homestead AFB	Homestead, FL	1993	Mayra Bustamante	Dade County Department of Aviation	3-5-96
K.I. Sawyer AFB	Gwinn, MI	1993	Tom Rumora	K.I. Sawyer Base Conversion Authority	2-29-96
NAS Memphis	Millington, TN	1993	Jim Furgeson	Millington Base Reuse Commission	4-3-96
Myrtle Beach AFB	Myrtle Beach, SC	1991	Betty Balou	Myrtle Beach Airport Authority	3-5-96
Norton AFB	San Bernadino, CA	1988	William Boll	San Bernadino International Airport Authority	3-7-96
Pease AFB	Portsmouth, NH	1988	L. Schnieder	Pease International Airport	3-12-96
Plattsburgh AFB	Plattsburgh, NY	1993	Al Flateau	Plattsburgh Intermunicipal Development Council	3-9-96
Rickenbacker AFB	Columbus, OH	1991	Bruce Miller	Rickenbacker Port Authority	4-3-96
Tipton AAF	Baltimore, MD	1988	John Lucas	Tipton Airport Authority	3-7-96
Williams AFB	Phoenix, AZ	1991	Lynn Kusy	Williams Redevelopment Partnership	4-3-96

Table 1 (continued)
Base Conversion Interviews

Facility	Location	BRAC Year	Interview Respondent	Organization	Interview Date
NAS Glenview*	Glenview, IL	1993	Paul McCarthy	Glenview Community Reuse Task Force	3-19-96
Griffis AFB*	Rome, NY	1993	Mark Reynolds	Griffis Redevelopment Planning Council	3-21-96
Hamilton AAF*	San Francisco, CA	1988	Ken Bell	Hamilton Reuse Planning Authority	3-21-96
Loring AFB*	Limestone, ME	1991	Brian Hamel	Loring Development Authority	3-7-96
Moore AAF*	Boston, MA	1991	Ken Woulette	Massachusetts Government Land Bank	3-5-96
NADC Warminster*	Philadelphia, PA	1991	Sheila Bass	Federal Lands Reuse Authority	3-7-96

* Indicates the closing base is not converting its airfield to a civilian airport.

