



**CHAPTER THREE**  
**PROJECTIONS OF**  
**AVIATION DEMAND**

**INTRODUCTION**

Aviation demand projections are an important element of this Master Plan Update because they provide the basis for:

- C Determining the future role of the Airport by identifying the types of aircraft to be accommodated.
- C Evaluating the capacity of existing Airport facilities to meet projected demand.
- C Estimating the extent of airside and landside facilities required in future years.

This chapter provides updated projections of passenger and aircraft activity for the Airport through the 20-year planning period in 5-, 10-, and 20-year increments (years 2000, 2005, and 2015). The assumptions and historical data underlying these updated projections are also documented in this chapter which is organized in the following sections:

- C Industry Trends and Airport Role
- C Projections of Passenger Enplanements
- C Projection of Airline Operations and Fleet Mix
- C Projection of Air Cargo Activity
- C Projection of General Aviation Activity
- C General Aviation Aircraft Operations Projection
- C Projection of Military Operations
- C Projection of Instrument Operations
- C Activity Peaking Characteristics
- C Projections Summary

**INDUSTRY TRENDS AND AIRPORT ROLE**

Major trends that may affect future activity levels at JIA include airline competition and service, tourism, and the debate over moving the Alaska State Capital from Juneau to Anchorage. Current airlines that service Juneau include Alaska Airlines and Taquan (AirONE). Although Alaska Airlines has been the dominant passenger airline at the Airport, several airlines have initiated and discontinued passenger service at JIA over the last several years. These airlines include MarkAir and Delta Air Lines, the latter of which served Juneau only during the summer months in recent years and terminated service in September 1996. It is significant to note that MarkAir provided reduced fares to the Juneau market, which served to increase overall travel demand. MarkAir discontinued service in 1993, although the airline briefly reentered the marketplace in 1995 before discontinuing service altogether. AirONE initiated service in June 1998. They service the towns of Juneau, Petersburg, Wrangell, Ketchikan, Sitka, and Klawock. They have three outgoing and two incoming flights daily.

Alaska Airlines has provided consistent service to Juneau and the rest of Alaska over the years. This has manifested itself in steady passenger growth. The boom in Alaska tourism can also be viewed as a major

factor in recent passenger growth and the potential for future growth. The issue of moving the Capital from Juneau to Anchorage has been debated for several years and will most likely continue to be discussed. While this study recognizes that some state government jobs have migrated and will likely continue to migrate north to Anchorage, this study assumes that Juneau will remain the Alaska State Capital.

GA activity nationally is projected to experience relatively stagnant or slow growth in the short term and then rebound around the year 2000.<sup>1</sup> Based on the reliance on aircraft for essential transportation in the state of Alaska, however, Juneau is expected to show continued growth in GA throughout the entire 20-year planning period.

## **PROJECTIONS OF PASSENGER ENPLANEMENTS**

This section presents projections of passenger enplanements for JIA. Before discussing the enplanement projections (EPs) that were developed for the Airport, it is important to identify the factors that affect enplanement levels and how these factors are shaping commercial passenger traffic at JIA.

Market demographics, as they relate to population, employment, and per capita personal income, often influence the use of scheduled commercial air service. As levels of population and employment increase, a market usually experiences a corresponding increase in its demand for commercial air travel. Discretionary or pleasure travel tends to increase as travelers in the market have more disposable income. Certain types of employers, such as state government, have the propensity to generate a higher demand for commercial air travel. Tourism is another good example of an activity that generates a higher demand for commercial air travel.

When these factors are considered in combination, the demand for commercial air service in a particular geographic area becomes very tailored and specific. Theoretically, in a deregulated environment, the level of commercial air service provided in each community will seek a level commensurate with actual demand. In the real world environment, however, service in any given market is most directly influenced by the ability of the airline to make a profit on the service it provides. The level of service provided, whether it is provided by a large air carrier with jet equipment or an air taxi with small aircraft, and the total number of available seats provided to the market also affect the level of enplanements generated at an airport and the profit the service can generate.

Historical passenger service at JIA, the relative stability of government jobs, and growth in Alaska tourism were considered during the development of EPs for the JIA. It is significant to note that 1995 enplanements were used as the starting point for projections since 1996 passenger enplanement data were incomplete at the time these projections were developed. The following methodologies were used to project enplanements at the Airport:

- C Linear Trend Methodology
- C Market Share Methodology
- C Seasonal Analysis Methodology

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<sup>1</sup> This factors in the enactment of the General Aviation Revitalization Act of 1994 and subsequent renewed optimism for the GA industry and new products. The full effects of the Act, and of long-term FAA/industry initiatives designed to increase interest in GA, are not anticipated to be realized for several years (source: *FAA Aviation Forecasts, Fiscal Years 1997-2008*, March 1997).

**Linear Trend Methodology**

The linear trend methodology examines historical growth trends in activity and applies these trends to current demand levels to produce projections of future activity. Linear trend analysis assumes that activity, and the factors that affect activity, will continue to influence demand levels at similar rates over an extended period of time. Linear trend projections are typically used to provide baseline forecasts that reflect stable market conditions.

To project enplanements over the planning period, the average growth rate experienced over the recent four-year period was used. Air carrier EPs for JIA, using the linear trend methodology, are presented in **Table 3-A**, while air taxi EPs are presented in **Table 3-B**. As shown, air carrier enplanements are projected to increase from 244,954 in 1995 to 304,631 in 2015, representing an annual growth rate of 1.1 percent. Air taxi enplanements, using the linear trend methodology, are projected to increase from 123,441 in 1995 to 432,985 in 2015, representing an annual growth rate of 6.5 percent. Total enplanements under the linear trend methodology are projected to increase from 368,395 in 1995 to 737,616 in 2015.

<b>AIR CARRIER ENPLANEMENT PROJECTIONS LINEAR TREND METHODOLOGY</b>		
Juneau International Airport		
<i>Year</i>	<i>Air Carrier EPs</i>	<i>Annual Growth Rate</i>
<u>Historical</u>		
1992	234,502	
1993	199,424	-15.0%
1994	227,850	14.3%
1995	244,954	7.5%
<u>Projected</u>		
2000	258,677	1.1%
2005	273,168	1.1%
2015	304,631	1.1%
Sources: <i>Historical - Airport Passenger Enplanement Analysis 1992-1995, June 17, 1997.</i> <i>Projected - The Airport Technology and Planning Group, Inc., July 1997.</i>		

**Table 3-A**

<b>AIR TAXI ENPLANEMENT PROJECTIONS LINEAR TREND METHODOLOGY</b>		
Juneau International Airport		
<i>Year</i>	<i>Air Taxi EPs</i>	<i>Annual Growth Rate</i>
<u>Historical</u>		
1992	96,041	
1993	116,364	21.0%
1994	117,551	1.0%
1995	123,441	5.0%
<u>Projected</u>		
2000	168,932	6.5%
2005	231,189	6.5%
2015	432,985	6.5%
Sources: <i>Historical - Airport Passenger Enplanement Analysis 1992-1995, June 17, 1997.</i> <i>Projected - The Airport Technology and Planning Group, Inc., 1997.</i>		

**Table 3-B**

**Market Share Methodology**

The market share methodology examines the JIA historical and projected share of the U.S. market through a comparison of historical and expected growth rates. Annually, the FAA prepares a forecast of aviation activity in the U.S. This forecast provides an accepted measure to reflect how aviation traffic in general is anticipated to grow. In the absence of significant local influences, activity at individual airports would be expected to increase at a rate comparable to the national rate. Once a growth rate projection is developed, it can then be reflected as an increase or decrease in the share of the U.S. market for that airport.

