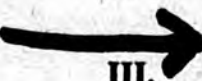


SCOMM

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* Included in all ITT committee member packets

** A portion of letters included in all ITT committee member packets



Anchorage International Airport

Letter of Intent Application

The Anchorage International Airport is a public facility owned and operated by the State of Alaska. The Airport is located in Anchorage, Alaska, and is the largest airport in the state. The Airport is a major hub for air travel in Alaska and the Pacific Northwest. The Airport is a vital part of the state's infrastructure and is a key factor in the state's economic development.





**Anchorage
International
Airport**

State of Alaska DOT & PF
P.O. Box 196960
Anchorage, Alaska
USA 99519-6960
(907) 266-2525
FAX (907) 243-0663

March 2, 1998

Mr. Ronnie V. Simpson
Airports Division Manager, Alaska Region
Federal Aviation Administration
222 West 7th Avenue, Box 14
Anchorage, Alaska 99513

Re: Anchorage International Airport Letter of Intent Application

Dear Mr. Simpson:

We are pleased to transmit the enclosed LOI Application for Anchorage International Airport. We are seeking LOI funding for the following projects:

- Cargo/Terminal Apron
- Remain Overnight Parking Positions/Cargo Apron Reconstruction
- Cargo Fueling Apron Expansion
- Runway 6L/24R Reconstruction
- Domestic Terminal Redevelopment Project (to be funded with entitlements only)

The present value of the benefit of the ramp projects and runway construction (\$70.2 million) exceeds the present value of their cost (\$48.4 million), as demonstrated in the accompanying Benefit-Cost Analyses. The positive net present value of \$21.8 million demonstrates that issuance of the requested LOI will comply with federal investment guidelines.

The positive net present values of the individual projects (\$6.2 million for the ramp projects and \$15.6 million for the runway reconstruction) indicate that they have significant individual merit and should be accepted in their own right. Their combined positive net present value indicate the magnitude of the economic value added by their acceptance.

For the LOI Projects to proceed, the Airport respectfully requests that the FAA issue a LOI to provide federal funding in the amount of \$48.05 million in discretionary funds, as such funds become available, to reimburse the Airport for allowable costs of the LOI Projects. Additionally, the Airport will commit 75.0 percent of its passenger entitlements to those eligible portions of the Terminal Redevelopment Project (TRP). The requested schedule for receipt of LOI Funds is as follows:



YEAR	ENTITLEMENT	DISCRETIONARY	LOI TOTAL
1999	\$1,950,000	\$4,675,000	\$6,625,000
2000	1,950,000	4,675,000	6,625,000
2001	1,950,000	3,950,000	5,900,000
2002	1,950,000	4,155,000	6,105,000
2003	1,950,000	4,370,000	6,320,000
2004	1,950,000	4,600,000	6,550,000
2005	1,950,000	4,845,000	6,795,000
2006	1,950,000	5,105,000	7,055,000
2007	1,950,000	5,380,000	7,330,000
2008	1,950,000	6,295,000	8,245,000
TOTAL	\$19,500,000	\$48,050,000	\$67,550,000

The requested amount of discretionary funding represents approximately 19.4 percent of the total estimated cost for both the LOI Projects and the TRP and approximately 9.1 percent of the Airport Development Program for the next 10 years. The remainder of the investments necessary to balance capacity requirements will be funded from Airport cash flow, from Federal Highway Administration funds, Airport revenue bonds and user fees. As the attached analysis indicates, a substantial share of the total benefits will accrue to both airline passengers and the airlines that service the Airport. These economically justifiable projects will strengthen ANC's position in the global cargo market.

If, after reviewing our application, you need any supplemental information or clarification, please contact us immediately.

We are looking forward to working successfully with you on these projects, all of which will have important, positive impacts locally, nationally and globally.

Sincerely,

Morton V. Plumb, Jr.
Director

Enclosure

APPLICATION FOR FEDERAL ASSISTANCE

OMB Approval No. 0348-0043

1. TYPE OF SUBMISSION: Application ☒ Construction ☐ Non-Construction Preapplication ☐ Construction ☐ Non-Construction		2. DATE SUBMITTED 3/2/98		Applicant Identifier 52415	
		3. DATE RECEIVED BY STATE		State Application Identifier	
		4. DATE RECEIVED BY FEDERAL AGENCY		Federal Identifier	
5. APPLICANT INFORMATION					
Legal Name State of Alaska			Organizational Unit: Dept. of Transportation & Public Facilities		
Address (give city, county, state, and zip code): P.O. Box 196960 Anchorage, Alaska 99519-6960			Name and telephone number of the person to be contacted on matters involving this application (give area code): Richard Wilson (Development Manager) (907) 266-2694		
6. EMPLOYER IDENTIFICATION NUMBER (EIN): N/A			7. TYPE OF APPLICANT: (enter appropriate letter in box) ☒ A		
8. TYPE OF APPLICATION: ☒ New ☐ Continuation ☐ Revision If Revision, enter appropriate letter(s) in box(es): ☐ A ☐ B ☐ C A. Increase Award B. Decrease Award C. Increase Duration D. Decrease Duration Other (specify):			H. Independent School Dist. I. State Controlled Institution of Higher Learning J. Private University K. Indian Tribe L. Individual M. Profit Organization N. Other (Specify):		
			9. NAME OF FEDERAL AGENCY: Department of Transportation, Federal Aviation Administration		
10. CATALOG OF FEDERAL DOMESTIC ASSISTANCE NUMBER: 2 0 1 0 6			11. DESCRIPTIVE TITLE OF APPLICANT'S PROJECT: Anchorage International Airport Letter of Intent Projects		
12. AREAS AFFECTED BY PROJECT (cities, counties, states, etc.): Anchorage Metropolitan Area					
13. PROPOSED PROJECT:		14. CONGRESSIONAL DISTRICTS OF:			
Start Date 7/98	Ending Date 5/04	a. Applicant 01		b. Project 01	
15. ESTIMATED FUNDING:		16. IS APPLICATION SUBJECT TO REVIEW BY STATE EXECUTIVE ORDER 12372 PROCESS?			
a. Federal \$ 67,550,000 .00		a. YES THIS PREAPPLICATION/APPLICATION WAS MADE AVAILABLE TO THE STATE EXECUTIVE ORDER 12372 PROCESS FOR REVIEW ON: DATE			
b. Applicant \$ 154,138,000 .00		b. NO. ☒ PROGRAM IS NOT COVERED BY E.O. 12372			
c. State \$.00		☐ OR PROGRAM HAS NOT BEEN SELECTED BY STATE FOR REVIEW			
d. Local \$.00					
e. Other FHWA \$ 26,300,000 .00					
f. Program Income \$.00		17. IS THE APPLICANT DELINQUENT ON ANY FEDERAL DEBT?			
g. TOTAL \$ 247,988,000 .00		☐ Yes ☒ No If "Yes," attach an explanation.			
18. TO THE BEST OF MY KNOWLEDGE AND BELIEF, ALL DATA IN THIS APPLICATION/PREAPPLICATION ARE TRUE AND CORRECT. THE DOCUMENT HAS BEEN DULY AUTHORIZED BY THE GOVERNING BODY OF THE APPLICANT AND THE APPLICANT WILL COMPLY WITH THE ATTACHED ASSURANCES IF THE ASSISTANCE IS AWARDED					
a. Typed Name of Authorized Representative Morton V. Plumb Jr.		b. Title Director		c. Telephone number 907/ 266-2525	
d. Signature of Authorized Representative				e. Date Signed 3/2/98	

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Standard Form 424 (REV 4-88)
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Airline Vote

Airlines Contributing 89% of Domestic Passenger Airline Revenue Voted YES

Airlines Representing 84% of Departing Domestic Passengers Voted YES

<u>Domestic Passenger Airlines</u>	<u>Vote</u>	<u>Domestic Airline Revenue</u>	<u>% of Total</u>	<u>Departing Passengers</u>	<u>% of Total</u>	<u>Samples of Increase per Departing Passenger*</u>
Alaska Airlines	Yes	\$3,687,952	45%	947,421	53%	\$0.96
Northwest Airlines	Yes	\$1,657,866	20%	129,380	7%	\$1.02
Delta Airlines	Yes	\$965,639	12%	215,627	12%	
United Airlines	Yes	\$851,133	10%	151,479	8%	
Reno Air	Yes	\$162,049	2%	61,616	3%	
America West	Yes	\$8,519	0%	3,479	0%	
Era Aviation	No	\$418,539	5%	201,012	11%	\$0.58
Reeve Aleutian	No	\$358,033	4%	39,593	2%	
Peninsula Airways	No	\$139,477	2%	42,697	2%	
		\$8,249,207	100%	1,792,304	100%	

**Based on flatline projection of FY 97 activity and rates*

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I. EXECUTIVE SUMMARY

Anchorage International Airport ("ANC" or the "Airport") is applying for a Letter of Intent ("LOI") to fund capital improvements that, when completed, will increase the efficiency of air transportation system regionally, nationally and globally. In consideration of the Airport's vital importance to the national airport system, its vast financial commitment to the proposed expansion plan and the financial benefits to be derived from these projects, ANC respectfully requests a commitment from the Federal Aviation Administration ("FAA") in the form of an LOI. By approving the Airport's LOI Application, the FAA will support the implementation of the U.S. Department of Transportation's ("USDOT") International Air Transport Policy, which is designed to aid the nation's participation in the globalization of the air cargo industry.

Alaska possesses a unique geographical advantage in that it is essentially equidistant from the world's major population centers in North America, Europe and Asia and the principal cargo origin and destination points in the Northern Hemisphere (see **Exhibit I-1**). Alaska also lies on a direct route between the key business centers of Latin America and principal Asian markets. The air cargo activity growth among these economies has been vigorous over the last several years, and the Airport is ideally positioned to continue as a global cargo hub and transfer point for this traffic.

As a medium hub domestic passenger airport, ANC has completed a detailed Passenger Terminal Needs Assessment which documents substantial deficiencies in service levels, including jet and regional gates and apron. The FAA's Terminal Area Forecast (TAF) projects annual growth in air carrier enplanements of 3.6% for the 20-year period through 2017. A Terminal Redevelopment Project (TRP) of \$231.6 million has been identified to address passenger terminal needs.

Because of its location, the Airport is well positioned to reap significant economic benefits for the U.S. national airport system. Although ANC is currently the top-ranked U.S. cargo airport, its role in the regional, national and global airport system is dependent upon its maintaining appropriate facilities to efficiently accommodate growing demand. If the Airport is unable to serve as the transit or transfer point for the international cargo market because of a lack of adequate facilities, another airport (most likely outside of the United States) would eventually accommodate the traffic. For the Airport to maintain its percentage of the U.S. and international cargo and passenger markets, the LOI Projects must be completed in a timely manner.

Accordingly, this document demonstrates that a federal investment of \$67.6 million in entitlement and discretionary funds through the FAA's LOI Program, when leveraged with significant state and federal highway funding contributions will result in substantial returns on the investments for the U.S. economy. At the present time, Passenger Facility Charges ("PFCs") are not collected at the Airport. Airport management has vigorously pursued a course of action that identifies all funding alternatives with potential emphasis on PFCs. Currently, Airport management is working with the FAA, state officials and the airlines to resolve this important issue.

ANC proposes that the LOI be structured in two stages to help fund its expansion over the next 10 years. The Phase I LOI Projects are depicted in **Exhibit I-2** and include the following:

- Terminal Apron Replacement
- Remain Overnight ("RON")/Cargo Apron Reconstruction
- Cargo Fueling Apron Expansion
- Runway 6L/24R Reconstruction
- Terminal Redevelopment Project (portions of terminal to be funded with entitlements only)

The present value of the benefit of the LOI Projects (\$70.2 million) exceeds the present value of their cost (\$48.4 million), as demonstrated in the accompanying Benefit-Cost Analyses ("BCA"), as required by the FAA in its Airport Benefit-Cost Analysis Guidance document dated June 2, 1997 ("BCA Guidance"). The positive net present value of \$21.8 million demonstrates that issuance of the requested LOI will comply with federal investment guidelines.