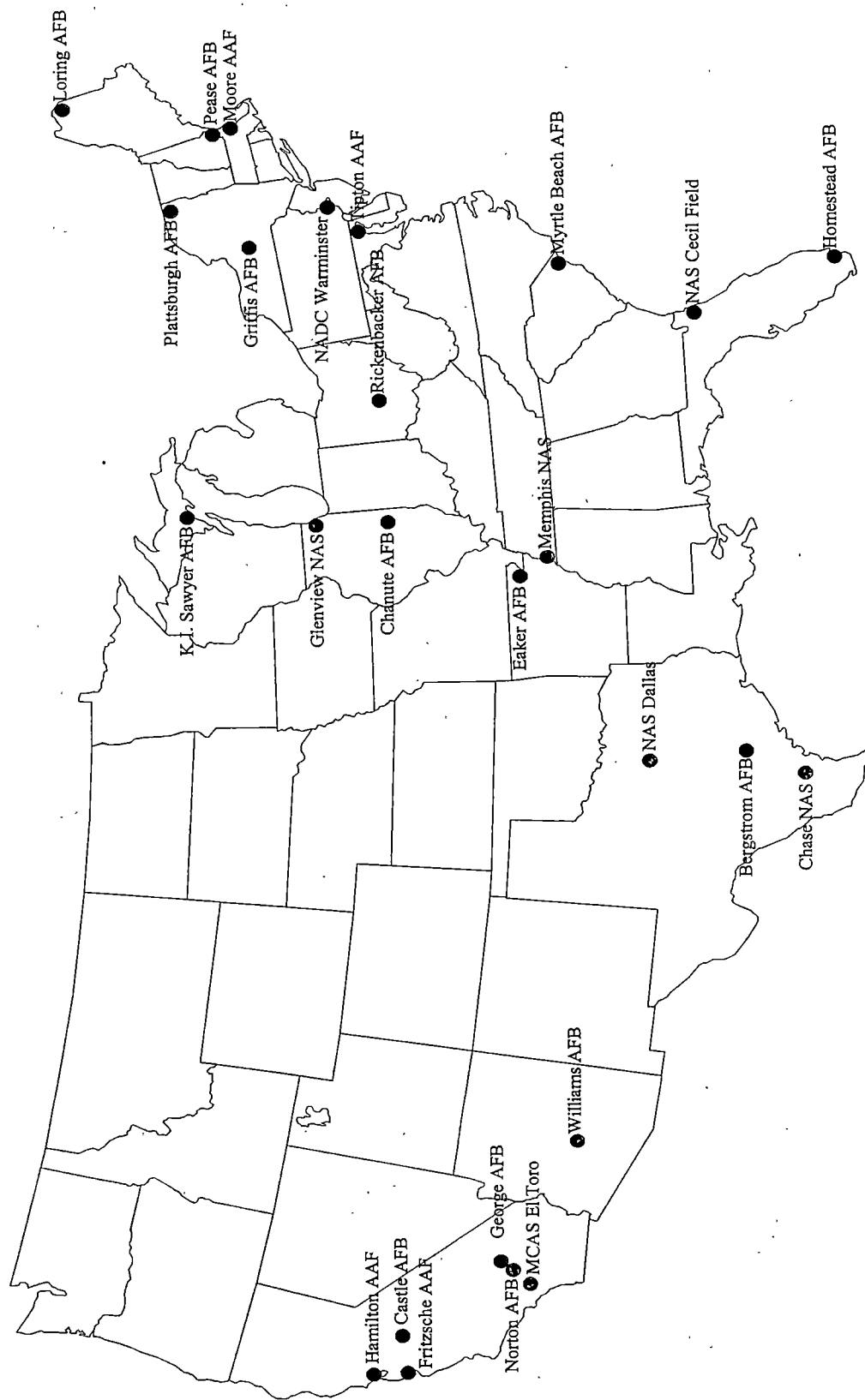


Figure 2. Geographic Locations of Surveyed Military Airfields

Table 2
Characteristics of Respondents

Thirty Four Bases with Airfields					
Twenty Six Responded to the Interview Survey					
Facility Type		BRAC Year		Conversion Decision	
Air Force	15	1988	6	Converting to an airport	20
Navy	6	1991	11	Not converting to an airport	6
Army	4	1993	9		
Marine Corps	1				

Corps use aviation in a support role therefore having less airfield infrastructure than the Air Force.

Environmental Issues

The activities of the US military have left many areas of closing bases with environmental contamination. Examples range from soil contamination due to leaking drums of petroleum products to unexploded ordinance in bunkers. The DoD is bound by the requirements of the National Environmental Protection Act (NEPA) and numerous supplemental legislation. Since disposal of a base is considered a "major federal action" an Environmental Impact Statement (EIS) must be prepared. Included in the EIS is a baseline survey of the type and extent of contamination, remedial action alternatives, and cleanup recommendations. In addition, no property which is contaminated may be transferred from DoD ownership until it is remediated to an acceptable level. The level of environmental cleanup is dictated by the community's reuse plan. For example, if a contaminated section of property on the base is to be used for housing the level of cleanup would be higher than if that same property was used for an industrial manufacturing plant.

The environmental cleanup on closing military bases has serious financial implications for the DoD. Several factors have essentially depleted the amount of money budgeted for environmental cleanup. One element is the initiation of closure for a large

number of bases over short period of time. Another is underestimating the number of types and levels of contamination and the resources necessary to remediate the problem.

From the literature review, it appeared that environmental contamination present on closing military airfields would be the major hindrance to conversion to a civil airport. The results of the interviews indicate, that while environmental contamination is an issue that arises when planning conversion to a civil airport, its significance is not as great on a national level from the airport planning point of view. Only seven of the twenty six interview respondents (27 percent) reported environmental contamination as an influence in the conversion planning process. The range of environmental problems was wide, though, ranging from leaking underground fuel storage tanks at Tipton AAF requiring some soil cleanup to finding areas contaminated with hazardous materials which were not previous identified at Bergstrom AFB.

There are several reasons that environmental contamination as a factor was not as significant as previously expected from the literature review. First, the DoD and the branch of the military that occupied the base are legally and financially responsible for the cleanup effort. Realizing that the timely cleanup and release of land assists communities' economic development, DoD and the cleanup team work closely with the LRA to ensure that restoration meets the needs of the proposed reuse plan. Several respondents reported having very good relationships with the cleanup teams. Cooperation and communication established early in the planning process was cited as minimizing conversion problems associated with environmental contamination.