The market share of the airport for air carrier enplanements over the past several years, as shown in **Table 3-C**, has fluctuated somewhat, ranging from 0.046 percent of U.S. air carrier enplanements in 1993 to 0.054 percent in 1992. The JIA market share has been influenced by the entrance and exit of carriers in the market

and the impact of tourism.

<b>AIR CARRIER ENPLANEMENT PROJECTIONS MARKET SHARE METHODOLOGY</b>					
Juneau International Airport					
<b>Year</b>	<b>Juneau Air Carrier EPs</b>	<b>United States Air Carrier EPs</b>	<b>Juneau Market Share</b>	<b>Annual Growth Rate</b>	
				<b>Juneau</b>	<b>U.S.</b>
<u>Historical</u>					
1992	235,502	430,300,000	0.054%		
1993	199,424	434,000,000	0.046%	-15.0%	0.9%
1994	227,850	472,100,000	0.048%	14.3%	8.8%
1995	244,954	465,300,000	0.049%	7.5%	5.1%
<u>Projected</u>					
2000	303,785	613,500,000	0.047%	4.4%	4.3%
2005	366,126	739,400,000	0.047%	4.1%	4.1%
2015	531,827	1,074,036,124	0.047%	4.0%	3.9%
<i>Sources: Historical - Airport Passenger Enplanement Analysis 1992-1995, June 17, 1997. Historical and Projected U.S. - FAA Aviation Forecasts - Fiscal Years 1997-2008. Projected U.S. - The Airport Technology and Planning Group, Inc., July 1997.</i>					

**Table 3-C**

The expansion of the hub-and-spoke system that characterizes the commercial aviation network of the nation has artificially increased total U.S. enplanement figures. As a result, most spoke cities such as Juneau typically grow at rates lower than those projected nationally, especially in the long term. It is expected that the Airport will continue its role as a spoke airport serving primarily origin and destination passengers. Therefore, the expected growth scenario for air carrier enplanements at JIA is based on a constant share of U.S. major/national enplanements. Under the market share projection methodology, it is estimated that the JIA share of U.S. major/national (i.e., air carrier) enplanements will remain steady at the historical average of 0.050 percent through 2015.

Therefore, air carrier enplanements using this methodology are projected to increase from 244,954 in 1995 to 531,827 in 2015. This increase represents an annual growth rate of 3.9 percent over the 20-year period. Since the market share methodology could not be used to project air taxi enplanements, the air taxi projections developed under the linear trend methodology are combined with air carrier EPs developed under the market share approach to arrive at total enplanements (see the Enplanement Projection Comparison).

**Seasonal Analysis Methodology**

Due to the seasonal fluctuation of passenger activity at the Airport, a methodology that examines growth in enplanements during the summer season (with increased tourism) as compared to the winter season (with a greater preponderance of local traffic) was developed. This methodology examined each of the distinctive seasons independently and then summed them to produce a total EP.

To project winter enplanements, the historical relationship between the enplanements during the winter season months (October to April) and the population of the CBJ were examined. Population projections developed by Reed Hansen & Associates, as presented in **Table 3-D**, were used for this analysis. Population in the CBJ, according to this study, is projected to continue to increase at a moderate rate with most of the growth caused by a natural increase until the turn of the century. Thereafter, the population is forecast to level off to a rate less than the natural increase through the remaining years of the forecast. This reflects the likelihood that declining state revenues and employment will result in modest out-migration. Since the Reed Hansen study provided population projections through the year 2013, estimates for the year 2015 were derived by extrapolation using implied growth rates. As shown in Table 3-D, the population of the CBJ is projected to increase from 29,775 in 1995 to 34,109 in 2015, representing an annual growth rate of 0.7 percent over the period.

<b>ENPLANEMENT PROJECTIONS</b>							
<b>SEASONAL ANALYSIS METHODOLOGY</b>							
Juneau International Airport							
<b>Year</b>	<b>Summer Enplanements</b>	<b>Summer EP Growth Rate</b>	<b>Winter Enplanements</b>	<b>CBJ Population</b>	<b>EPs Per Person</b>	<b>Enplanement Growth Rate</b>	<b>Total EPs</b>
<u>Historical</u>							
1992	187,087		143,456	28,036	5.12		330,543
1993	178,736	-4.5%	137,052	28,361	4.83	1.2%	315,788
1994	195,497	9.4%	149,904	28,518	5.26	0.6%	345,401
1995	208,512	6.7%	159,883	29,775	5.37	4.4%	368,395
<u>Projected</u>							
2000	251,946	3.9%	162,237	31,540	5.14	0.3%	414,184
2005	302,135	3.7%	172,239	32,498	5.30	0.7%	474,375
2015	426,192	3.5%	194,421	34,109	5.70	1.0%	620,613
<p><i>Sources: Historical EPs - Airport Passenger Enplanement Analysis 1992-1995, June 17, 1997.</i>  <i>Historical Population - Alaska Department of Labor and CBJ Department of Community Development.</i>  <i>CBJ Population Projection - Reed Hansen &amp; Associates, January 1997 (extrapolated to 2015).</i>  <i>Projected Enplanements - The Airport Technology and Planning Group, Inc., 1997.</i></p> <p><i>Notes: Summer EPs include May through September activity (historically 56.6% of total EP).</i>  <i>Winter EPs include October through April activity (historically 43.4% of total EP).</i></p>							

**Table 3-D**

As shown in Table 3-D, the historical ratio of winter enplanements to CBJ resident population ranged from a low of 4.83 EPs per person in 1993 to 5.37 EPs per person in 1995. Based on a slightly increasing ratio of EPs per person from 5.14 in 2000 (historical average) to 5.70 in 2015 and a modest projected increase in CBJ population, winter enplanements are projected to increase from 159,883 in 1995 to 194,421 in 2015. This represents an annual growth rate of approximately 1.0 percent over the 20-year planning period.

To project enplanements for the busier summer months, the historical growth in summertime enplanements was examined. As shown in Table 3-D, summer enplanement growth has fluctuated significantly, ranging from a 4.5 percent decline in 1993 to a 9.4 percent increase in 1994. The average growth rate in summer enplanements for the period 1992 to 1995, which is used to develop the projection of enplanements for the Airport in the short term (2000), is 3.9 percent. Growth rates of 3.7 percent and 3.5 percent were applied to the 10- and 20-year forecast periods, respectively. Based on these growth rates, summer enplanements at JIA are projected to increase from 208,512 in 1995 to 426,192 in 2015. It is significant to note that growth in

tourism, which is the driving force behind the peak summer activity, is widely anticipated to increase at a strong rate in the short to medium time frame (i.e., the next 10 years) and is likely to level off in the long term to a more moderate growth rate.

When the winter and summer EPs developed under this methodology are summed, total enplanements are projected to increase from 368,395 in 1995 to 620,613 in 2015, representing an annual growth rate of 2.6 percent.