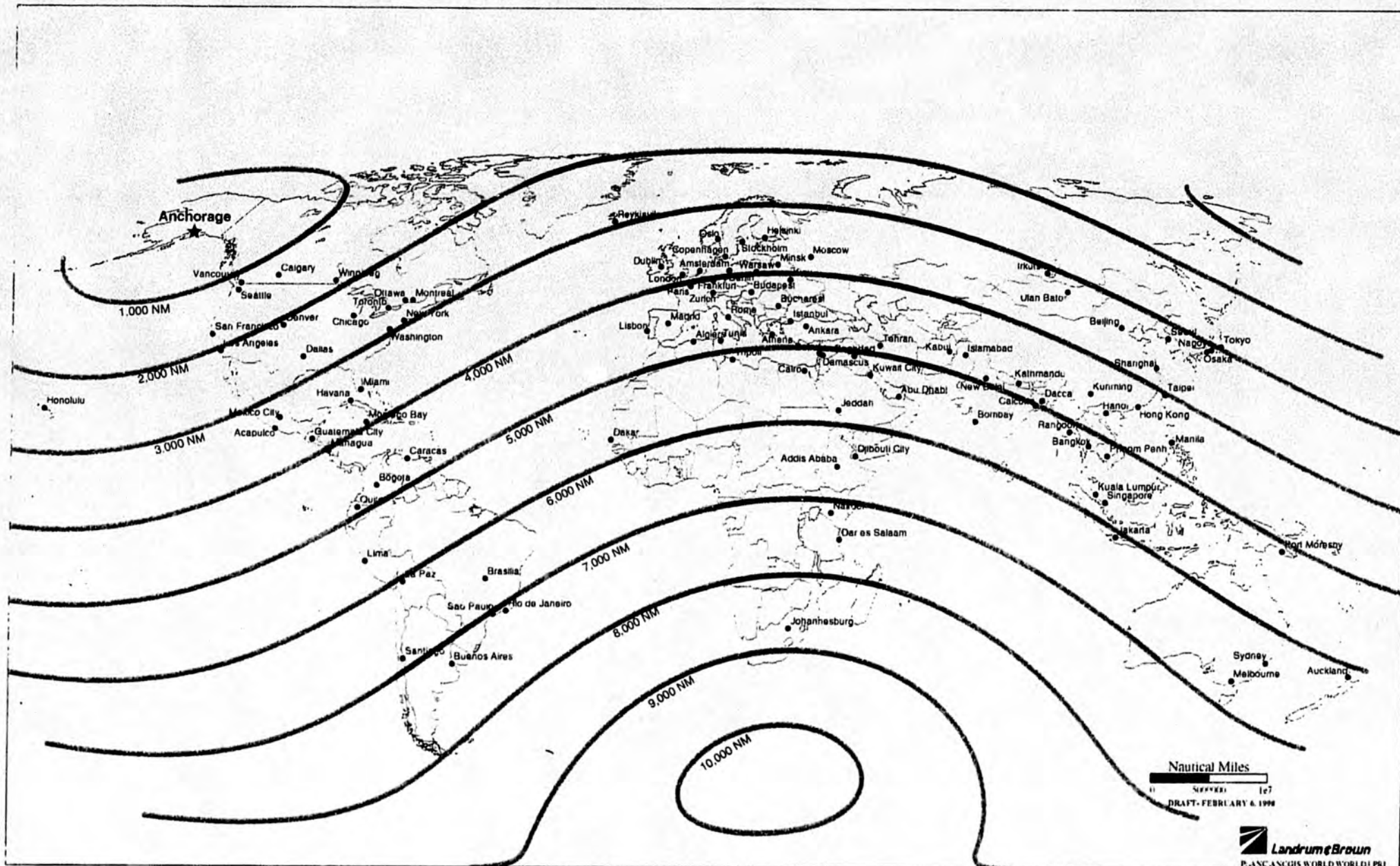
The positive net present values of the individual projects (\$6.2 million for the ramp projects and \$15.6 million for the runway reconstruction) indicate that they have significant individual merit and should be accepted in their own right. Their combined positive net present value indicates the magnitude of the economic value added by their acceptance.

In addition to providing substantial local and system benefits, the LOI projects are compatible with the Airport's Master Plan, and as such, will help the Airport achieve its transportation mission within the State and U.S. airport system. Further, these projects will complement other components of the Airport's future capital program, thereby maximizing the benefit of current and future investments.

For the LOI Projects to proceed, the Airport respectfully requests that the FAA issue a LOI to provide federal funding in the amount of \$48.05 million in discretionary funds, as such funds become available, to reimburse the Airport for allowable costs of the LOI Projects. Additionally, the Airport will commit 75.0 percent of its passenger entitlements to those eligible portions of the TRP. The requested schedule for receipt of LOI Funds is as follows:

YEAR	ENTITLEMENT	DISCRETIONARY	LOI TOTAL
1999	\$1,950,000	\$4,675,000	\$6,625,000
2000	1,950,000	4,675,000	6,625,000
2001	1,950,000	3,950,000	5,900,000
2002	1,950,000	4,155,000	6,105,000
2003	1,950,000	4,370,000	6,320,000
2004	1,950,000	4,600,000	6,550,000
2005	1,950,000	4,845,000	6,795,000
2006	1,950,000	5,105,000	7,055,000
2007	1,950,000	5,380,000	7,330,000
2008	1,950,000	6,295,000	8,245,000
TOTAL	\$19,500,000	\$48,050,000	\$67,550,000

The requested amount of discretionary funding represents approximately 19.4 percent of the total estimated cost for both the LOI Projects and the TRP and approximately 9.1 percent of the Airport Development Program ("ADP") for the next 10 years. The remainder of the investments necessary to balance Airport requirements will be funded from Airport cash flow, Federal Highway Administration ("FHWA") funds, Airport revenue bonds and user fees. As the attached analysis indicates, a substantial share of the total benefits will accrue to both airline passengers and the airlines that service the Airport. These economically justifiable projects will strengthen ANC's position in the global cargo market.

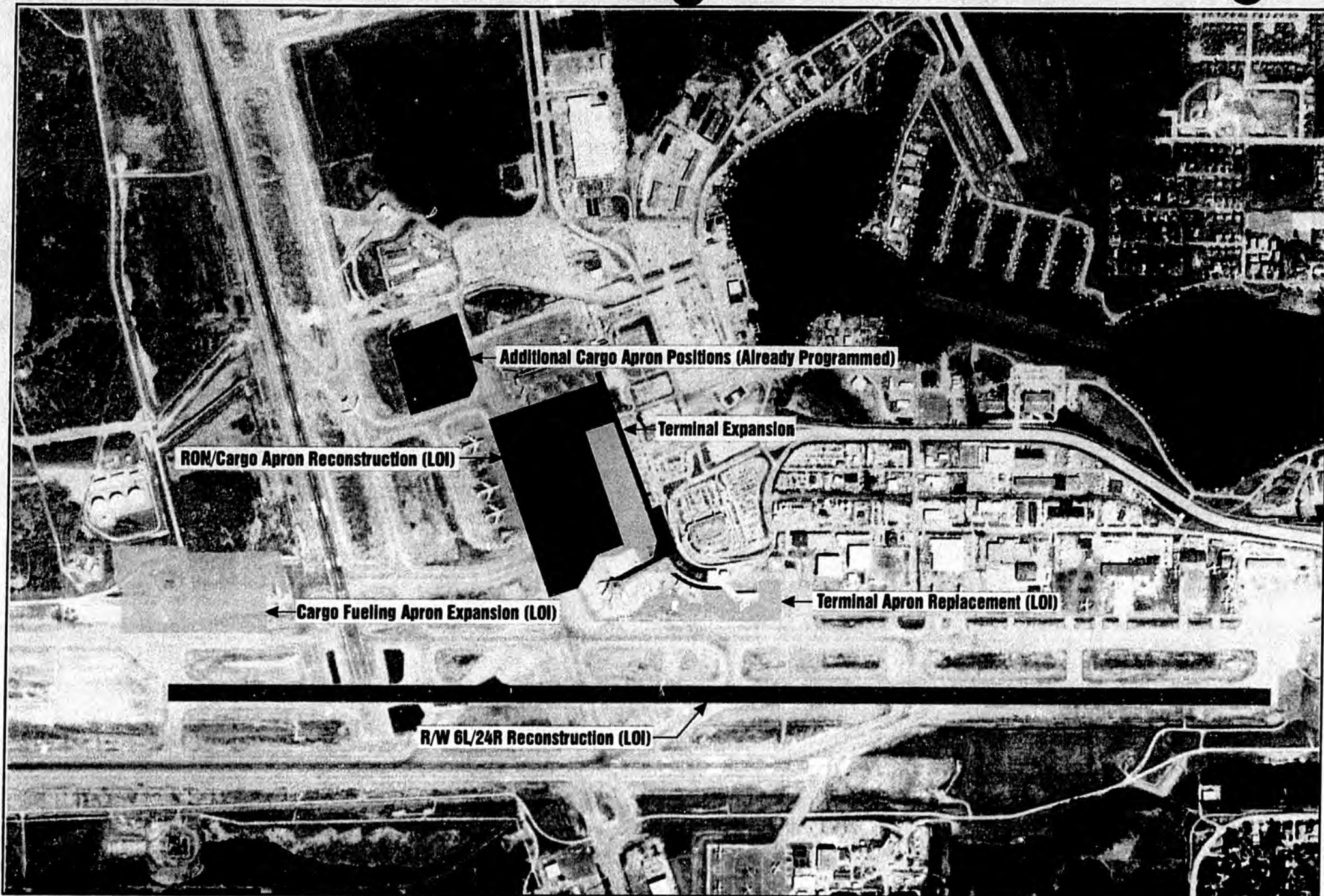


**Anchorage
International
Airport**

Great Circle Distance From Anchorage to Major Cities World Wide

Exhibit

I-1



II. ANCHORAGE INTERNATIONAL AIRPORT

"Protecting the Airport's distinct competitive advantage is our primary objective."

On November 1, 1996, the USDOT issued Final Order 96-11-2, granting certain blanket authority to foreign air carriers to conduct expanded cargo transfer activities at international airports in the State of Alaska. This action recognized Alaska's ideal location for a global cargo hub operation and has had the intended effect of stimulating interest in utilization of ANC as a cargo hub by both foreign flag and domestic carriers.

The USDOT's ruling expanded cargo transfer authority for foreign carriers transiting at ANC, including carrier-to-carrier transfer, co-mingling of foreign and domestic cargo from various origination points, change of gauge and starburst (i.e., multiple change of gauge operations). This blanket cargo transfer authority is found nowhere else in the world.

ANC's location allows carriers to maximize payload with their fleets. This fact alone is reason enough for the double-digit growth in fuel stops at ANC as time-sensitive freight increases with the globalization of business and commerce. Concurrently, international freight transfers at the mid-point in Anchorage are increasing rapidly. While major express carriers have relied on ANC as their interline hub, the heavy freight carriers, for various reasons, have held back. One factor is a matter of clarifying the intent of the USDOT in granting full transfer authority. The State of Alaska, through ANC, is working to achieve this clarification and expects resolution in the near future. Successful conclusion in January 1998 of the U.S.-Japan bilateral negotiations extended to Japanese cargo carriers the broad transfer authority granted to other foreign flag carriers in the 1996 USDOT ruling. The significant role that Japan Airlines ("JAL") and Nippon Cargo Airlines ("NCA") already play at ANC makes this an important development and one that will only increase the need for additional airside facilities.

Most international freight traffic at the Airport is generated by transload operations. An international transload typically occurs when a carrier has scheduled two or more aircraft to arrive at ANC from different international cities, each with a final destination to other international cities. At ANC, the carrier will transload cargo from and between the aircraft.

In a transload operation, the cargo is physically deplaned from one aircraft and enplaned onto a second aircraft. The transload may take place over a few hours or over the course of a few days. Depending upon a particular carrier's type of operation, if a transload of two or more aircraft is performed simultaneously, then sufficient apron space must be available in close proximity to facilitate the transload operation. If the transload takes place over a few days, then sufficient warehouse space must be available for storage and/or sorting.

Responding to world competitive pressures, nine cargo carriers completed or initiated expansion or improvement programs at the Airport in 1997, partly based on the increased transloading opportunity granted under the USDOT ruling. For example, Polar Air Cargo anticipates transferring 70 percent of its cargo between aircraft at the Airport. Northwest Airlines and United Worldwide Cargo anticipate 50 percent transfer between aircraft. Furthermore, United anticipates that a substantial portion of this activity will be interlining with foreign carriers.

As more transit flights begin to transfer cargo between aircraft at the Airport, longer turnaround times at the refueling aprons will occur. These longer turnaround times alone mean even more congestion in the future on the existing cargo aprons. This congestion will continue to intensify

as cargo activity is forecasted by Keiser & Associates to increase at an average annual rate of 8.4 percent over the next five years. Continued growth at lower rates is forecasted in years 6 through 20.

Additionally, as the shift to interline hubbing takes place, it will place even greater pressure on the requirements for apron parking and fueling positions. With its current facilities, ANC is not equipped to meet this demand. Carriers have indicated that they are hesitant to transform transit operations into transfer operations without the availability of sufficient facilities.

Cargo aircraft generally arrive and depart within a limited time frame because of curfews and "slots" in Asia, Europe and the Lower 48 States. Focusing on customer service and time of delivery, carriers schedule many flights to arrive in Narita Airport in Tokyo as soon as the curfew has ended to deliver packages that business day. Similarly, the later in the day a flight can leave Narita before the evening curfew, the more business the carrier can pick up and still make the morning deliveries to New York, Chicago or Los Angeles.

A carrier's missing these narrow windows can cause it to delay deliveries, miss the day's business or experience other impacts downstream. While curfews drive the overall system, missing slots causes substantial airline adjustment costs, whether it means diverting to another airport or losing a day altogether. These basic constraints in Asia (and at European airports as well) result in two primary peak cargo periods at ANC: 3 a.m. to 6 a.m. and 9 a.m. to noon. ANC is experiencing congestion at these times and, based on the cargo forecasts, these peaks are expected to widen. The situation will not change significantly in the near term.