Another set of related reasons also explain environmental contamination's limited influence on airfield conversion planning. As identified by one respondent, airports and aviation related industries are good reuses for a contaminated area because the level of cleanup that is necessary is less extensive than for other land uses. The number of chemicals used in aircraft maintenance, as well as the large quantity of fuel required for aircraft operations gives the industry a high probability of contamination through mishandling and accidents. The contamination of on the airfield portion of the base are generally common types such as fuel (from leaking tanks), oil, and parts cleaners. Other parts of the base, which in many cases are not used as part of the airport (housing, open space, industrial parks, etc.) are more likely to have more serious types of chemical and unexploded ordinance contamination. The fact is that the converted base is seldom used entirely as an airport and while serious contamination has a major influence on the conversion of the base as a whole its effect on the aviation segment of that reuse is less significant.

Conversion Costs

While the billions of dollars of infrastructure in place to support aviation makes it an attractive reuse, there are additional costs to convert the facility for use by civilian aircraft. The standards set forth by the FAA for such things as pavement condition, airfield lighting, and clear zones around the runways often differ from what is on the ground at the military airfield. Conversion to a civilian facility requires meeting FAA

standards. Another difference is in the electronic navigation and communication equipment used by the military. In many cases the military uses radio frequencies and equipment not compatible with the equipment in use by civilian aircraft. The costs of modifying lighting and installing new navigation equipment are relatively minor when looking at the construction of a new airport, but they become significant costs for a reuse authority starting with very little capital budget. If a reuse authority is seeking a potential market for passenger air service, it must build a terminal for those passengers. Few, if any, military bases have the traditional terminal with aircraft gates, baggage handling systems, and vehicle parking areas.

Access is another concern of conversion to a civilian airport. The military facilities are designed for a high level of security. With conversion to an airport, good ground access is necessary to move people and goods. New access roads, which add to the conversion cost, are sometimes necessary to allow movement from outside the base to the airport.

The survey interviews revealed that conversion costs was a common issue in the planning process was quite common with fourteen of the twenty six respondents (54 percent) identifying it. The issue of spending money on airfield conversion is especially significant when no tenants are secured to provide a return on such an investment.

Rickenbacker AFB reported planning for air cargo and direct shipment tenants. Late in the planning process, with tenants interested in the facility, it was discovered that while the runways were long enough for cargo jets they lacked sufficient pavement

strength to handle the weight of that type of aircraft. The military mission at the base before closure was focused on fighter jets. Since these are much lighter, they require a less durable pavement than a heavy cargo jet. This resulted in an unexpected multi-million dollar runway paving and strengthening project.

Norton AFB, poised to receive significant traffic from overcrowded airports in Southern California, used grant-in-aid funding to overcome some of the initial conversion costs. This included a 2.1 million dollar FAA/State of California grant for an Automated Weather Observation System (AWOS), guidance signage for taxiways and runways, and upgraded runway shoulders. Also important was a one million dollar MAP grant (described in Chapter 3) to renovate a military terminal for commercial passenger use and a two million dollar grant from EDA for access roads and parking lots. Other converting airports, reported not receiving enough support in terms of grant money.

Interestingly, only one of the six airfields surveyed which are *not* converting to a civilian airport reported conversion costs as an issue leading to this decision. Warminster NADC, which had little military air traffic (500 operations per year) found that twelve million dollars would be needed to upgrade the facilities with an additional two million dollars for installation of navigational aids. The decision to not convert to an airport was based on the lack of benefits for the initial cost.

Operating Costs

In addition to the initial cost to physically convert the airfield for civilian use, there is an ongoing cost to operate and maintain the airport. To keep the airport attractive to prospective tenants after it is converted at least minimum upkeep must be performed. This includes mowing the grass, keeping buildings in good repair, pavement repairs, and repainting runway markings. Usually, an airport manager is required to oversee the operations, maintenance, and finances of the airport. Other services such as Airport Rescue and Fire Fighting (ARFF) and airport security/police are much more expensive but are required by many aviation firms before establishing operations at an airport. This leads to a "Catch-22" situation. It takes significant amounts of money to operate an airport. Initially, there are no tenants, thus, no income. Without maintenance and operations services in place airport tenants are not generally interested in locating at the airport.

Twelve of the twenty six (46%) airfield conversion planners interviewed stated that long range operating costs were an issue during the planning process. This factor was more significant in the decision to *not* convert to an airport. Four of the six bases in this situation reported operating costs over the long term a factor in the decision.

The survey interviews identified a wide range of budget trimming to keep the airport open until it was financially stable. Eaker AFB had considered keeping the ARFF and dedicated airport security services but decided not to without any tenants present to

offset the costs. Similarly, minimal grounds maintenance services were provided by local public works at some airports.