**Enplanement Projection Comparison**

To provide a comprehensive comparison of trends and projection methodologies, previously prepared EPs, including the 1987 Master Plan, the FAA Terminal Area Forecast, and the 1996 update of the AASP, were compared to the projections produced as part of this Master Plan Update. **Table 3-E** presents these various EPs in tabular format while **Figure 3-1** presents them graphically. EPs using the market share methodology as presented in Table 3-E, include the air carrier component from Table 3-C and the air taxi component presented in Table 3-B (linear methodology). As previously discussed, this was done to allow a comparison of the alternative forecasts.

<b>ENPLANEMENT PROJECTION COMPARISON</b>							
Juneau International Airport							
Year	Total EPs	1987 Master Plan	TAF	AASP	Linear Trend	Seasonal Analysis	Market Share
<u>Historical</u>							
1992	330,543		251,800				
1993	315,788						
1994	345,401						
1995	368,395			329,631			
<u>Projected</u>							
2000		323,600	332,695	357,452	427,609	414,184	472,717
2005		361,820	370,424	387,836	504,356	474,375	597,315
2015		438,200	452,079	457,243	737,617	620,613	964,812
Sources: Historical - Airport Passenger Enplanement Analysis, 1992-1995, June 17, 1997. Projections - 1987 Master Plan, Coffman Associates, TAFs, AASP, TRA-BV 1996, Master Plan Update - The Airport Technology and Planning Group, Inc., 1997.							
Notes: These figures derived through interpolation or extrapolation to match specific years, are shown for comparison purposes only. Total EPs were derived using air carrier EPs based on methodology plus air taxi EPs based on linear trend methodology.							

**Table 3-E**

Each year, the FAA prepares Terminal Area Forecasts (TAFs) for use in the FAA planning and decision making. This document includes all U.S. airports which have at least one of the following: an ATCT, commercial service, 60,000 itinerant or 100,000 total annual operations, or at least 10 based aircraft. The current TAF for JIA is based on 1995 data and forecasts activity year-by-year through 2010. Forecasts for those years not included in the TAF were extrapolated using existing or implied growth rates.

Table 3-E also presents the 1987 Master Plan projection of enplanements for the Airport. Forecasts from the 1987 Master Plan were formulated for the 1992, 1997, and 2007 planning horizons. For this study, figures

from the 1987 Master Plan were interpolated or extrapolated using existing or implied growth rates to produce projections for years that are consistent with the planning milestones of this study.

The projections presented in Table 3-E and Figure 3-1 show a range of total EPs. As shown, total 2015 enplanements range from a low of 438,200 (1987 Master Plan extrapolated to 2015) to a high of 964,812 (market share methodology).

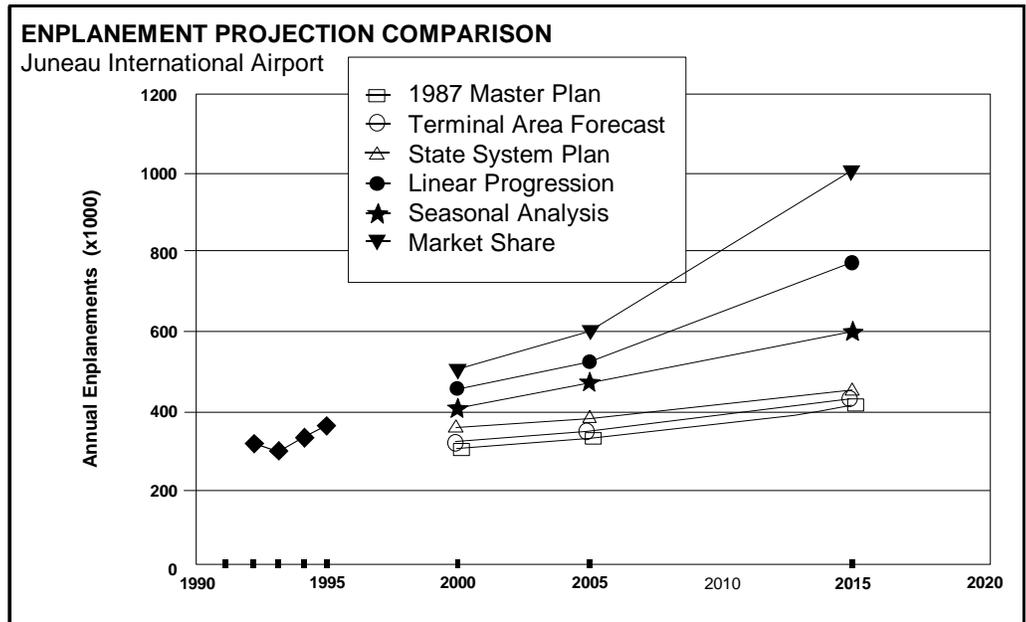


Figure 3-1

The seasonal analysis is considered the most realistic projection of passenger activity for JIA. This methodology considers the seasonal peaks experienced at the Airport and produces short-term projections that are attainable given the outlook on tourism in the marketplace during the summer months. These projections are tempered by the slower growth anticipated in off-season activity, which is related to modest growth in CBJ population. The seasonal analysis methodology was selected as the preferred EP methodology. Therefore, for purposes of this Master Plan Update, total enplanements for JIA are projected to increase from 368,395 in 1995 to 620,613 in 2015, representing an annual growth rate of 2.6 percent.

**PROJECTION OF AIRLINE OPERATIONS AND FLEET MIX**

Operations and fleet mix projections were developed for the commercial airline activity at the Airport using the enplaned passenger data previously presented in conjunction with historical and expected trends in load factors, types of aircraft, and average seats per departure. Operations and fleet mix projections are presented in the following subsections:

- C Air Carrier Operations
- C Air Taxi Operations
- C Commercial Fleet Mix Projection
- C Critical Aircraft

**Air Carrier Operations**

To develop a projection of air carrier operations, enplaned data were used in conjunction with historical data and expected trends regarding load factors and average seats per departure at JIA.

**Table 3-F** presents historical operational data for the scheduled commercial air carriers from 1992 to 1995. As shown, the average number of seats per departure has ranged from a low of 119.1 in 1992 to a high of 132.0 in 1994. By comparison, average seats for all domestic airlines averaged approximately 147.5 during this same time period.<sup>2</sup> One reason for the lower average number of seats in Juneau is the capacity of the relatively homogenous fleet (B737, MD-80 series) of the largest carrier operating at JIA which is Alaska Airlines. Another reason is the use of passenger/cargo combination aircraft by Alaska Airlines.