Some airports being developed in Asia are planned for 24 hour operations, a change intended to ease some of the curfew and slot restrictions. However, this is not proposed for Narita, which is expected to remain the largest air cargo destination in Asia with continued reliance on curfews and slots into the foreseeable future. Moreover, new Pacific Rim airports in Shanghai, Guangzhou and Korda are not likely to open for at least five to 10 years.

At ANC, cargo carriers use seven hardstand positions adjacent to the terminal apron, and overflow parking is provided on an "as available" basis at passenger gates on the International Terminal. International passenger and cargo peak periods frequently coincide (such as from 3 a.m. to 6 a.m.), reducing the availability of passenger gates on the International Terminal for cargo operations, further restricting efficient cargo operations.

A demand/capacity analysis for the current positions indicates the deficiency of ANC's fueling/cargo transfer positions will exceed 13 by 2006.¹ To efficiently serve forecast demand, the terminal apron is in urgent need of expansion.

The Airport and its tenants have 31 all-cargo hydrant fueling hardstands and two non-hydrant positions that are fully occupied during peak periods. Three new positions are scheduled to go online by August 1998, and the proposed cargo fueling apron expansion will add five more hydrant fueling cargo positions in a new location. These five positions will replace two lost cargo positions on the site of Concourse C and three positions that will be lost temporarily during the construction of the mixed use RON/Cargo Apron adjacent to the terminal. These three new positions and the five replacement positions are needed to handle the immediate demand, while requirements for further additions are being examined in detail through the Cargo Marketing Project and the Cargo/Airfield Master Plan.

¹ Demand/Capacity Analysis for apron romeo by Keiser Associates, Inc. February 24, 1998.

In the future, congestion-induced delays could slow growth in international cargo operations and reduce the Airport's ability to capitalize on the growing cargo transfer market. Furthermore, delays may eventually weaken ANC's position in the international air transportation system and could encourage the growth in cargo traffic at airports outside of the United States. Other airports, primarily in central and eastern Russia and potentially in western Canada, are actively competing for the same growing market.

Northwest Airlines, Cathay Pacific, JAL and NCA, as well as other carriers serving Asia, Europe and North America have begun to shift cargo transfers to ANC from Narita, Hong Kong and other foreign airports. Incheon in Korea and the Confederation of Independent States airports (including Tashkent, Novosibirsk, Petro-Pavlov and Yuzno-Sakhalinsk) are making proposals for larger roles in world cargo transfers. While ANC has the advantage at this point, the success of competing Russian airports will depend in large measure on ANC's capacity to handle growing demands for facilities. Realizing the Airport's full potential as a global cargo hub will take active development of additional cargo facilities. In this respect, ANC is the nation's best aeronautical resource to compete for future cargo international hubbing opportunities, i.e., multiple carriers cooperating to effectively create a "hub and spoke" system centered in Anchorage.

The following sections provide a detailed description of the Airport's aviation activity and facilities, the planned airport capital improvements, including the projects to be funded in part under the proposed LOI, the Airport's financial plan and the FAA-required BCAs.

1. HISTORICAL AVIATION ACTIVITY

a. Domestic and International Enplanements

The Airport continues to enjoy an extremely high level of domestic passenger service from major carriers and regional commuters, averaging over 160 domestic passenger flights per day. Two factors drive this service: (i) Alaskans fly three times more frequently than the national average because many Alaskan communities do not have road connections and (ii) Alaska remains an attractive tourist destination.

During the peak summer season, Anchorage enjoys daily nonstop passenger service to multiple West Coast and Midwest points by Alaska Airlines, America West, Continental Airlines, Delta Air Lines, Northwest Airlines, Reno Air and United Airlines. Alaska Airlines, Reno Air and Northwest Airlines provide in-state jet service, and the regional carriers, Era Aviation, Peninsula Airways, Southcentral Air and Yute Airlines, provide a high level of air service between communities.

International transit activity at ANC, which declined from 1990 to 1993 with the advent of the 747-400 and other long-range aircraft, has begun to rebound, increasing approximately 6 percent between 1994 and 1995. The Airport is an important international transit point for Asian-North American passenger service. From 1995 to 2000, international traffic is expected to increase by 12.8 percent. All of the transit carriers contributed to this increase: Aeroflot, Air China, Asiana Airlines, Cathay Pacific, China Airlines, Eva and Korean Air. ANC is a scheduled stop for international passenger flights serving Hong Kong, Taipei, Seoul, Guangzhou and Shanghai and points in North America.

ANC enjoys scheduled year-round international passenger service from Korea (Korean Air), Russia (Aeroflot and Alaska Airlines) and Taipei (China Airlines). In addition,

both Swissair and Condor, the charter arm of Lufthansa, provide healthy May-September weekly service to Switzerland and Germany, respectively.

Northwest Airlines announced that it would operate scheduled Tokyo-Anchorage service on Boeing 747 aircraft from June to September 1998. Unlike much of the Airport's international passenger service, which is transit, Northwest markets its turnaround service to the Japanese traveler to Alaska.

b. Airline Service

Following a period of relatively slow growth that corresponded to the recession from 1988 to 1993, world air cargo traffic increased more than 12 percent in 1994. This overall growth rate slowed somewhat in 1995, to only 7.7 percent overall. However, the international segment exceeded 1994 by 22.0 percent. In 1996, world air freight traffic grew by 6.9 percent rate, while preliminary International Air Transport Association reports indicate that international cargo traffic for 1997 has increased 11 percent. Total international air express traffic increased by 15.7 percent in 1997 over 1996 levels. For the first 11 months of 1997, domestic air cargo increased by 5.6 percent over 1996 for the same period, while international cargo volume increased by 15.8 percent.

Six of the top 10 airlines and 15 of the top 25 airlines in the world have scheduled operations at ANC. As of December 1997, there were 35 scheduled airlines operating at the Airport, and 11 airlines conducting regular seasonal charter service. Twenty airlines are engaged exclusively in international air cargo operations; seven airlines are engaged exclusively in domestic air cargo operations; and six airlines operate both international and domestic cargo operations (Alaska Airlines, FedEx, United, Polar, Northwest and United Parcel Service ("UPS")).

Alaska Airlines holds the largest market share at the Airport. In 1997, Alaska Airlines enplaned in excess of 1 million passengers, or nearly half of all domestic enplanements at the Airport. Delta Air Lines holds the second-largest domestic market share, enplaning approximately 234,000, or 11 percent of domestic enplanements in 1997. ERA Aviation holds the third-largest market share, enplaning approximately 190,000 passengers in 1997, or 9 percent of total domestic enplanements. Northwest and United hold the fourth- and fifth-largest market shares, enplaning approximately 133,000 and 107,000 domestic passengers, respectively. Together, Northwest and United enplaned approximately 11 percent of total domestic enplanements in 1997. The remaining scheduled domestic carriers include Reno Air, America West, Peninsula Airways and Reeve Aleutian Airways, which together enplaned approximately 11 percent of domestic passengers in 1997. Non-scheduled domestic carriers accounted for approximately 10 percent of domestic enplanements in 1997.

2. FORECAST AVIATION ACTIVITY

a. Benefit-Cost Analyses Forecasts

The FAA's BCA policy requires the use of the FAA's Terminal Area Forecast ("TAF") for forecasting an airport's future activity levels. In conducting the BCAs for this LOI Application, the Airport evaluated both the TAF and its own forecasts. The following sections discuss the differences between the Airport's forecast and the TAF for enplanements and operations. Both forecasts have been extrapolated to 2017, providing

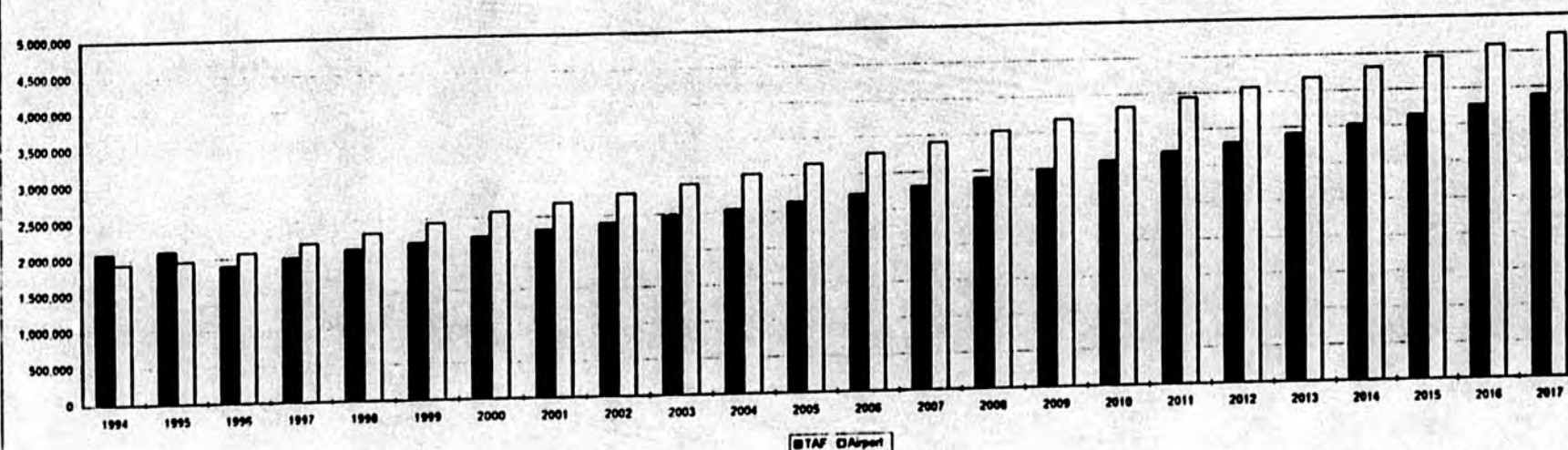
a 20-year forecast period. For the BCAs and the financial plan, the TAF enplanement forecast was used with no adjustments. The TAF operations forecast was adjusted for cargo freighter operations and general aviation activity. A recent cargo operations forecast prepared by the Airport has been included in the Revised TAF. The rationale and methodology for making these adjustments is discussed in Section 3c of this chapter. The Airport is working with FAA regionally and nationally to adjust the TAF.

b. Enplanement Forecasts

1. Airport Forecast

The Airport forecast was originally prepared for the period of 1996 to 2015. The growth rates from 2015 for the air carrier and commuter categories were extrapolated to complete a 20-year forecast period, extending the forecast to 2017. To be consistent with the TAF format, the commuter and charter enplaned passenger categories were combined. Transit passengers are also included in the Airport forecast. Total transit passengers reported in 1996 were 666,698 and are expected to increase to approximately 1.4 million in 2017 (see Table II-1). Because this category is not included in the TAF enplaned passenger forecast, Airport forecast totals with and without transit passengers have been shown. The Airport forecast is based upon 1996 USDOT data, the most current data available at the time this forecast was prepared. The average annual compound growth rate for air carriers from 2000 to 2005 is approximately 4.5 percent for air carrier airlines and 2.3 percent for commuter airlines, growing from approximately 2.0 million to 2.6 million and 500,000 to 560,000, respectively. For the period 2005 to 2010, air carriers' and commuters' average annual compound growth rates are approximately 4.2 percent and 2.7 percent, yielding approximately 3.2 million air carrier and 640,000 commuter enplanements in 2010. Based on the Airport's forecast of 1997 to 2017, air carrier, commuter and total enplanements are expected to increase from approximately 1.7 million, 452,000 and 2.1 million enplanements in 1997 to 4.1 million, 598,000, and 4.7 million in 2017, respectively. Average annual growth rates in these segments are 4.4 percent, 1.4 percent and 3.9 percent, respectively. (See Table II-1.)