Norton AFB could not find any other way to keep the airport operational and used local money to cover the initial operating expenses. At the opposite end of the spectrum, Myrtle Beach AFB, which did not report operational costs as a factor, was a joint use facility with the military allowing a specific number of airline flights per day. With the market in place before the closure, local officials knew that revenues were available from the existing tenants and keeping the airport operational in the short term would not be a problem.

The master plan for an airport typically focuses on the physical infrastructure and ensuring there is enough capacity to handle demand. Several of the master plans for converting airfields to civil airports look more at future revenue development and operating costs. One example of this shift in airport master planning is the plan for Millington NAS, near Memphis, TN. The Memphis NAS/Millington Airport Master Plan estimated that it would cost \$600,000 per year to operate and maintain with minimal expenses. The local municipalities pledged \$150,000 while the state was considering a \$200,000 subsidy. This leaves a shortfall of \$150,000 that must be made up by airport revenues each year. The Master Plan also forecast that it would take about eight years to develop to the point of being financially self sufficient.

Griffis AFB, which is not converting to an airport, had a historical operating cost of 1.3 million dollars per year. The county could not afford such a subsidy, especially

when the existing airport had surplus capacity at less than half the annual operating cost. The Moore AAF LRA found that aviation as a reuse was not feasible due to a forecast shortfall of 200,000 dollars annually.

Public Opposition

Public opposition can play a significant role in airport planning. In cases specific to the conversion of military airfields to civilian airports, citizens are opposed either because they do not want the negative impacts (noise, safety concerns) or because they are in favor of conversion to some other land use. Based on the responses to the interviews, public resistance is not as significant in conversion planning as it is in airport planning in general.

When questioned, only six of the twenty six bases (23 percent) reported public opposition as a factor that came into play during the planning process. Several reported high levels of public support because of the perceived economic benefits associated with airports and the fact that airfield is already in place and supporting military air traffic. With a military airfield present, aircraft overflights and the associated noise are also present, although this can vary depending on the level of aircraft activity at the base. This is the primary reason that public opposition to conversion to an airport is less than that experienced when proposing an airport on a new site.

Of the six bases which are not converting to an airport, three stated that public demands influenced that decision. Glenview NAS responded that a policy decision was

made that the land should be used for open space and recreational land uses rather than an airport. NADC Warminster, near Philadelphia, PA, reported that people feared an increase in noise because there was little Navy air traffic in the past ten years.

One aspect of public opposition was identified by two California bases. Accurately described by one respondent as "ballot box planning" both cases had enough public outcry against conversion to an airport to force the issue onto the ballot as a special referendum. The reuse authority for MCAS El Toro, located near Los Angeles, California, was studying the feasibility, market, and costs for conversion when its fate was left in the hands of the voters. Because of the aircraft congestion associated with airports in southern California, El Toro's conversion to an airport would probably bring some relief. The citizens voted by a narrow margin to reuse El Toro as an airport. At the time of this research, though, the results were being contested in court and a second referendum was likely.

Market Presence

The presence of a market for aviation facilities is a factor that airport conversion planners can, at best, try to forecast. The best airfield conversion plans will not be fully implemented if demand is not present. Of the twenty six facilities represented in the survey, thirteen felt that market presence was an issue that had to be addressed in the planning process. This number may be deceiving because of the shift of an existing aviation market to the a converted airfield. The conversion of Bergstrom AFB in Austin,

Texas is an example of this situation. Austin's Robert Mueller Airport was facing severe congestion and seeking a site for a new airport when the decision to close Bergstrom AFB was announced. When the conversion is complete, all aviation and related activities will be transferred from the existing airport. The issue of market demand is not a factor because it already exists. This situation was also identified in at least three cases where the decision was made during the planning process to move the aviation activities from a general aviation airport to the converted airfield.

Pease AFB, converted to Pease International Tradeport, reported that airlines were difficult to attract as tenants. An aggressive marketing effort was undertaken where the authority had to convince prospective users of the market for air travel. Once commuter airlines did start service they found increasing numbers of travelers using the airport.

For the six bases not converting to an airport, the market for such activities played a significant role in leading to this decision. Of these six bases, Griffis AFB, Loring AFB, Moore AAF, and Warminster NADC cited market presence as an issue. The remaining two bases were located in large urban areas where additional airport capacity is needed but other decisions led to the decision of not to pursue an airport as a reuse.