<b>AIR CARRIER OPERATIONS PROJECTIONS</b>					
Juneau International Airport					
<i>Year</i>	<i>Air Carrier Enplanements</i>	<i>Average Seats</i>	<i>Load Factor</i>	<i>Air Carrier Departures</i>	<i>Air Carrier Operations</i>
<u>Historical</u>					
1992	234,502	119.1	44.8%	4,391	8,782
1993	199,424	123.4	47.3%	3,419	6,838
1994	227,850	132.0	41.5%	4,163	8,325
1995	244,954	123.5	50.8%	3,907	7,814
<u>Projected</u>					
2000	277,503	124.9	52.0%	4,273	8,545
2005	317,831	126.5	54.0%	4,653	9,306
2015	415,811	128.0	56.0%	5,801	11,602
<i>Sources: Historical Enplanement - Airport Passenger Enplanement Analysis 1992-1995, June 17, 1997. Historical Seats/Load Factors - Back Information Services, Official Airline Guide Database, 1992-1995. Historical Operations - FAA, ATCT Records, 1992-1995. Projected Seats/Load Factor - FAA Aviation Forecasts - Fiscal Years 1996-2007, March 1996, The Airport Technology and Planning Group, Inc., July 1997, and Alaska Airlines.</i>					

**Table 3-F**

The discussion of future air carrier fleet trends for Juneau can be organized into three groups: First, because Alaska Airlines will likely remain the dominant air carrier for Juneau, a close look at their future fleet plans is required. Second, thought must be given to the possibility of future aircraft fleet preferences by other air carrier operators not currently operating at the Airport. Third, it is likely that some short-haul, low load factor routes currently being served by large jets will transition to service using commuter aircraft (e.g., deHavilland Dash 8, Swearingen Metro). From the perspective of determining air carrier operations, it is assumed that the average number of seats for the overall fleet will grow to 124.9 in 2000, 126.5 in 2005, and 128.0 in 2015. This takes into consideration the future fleet plans for Alaska Airlines (additional B737-400s and utilization of the new B737-900s), the possibility of new entrants into the Juneau market with similar size aircraft, and the transition of some air carrier service to commuter aircraft. It also takes into account some of the unique facets of passenger activity at JIA, such as the desire for frequently scheduled flights.

Historical load factors, as shown on Table 3-F, are significantly lower than industry standards. The load factors appear low for air carriers operating in Juneau because many of the operations have several stops (i.e., Ketchikan, Sitka, Juneau) on the flight from Seattle to Anchorage. In addition, several Alaska Airlines flights operate B737-200 convertible aircraft. These aircraft offer a passenger/cargo combination, in which passenger seats from the forward cabin section are removed and the space is used for air freight. In this arrangement, only a portion of the passenger cabin is available for actual passenger use. Historical load factors have ranged from a low of 41.5 percent in 1994 to a high of 50.8 percent in 1995. Future load factors are expected to remain low relative to the industry because of the unique characteristics of passenger/cargo operations. However, they are projected to increase to 52.0 percent in 2000, 54.0 percent in 2005, and 56.0 percent in 2015.

<sup>2</sup> Source: FAA Aviation Forecasts - Fiscal Years 1997-2008, March 1997, page IX-9.

Based on the projected number of air carrier enplanements, average seats per departure, and load factors, shown in Table 3-F, air carrier departures are projected to increase from 3,907 in 1995 to 5,801 in 2015. This represents an annual growth rate of 2.0 percent and corresponds to an increase in total air carrier operations (departures and landings) from 7,814 in 1995 to 11,602 in 2015.

### Air Taxi Operations

Similar to the air carrier operations analysis, enplaned data were used in conjunction with historical data and expected trends regarding load factors and average seats per departure at JIA to develop a projection of air taxi operations. **Table 3-G** presents historical operational data by fixed wing and helicopters from the air taxi operators for the years 1992 to 1995.

<b>AIR TAXI OPERATIONS PROJECTIONS</b>					
Juneau International Airport					
<b>Year</b>	<b>Air Taxi Enplanements</b>	<b>Average Seats</b>	<b>Load Factor</b>	<b>Air Taxi Departures</b>	<b>Air Taxi Operations</b>
<b>Fixed Wing:</b>					
<u>Historical</u>					
1992	61,533	7.3	22.8%	36,819	73,639
1993	75,454	7.4	27.0%	37,855	75,710
1994	72,944	7.5	22.2%	43,737	87,473
1995	80,862	7.4	22.2%	49,032	98,065
<u>Projected</u>					
2000	87,612	8.3	23.5%	44,920	89,841
2005	100,344	9.0	24.5%	45,281	90,563
2015	131,278	10.9	26.5%	45,469	90,939
<b>Helicopter:</b>					
<u>Historical</u>					
1992	34,508	5.0	62.7%	11,003	22,007
1993	40,910	5.0	72.3%	11,313	22,626
1994	44,607	5.5	62.0%	13,071	26,141
1995	42,579	5.5	52.8%	14,653	29,307
<u>Projected</u>					
2000	49,068	5.5	70.0%	12,745	25,490
2005	56,199	6.0	73.0%	12,831	25,662
2015	73,524	6.0	76.0%	16,124	32,247
<i>Sources: Historical Enplanements - Airport Passenger Enplanement Analysis 1992-1995, June 17, 1997. Historical Seats/Load Factor - Back Information Services, Official Airlines Guide Database, 1992-1995. Historical Operations - FAA, ATCT records, 1992-1995. Projected - The Airport Technology and Planning Group, Inc., July 1997. (Helicopter operations are doubled from ATCT counts, based on counting practices. This assumes that about 50% of actual helicopter operations are counted by the ATCT.)</i>					

**Table 3-G**

For fixed wing aircraft, average seats per departure have ranged from a low of 7.3 in 1992 to a high of 7.5 in 1994. Future average seats per departure are anticipated to increase based on the evolution of air taxi

service by larger commuter aircraft such as the Swearingen Metro, Beech 1900, deHavilland Dash 8, and the Canadair Regional Jet. The use of such aircraft is anticipated to increase the average number of seats in the air taxi fleet to 8.3 in 2000, 9.0 in 2005, and 10.9 in 2015. Historical load factors range from a low of 22.2 percent in 1994 and 1995 to a high of 27.0 percent in 1993. To develop projected load factors, the average of historical load factor (23.5 percent) was used for the short-term (2000), with minor increases to 24.5 percent in 2005 and to 26.5 percent in 2015. Fixed wing air taxi departures are projected to *decrease* from 49,032 in 1995 to 45,469 in 2015, based on the projected number of *fixed wing* air taxi enplanements (estimated to be 62.0 percent of total air taxi enplanements based on historical data), average seats per departure, and load factors. These departure numbers correspond to a decrease in fixed wing air taxi operations (departures and landings) from 98,065 in 1995 to 90,939 in 2015.

For helicopter aircraft, historical average seats per departure range from 5.0 to 5.5. This reflects programs by some of the current operators at the Airport, such as TEMSCO, to convert their equipment for higher passenger capacities. Based on the continuation of these conversions and overall tour industry and new equipment trends, future average seats are estimated at 5.5 for 2000 and 6.0 for 2005 and 2015. Historical load factors range from a low of 52.8 percent in 1995 to a high of 72.3 percent in 1993. Future load factors are estimated at 70.0 percent in 2000, 73.0 percent in 2005, and 76.0 percent in 2015. Helicopter air taxi departures are projected to increase from 14,653 in 1995 to 16,124 in 2015, representing an annual growth rate of 0.5 percent based on the projected number of *helicopter* air taxi enplanements (estimated to be 38.0 percent of total air taxi enplanements based on historical data), average seats per departure, and load factors. These departure numbers correspond to an increase in total helicopter air taxi operations (departures and landings) from 29,307 in 1995 to 32,247 in 2015.