Table II-1
Anchorage International Airport
Enplanement Forecast



TAF (1)					Airport Forecast (2)							Variance [TAF - Airport]	% Variance [TAF/ Airport]	
		Air Carrier	Commuter	Total	% Change		Air Carrier	Commuter	Transit	Total w/ Transit	Total w/o Transit	% Change		
Actual	1994	1,790,855	288,251	2,079,106	--	Actual	1,536,662	397,832	571,957	2,506,451	1,934,494	--	144,612	7.5%
	1995	1,784,924	319,245	2,104,169	1.2%		1,543,796	422,324	636,999	2,603,119	1,966,120	1.6%	138,049	7.0%
Forecast	1996	1,627,154	267,799	1,894,953	-9.9%	Forecast	1,638,644	436,828	666,698	2,742,170	2,075,472	5.6%	-180,519	-8.7%
	1997	1,718,074	275,451	1,993,525	5.2%		1,739,319	451,830	697,781	2,888,930	2,191,149	5.6%	-197,624	-9.0%
	1998	1,812,242	283,104	2,095,346	5.1%		1,846,180	467,348	730,314	3,043,842	2,313,528	5.6%	-218,182	-9.4%
	1999	1,875,344	290,756	2,166,100	3.4%		1,959,606	483,398	764,363	3,207,367	2,443,004	5.6%	-276,904	-11.3%
	2000	1,940,515	298,408	2,238,923	3.4%		2,080,000	500,000	800,000	3,380,000	2,580,000	5.6%	-341,077	-13.2%
	2001	2,010,380	306,060	2,316,440	3.5%		2,171,255	511,462	833,139	3,517,856	2,684,717	4.1%	-368,277	-13.7%
	2002	2,077,089	313,713	2,390,802	3.2%		2,270,690	523,187	867,650	3,661,527	2,793,877	4.1%	-403,075	-14.4%
	2003	2,141,754	321,365	2,463,119	3.1%		2,372,494	535,181	901,590	3,811,265	2,907,675	4.1%	-442,546	-15.2%
	2004	2,214,510	329,017	2,543,527	3.2%		2,478,861	547,450	941,020	3,967,333	3,026,313	4.1%	-482,786	-16.0%
	2005	2,289,692	336,670	2,626,362	3.1%		2,590,000	560,000	980,000	4,110,000	3,150,000	4.1%	-523,638	-16.6%
	2006	2,367,565	344,322	2,711,887	3.1%		2,699,366	575,157	1,011,860	4,286,383	3,274,523	4.0%	-562,636	-17.2%
	2007	2,450,108	351,974	2,802,082	3.1%		2,813,349	590,724	1,044,756	4,448,829	3,404,073	4.0%	-601,991	-17.7%
	2008	2,535,517	359,627	2,895,144	3.1%		2,932,146	606,713	1,078,721	4,617,580	3,538,859	4.0%	-643,715	-18.2%
	2009	2,623,952	367,279	2,991,231	3.1%		3,055,959	623,134	1,113,790	4,792,883	3,679,093	4.0%	-687,862	-18.7%
	2010	2,715,243	374,931	3,090,174	3.1%		3,185,000	640,000	1,150,000	4,975,000	3,825,000	4.0%	-734,826	-19.2%
2011	2,809,710	382,742	3,192,453	3.3%		3,306,388	633,884	1,185,712	5,125,984	3,940,272	3.0%	-747,819	-19.0%	
2012	2,907,464	390,717	3,298,181	3.3%		3,432,402	627,827	1,222,533	5,282,762	4,060,229	3.0%	-762,048	-18.8%	
2013	3,008,619	398,857	3,407,476	3.1%		3,563,219	621,827	1,260,498	5,445,544	4,185,046	3.1%	-777,570	-18.6%	
2014	3,113,293	407,167	3,520,460	3.1%		3,699,022	615,885	1,299,641	5,614,548	4,314,907	3.1%	-794,447	-18.3%	
2015	3,221,609	415,650	3,637,259	3.1%		3,840,000	610,000	1,340,000	5,790,000	4,450,000	3.1%	-812,741	-18.1%	
2016	3,333,693	424,310	3,758,003	3.1%		3,986,351	604,171	1,381,612	5,972,134	4,590,522	3.2%	-832,519	-18.0%	
2017	3,449,677	433,150	3,882,827	3.1%		4,138,281	598,398	1,424,517	6,161,196	4,736,679	3.2%	-853,852	-18.0%	

Source

(1) FAA reported actuals for 1994 to 1996. TAA Terminal Area Forecast for 1997 to 2010, 2011 - 2017 prepared by Landrum & Brown, Inc. The Commuter category includes air taxi activity.

(2) From Airport Records. Airport Forecast of 1996 to 2015 from 1996 Refined TAMS Summary Forecasts, dated 7-01-97, years 2016-2017 provided by Landrum & Brown, Inc. The Commuter category includes charter enplanement activity.

Variance percentages are based upon Totals w/o transit

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2. FAA TAF

The TAF for ANC was prepared for the period 1997 to 2010. To complete the remaining years of the 20-year forecast through 2017, the individual growth rates for the air carrier and commuter categories of approximately 3.5 percent and 2.1 percent from the forecast year 2010 were used. The average annual compound growth rate from 2000 to 2005 for air carriers is approximately 3.4 percent and approximately 2.4 percent for commuters, growing from 1.9 million to 2.3 million and 298,000 to 337,000, respectively (see Table II-1). For the period 2005 to 2010, air carriers' and commuter airlines' average annual compound growth rates are approximately 3.5 percent and 2.2 percent, yielding approximately 2.7 million and 375,000 air carrier and commuter enplanements, respectively. Based on these assumptions, the growth rates depict positive increases for both categories, yet at a decreasing rate for the commuter category. Based on the TAF, air carrier, commuter and total enplaned passengers for the period of 1997 to 2017 are expected to increase to 3.4 million, 433,000 and 3.9 million enplaned passengers, respectively. The average annual growth rates of these segments are 3.6 percent, 2.3 percent and 3.4 percent, respectively (see Table II-1).

3. Comparison of Enplanement Forecasts

The variances in total enplanements between the TAF and the Airport forecast range from approximately 198,000 more enplanements in the Airport's forecast, or 9.0 percent, in 1997 to approximately 854,000 enplanements, or 18.0 percent, in 2017. Although the total variances are significant, total enplanement average annual growth rate for the period 1997 to 2017 is similar, yielding 3.4 percent for the TAF and 3.9 percent for the Airport forecast. The air carrier and commuter activity show greater variances in average annual growth rates. The TAF yields a 3.6 percent average annual growth for air carriers, while the Airport forecast shows 4.4 percent growth. The TAF also yields a 2.3 percent average annual growth rate for the commuter category, in comparison to the Airport's 1.4 percent growth.

Airport management believes there are two factors that may have caused the variances between the air carrier and commuter categories. The air carrier activity shown in the Airport forecast reflects the expected increased growth of enplaned passengers traveling to and from the Pacific Rim and domestically, which currently exceeds the national trends used in the TAF. Also, there may be different reporting criteria by the Airport and the FAA affecting the commuter category. Nevertheless, as previously stated, in conducting the BCAs for this LOI Application, the Airport will use the TAF for enplaned passengers in an effort to show a more conservative growth of enplaned passengers.

c. **Operations Forecasts**

1. **Airport Forecast**

The Airport operations forecast was originally prepared through 2016. Based on the annual growth rates by sector in 2016, operations were extrapolated to 2017, the evaluation period for the BCAs. From 1994 to 1996, the Airport reported a 3.3 percent increase in total aircraft operations (see Table II-2). For this same period, air carrier operations have increased by 5.0 percent, and more specifically, freighter operations have increased by 7.3 percent. The Airport projects total aircraft operations to increase from 220,700 in 1996 to approximately 330,000 in 2017, an average annual growth rate of 2.0 percent.

Since the Airport's Master Plan Update using 1993 forecasts, ANC has experienced significantly higher growth in cargo activity than forecast. In addition, recent activity does not reflect the cargo activity growth reported nationally, and globally, even though 90 percent of trans-Pacific freight services operates via ANC. These events have led Airport management to believe that cargo activity at ANC has been severely underestimated, and therefore Airport management completed a new air cargo forecast. This new forecast reports 57,764 freighter operations in 1996, an average of over 1,100 all-cargo operations per week, compared to the Airport records of 46,120. A copy of the Preliminary Aircargo Forecasts Report is included in Appendix B. Preliminary estimates indicate that domestic and international freighter aircraft combined were approximately 67,000 operations at the Airport in calendar year 1997, which produces two years of freighter operations increasing by at least 16.0 percent. In fact, the new cargo forecast predicts freighter operations to increase to approximately 93,000 operations by 2001, an increase of 38.5 percent from 1997.

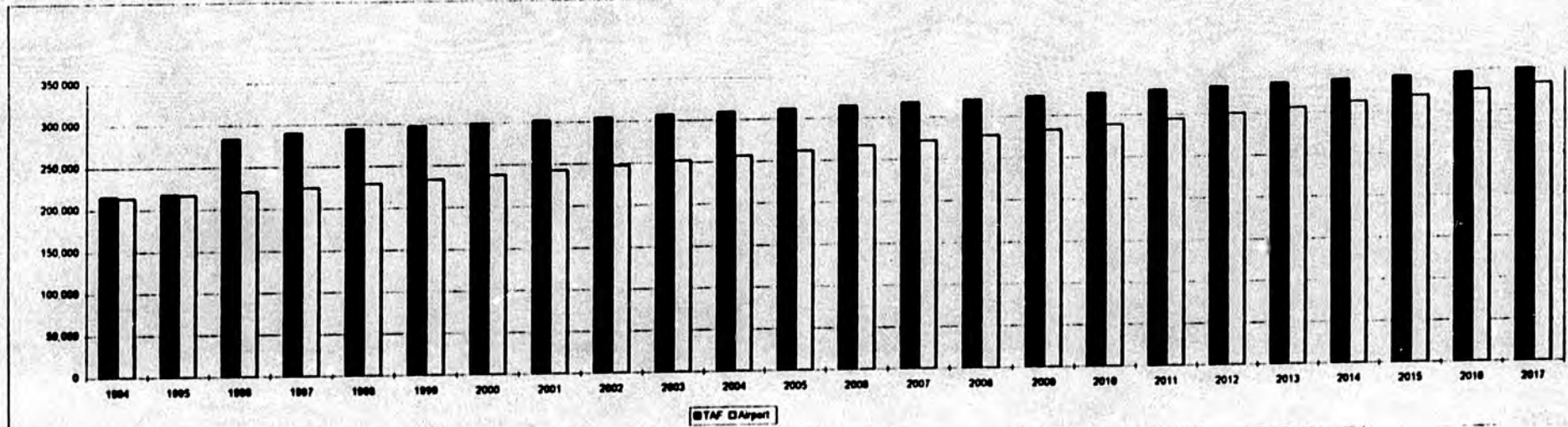
2. **FAA TAF**

According to the TAF, total aircraft operations at ANC between 1995 and 1996 increased from 217,768 to 283,611, or 30.2 percent (see Table II-2). This large increase in total aircraft operations was caused primarily by the general aviation segment. For this period, general aviation operations more than doubled, increasing from 43,425 to 96,977. This increase in general aviation operations significantly differs from the Airport's general aviation operations number of approximately 45,000 for 1996, which is based on ANC's Tower Stat Reports.

The forecast period for the TAF is from 1997 through 2010. For the BCAs, the TAF has been extrapolated to 2017 based on the growth rate utilized in the TAF for 2009 and 2010. The extended TAF projects total aircraft operations to increase at an average annual growth rate of approximately 1.0 percent from 1997 to 2017. Operations are expected to increase from approximately 290,000 in 1997 to 350,000 in 2017. The TAF includes air carrier and commuter operations, as well as cargo freighter operations.

In the base year of the TAF, 1996, the TAF reports total air carrier operations at 105,593, which includes passenger air carriers and freighter operations. However, the TAF does not identify each segment separately; therefore, in order