Transfer Delays

There are delays associated with the transfer of ownership of military property from DoD to the appropriate local agency. The transfer process is long, complicated, and has hindered the economic recovery efforts of several communities. Besides the multiple

sets of regulations for the disposal of military property, there are several other problems that slow the process. The LRA must work with several federal agencies outside the DoD to receive the property under a public benefit transfer. Using the local reuse plan, the facility is divided into parcels based upon proposed land uses. Each parcel must be approved for transfer by the appropriate government agency. Under the public benefit laws, the FAA must support the transfer of the airfield and its related properties.

Differing and conflicting policies between federal agencies can also complicate the process. To speed the transfer process and help local communities, regulations were altered which allows the uncontaminated property to be used during environmental cleanup via an interim lease. This gives the LRA some property to use to create jobs while DoD remains responsible for the environmental restoration. Until recently, the longest interim lease DoD would approve is for five years. The FAA requires that a twenty five year lease be in place to receive capital improvement funds through the MAP program.

Environmental contamination is a factor that is related to transfer delays. For research purposes delay issues were defined as those caused by "red tape" or government bureaucracy. This question also focuses only on the airfield portion of the base which would be transferred through the public benefit regulations.

The response to this area of inquiry indicate that the issue of transfer delays is probably a problem of the past. Only five facilities reported this type of delay in converting the facility to an airport. All five of these bases were on the 1988 or 1991

BRAC closure lists. Based on the responses this issue seems to be isolated among the bases that were in the early rounds of closures. The process, through several agencies of the federal government, simply takes time. As previously discussed, newer regulations have streamlined the process which could explain why none of the bases from the 1993 list reported this type of delay.

Obviously none of the six bases that are not converting to an airport cited airfield transfer delays as an issue since it is an issue that would typically occur after that decision is made.

Other Issues

Reversion Clauses

A reversion clause was a factor in planning at three facilities which responded. When these bases were first established, the land was acquired from state and local governments. In the cases reported, the original conveyance of land to DoD contained a clause that returned ownership of the property back to the state and local government if the DoD no longer occupied it. The reversion clause had differing impacts on two airfield conversions.

In the case of Bergstrom AFB this clause greatly simplified the transfer process by eliminating the red tape involved in the public benefit transfer. In the other case, at K.I. Sawyer AFB, it caused problems because it was linked to a "restoration clause" which stated DoD must restore the property to its original condition. Both the state and

DoD recognize that demolishing valuable infrastructure to restore farm lands is not practical. The state, however, wanted a payment in lieu of restoration. The DoD dismissed the idea of such a payment and pointed to the value of the improvements on the base, including runways, large parking aprons, and several aircraft hangers. At the time of the research the issue was unresolved and slowing the conversion to an airport.

Airfield Configuration

One interesting issue that three of the four Army Air Fields (AAF) surveyed had in common was the design of the aviation facilities. The Army's mission uses helicopters more extensively than other branches of the military. The Army facilities are primarily equipped to handle helicopter operations and maintenance. With fixed-wing aircraft as a secondary operation, these four facilities have short (3,000 to 4,000 feet) runways where Naval and Air Force facilities have runways capable of handling cargo and jet aircraft (8,000 to 11,000 feet). These three found that the market was very limited for helicopter facilities. Only general aviation can use the short runway and the market for this aviation segment has been declining over the last several years. Two found that there was not enough helicopter and general aviation market potential to make conversion to a public airport feasible. Tipton AAF is converting to a public airport but is facing high costs to make the helicopter facilities compatible with fixed-wing aircraft.

Jurisdictional Conflicts

Conflicts between two or more local jurisdictions was only cited by two respondents, but is worth discussion because of its impacts. Myrtle Beach AFB was caught in the middle of a struggle for control between the city and county governments with differing reuse ideas. While the county wanted the entire base for airport uses and future runway expansion, the city wanted part of the base to be reused as an amusement park. The governor of South Carolina had to intervene and appointed an authority of city, county, and state officials to oversee conversion. Similarly, the conversion of George AFB was delayed for three years at a cost of 10 million dollars in legal costs due to one city, which bordered the base, opposing control of the reuse by a coalition of several other cities surrounding the base. The coalition finally was able to begin planning for the reuse of the base including an aviation reuse. Castle AFB reported a similar situation with inter-jurisdictional conflicts. The result was the same as Myrtle Beach, costing time and money that would have been better spent on the conversion effort.

Chapter 5

Considerations for Future Airfield Conversion Planning

As we approach the 21st century it appears that more bases could be closed to bring DoD's infrastructure in line with the decreasing budget. The opportunity to convert those bases with airfields into civilian airports is a tremendous one. As existing airport expansion is further limited by surrounding development, the increasing delays will become unacceptable to travelers and the air transportation industry alike.