### Commercial Fleet Mix Projection

The existing and future fleet mix for commercial air carrier operators at JIA is shown in **Table 3-H**. As shown, the dominant aircraft in the market has historically been the Boeing 737. There has been a trend towards less use of the older B737-100 and 200 series aircraft and greater utilization of the B737-400 aircraft. Boeing 727s have served Juneau, however, B727 operators do not currently serve the Airport and Alaska Airlines has phased the B727 out of its aircraft fleet. Air cargo operations conducted by Evergreen International, which began in 1995, utilize DC-9 aircraft. Limited operations by MD-80 series aircraft have been conducted at the Airport and, although it is not listed in Table 3-H, an occasional Boeing 757 has operated at the Airport.

Future fleet projections are based largely on the current makeup of the Alaska Airlines fleet and their fleet acquisition plans.

Alaska Airlines currently has on order two additional B737-400s and two additional MD-83s. Airline personnel have indicated that the B737-900 (which has a slightly higher seating capacity than the B737-400) will likely be a dominant aircraft in their future fleet serving JIA.<sup>3</sup> The anticipated transition for a small percentage of the total air carrier enplanement from jet service to commuter service may be significant. This transition is partially due to a limited reliance on Essential Air Service subsidies in the future.

The existing and future fleet mix for fixed-wing air taxi operators at the Airport is shown in **Table 3-I**. As shown, Piper and Cessna light aircraft are the dominant aircraft in this group, with a strong presence of deHavilland DHC-2 Beaver aircraft. It is assumed, for purposes of this Master Plan Update, that the future fleet mix for air taxi operators will include aircraft from the current fleet, as well as an increase in larger regional transports such as the Metro/Beech 1900, Dash 8, and the Canadair Regional Jet. The current air taxi helicopter fleet is comprised of Eurocopter AStar, Bell JetRanger, and Hughes 500 aircraft. These

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<sup>3</sup> Based on discussions with Alaska Airlines' Customer Service Manager, March 3, 1997.

generally have a pilot plus four or five seating configuration (some have been converted for the additional seat and others will be converted). Future trends in air taxi helicopters include quieter equipment, such as the Eurocopter EC 135 and EC 120. Future air taxi trends are also towards helicopters with 6 to 8 passenger seating.

<b>AIR CARRIER FLEET MIX PROJECTIONS</b>							
Juneau International Airport							
<i>Aircraft Type</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2015</i>
Boeing 737-200	39.6%	24.5%	18.3%	30.7%	28.0%	23.0%	18.0%
Boeing 737-300	2.4%	0.0%	0.0%	0.0%	0.0%	5.0%	10.0%
Boeing 737-400/900	5.0%	57.5%	75.2%	62.8%	62.0%	64.0%	64.0%
Boeing 727	51.9%	12.0%	4.5%	6.1%	6.0%	2.0%	0.0%
MD-80 Series	1.1%	6.0%	2.1%	0.3%	2.0%	2.0%	2.0%
DeHavilland Dash 8/Metro	0.0%	0.0%	0.0%	0.0%	2.0%	4.0%	6.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Sources: Historical - Back Information Services, Official Airline Guide Database, 1921-1995.  
Projected - The Airport Technology and Planning Group, Inc., July 1997.*

**Table 3-H**

<b>AIR TAXI (FIXED WING) FLEET MIX PROJECTIONS</b>							
Juneau International Airport							
<i>Aircraft Type</i>	<i>1992</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2015</i>
Cessna (light aircraft)	24.6%	21.6%	20.1%	17.7%	20.0%	18.0%	16.0%
Swearingen Metro/Beech 1900	0.0%	0.0%	0.0%	0.0%	3.5%	7.0%	14.0%
Piper (light aircraft)	63.1%	63.8%	67.3%	65.3%	62.0%	59.5%	51.5%
DeHavilland Beaver	11.5%	13.7%	11.5%	16.3%	13.0%	13.0%	13.0%
DeHavilland Dash 8	0.0%	0.0%	0.3%	0.0%	1.0%	2.0%	5.0%
DC-3	0.9%	0.9%	0.8%	0.7%	0.5%	0.5%	0.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Sources: Historical - Back Information Services, Official Airline Guide Database, 1921-1995.  
Projection - The Airport Technology and Planning Group, Inc., July 1997.*

**Table 3-I**

**Critical Aircraft**

The critical, or design, aircraft is defined as the most demanding aircraft that operates at an airport on a regular basis. Typically, an aircraft must conduct 500 or more annual operations to be considered the critical aircraft. Based on the projected commercial airline fleet mix presented in Tables 3-H and 3-I, the design aircraft for JIA through the 20-year planning period is the Boeing 737-900.

The FAA organizes airport design standards by Airport Reference Code (ARC) and the ARC is defined based on the design aircraft of the airport. The ARC incorporates characteristics of the most demanding aircraft

expected to operate at the airport on a regular basis and includes the following two components: Aircraft Approach Category and Airplane Design Group. The aircraft approach category relates to the operational approach speed characteristics of the aircraft and is denoted by a letter. The airplane design group is based on wingspan and relates to the physical characteristics of the aircraft and it is denoted by a roman numeral. The ARC for the Boeing 737-900 is C-III, based on an approach speed of 139 knots and a wingspan of 112.6 feet.

**PROJECTION OF AIR CARGO ACTIVITY**

Air cargo is broken down into two categories: air mail, which is carried under contract to the U.S. Postal Service; and air freight, which includes all other air cargo. Both types of cargo are typically carried in the belly hold of an aircraft, although the current U.S. Air Mail service is conducted by Evergreen International Airlines using dedicated cargo aircraft. Additionally, some passenger airline flights are operated as combination cargo/passenger flights, in which passenger seats from the forward cabin section are removed and the space is used for air freight. Historical and projected air cargo activity is presented in **Table 3-J**.

<b>AIR CARGO PROJECTIONS</b>							
Juneau International Airport							
<i>Year</i>	<i>Air Mail*</i>	<i>CBJ Population</i>	<i>Air Mail* Per Capita</i>	<i>Air Freight*</i>	<i>CBJ Population</i>	<i>Air Freight* Per Capita</i>	<i>Total Air Cargo*</i>
<u>Historical</u>							
1992	6,528,402	28,036	233	15,306,878	28,036	546	21,835,280
1993	7,255,750	28,361	256	16,561,599	28,361	584	23,817,349
1994	5,473,038	28,518	192	15,193,444	28,518	533	20,667,219
1995	6,446,038	29,775	216	15,362,022	29,775	516	21,808,060
<u>Projected</u>							
2000	7,073,838	31,540	224	17,178,520	31,540	545	24,252,358
2005	7,288,700	32,498	224	17,700,302	32,498	545	24,989,002
2015	7,650,018	34,109	224	18,577,747	34,109	545	26,227,764
<i>Sources: Historical Cargo - Airport Management Records 1992-1995, plus discussions with Evergreen International. Projected Cargo - The Airport Technology and Planning Group, Inc., July 1997.</i>							
<i>Note: * Unit Measurement is pounds</i>							

**Table 3-J**

Air mail activity was fairly steady from 1992 to 1995, ranging from a low of approximately 5.5 million pounds in 1994 to a high of approximately 7.3 million pounds in 1993. Projections for air mail were developed based on a ratio of air mail per capita. As shown in Table 3-J, the future air mail per capita ratio is assumed to be 224 pounds, representing an average of the historical activity.

Applying this to projected population results in an increase in air mail from approximately 6.4 million pounds in 1995 to approximately 7.7 million pounds in 2015. This represents an annual growth rate of 0.9 percent over the 20-year planning period.