Table II-2
Anchorage International Airport
Aircraft Operations Forecast



		TAF (1)							Airport Forecast (2)							Variance	% Variance	
		Air Carrier (Pax & Freight)	Commuter	G/A	Military	G/A & Military	Total	% Change	Actual Forecast	Air Carrier (Pax & Freight)	Commuter	G/A	Military	G/A & Military	Total	% Change	[TAF - Airport]	[TAF/ Airport]
Actual	1994	97,387	68,456	45,961	3,817	49,798	215,641	--		98,166	63,308	48,230	4,046	52,276	213,750	--	1,891	--
	1995	96,946	73,500	43,425	3,897	47,322	217,768	1.0%		100,578	64,660	48,115	3,816	51,931	217,169	1.6%	599	0.3%
Forecast	1996	105,593	77,538	46,977	3,503	100,480	283,611	30.2%		103,060	66,040	48,000	3,600	51,600	220,700	1.6%	62,911	28.5%
	1997	111,494	78,365	46,581	3,503	100,084	289,943	2.2%		105,858	67,447	48,000	3,600	51,600	224,905	1.9%	65,038	28.9%
	1998	115,710	79,193	46,186	3,503	99,689	294,592	1.6%		108,739	68,884	48,000	3,600	51,600	229,223	1.9%	65,369	28.5%
	1999	117,774	80,021	45,791	3,503	99,294	297,089	0.8%		111,705	70,351	48,000	3,600	51,600	233,656	1.9%	63,433	27.1%
	2000	119,869	80,849	45,396	3,503	98,899	299,617	0.9%		114,757	71,849	48,000	3,600	51,600	238,206	1.9%	61,411	25.8%
	2001	122,147	81,677	45,001	3,503	98,504	302,328	0.9%		117,900	73,380	48,000	3,600	51,600	242,880	2.0%	59,448	24.5%
	2002	124,122	82,505	44,606	3,503	98,109	304,736	0.8%		120,937	74,977	48,000	3,600	51,600	247,514	1.9%	57,222	23.1%
	2003	125,994	83,333	44,211	3,503	97,714	307,041	0.8%		124,054	76,610	48,000	3,600	51,600	252,264	1.9%	54,777	21.7%
	2004	128,045	84,160	43,815	3,503	97,318	309,523	0.8%		127,254	78,277	48,000	3,600	51,600	257,131	1.9%	52,392	20.4%
	2005	130,263	84,988	43,420	3,503	96,923	312,174	0.9%		130,541	79,981	48,000	3,600	51,600	262,122	1.9%	50,052	19.1%
	2006	132,333	85,816	43,025	3,503	96,528	314,877	0.9%		133,917	81,722	48,000	3,600	51,600	267,239	2.0%	47,638	17.8%
	2007	134,974	86,644	42,630	3,503	96,133	317,751	0.9%		137,383	83,501	48,000	3,600	51,600	272,484	2.0%	45,267	16.6%
	2008	137,469	87,472	42,235	3,503	95,738	320,679	0.9%		140,942	85,319	48,000	3,600	51,600	277,861	2.0%	42,818	15.4%
	2009	140,019	88,300	41,840	3,503	95,343	323,662	0.9%		144,596	87,176	48,000	3,600	51,600	283,372	2.0%	40,290	14.2%
	2010	142,625	89,128	41,445	3,503	94,948	326,701	0.9%		148,350	89,074	48,000	3,600	51,600	289,024	2.0%	37,677	13.0%
	2011	145,280	89,964	41,052	3,503	94,553	329,798	0.9%		152,205	91,013	48,000	3,600	51,600	294,818	2.0%	34,980	11.9%
	2012	147,983	90,807	40,660	3,503	94,163	332,954	1.0%		156,164	92,994	48,000	3,600	51,600	300,758	2.0%	32,196	10.7%
2013	150,738	91,659	40,270	3,503	93,773	336,170	1.0%		160,230	95,019	48,000	3,600	51,600	306,849	2.0%	29,321	9.6%	
2014	153,543	92,518	39,882	3,503	93,385	339,446	1.0%		164,406	97,087	48,000	3,600	51,600	313,093	2.0%	26,353	8.4%	
2015	156,401	93,386	39,495	3,503	92,998	342,785	1.0%		168,694	99,201	48,000	3,600	51,600	319,495	2.0%	23,290	7.3%	
2016	159,312	94,262	39,110	3,503	92,613	346,187	1.0%		173,100	101,360	48,000	3,600	51,600	326,060	2.1%	20,127	6.2%	
2017	162,277	95,146	38,727	3,503	92,230	349,652	1.0%		177,625	103,566	48,000	3,600	51,600	332,791	2.1%	16,861	5.1%	

Source:

(1) FAA reported actuals for 1994 to 1996, FAA Terminal Area Forecast for 1997 to 2010; 2011 - 2017 prepared by Landrum & Brown, Inc.

(2) From Airport Records. Airport Forecast from Historic & Forecast Aircraft Departures provided by INTB for forecast years 1995 to 2016, year 2017 based upon 2016 growth rate, provided by Landrum & Brown, Inc.

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to utilize the TAF for the BCA, it was necessary to separate the TAF air carrier operations into its components.

The methodology used for deriving TAF passenger air carrier and freighter operations is based on applying ANC's existing 1996 ratio of freighter to total air carrier operations to the TAF total air carrier operations (see **Table II-2A and 2B**). In 1996, ANC records indicate that 29.6 percent of the passenger and freighter landings were commuter, 37.9 percent were passenger air carrier and 32.5 percent were freighter. Using this ratio, the percentage of freighter landings to total air carrier is 46.2 percent. By applying this ratio to the 1996 TAF air carrier operations of 105,593, TAF freighter operations are estimated at 48,740, and passenger air carrier operations are estimated at 56,853.

3. Revised TAF

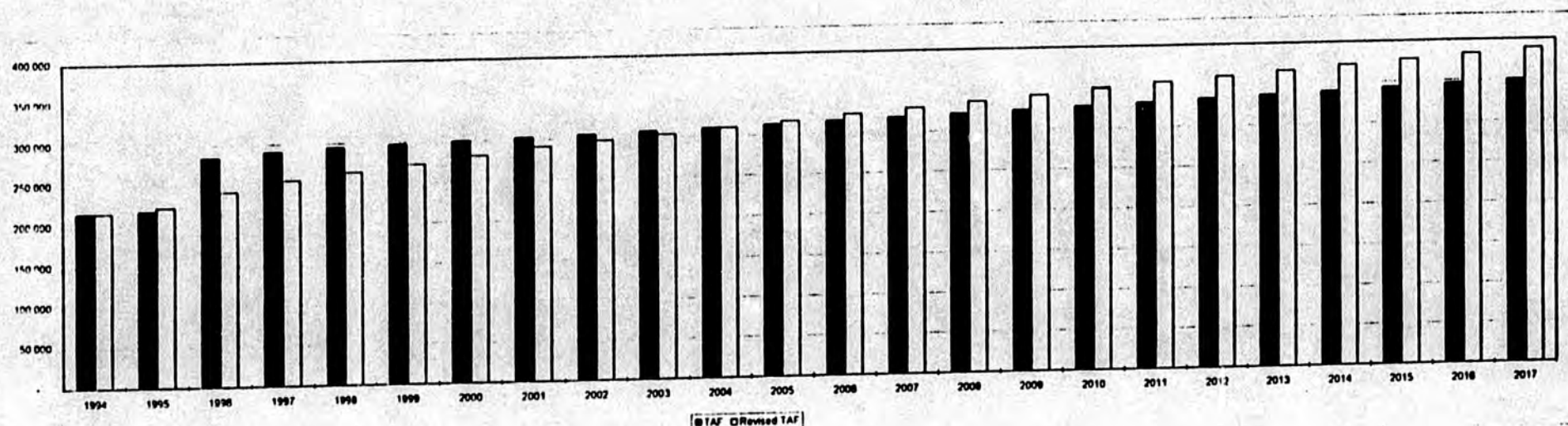
The Revised TAF differs from the original TAF in two sectors: General Aviation & Military, reflecting a decrease in the base year general aviation activity; and Air Carrier, reflecting higher levels of freighter operations (see **Table II-2A**).

The Airport's general aviation activity is based on the ANC Tower Stat Report. For 1996, general aviation activity operations were estimated at 45,000. Consequently, the TAF was adjusted from 100,480 to 45,000. The original TAF shows general aviation operations declining by less than 1.0 percent over the forecast period. However, because of Alaska's reliance on aviation as a means of transportation, the Airport believes general aviation forecasts will increase annually by at least 1.0 percent and based on the historical actual trend. Therefore, the General Aviation & Military sector in the Revised TAF shows general aviation operations increasing annually at 1.0 percent, with military operations remaining the same as projected in the original TAF.

The number of freighter operations derived from the TAF is substantially lower than in ANC's new cargo forecast. The recent development and expansion of cargo facilities at ANC and the availability of 1997 recent data during the preparation of the Airport's new cargo forecast in comparison to when the TAF was prepared suggests that the Airport's new cargo forecast is a more realistic estimate of future freighter operations.

The Revised TAF contains the same number of passenger air carrier operations throughout the entire forecast period as those contained in the original TAF, which is based on the existing ANC ratio of freighter operations to total air carrier operations (46.2 percent). However, the number of freighter operations derived from the TAF has been replaced with the number of freighter operations forecast in the Airport's new cargo forecast (see **Table II-2C**). For example, in 1998, total air carrier operations in the TAF are 115,710. By using ANC's existing ratio of current freighter operations to total air carrier operations (46.2 percent) to 115,710 total operations, freighter operations are calculated to be 53,410, with passenger air carrier operations at 62,300. The Revised TAF includes 62,300 passenger air carrier operations in 1998; however, the number of

Table II-2A
Anchorage International Airport
Aircraft Operations Forecast



TAF (1)										Revised TAF(2) - (See Tables II-2B & II-2C)										Variance [TAF - Revised TAF]	% Variance [TAF - Revised TAF]
		Air Carrier		Commuter	G/A & Military		Total Operations	% Change			Air Carrier		Commuter	G/A & Military		Total Operations	% Change				
		Passenger	Freighter		G/A	Military					Passenger	Freighter		G/A	Military						
Actual	1994	52,434	41,953	97,387	68,456	3,837	49,798	215,641	--	Actual	52,434	41,953	97,387	68,456	3,837	49,798	216,110	3.0%	(469)	-0.2%	
	1995	52,197	44,749	96,946	71,500	3,897	47,322	217,768	1.0%		52,197	44,749	96,946	71,500	3,897	47,322	222,641	2.5%	(4,873)	-2.2%	
	1996	56,853	48,740	105,593	77,538	3,503	100,480	283,611	30.2%	Forecast	56,853	48,740	105,593	77,538	3,503	100,480	283,611	0.0%	0	0.0%	
	1997	60,030	51,464	111,494	78,365	3,503	100,084	289,943	2.2%		60,030	51,464	111,494	78,365	3,503	100,084	289,943	0.0%	0	0.0%	
	1998	62,300	53,410	115,710	79,193	3,503	99,689	294,592	1.6%		62,300	53,410	115,710	79,193	3,503	99,689	294,592	0.0%	0	0.0%	
	1999	63,411	54,363	117,774	80,021	3,503	99,294	297,089	0.8%		63,411	54,363	117,774	80,021	3,503	99,294	297,089	0.0%	0	0.0%	
	2000	64,539	55,330	119,869	80,849	3,503	98,899	299,617	0.9%		64,539	55,330	119,869	80,849	3,503	98,899	299,617	0.0%	0	0.0%	
	2001	65,765	56,382	122,147	81,677	3,503	98,504	302,328	0.9%		65,765	56,382	122,147	81,677	3,503	98,504	302,328	0.0%	0	0.0%	
	2002	66,829	57,293	124,122	82,505	3,503	98,109	304,736	0.8%		66,829	57,293	124,122	82,505	3,503	98,109	304,736	0.0%	0	0.0%	
	2003	67,837	58,157	125,994	83,111	3,503	97,714	307,041	0.8%		67,837	58,157	125,994	83,111	3,503	97,714	307,041	0.0%	0	0.0%	
	2004	68,941	59,104	128,045	84,160	3,503	97,318	309,523	0.8%		68,941	59,104	128,045	84,160	3,503	97,318	309,523	0.0%	0	0.0%	
	2005	70,135	60,128	130,263	84,988	3,503	96,923	312,174	0.9%		70,135	60,128	130,263	84,988	3,503	96,923	312,174	0.0%	0	0.0%	
	2006	71,357	61,176	132,533	85,816	3,503	96,528	314,877	0.9%		71,357	61,176	132,533	85,816	3,503	96,528	314,877	0.0%	0	0.0%	
	2007	72,672	62,192	134,974	86,644	3,503	96,133	317,741	0.9%		72,672	62,192	134,974	86,644	3,503	96,133	317,741	0.0%	0	0.0%	
	2008	74,015	63,454	137,469	87,472	3,503	95,738	320,679	0.9%		74,015	63,454	137,469	87,472	3,503	95,738	320,679	0.0%	0	0.0%	
	2009	75,388	64,611	140,019	88,300	3,503	95,343	323,662	0.9%		75,388	64,611	140,019	88,300	3,503	95,343	323,662	0.0%	0	0.0%	
	2010	76,791	65,834	142,625	89,128	3,503	94,948	326,701	0.9%		76,791	65,834	142,625	89,128	3,503	94,948	326,701	0.0%	0	0.0%	
	2011	78,220	67,059	145,279	90,964	3,503	94,553	329,797	0.9%		78,220	67,059	145,279	90,964	3,503	94,553	329,797	0.0%	0	0.0%	
	2012	79,676	68,307	147,983	90,807	3,503	94,163	332,953	1.0%		79,676	68,307	147,983	90,807	3,503	94,163	332,953	0.0%	0	0.0%	
	2013	81,159	69,579	150,738	91,659	3,503	93,773	336,170	1.0%		81,159	69,579	150,738	91,659	3,503	93,773	336,170	0.0%	0	0.0%	
	2014	82,669	70,874	153,543	92,518	3,503	93,385	339,446	1.0%		82,669	70,874	153,543	92,518	3,503	93,385	339,446	0.0%	0	0.0%	
	2015	84,208	72,193	156,401	93,386	3,503	92,998	342,785	1.0%		84,208	72,193	156,401	93,386	3,503	92,998	342,785	0.0%	0	0.0%	
	2016	85,775	73,536	159,311	94,262	3,503	92,613	346,186	1.0%		85,775	73,536	159,311	94,262	3,503	92,613	346,186	0.0%	0	0.0%	
	2017	87,372	74,905	162,277	95,116	3,503	92,210	349,653	1.0%		87,372	74,905	162,277	95,116	3,503	92,210	349,653	0.0%	0	0.0%	

Source:

(1) FAA reported actuals for 1994 to 1996, FAA Terminal Area Forecast for 1997 to 2010, 2011 - 2017 prepared by Landrum & Brown, Inc.