This chapter will take the information learned from the surveys and present those key items that planners involved in future airfield conversions should consider. It is recognized that each conversion is unique, but the general information provided here can serve to identify and address issues early in the planning process. Undoubtedly there will be one or more factors that arise which are not noted here. This could be due to changes in laws and regulations, a different economic climate, changes in the aviation industry, or simply with the uncertainty associated with long range planning efforts.

The Airfield: Only One Part of a Closing Base

Once a base is listed for closure, the immediate reaction of the community is the challenge the closure. Unfortunately, there has not been much success in reversing the closure decision. Concentrating on keeping the base open without focusing resources on

reuse planning and economic development can leave a community unprepared. Ideally, implementation of the reuse plan should begin at the time the base closes. If a community gets a late start planning because it focused on fighting the closure then it is likely that it will be unprepared for actual closure of the base. Once a community discovers that their base is being considered for closure it can determine how much effort to devote to challenging the decision. But it is recommended that the planning effort begins as early as the time that closure is even being considered.

Those LRA's with good organization and clear goals move through the planning process in a more orderly fashion. Problems were identified and overcome in order to open the facility as an airport. Cases such as Myrtle Beach AFB and Castle AFB created their an additional level of problems with inter-governmental agency arguments. All efforts were focused on resolving this problem rather than moving forward with the airfield conversion planning. Fortunately this issue was reported in very few instances. The two bases mentioned had the most serious problems which were resolved at the time of this research, but not without a cost. The time and money could have been better spent on planning and converting the bases. These examples should emphasize the need for stakeholder identification and coalition building, as well as establishing clear goals for conversion. The planner must be sensitive to differing views of community leaders and address those in the planning process. While all of this seems fundamental to planning, a conflict like those identified can bring conversion planning to a stop.

The scope of planning the conversion of military airfields to civilian airports is broadened due to the fact that the planning must be done in the context of the entire base. Very few base reuse plans will dedicate the entire base for conversion to an airport. The base reuse plan and EIS required to release the land consider the entire base. Issues involved with residential, industrial, and recreational reuses may complicate the airport planning segment. The reverse is also true making careful planning that much more important.

In the early stages of the base reuse planning, careful attention should be paid to the evaluation of the feasibility of aviation reuse as an alternative. In some cases just because an airfield is present reusing that land as an airport is not practical. An understanding of the aviation market and realistic forecasts are necessary to determine the feasibility of an aviation reuse.

Keeping a long term outlook is important especially at this stage of airfield conversion planning. Once forecasts of aviation activity have been made consider these questions:

1. What is the time frame before the airport becomes financially self sufficient? One to three years? Fifteen to twenty years?
2. What amount of subsidy is required to keep the facility operational until that point?
3. What are potential sources for that money?
4. Is it beneficial in the long run for the community to keep the facility open (in terms of jobs, tax revenues)?

As a planner, either with the LRA or a consulting firm under contract, the history of the base can provide valuable information, especially during the inventory phase of the planning process. Information on pavement maintenance, building age, and utilities can be obtained from the base. The value of this information will vary depending on the quality and level of detail of the recordkeeping.

Once the decision has been made to pursue conversion with an aviation reuse, an airport master plan (funded by the FAA) should be initiated immediately. Essentially the airport master plan is an in-depth study of the airport segment of the base reuse plan.

The typical airport master plan examines future demand and evaluates alternative capital improvements to provide adequate capacity to meet that demand. Master plans for conversions are unique because the infrastructure is present but the activity is not. The focus of the master plan in this case is more strategic in that financial and marketing issues are addressed to keep the facility operational in the near-term when lease revenues may not cover operating expenses.

The mission of the base can also give the planner an idea of the types of aircraft for which the base is configured. For example, a base which has a mission of troop and cargo deployment will have strong enough runway, taxiway, and apron pavement to handle civilian cargo aircraft. The pavement strength may only be suitable for general aviation aircraft if the base was used solely for fighter activity. If the base is a former Army facility, it is possible that the runway(s) will not be long enough for large

commercial aircraft. Also, parking, maintenance, and fueling will likely be configured to helicopters rather than fixed wing aircraft.

Another issue that can be learned from the base history is that of previous land ownership. In several cases local and/or state governments provided the land for the base with a clause which reverts the property back when the military vacates. This type of clause could, depending upon complex legal requirements of NEPA, eliminate the time consuming, burdensome requirements of the public benefit transfer laws and regulations.