Projections of air freight were also developed using a per capita approach. As shown in Table 3-J, air freight activity was fairly steady from 1992 to 1995, ranging from a low of approximately 15.2 million pounds in 1994 to a high of approximately 16.6 million pounds in 1993. Projections of air freight assume a per capita rate of 545 pounds, representing an average of the historical activity.

Applying this to the projected population results in an increase in air freight from approximately 15.4 million pounds in 1995 to approximately 18.6 million pounds in 2015. This represents an annual growth rate of 1.0 percent over the 20-year planning period.

Total air cargo is projected to increase from approximately 21.8 million pounds in 1995 to approximately 26.2 million pounds in 2015, representing an annual growth rate of 0.9 percent.

**PROJECTION OF GENERAL AVIATION ACTIVITY**

GA activity represents all facets of civil aviation except activity by certificated route air carriers and air commuters. Projections of GA based aircraft, GA operations, and fleet mix were prepared for JIA, and are presented in the following subsections.

**Based Aircraft Projections**

Two methodologies were used to develop based aircraft projections for JIA. The first projects the number of potential based aircraft as a percentage or “market share” of active aircraft in Alaska. The second correlates the number of based aircraft with the population of the CBJ. It is significant to note that a long stream of reliable historical based aircraft data for the Airport were not available. However, existing (1995) based aircraft data are believed to be accurate and serve as the basis for projecting future GA demand.

**Market Share Methodology:** The market share approach assumes that JIA will capture a percentage of the future market equal to the percentage of the market it captured in the past. The FAA tracks the number of active GA aircraft (aircraft that have flown a minimum of one hour annually) and prepares projections of active aircraft for each region of the country. Since these projections are available through 2008, estimates through the 20-year planning period (2015) were derived by extrapolation using FAA growth rates.

As shown in **Table 3-K**, FAA active GA aircraft projections indicate that the Alaska Region can anticipate an increase from 5,500 active GA aircraft in 1995 to 6,000 in 2015. This represents an average annual growth of 0.44 percent over the 20-year planning period. If the relationship between active aircraft in the region and based aircraft at the Airport continues, the number of based aircraft can expect to increase by the end of the planning period. By capturing a constant share of the regional active GA aircraft, JIA is projected to increase the number of based aircraft from 355 in 1995 to 387 in 2015.

<b>BASED AIRCRAFT PROJECTIONS MARKET SHARE METHODOLOGY</b>			
Juneau International Airport			
<b>Year</b>	<b>Alaska Region GA Aircraft</b>	<b>Juneau Market Share</b>	<b>Juneau- Based Aircraft</b>
<u>Historical</u> 1995	5,500	6.5%	355
<u>Projected</u> 2000	5,800	6.5%	374
2005	5,800	6.5%	374
2015	6,000	6.5%	387
<i>Sources: Historical Based Aircraft - FAA, Airport Master Record, November 21, 1996. Projected Region - FAA Aviation Forecasts, Fiscal Years 1996-2007, extrapolated to 2015. Projected Based Aircraft - The Airport Technology and Planning Group, Inc., 1997.</i>			

**Table 3-K**

**Socioeconomic Methodology:** Local socioeconomic trends, such as population growth, can often provide a reliable method for projecting aviation activity. Based aircraft projections were developed through a population-based projection scenario using population projections developed by Reed Hansen & Associates (see **Table 3-L**). This is accomplished by determining the ratio of population to based aircraft. Existing (1995) based aircraft data were used as the basis of the projection.

The socioeconomic approach of projecting based aircraft assumes that the future ratio of persons per JIA-based aircraft will remain constant at the 1995 ratio. By holding the ratio constant at 84 persons per aircraft, the number of based aircraft is estimated to grow from 355 in 1995 to 407 by 2015. This projection methodology results in an annual growth rate of 0.7 percent. Based on the nature of GA activity at JIA, this methodology provides a realistic approach to projecting future based aircraft demand.

<b>BASED AIRCRAFT PROJECTIONS SOCIOECONOMIC METHODOLOGY</b>			
Juneau International Airport			
<b>Year</b>	<b>Population</b>	<b>Individuals per Based Aircraft</b>	<b>Based Aircraft</b>
<u>Historical</u>			
1995	29,775	84	355
<u>Projected</u>			
2000	31,540	84	376
2005	32,498	84	387
2015	34,109	84	407
Sources: <i>Historical Population - Alaska Department of Community and Regional Affairs, 1996.</i>			
<i>Projected Population - Reed Hansen &amp; Associates, January 1997 (extrapolated to 2015).</i>			
<i>Projected Based Aircraft - The Airport Technology and Planning Group, Inc., July 1997.</i>			
Note: <i>Military aircraft are not included in based aircraft total.</i>			

**Table 3-L**

**Preferred Based Aircraft Projection**

Of the two methodologies used to project based aircraft at the JIA, the socioeconomic approach was chosen as the preferred methodology. This methodology produces results that are more representative of the historical activity experienced at the Airport and of GA trends as a whole. It is believed that the market share methodology projects an unrealistically low rate of growth and would result in under-planning of the future GA facility needs of the Airport.

**GENERAL AVIATION AIRCRAFT OPERATIONS PROJECTION**

To project future airport GA operations, a methodology was used that compares the number of based aircraft to the number of GA operations. This is known as an Operations Per Based Aircraft (OPBA) methodology. The OPBA methodology is recognized by the FAA to relate total GA airport activity to a known variable; in this case, based aircraft. The OPBA ratio is obtained by dividing total annual GA operations by the total number of based aircraft. The historical ratio of 98 OPBA is used to project future GA operations. **Table 3-M** presents the historical and projected GA operations for JIA using the OPBA methodology. As shown in Table 3-M, total GA operations are projected to increase from 34,774 in 1995 to 39,836 in 2015.

This growth in total GA operations represents an annual rate of 0.7 percent.

For planning purposes, GA operations are divided into two categories: local and itinerant. Local operations, as defined by the FAA, are performed by aircraft that:

- C Operate in the local traffic pattern or within sight of an airport,
- C Are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of an airport, and
- C Are executing simulated or actual instrument or visual approaches or low passes at an airport (touch-and-go operations).

<b>GENERAL AVIATION OPERATIONS PROJECTIONS</b>					
Juneau International Airport					
Year	Based Aircraft	Operations per Based Aircraft	General Aviation Operations		
			Itinerant	Local	Total
<u>Historical</u>					
1995	355	98	17,587	17,187	34,774
<u>Projected</u>					
2000	376	98	18,418	18,418	36,835
2005	387	98	18,977	18,977	37,954
2015	407	98	19,918	19,918	39,836
Source: FAA Juneau ATCT, 1987-1995, TAF March 1997. The Airport Technology and Planning Group, Inc., July 1997.					

**Table 3-M**

Itinerant operations include all non-local operations. As shown in Table 3-M, the current (1995) local-itinerant split is 49.4 percent local and 50.6 percent itinerant. Based on information from the FAA TAF, a split of 50 percent local and 50 percent itinerant is used throughout the planning period to project future local and itinerant GA operations.