(2) See calculations on Tables II-2B & II-2C

HEADLINE TABLES

Table II-2B
Anchorage International Airport
Ratio for the Revised TAF Air Carrier Operations Forecast

	1996 Landings	% of Passenger Landings	% of Total Landings
Passenger Landings	55,422		
Commuter	24,309	43.9%	29.6%
Air Carrier	31,113	56.1%	37.9%
	55,422	100.0%	
Freighter Landings	26,674		32.5%
Total Landings	82,096		100.0%
Total Air Carrier Landings	57,787		
Freighter Landings / Total Air Carrier Landings (Prepared for Tables II-2A & II-2C -- Revised TAF Freighter operations)			46.2%
Source: From Airport Records: Annual Statistics by Fiscal Year (actual data for 1994 to 1996)			
Methodology: Subtract commuters from the passenger landing number to calculate the percentage ratio of freighter landings to the total air carrier landings.			

Anchorage International Airport

Variance (Revised TAF- Original FAA TAF)	% Variance/ Original FAA TAF
--	---------------------------------

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freighter operations are replaced with the Airport's new cargo forecast's estimate of 72,600. As a result, total air carrier operations in the Revised TAF are forecast to be 134,900.

For the freighter operations, the forecast period for the Airport's new cargo forecast was 1997 - 2001; therefore, it was necessary to extrapolate the numbers through 2017. Consequently, the annual growth rates for freighter operations are 4 percent from 2002 through 2006, 3 percent from 2007 through 2011 and 2 percent thereafter.

d. Cargo Tonnage

The Airport's new cargo forecast includes forecasts for domestic and international freight and air mail cargo tonnage for the period 1997 - 2001. The forecast cargo tonnage has been extrapolated to 2017 based on the rate of freighter operations: 4 percent for 2002 - 2006, 3 percent for 2007 - 2011 and 2 percent thereafter. Based on this forecast, total air cargo tonnage is expected to increase from 556,000 tons in 1997 to 1.1 million tons in 2017, an average annual increase of 3.5 percent. (See Table II-3).

e. Take-Off Weight

The Airport's take-off weight forecast is based on 1996 actuals. This is a conservative forecast that does not address the adjustments represented in the Revised TAF. Total take-off weight is determined by summing the product of total aircraft landings at the Airport multiplied by each aircraft's certified maximum permissible take-off weight. Based on this approach, from 1996 to 1997, total take-off weight at the Airport is forecast to increase 10.6 percent, from 10.2 million tons to 11.3 million tons. Thereafter, total takeoff weights are forecast to increase to 23.2 million tons in 2017, for an annual average growth rate of approximately 3.7 percent. (See Table II-4.)

3. DESCRIPTION OF AIRPORT FACILITIES

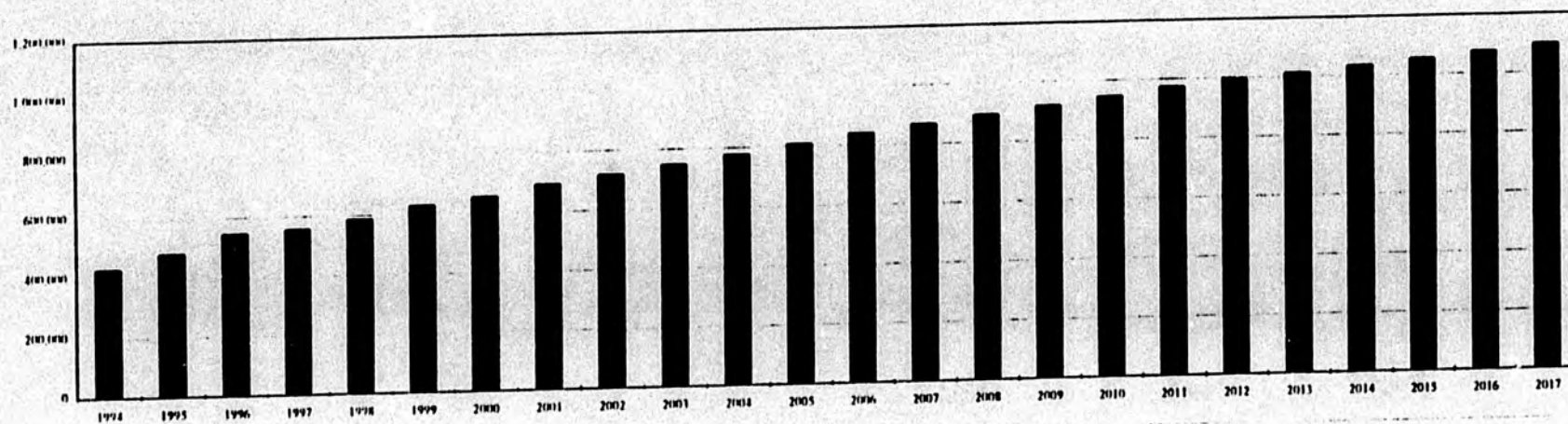
The FAA defines ANC as a medium-sized air traffic hub. The Airport, including the seaplane facilities at Lake Hood and Lake Spenard, occupies approximately 4,480 acres and is located three miles southwest of the Anchorage central business district. The Airport property is owned by the State of Alaska and is administered and operated by the Department of Transportation and Public Facilities.

ANC maintains three runways: two parallel east-west runways separated by 700 feet (Runway 6L/24R and Runway 6R/24L) and a north-south runway (Runway 14/32) located north of the parallel east-west runways. The dimensions of these runways are as follows:

- | | |
|----------------------|-------------------|
| • 6L/24R (east-west) | 10,600 x 150 feet |
| • 6R/24L (east-west) | 10,897 x 150 feet |
| • 14/32 | 11,584 x 150 feet |

ANC operates two terminal buildings. The North (international) Terminal has eight gates, and the South (domestic) Terminal has 19 structural gates and 13 ground-loading positions. Together, the terminals total over 1.2 million square feet. The Airport has four cargo airparks

Table II-3
Anchorage International Airport
Air Cargo Tonnage Forecast

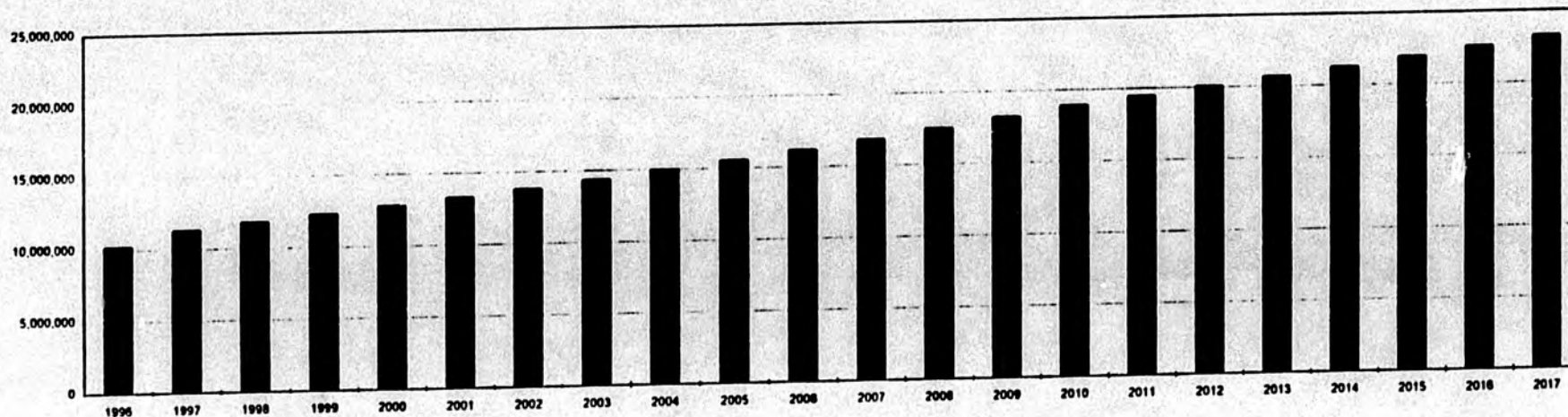


Source:

(1) From Airport Records. Forecast period 1997 to 2001 provided by Keiser & Associates, Inc. from the Preliminary Air Cargo Forecast Draft dated 02/16/98, years 2002 to 2017 prepared by Landrum & Brown, Inc.

II. AIRCRAFT ACTIVITY TABLES

Table II-4
Anchorage International Airport
Maximum Gross Take-off Weight Forecast
(In Tons)



		Airport Forecast - (1)			
		Domestic	International	Total	% Change
Actual Forecast	1996	3,226,160	6,984,739	10,210,899	--
	1997	3,187,500	7,909,500	11,297,000	10.6%
	1998	3,490,000	8,305,000	11,795,000	4.4%
	1999	3,629,600	8,637,200	12,266,800	4.0%
	2000	3,774,784	8,982,688	12,757,472	4.0%
	2001	3,925,776	9,341,996	13,267,771	4.0%
	2002	4,082,807	9,715,676	13,798,482	4.0%
	2003	4,246,119	10,104,303	14,350,421	4.0%
	2004	4,415,964	10,508,475	14,924,438	4.0%
	2005	4,592,602	10,928,814	15,521,416	4.0%
	2006	4,776,306	11,365,966	16,142,272	4.0%
	2007	4,967,358	11,820,605	16,787,963	4.0%
	2008	5,166,053	12,293,429	17,459,482	4.0%
	2009	5,372,695	12,785,166	18,157,861	4.0%
	2010	5,587,603	13,296,573	18,884,175	4.0%
	2011	5,755,231	13,695,470	19,450,701	3.0%
	2012	5,927,888	14,106,334	20,034,222	3.0%
	2013	6,105,724	14,529,524	20,635,248	3.0%
	2014	6,288,896	14,965,410	21,254,306	3.0%
	2015	6,477,563	15,414,372	21,891,935	3.0%
	2016	6,671,890	15,876,803	22,548,693	3.0%
	2017	6,872,046	16,353,107	23,225,153	3.0%

Source: From Airport Records. Forecast years 1997-2017 from Financial Models Vol. II dated 10/02/97, prepared by Hudson AIPF, LLC.
 (1) Total take-off weights are determined by summing the product of total aircraft landings at the Airport multiplied by each aircraft's certified maximum take-off weight.
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and a cargo refueling ramp that contain 1.2 million square feet for cargo transient parking and international sorting hubs for various cargo carriers.

FedEx, UPS, United Airlines, Northwest Airlines and Polar Air Cargo are only a few of the all-cargo carriers with hubs in Anchorage. These carriers have expanded their facilities in Anchorage in 1997, some doubling or tripling in size. Along with its passenger and cargo facilities, the Airport also has a floatplane base and general aviation airstrip.

Significant expansion or construction of new facilities at the Airport between 1996 and 1998 include the following:

Carrier	Project
FedEx	\$38 million: Broke ground in Spring 1997 for an additional 165,000 s.f. to the existing 208,000 s.f.
	\$15 million: Completed construction and opened 15,000 s.f. MD-11 flight simulator facility
Lynxs/Mapco	\$25 million: Secured lease in fall 1997 for 1 million s.f. site to construct 9 widebody hardstands and 100,000 s.f. cargo facility
Alaska	\$8 million: Completed 72,000 s.f. addition/remodel cargo facility
UPS	\$5 million: Opened 60,000 s.f. addition/remodel cargo facility
Penair	\$4 million: Completed 40,000 s.f. aircraft hangar and operations center
Northern Air Cargo	\$3.5 million: Began construction of an addition to its existing cargo facility
Northwest	\$3 million: Reconstructed two widebody freighter hardstands and added a third
Lynden	Moved into 36,000 s.f. aircraft hangar and ops center
Polar	Moved hub operations to subleased FedEx hardstands in East Airpark, (formerly Flying Tigers site)
United	Established ANC hub and domicile crew base in March 1997 with over 100 pilots and 100 ground personnel

III. AIRPORT CAPITAL IMPROVEMENTS

There are two primary development programs currently being implemented relative to the Airport: "Gateway Alaska," a state program that focuses on domestic terminal redevelopment and highway improvements around Anchorage and the Airport Development Program ("ADP"). The Terminal Redevelopment Project ("TRP") is included in Gateway Alaska. The LOI Projects are included in the ADP. As these programs are completed, they will accomplish the following objectives: (i) increase capacity, (ii) reduce delay, (iii) improve efficiency (iv) improve safety, (v) improve passenger comfort and convenience and (vi) lower Airport operating costs.

1. GATEWAY ALASKA

In 1997, the Governor of the State of Alaska announced a capital development program known as "Gateway Alaska." The initiative recognized the increasing growth in domestic and international passengers and the State's importance in the global cargo market. Expansion of the terminal and other facilities is expected to displace certain cargo fueling areas, gates and overnight parking positions, thereby adding urgency to the need for cargo facility and apron area improvements. The TRP, which is part of Gateway Alaska, is described more fully in Section 3 of this chapter.

The Gateway Alaska program will fund a portion of the renovation and expansion of the Airport's domestic terminal and other airside and landside improvements. A primary objective of Gateway Alaska is to improve highway access to the Airport through a series of programmed and planned improvements along International Airport Road. Programmed projects are shown in Exhibit III-1 and include the following:

- Build an interchange where International Airport Road crosses Minnesota Drive.
- Widen C Street from Tudor Road to International Airport Road.
- Improve International Airport Road, including bicycle and pedestrian trails.
- Intersection improvements and partial realignment of Postmark Road where it intersects with International Airport Road.