Economic factors related to the physical conversion and operation of the airfield were cited in the survey as more significant factors in conversion planning than environmental contamination. This does not mean that environmental issues should be dismissed as DoD's problem. Future airfield conversion planners should familiarize themselves with the legal requirements for cleanup as well as have an understanding of the current cleanup budget. If DoD is still responsible for the environmental restoration (which it likely will be) the issue of implementation schedule and timing with base reuse will be important. An idea of which parts of the base will be available at what time is important in that it may be possible to transfer the airfield portion of the base before other parts. It goes without saying that early coordination and communication with the DoD cleanup team is good practice and should help make the process smoother. Other key points to keep in mind in terms of environmental issues in the planning process are: 1. The recognition that the EIS and the inventory of contamination will be a lengthy process; 2. While it is possible and desirable to work with DoD throughout the process,

the environmental cleanup is essentially out of the LRA's hands and some patience will be necessary.

On the topic of the cost to physically convert an airfield to an airport, a realistic phasing plan must be in place. This will allow particular items to either be converted or installed when traffic or revenue levels reach trigger points or milestones. For example, when the number of annual operations reaches 30,000 the approach lighting will be converted to FAA standards.

The airfield conversion planner should be aware that this increase may not be gradual. In fact, the number of operations could double over night if an air cargo carrier begins operations. Some conversion items, especially where a tenant would occupy, could be covered by a set-aside portion of the lease revenues.

Big Opportunity ... Big Cost

For bases with airfield facilities one of the key questions is: can a civilian airport generate enough revenue from tenants and users to cover operational and maintenance costs? The answer to this question is usually "no", at least not for several years. In this case how much public subsidy is going to be needed to make up the shortfall? Currently, there are no federal programs in place to assist in operational costs, only capital improvements. Although the FAA would like to see this type of program to preserve the infrastructure that is in place for future needs, the same fiscal conservatism that forced the bases to close in the first place may prevent it. Planners will have to use judgments to the

amount of money that may be available. LRA's could possibly use the revenue from tenants not on the airfield portion of the base for operating costs. The competition for industry in general is almost as intense as aviation related business with every economic development organization trying to attract employers to their particular area.

As learned from the research, the issue of money is paramount. Airports, no matter what size, cost money to operate and maintain. Without a secure tenant and the resulting revenue, an initial subsidy is needed. Once the LRA makes the decision to pursue an airport, the planner should look realistically at how long it is going to take for revenues to equal expenses.

Several strategies have been used to keep costs to a minimum while maintaining the airport so that it is attractive to prospective tenants. If there are multiple runways, consider closing all but the longest to air traffic. With little initial traffic one runway can usually suffice and limited maintenance resources can be focused on the single runway. If future traffic increases and funding allows, closed runways can be reopened.

A common practice at many general aviation airports is to turn the airport management duties over to a Fixed Base Operator (FBO). This may be a good initial strategy for the newly converted airport, also. Due to the uniqueness of a company serving as the facility manager and as a tenant, close oversight by the local authority is necessary to ensure the airport is kept attractive for future tenants. A target, such as a specific number of aircraft operations or annual revenues, should be set for the authority to hire a manager for the facility.

Several bases, in order to stimulate aircraft activity, are “transplanting” an existing market onto the facility. These communities are closing their existing general aviation airports and moving the aircraft to the converted airfield. While this does not directly help the local economy with new jobs, it does provide an instant source of revenue for the facility. In addition, the activity at the airfield (from the general aviation airport) may be the impetus needed to attract more tenants. The question still remains as to what to do with the general aviation airport, though. Several respondents reported not being able to close the general aviation airport because of FAA requirements dealing with funding which the airport has received.

The use of a private developer is another possibility for keeping the airport open without the financial burden to the community. The developer would be responsible for management and maintenance of the facility and for securing tenants. In return the developer would retain a percentage of the airport revenues. At this time, the privatization of airports is a highly debated issue. While it has its positive and negative aspects, it may be one way to keep the airport open during initial conversion. The goals of job creation and adding capacity to the aviation system are met, but with the help of private dollars.

For many smaller airports with a control tower, the FAA has begun providing control tower services through the use of a private contractor. This may be a consideration for converted airports once traffic reaches some threshold or when a tenant begins operations.