**Based Aircraft Fleet Mix**

A based aircraft fleet mix projection was developed as part of the master planning effort for the JIA. In order to obtain the percentages of aircraft in the based fleet, by class, information was gathered from the 1995 FAA 5010 Form. In 1995 an estimated 85.1 percent of the based aircraft fleet mix was comprised of single-engine piston aircraft.

Multi-engine piston aircraft are estimated to make up approximately 5.4 percent of the JIA fleet, turboprop aircraft comprise 0.6 percent of the fleet, and jet aircraft represent 0.3 percent of the current fleet. Helicopters comprise 8.7 percent of the fleet.

Military aircraft, which are not included in the based aircraft projections thus far, include three aircraft: two Blackhawk helicopters and one Twin Otter (since the 1995 inventory, however, the Twin Otter is not based at JIA). Since military activity is dependent on many factors including world situations, military aircraft are considered difficult to accurately forecast. Therefore, for the purposes of this forecast, the number of military aircraft will be kept constant (at three) throughout the 20-year planning period.

The existing and projected based aircraft fleet mixes are depicted in **Table 3-N**. In order to project the future based aircraft fleet, it was assumed that the percentage of single-engine aircraft would decline slightly. This

<b>BASED AIRCRAFT FLEET MIX PROJECTIONS</b>														
Juneau International Airport														
Year	Single-engine		Multi-engine		Turboprop		Jet		Helicopter		Military		Total	
	Based	Percent	Based	Percent	Based	Percent	Based	Percent	Based	Percent	Based	Percent	Based	Percent
<u>Historical</u>														
1995	302	85.1%	19	5.4%	2	0.6%	1	0.3%	31	8.7%	3	0.8%	358	100.0%
<u>Projected</u>														
2000	317	83.7%	20	5.3%	6	1.7%	2	0.4%	34	8.9%	3	0.8%	379	100.0%
2005	325	83.2%	21	5.3%	7	1.9%	2	0.5%	36	9.1%	3	0.8%	390	100.0%
2015	338	82.6%	22	5.2%	9	2.2%	2	0.6%	39	9.4%	3	0.7%	410	100.0%

Sources: *Historical - FAA Airport Master Record, September 1995, and discussions with Aero Services, Inc.*  
*Projected - FAA Aviation Forecasts (1997-2008) extrapolated through 2015 and discussions with Aero Services.*

**Table 3-N**

decline is offset by an increase in the percentage of the remaining civil aircraft types based at the Airport. This overall trend is consistent with the national fleet mix projections developed by the FAA.

It is significant to note that the operational GA fleet expands greatly during the peak summer months. During this period, the number of GA aircraft, including all types of single-engine, multi-engine, corporate jets, and others converge on Juneau and create an extreme peak level of usage. The facility requirements element of the Master Plan Update will quantify, with the help of users and Airport operators, the demand that this seasonal operational fleet represents.

**PROJECTION OF MILITARY OPERATIONS**

Military activity at JIA includes operations conducted by the Alaska Army National Guard, which is based at the Airport. The National Guard has three aircraft based at the Airport: two Blackhawk helicopters and one deHavilland Twin Otter fixed wing (note: since the time that the inventory was compiled, the Twin Otter is no longer based at JIA).

Military activity at the Airport also includes occasional visits by other military aircraft, such as the F-14, F-15, F-16, and F-18. The Airport also handles larger military aircraft such as the C-5, C-130, and KC-135. As shown in **Table 3-O**, total annual military operations have ranged from a low of 978 in 1992 to a high of 1,151 in 1994. In projecting military activity, it is important to recognize that military operations of the Airport are not influenced by the same factors that affect civil aviation. Rather, military activity is subject to factors relating to national defense. Based on the assumption that future military activity at JIA will resemble activity in the recent past, operations are projected to remain static at 1,000 operations per year through 2015.

<b>MILITARY ACTIVITY PROJECTION</b>		
Juneau International Airport		
	Year	Military Operations
<u>Historical</u>		
	1992	978
	1993	1,074
	1994	1,151
	1995	1,103
<u>Projected</u>		
	2000	1,000
	2005	1,000
	2015	1,000

Sources: *Historical - FAA Juneau ATCT.*  
*Projected - The Airport Technology and Planning Group, Inc., July 1997.*

**Table 3-O**

## PROJECTION OF INSTRUMENT OPERATIONS

An instrument *approach* can be defined as a series of predetermined maneuvers for the orderly transfer of an aircraft under IFR conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually. An instrument *operation* occurs when an FAA-operated terminal control facility handles the arrival, departure, or overflight of an aircraft on an IFR flight plan or provides IFR separation to other aircraft.

Historically, instrument operations at the Airport have remained consistent for the various operators. As shown in **Table 3-P**, nearly all air carrier operations are conducted using instrument procedures, *regardless of weather conditions*. This is a reflection of airline company policies. Historically, air taxi instrument operations have been conducted 1 percent of the time or less, GA instrument flights less than 3 percent of the time, and military instrument operations from 20 to 30 percent of the time. The projections of instrument operations assume that little variation will occur in the historical relationship between total operations and instrument operations. Total instrument operations are projected to increase from 9,798 in 1995 to 13,099 in 2015.

<b>INSTRUMENT OPERATIONS AND APPROACH PROJECTIONS</b>									
Juneau International Airport									
Year	Air Carrier		INSTRUMENT OPERATIONS				Military		Total
	Number	Percent	Air Taxi Number	Percent	General Aviation Number	Percent	Number	Percent	
<u>Historical</u>									
1992	6,676	76.0%	771	0.9%	569	1.6%	224	22.9%	8,240
1993	6,816	99.7%	741	0.9%	905	2.3%	294	27.4%	8,756
1994	8,261	99.2%	678	0.7%	892	2.1%	296	25.7%	10,127
1995	7,784	99.6%	684	0.6%	1,033	3.0%	297	26.9%	9,798
<u>Projected</u>									
2000	8,573	100.0%	439	0.8%	411	2.2%	257	25.7%	9,681
2005	9,456	100.0%	442	0.8%	423	2.2%	257	25.7%	10,579
2015	11,929	100.0%	469	0.8%	444	2.2%	257	25.7%	13,099
<b>INSTRUMENT APPROACHES</b>									
<u>Historical</u>									
1994	1,519	36.5%	54	0.1%	192	0.9%	49	8.5%	1,814
1995	1,370	35.1%	44	0.1%	231	1.3%	38	6.9%	1,683
<u>Projected</u>									
2000	1,543	36.0%	58	0.1%	204	1.1%	38	7.5%	1,843
2005	1,702	36.0%	58	0.1%	247	1.3%	38	7.5%	2,044
2015	2,147	36.0%	62	0.1%	259	1.3%	38	7.5%	2,505
Sources: Historical Instrument Operations - FAA Juneau ATCT records. Historical Instrument Approaches - FAA Anchorage Air Route Control Center, 1994-1995 (one month missing 1994). Projected Instrument Operations and Approaches - The Airport Technology and Planning Group, Inc., July 1997.									

**Table 3-P**

The number of instrument approaches, also presented in Table 3-P, represent a much smaller number and percentage than instrument operations. Air carriers, for example, conducted approximately 36 percent of

their approaches *under instrument meteorological conditions* during the period 1994-1995. It is expected that little variation will occur in the relationship between historical instrument approaches and operations by category. As shown in Table 3-P, total instrument approaches are projected to increase from 1,683 in 1995 to 2,505 in 2015.