Additional contemplated improvements that will be reviewed and programmed as needed include:

- A new grade separation at International Airport Road and the New Seward Highway.
- Interchange on International Airport Road at Jewel Lake Road and at-grade railroad crossings to improve safety.
- Improve Old International Airport Road, where many cargo operations are located.
- Build bicycle and pedestrian trails along Lakeshore Drive, which winds around Lake Hood.
- Repair an eroding section of the Tony Knowles Coastal Trail near the north end of the Airport.

2. AIRPORT DEVELOPMENT PROGRAM

The ADP includes funding for projects at ANC, Lake Hood Airport, a separate but jointly managed facility next to ANC, and Fairbanks International Airport ("FIA"). Lake Hood and FIA are included because their operations and capital improvements are financed under the same enterprise fund as ANC. Therefore, project costs and O&M costs at each airport affect the rates and fees at the other airports. For purposes of this LOI Application, only total project costs at Lake Hood and FIA are shown for each fiscal year. Detailed project descriptions for these two

airports and justifications are not discussed. Table III-1 shows a detailed listing of ANC's ADP projects with estimated start and finish dates.

The ADP is a 10-year program that can be grouped into five discrete categories:

- **Airfield**--Planned airfield projects include airfield lighting upgrades and pavement rehabilitation of runways, taxiways and aprons. The Airport maintains and operates three runways and two taxiways, each of which are over 10,000 feet long, as well as numerous other connecting taxiways and large passenger and cargo aprons. These areas represent a large annual commitment of operating and maintenance resources.
- **Terminal**--Terminal projects include the TRP and the 2015 Terminal and Parking Garage Expansion Programs. Additional projects address maintenance, repairs and code upgrades within the domestic and international terminals, and the aircraft parking aprons next to the terminals.
- **Cargo**--Cargo projects address taxiways, roads and utility services to expand cargo into the West, North and South Airparks. A Cargo LOI (Phase II Projects) proposed for 2001 includes airpark expansions, land acquisition, deicing facilities and engine runup and holding pads. Other cargo projects would complete wetland mitigation to allow development of Airport wetlands for cargo expansion, extension of a runway to increase international cargo aircraft payloads and expansion and reconstruction of cargo aprons.
- **Environmental**--Environmental projects address airport noise, air and water quality, hazardous materials, soil contamination and drainage systems.
- **Other Improvements**--Projects in this category address Airport security programs, facilities expansion and snow removal equipment.

3. TERMINAL REDEVELOPMENT PROJECT

The TRP includes improvements to terminal roads and parking, the extension of upper level departure curbside bridge and roads, replacement of Concourse C, renovation and expansion of existing terminal space, tour group processing and improvements to airside facilities. The plan provides for facilities that meet anticipated demands for the target year 2005. The proposal calls for construction to begin by 1999 and to be completed by 2004.

The plan also provides for five new jet aircraft gates, seven regional aircraft parking positions, the demolition of Concourse C and the construction of a new concourse that will provide more curbside access, baggage claim, ticket lobby and retail space.

This plan meets the following specific goals and objectives of the Airport and the airlines:

- provide the roadway and terminal facilities necessary to meet the forecast demand;
- create a facility with balanced capacities for airside, terminal and curbside areas;
- resolve major deficiencies that exist in current ticket lobbies, baggage claim and curbside pick up areas;

- provide a flexible terminal that can accommodate changes in fleet mix and other factors that could change the mix in the future;
- maximize the use of existing facilities in a cost-effective manner;
- provide for construction while continuing the operations of the Airport;
- provide flexibility for future terminal expansion to meet increased demand; and
- maintain the existing number of cargo fueling positions.

4. LOI PROJECTS

The LOI Projects consist of two distinct phases. Portions of the Phase I Projects are on the Airport's current approved Airport Layout Plan ("ALP"). Environmental processing for each LOI Project is completed or underway. The NEPA process for the runway reconstruction project has been completed. Final approval of the Environmental Assessment for the remaining projects is expected at the end of June 1998. In addition, a revised Airport Layout Plan ("ALP") depicting the relevant projects will be submitted for FAA approval within the next two months. Finally, preliminary design work for these projects is completed. Contracts documents for bidding will be prepared in sequence with the TRP phasing plan and pending the results of the environmental assessment.

a. LOI Phase I

The Airport recognizes that the FAA is looking for a comprehensive and well-documented BCA, financial plan and environmental review. To analyze the long-range development needs and potential funding sources, the Airport has prepared the Terminal Needs Assessment and the Airport Master Plan to identify critical airside projects requiring immediate attention. In response to these requirements, the Airport is submitting four airside projects for discretionary funding and the eligible portions of the TRP for entitlement funding under the LOI Application.

The four airside projects submitted for LOI consideration are briefly described below:

- Terminal Apron Replacement--Construct concrete terminal apron to serve new jet and commuter gates at Concourse C and replace existing aging asphalt aprons at various locations around Concourses A and B.
- RON/Cargo Apron Construction--Convert three existing cargo refueling positions to concrete joint use cargo hardstand/air carrier RON positions.
- Cargo Fueling Apron Expansion--Construct five new Design Group VI cargo fueling positions, including access taxiways, tug road tie-ins and hydrant fueling system.
- Runway 6L/24R Reconstruction--Reconstruct Runway 6L/24R to strengthen it for larger aircraft and make associated safety, lighting and drainage improvements.

The first three airside LOI projects involve the construction of ramp improvements that will facilitate the implementation of the TRP. The sequencing of these projects is designed to minimize the operational impacts and passenger disruptions during construction. While each project will contribute to enhancing overall Airport system efficiency, these projects are inter-related from a construction phasing perspective. As a

result, all three projects must be completed to achieve the benefits defined in the BCA section of these documents.

The fourth airside LOI project, the reconstruction of Runway 6L/24R, is independent from the three ramp projects. Since the benefits expected to result from this project are not dependent on the ramp projects, a separate BCA was performed for the runway reconstruction. This approach complies with the FAA directive to evaluate the marginal benefits and costs of independent projects.

Growth in cargo and air carrier activity is occurring so quickly that the Airport believes it is appropriate to request funding for these projects at this time, recognizing that the Airport will be prepared to submit a Phase II application within two years.

Table III - 1
Anchorage International Airport
Summary of ADP Projects

#	Cost Center	Project Title	Total Estimated Project Cost (\$000's)	Project Dates (Fiscal Year)	
				Begin	End
98-01	AF	Runway 6L/24R Reconstruction & Lighting	17,000	1998	1999
98-02	AF	Cargo Fueling Apron Expansion	9,700	1998	2006
98-03	AF	South Terminal Ramp Reconstruction	809	1998	1998
98-04	TE	Terminal Redevelopment Project	231,600	1998	2004
98-05	TE	Terminal Rehabilitation	10,200	1998	2007
98-06	AF	Taxiway S Tug Road	300	1998	1998
99-01	AF	Cargo Ramp Reconstruction	6,000	1999	1999
99-02	AF	Lake Hood Sewer and Water	2,500	1999	1999
99-03	AF	Airfield Blast Protection Reconstruct	4,900	1999	2006
99-04	TE	Escalator Replacement	350	1999	1999
99-05	AF	Flight Tracking/Noise Monitoring System	1,200	1999	1999
99-06	OT	Snow Storage Area Construction	4,500	1999	2005
00-01	AF	Airfield Lighting Upgrades	4,500	2000	2003
00-02	AF	Field Mntc. Reconstruct/Expansion	4,500	2000	2002
00-03	AF	Fire Pit Assessment and Repair	150	2000	2000
00-04	TE	Security Access Control Upgrades	3,500	2000	2000
00-05	AF	Taxiway Upgrade/Repairs	3,000	2000	2000
00-06	TE	Ticketing Area Automatic Doors	250	2000	2000
00-07	OT	Wetland Mitigation	2,500	2000	2000
01-01	TE	ADA Compliance	400	2001	2001
01-02	OT	Airport Security Upgrades	1,450	2001	2004
01-03	AF	Parallel Taxiway East of Romeo (1)	9,200	2001	2001
01-03	AF	North Airpark Taxiway into Wetlands (1)	3,100	2001	2001
01-03	AF	Deicing Collection Facility (1)	1,500	2001	2001
01-03	AF	Engine Runup PAD/D&D Holding Area (1)	2,100	2001	2001
01-03	AF	North Airpark Tug Roads (1)	5,400	2001	2001
01-03	AF	West Airpark Parallel Taxiways (1)	23,000	2001	2001
01-03	AF	West Airpark Roads (1)	11,200	2001	2001
01-03	AF	Land Acquisition (1)	1,000	2001	2001
01-04	TE	Communication Upgrade	800	2001	2002
01-05	AF	G.A. Parking & Taxiway Relocation	4,500	2001	2001
01-06	TE	Overhead Doors Replacement	450	2001	2001
01-07	OT	Roads/Utilities Reconstruction/Upgrade	5,500	2001	2006
01-08	AF	Storm Drain Construction	10,300	2001	2006
01-09	AF	Terminal Ramp Reconstruction	2,400	2001	2001
01-10	AF	UREA Storage Facility	900	2001	2001
01-11	AF	Part 150 Noise Program Implementation	15,000	2001	2009
02-01	AF	Airfield Pavement Rehabilitation	10,000	2002	2008
02-02	AF	Lake System Dredging	3,250	2002	2002
02-03	AF	South Airpark Taxiway Expansion	6,700	2002	2005
02-04	OT	South Postmark Drive Realignment	6,100	2002	2002
02-05	TE	Terminal Apron Reconstruction	11,600	2002	2009
03-01	AF	Equipment/Ops Building Expansion	3,000	2003	2003
03-02	ALL	Master Plan/Noise Program Update	1,100	2003	2003
03-03	OT	Old Intl. Airport Road Reconstruction	7,500	2003	2003
03-04	AF	Runway 14-32 Overlay and Groove	2,000	2003	2003
04-01	OT	North Airpark Access Road Construction	9,000	2004	2004
04-02	AF	Runway Extension	6,200	2004	2004
05-01	AF	Cargo Apron Reconstruction	6,000	2005	2009
05-02	AF	Taxiway K Resurfacing	1,500	2005	2005
06-01	AF	Runway 6R-24L Overlay and Groove	2,000	2006	2006
06-02	AF	Taxiways R & E Resurfacing	2,000	2006	2006
07-01	AF	Lake Hood Strip/Apron Resurfacing	300	2007	2007
07-02	AF	Land Acquisition	1,000	2007	2007
07-03	AF	Runway 14-32 West Airpark Parallel Taxiway	12,000	2007	2007
08-01	AF	Runway 6L-24R Overlay and Groove	2,000	2008	2008
98-07	ALL	Advance Project Design	11,650	1998	2009
98-08	ALL	Annual Improvements	8,300	1998	2009
98-09	OT	Environmental Assessment & Cleanup	21,500	1998	2009
98-10	AF	Equipment	9,196	1998	2009
Anchorage International Airport Total (2)			\$549,555		
Fairbanks International Airport			\$44,133	1999	2009
Total AIAS			\$593,688		

(1) Part of the Cargo Letter of Intent

(2) Anchorage International Airport ADP includes Lake Hood Capital Project

b. **LOI Phase II**

The LOI Phase II program is intended to comprehensively integrate all of the facility requirements under the ADP and is presented in this LOI Application in preliminary form to alert the FAA that future funding requests are anticipated. These Phase II projects are intended to provide additional capacity for all cargo freighters and transloading operations. These projects also will provide the necessary facilities to allow ANC to become the dominant global cargo hub airport in the world.

Unlike most other U.S. airports where one sector of activity dominates, ANC is experiencing growth in both passenger and air cargo activity. Efficiencies can be derived by servicing user requirements in an integrated manner rather than by independent and parallel strategies. This presents an opportunity for maximizing yield on available Airport financial resources and for leveraging national system benefits with federal, state and Airport funding.

IV. FINANCIAL PLAN

The Airport's Financial Plan anticipates the issuance of Airport Revenue Bonds in Fiscal Year 1999 (the "1999 Series Bonds"). The 1999 Series Bonds are being issued to fund the Ramp/Apron Projects and the majority of the TRP. The reconstruction of Runway 6L/24R, (Phase II occurs in 1999) will be funded with discretionary grants under the LOI. The interdependencies of the Ramp/Apron Projects require the proper sequence to accommodate construction of the TRP and Runway 6L/24R. To meet the phasing schedule described in Chapter VI, Airport management will capitalize interest on the 1999 Series Bonds. Upon completion of the project, annual principal and interest payments will be included in the airline rates and charges. Based on the BCA Guidance, the discretionary grant schedule provides for greater reimbursement amounts in the later years of the LOI Application. The Airport will commit 75.0 percent of its passenger entitlements to the eligible portions of the TRP. The requested schedule for receipt of LOI Funds is as follows:

YEAR	ENTITLEMENT	DISCRETIONARY	LOI TOTAL
1999	\$1,950,000	\$4,675,000	\$6,625,000
2000	1,950,000	4,675,000	6,625,000
2001	1,950,000	3,950,000	5,900,000
2002	1,950,000	4,155,000	6,105,000
2003	1,950,000	4,370,000	6,320,000
2004	1,950,000	4,600,000	6,550,000
2005	1,950,000	4,845,000	6,795,000
2006	1,950,000	5,105,000	7,055,000
2007	1,950,000	5,380,000	7,330,000
2008	1,950,000	6,295,000	8,245,000
TOTAL	\$19,500,000	\$48,050,000	\$67,550,000

This is accomplished by matching the discretionary grants with the principal repayment schedule associated with the 1999 Series Bonds. By applying the LOI proceeds against principal payment as a credit to the airlines' rates and charges, Airport management will have greater flexibility and debt capacity beyond 2005 to implement the remaining projects in the ADP. This LOI Application also allows the Airport to meet future activity levels in a timely manner and at service levels that are consistent with industry standards.