It may be possible to leave the control tower out of commission when the military departs, but have an agreement with a tower contractor and the FAA that if a tenant is secured, controllers can be provided on short notice at the cost of the LRA or airport sponsor. The agreement with the FAA would be that when traffic reaches their minimum level to provide control tower services that they either assume payment the tower contractor or install their personnel to perform those duties. A key point for the airport is not to get caught paying for air traffic control services once traffic levels reach FAA minimums.

One infrastructure item which was previously believed to be a necessity was an instrument landing system (ILS) which provides vertical and horizontal guidance to aircraft landing in low visibility or poor weather conditions. This system would be a requirement for commercial aviation operations that cannot afford either delays or diversions to other airports. The average cost to install an ILS is one million dollars. The cost is too high when there are no aircraft to use the system but a necessity for attracting tenants.

The next generation of technology which can provide a more accurate approach is the global positioning system (GPS). Using triangulation from four or more satellites, the GPS can provide precise navigation information. The only necessary piece of equipment on the ground is a local area augmentation system (LAAS) which supplements the satellite signals to provide navigation information precise enough to land in the lowest visibility. Unfortunately, the LAAS is still in the testing phase but it will likely be

approved for commercial use in two to three years. The cost of installing the LAAS is significantly lower than an ILS and the LAAS can serve multiple airports if positioned in the correct area. GPS approach procedures should be developed during the airfield conversion planning so that implementation can be expedited. This will save time over leaving the FAA to developing the approach procedures and provide instrument landing capabilities for commercial aviation.

The Aviation Market

Going into this research, the intangible forces of the private market were recognized as: 1. an important factor in deciding to convert the facility a civil airport, and; 2. the determinant of "success" of the conversion. These market forces do not fit neatly into the planning process.

The following are three very different scenarios that illustrate how market forces can affect military airfield conversions:

1. Plans are driven by the market. Aviation tenants commit to using the facility before or early into the conversion planning. The economic uncertainty is reduced if not eliminated. The planning, therefore, must be well done to satisfy the tenant.
2. No tenants are secured. Based on market estimates, the LRA begins the planning process with conversion to a civilian airport as a goal for economic

recovery. Hopefully, aviation industries will see the planning effort put forth and respond by locating their business at the newly converted airport.

3. The market is already in place. In other words the base closure occurred in the right place at the right time. In very few cases the closing facilities are needed almost immediately. This was the case with Bergstrom AFB in Austin where local officials were searching for a site for a new airport to replace the constrained Mueller Airport.

It is evident that the market forces have a very significant role in airfield conversions. This does not mean that planning is not a necessary element. It makes conversion planning that much more important. An airfield without a well designed comprehensive plan is not as attractive to potential businesses.

Formulate a plan that is flexible to the market. Develop a schedule for implementation that is based on milestones or trigger points in terms of traffic. This type of schedule will help to perpetuate the business at the airport. A detailed economic analysis is necessary to estimate the revenue at each milestone. This eliminates spending up front (when budgets are small) and air traffic may or may not appear.

Conclusion

Planning by definition deals with the future, so uncertainty is inherent. Planning the conversion of military airfields to civilian airport is no exception. The cyclical tendencies and competitive nature of the aviation industry further complicate the issues.

The main finding from this research is the financial needs of converting airfields in order to remain operational before such time that revenues equal expenses. The financial burden of operating an airport is more than most cities can handle, especially when the military, a major employer, has just departed. The FAA stresses that a long range outlook is essential in airfield conversion planning. And although it has a grant program for capital conversion expenses, it has no program to for operations and maintenance expenses. Master planning for this type of facility must shift from capital improvements to strategic management and operational efficiency.

The success of the converted airports surveyed in this research will only be determined with time. Hopefully their contribution to civilian aviation in the future will equal their service to the military in the past.

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Vita

Steve Ryan was born and raised in Northern Kentucky and attended St. Henry Elementary School and High School in Erlanger, Kentucky. It was during this time that Steve's interest in aviation grew and he became a cadet in the Civil Air Patrol. After graduating from high school, Steve studied aviation at Middle Tennessee State University. After receiving his Bachelor of Science degree in Aerospace Administration, Steve worked for the Cincinnati/Northern Kentucky International Airport as a Noise Abatement Specialist.

In 1994, Steve returned to graduate school at the University of Tennessee School of Planning in Knoxville. During that time he worked as a research assistant for the UT Transportation Center. Upon completion of his coursework, Steve spent two years working for the Tennessee Department of Transportation (TDOT) as a Transportation Planner. Most recently Steve moved into the private sector as an airport planning consultant with PB Aviation, Inc. and has since been named a senior consultant with the firm.