## ACTIVITY PEAKING CHARACTERISTICS

In addition to projecting annual activity levels, peak period activity levels are also defined. These projections are important for various facility planning purposes since JIA, similar to many commercial service airports, must be designed to accommodate some level of peak demand. Peaking characteristics were developed for passenger enplanements and aircraft operations using the following methodologies.

Monthly enplanements and operations data are evaluated to determine peak month percentages relative to the total activity of the year.

- C The analyses indicated that the peak month for all airport activity components consists of 31 days. To derive Peak Month Average Day (PMAD) estimates for the various demand components, peak month estimates are, therefore, divided by 31 days.
- C Peak hour percentages are applied to projected PMAD estimates to derive peak hour operations levels. The following documents peak hour demand factors as they relate to aircraft operations and passenger enplanements at JIA.
  - **Aircraft Operations.** Historical hourly traffic counts logged by the FAA ATCT were analyzed to determine peak hourly demand, by category, for a typical day in the peak month. Historically, either July or August was the peak month. As shown, future peak hour air carrier operations are projected to comprise 6 percent of the PMAD traffic, while 15 percent of PMAD air taxi operations occur in the peak hour. Twenty percent of the PMAD GA operations are projected to occur in the peak hour and twenty-five percent of the PMAD military operations are projected to occur in the peak hour. It is significant to note that 26 percent of air taxi operations are conducted by helicopters. Also, 10 percent of summertime (May to September) aircraft operations, which comprise 6.9 percent of total annual operations, are conducted in the floatplane basin. Of those operations conducted in the floatplane basin, 25 percent are GA operations and 75 percent are air taxi operations. *These factors will affect runway demand/capacity calculations since neither helicopter operations nor floatplane basin operations utilize paved Runway 8/26.*
  - **Passenger Enplanements.** Peak hour passenger demand was derived based on peak air carrier and air taxi operations, aircraft seats, and load factors. For air carriers, the peak was based on the aircraft with the maximum seating capacity (140 seats in the B737-400 for 1995 and 2000; 160 seats in the B737-800 for 2005 and 2015) at 100 percent load factors. This is a reasonable assumption given the nature of actual peak demand, and is important from a terminal planning perspective. *It is important to note that 38 percent of air taxi enplanements are related to helicopter activity, which is conducted at a site (primarily TEMSCO's) that is remote from the main passenger terminal.*

**Table 3-Q** presents projections of peak hour passenger enplanements and aircraft operations at JIA. Relevant assumptions (e.g., peak month and peak hour percentages) are also presented in Table 3-Q. Peak hour enplanement assumptions are not shown in Table 3-Q because peak hour enplanements are derived from aircraft operations, number of aircraft seats, and load factors, as described above.

<b>PEAK DEMAND CHARACTERISTICS</b>								
Juneau International Airport								
Year	Passenger Enplanements			Aircraft Operations				
	Air Carrier	Air Taxi	Total	Air Carrier	Air Taxi	Gen'l Aviation	Military	Total
<u>1995</u>								
Annual	242,084	113,383	355,467	7,814	112,718	34,774	1,103	156,409
Peak Month	34,194	22,677	56,871	1,063	19,365	4,200	154	24,782
Average Day	1,103	732	1,835	34	625	135	5	799
Peak Hour	280	201	481	2	83	36	0	121
<u>2000</u>								
Annual	277,503	136,681	414,184	8,545	115,331	36,835	1,000	161,712
Peak Month	39,197	27,336	66,533	1,162	19,814	4,449	140	25,565
Average Day	1,264	882	2,146	37	639	144	5	825
Peak Hour	280	309	589	2	96	29	1	128
<u>2005</u>								
Annual	317,831	156,544	474,375	9,306	116,224	37,954	1,000	164,484
Peak Month	44,893	31,309	76,202	1,266	19,967	4,584	140	25,957
Average Day	1,448	1,010	2,458	41	644	148	5	837
Peak Hour	320	354	674	2	97	30	1	129
<u>2015</u>								
Annual	415,811	204,802	620,613	11,602	123,186	39,836	1,000	175,624
Peak Month	58,733	40,960	99,693	1,578	21,163	4,811	140	27,693
Average Day	1,895	1,321	3,216	51	683	155	5	893
Peak Hour	480	443	923	3	102	31	1	138
<u>Assumptions</u>								
Peak Month	14.1%	20.0%		13.6%	17.2%	12.1%	14.0%	
Average Day	31	31		31	31	31	31	
Peak Hour	—	—		6.0%	15.0%	20.0%	25.0%	
Sources: 1995 Operations - FAA ATCT records. Projected Peaking Assumptions - The Airport Technology and Planning Group, Inc., July 1997.								
Notes: 38% of air taxi enplanements are related to helicopter activity, which is included at a site remote from the main terminal building. 26% of air taxi operations are recorded by helicopters. 10% of summertime (May-Sep) aircraft operations (which comprise 6.9% of total annual operations) are conducted in the floatplane basin. Of those, 25% are GA operations and 75% are air taxi operations.								

**Table 3-Q**

## PROJECTIONS SUMMARY

**Table 3-R** presents a summary of projected activity at JIA. Included in this projections summary are total passenger enplanements, total aircraft operations, and total air cargo, each of which are broken down into their subgroup components. As shown, total passenger enplanements are projected to increase from 368,395 in 1995 to 620,613 in 2015, representing an annual growth rate of 2.6 percent. Total aircraft operations are projected to increase from 171,062 in 1995 to 175,624 in 2015, representing an annual growth rate of 0.1 percent. Air cargo is projected to increase from approximately 21.8 million pounds in 1995 to approximately 26.2 million pounds in 2015, representing an annual growth rate of 0.9 percent.

<b>PROJECTIONS SUMMARY</b>											
Juneau International Airport											
	<i>Passenger Enplanements</i>			<i>Aircraft Operations</i>					<i>Air Cargo (Pounds x1,000)</i>		
	<i>Air Carrier</i>	<i>Air Taxi</i>	<i>Total</i>	<i>Air Carrier</i>	<i>Air Taxi</i>	<i>GA</i>	<i>Military</i>	<i>Total</i>	<i>Air Mail</i>	<i>Air Freight</i>	<i>Total</i>
<u>Historical</u>											
1992	234,502	96,041	330,543	8,782	95,645	35,000	978	140,405	6,528	15,307	21,835
1993	199,424	116,364	315,788	6,838	98,336	39,937	1,074	146,185	7,256	16,562	23,817
1994	227,850	117,551	345,401	8,325	113,615	43,226	1,151	166,317	5,474	15,193	20,667
1995	244,954	123,441	368,395	7,814	127,371	34,774	1,103	171,062	6,446	15,362	21,808
<u>Projected</u>											
2000	277,503	136,681	414,184	8,545	115,331	36,835	1,000	161,712	7,074	17,179	24,252
2005	317,831	156,544	474,375	9,306	116,224	37,954	1,000	164,484	7,289	17,700	24,989
2015	415,811	204,802	620,613	11,602	123,186	39,836	1,000	175,624	7,650	18,578	26,278
Annual Growth Rate (1995-2015)			2.6%					0.1%			0.9%
Source: <i>The Airport Technology and Planning Group, Inc., July 1997.</i>											

**Table 3-R**