1. SOURCES AND USES OF FUNDS FOR THE ADP

The ADP described in Chapter III is based on the Alaska International Airport System's ("AIAS") current six-year CIP for the Airport, FIA and Lake Hood Airport. For purposes of this LOI Application, this six-year CIP has been modified to create the 10-year ADP. The ADP was developed to identify long-range facility requirements and to coincide with projects intended to be funded under the LOI. Certain capital projects that have already received or will receive entitlement or discretionary funding in Federal Fiscal Year (FFY) 1997, 1998 or 1999 are included in the ADP.

a. **Summary of ADP Funding Sources**

In recognition of the importance of the ADP to the State of Alaska and the positioning of ANC in the global cargo market, Airport management has sought to maximize funding from a variety of different sources. As a result, the Airport will receive funding from Airport cash flow, airport revenue bonds and the FHWA, in addition to AIP funds. At the present time, PFCs are not collected at the Airport or FIA. Airport management has vigorously pursued a course of action that identifies all funding alternatives with potential emphasis on PFCs. Currently, Airport management is working with the FAA, state officials and the airlines to resolve this important issue.

Table IV-1 shows the annual ADP capital costs and their proposed funding sources. These cost estimates reflect total project costs and include design and construction costs; administrative costs for inspection testing and design; and contingencies. The costs are stated in 1997 dollars.

b. **Sources and Uses With LOI Funding**

The ADP for the Airport is estimated to cost approximately \$549.6 million. Of the total amount, approximately \$191.1 million is expected to be funded from Airport cash flow. The largest funding source, however, is Airport revenue bonds, which total \$199.2 million, or 36.1 percent of the funding sources for the ADP. The Airport is also receiving a \$26.3 million grant from the FHWA, which will be used to fund a portion of the on-Airport roadways. The FHWA commitment represents 5 percent of the total funding sources. Passenger entitlement funds, including 1998 and 2009, represent 5.9 percent of the total funding, while cargo entitlements represent 6.6 percent of the funding. Discretionary funds under the LOI Application would represent only 9.1 percent of total funding (see **Table IV-2**).

c. **Sources and Uses Without LOI Funding**

Table IV-3 presents the sources and uses of funds assuming that the Airport does not receive LOI funding. The total funding deficit increases from \$19.4 million to \$66.7 million. This difference is equal to the discretionary portion of the LOI request. Annual entitlements would continue to be applied to the ADP. All other funding sources remain unchanged. Without the LOI funding, Airport revenue bonds will now represent 61.8 percent of the funding sources and could potentially be as high as 65.8 percent if the airlines are expected to provide funding for the deficit as well. If the Airport does not receive the LOI, there is the possibility that some of the ADP projects will be deferred or rescheduled to match available funding sources.

TABLE - 1
ANCHORAGE INTERNATIONAL AIRPORT
ANNUAL ADP COSTS

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Anchorage International Airport

#	Cost Center	Project Title	Total Estimated Project Cost (\$000's)	Project Dates (Fiscal Year)		Proposed Funding Sources (000s)				
				Begin	End	AIP	FIIWA	Airport/Local	Bond Issue	Total
1998										
98-01	AF	Runway 6L/24R Reconstruction & Lighting	\$17,000	1998	1999	\$5,951		\$661		\$6,612
98-02	AF	Cargo Fueling Apron Expansion	9,700	1998	2006	4,680		520		5,200
98-03	AF	South Terminal Ramp Reconstruction	809	1998	1998	728		81		809
98-04	TE	Terminal Redevelopment Program	231,600	1998	2004		1,000	6,100		7,100
98-05	TE	Terminal Rehabilitation	10,200	1998	2007			375		375
98-06	AF	Taxiway S Tug Road	300	1998	1998			300		300
98-07	ALL	Advance Project Design	1,050	1998	2009	495		555		1,050
98-08	ALL	Annual Improvements	650	1998	2009			650		650
98-09	OT	Environmental Assessment & Cleanup	1,500	1998	2009			1,500		1,500
98-10	AF	Equipment	796	1998	2009			796		796
		Anchorage International Airport Total				\$11,854	\$1,000	\$11,538		\$24,392
1999										
99-01	AF	Cargo Ramp Reconstruction	\$6,000	1999	2000	\$2,760		\$240		\$3,000
99-02	AF	Lake Hood Sewer and Water	2,500	1999	1999			2,500		2,500
99-03	AF	Airfield Blast Protection	4,900	1999	2006	1,530		370		1,900
99-04	TE	Escalator Replacement	350	1999	1999			350		350
99-05	AF	Flight Tracking/Noise Monitoring System	1,200	1999	1999	1,080		120		1,200
99-06	OT	Snow Storage Area Construction	4,500	1999	2005			1,500		1,500
98-01	AF	Runway 6L/24R Reconstruction & Lighting	17,000	1998	1999	9,349		1,039		10,388
98-05	TE	Terminal Redevelopment Program	231,600	1998	2004				40,984	40,984
98-06	AF	Terminal Rehabilitation	10,200	1998	2007			375		375
98-07	ALL	Advance Project Design	600	2000	2000			600		600
98-08	ALL	Annual Improvements	650	2000	2000			650		650
98-10	AF	Equipment	650	2000	2000			650		650
		Anchorage International Airport Total				\$14,719		\$8,394	\$40,984	\$64,097
		Fairbanks International Airport		1999	1999	\$2,275		\$4,083		\$6,358
2000										
00-01	AF	Airfield Lighting Upgrades	\$4,500	2000	2003	\$2,250		\$250		\$2,500
00-02	AF	Field Mntc. Reconstruct/Expansion	4,500	2000	2002			3,000		3,000
00-03	AF	Fire Pit Assessment and Repair	150	2000	2000			150		150
00-04	TE	Security Access Control Upgrades	3,500	2000	2000	3,150		350		3,500
00-05	AF	Taxiway Upgrade/Repairs	3,000	2000	2000	2,700		300		3,000
00-06	TE	Ticketing Area Automatic Doors	250	2000	2000			250		250
00-07	OT	Wetland Mitigation	2,500	2000	2000			2,500		2,500
98-05	TE	Terminal Redevelopment Program	231,600	1998	2004		22,300		57,375	79,675
98-06	AF	Terminal Rehabilitation	10,200	1998	2007			450		450
99-01	AF	Cargo Ramp Reconstruction	\$6,000	1999	2000	\$2,760		\$240		\$3,000
98-07	ALL	Advance Project Design	1,000	2000	2000			1,000		1,000
98-08	ALL	Annual Improvements	650	2000	2000			650		650
98-09	OT	Environmental Assessment & Cleanup	2,000	2000	2000			2,000		2,000
98-10	AF	Equipment	750	2000	2000			750		750
		Anchorage International Airport Total				\$10,860	\$22,300	\$11,890	\$57,375	\$102,425
		Fairbanks International Airport		2000	2000	\$2,070		\$5,980		\$8,050

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Anchorage International Airport

#	Cost Center	Project Title	Total Estimated Project Cost (\$000's)	Project Dates (Fiscal Year)		Proposed Funding Sources (000s)				
				Begin	End	AIP	FIIWA	Airport/Local	Bond Issue	Total
2001										
01-01	TE	ADA Compliance	\$400	2001	2001			\$400		\$400
01-02	OT	Airport Security Upgrades	1,450	2001	2004			450		450
01-03	AF	Parallel Taxiway East of Romeo (1)	9,200	2001	2001	9,200				9,200
01-03	AF	North Airpark Taxiway into Wetlands (1)	3,100	2001	2001	3,100				3,100
01-03	AF	Deicing Collection Facility (1)	1,500	2001	2001	1,500				1,500
01-03	AF	Engine Runup PAD/D&D Holding Area (1)	2,100	2001	2001	2,100				2,100
01-03	AF	North Airpark Tug Roads (1)	5,400	2001	2001	5,400				5,400
01-03	AF	West Airpark Parallel Taxiways (1)	23,000	2001	2001	23,000				23,000
01-03	AF	West Airpark Roads (1)	11,200	2001	2001	11,200				11,200
01-03	AF	Land Acquisition (1)	1,000	2001	2001	1,000				1,000
01-04	TE	Communication Upgrade	800	2001	2002			400		400
01-05	AF	G.A. Parking & Taxiway Relocation	4,500	2001	2001	4,050		450		4,500
01-06	TE	Overhead Doors Replacement	450	2001	2001			450		450
01-07	OT	Roads/Utilities Reconstruction/Upgrade	1,500	2001	2001			1,500		1,500
01-08	AF	Storm Drain Construction	10,300	2001	2006			3,000		3,000
01-09	AF	Terminal Ramp Reconstruction	2,400	2001	2001	2,160		240		2,400
01-10	AF	UREA Storage Facility	900	2001	2001			900		900
01-11	AF	Part 150 Noise Program Implementation	15,000	2001	2009	2,700		300		3,000
98-05	TE	Terminal Redevelopment Program	231,600	1998	2004				\$5,551	55,551
99-06	OT	Snow Storage Area Construction	4,500	1999	2005			1,500		1,500
98-07	ALL	Advance Project Design	1,000	2001	2001			1,000		1,000
98-08	ALL	Annual Improvements	650	2001	2001			650		650
98-09	OT	Environmental Assessment & Cleanup	2,000	2001	2001			2,000		2,000
98-10	AF	Equipment	750	2001	2001			750		750
		Anchorage International Airport Total				\$65,410		\$13,990	\$55,551	\$134,951
		Fairbanks International Airport		2001	2001	\$5,050		\$2,318		\$7,368
2002										
02-01	AF	Airfield Pavement Rehabilitation	\$10,000	2002	2008	\$1,800		\$200		\$2,000
02-02	AF	Lake System Dredging	3,250	2002	2002			3,250		3,250
02-03	AF	South Airpark Taxiway Expansion	6,700	2002	2005			3,200		3,200
02-04	OT	South Postmark Drive Realignment	6,100	2002	2002			6,100		6,100
02-05	TE	Terminal Apron Reconstruction	11,600	2002	2009	2,160		240		2,400
98-05	TE	Terminal Redevelopment Program	231,600	1998	2004		3,000		33,800	36,800
98-06	AF	Terminal Rehabilitation	10,200	1998	2007			3,000		3,000
99-03	AF	Airfield Blast Protection	4,900	1999	2006	1,350		150		1,500
00-02	AF	Field Mntc. Reconstruct/Expansion	4,500	2000	2002			1,500		1,500
01-04	TE	Communication Upgrade	800	2001	2002			400		400
01-08	AF	Storm Drain Construction	10,300	2001	2006			1,000		1,000
98-07	ALL	Advance Project Design	1,000	2002	2002			1,000		1,000
98-08	ALL	Annual Improvements	650	2002	2002			650		650
98-09	OT	Environmental Assessment & Cleanup	2,000	2002	2002			2,000		2,000
98-10	AF	Equipment	750	2002	2002			750		750
		Anchorage International Airport Total				\$5,310	\$3,000	\$23,440	\$33,800	\$65,550
		Fairbanks International Airport		2002	2002	\$2,095		\$3,842		\$5,937

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ANNUAL ADP COSTS

#	Cost Center	Project Title	Total Estimated Project Cost (\$000's)	Project Dates (Fiscal Year)		Proposed Funding Sources (000s)				
				Begin	End	AIP	FHWA	Airport/Local	Bond Issue	Total
2003										
03-01	AF	Equipment/Ops Building Expansion	\$3,000	2003	2003			\$3,000		\$3,000
03-02	ALL	Master Plan/Noise Program Update	1,100	2003	2003	1,000		100		1,100
03-03	OT	Old Intl. Airport Road Reconstruction	7,500	2003	2003			7,500		7,500
03-04	AF	Runway 14-32 Overlay and Groove	2,000	2003	2003	1,800		200		2,000
98-05	TE	Terminal Redevelopment Program	231,600	1998	2004				11,491	11,491
00-01	AF	Airfield Lighting Upgrades	4,500	2000	2003	1,800		200		2,000
01-08	AF	Storm Drain Construction	10,300	2001	2006			4,300		4,300
01-11	AF	Part 150 Noise Program Implementation	15,000	2001	2009	2,700		300		3,000
02-01	AF	Airfield Pavement Rehabilitation	10,000	2002	2008	1,800		200		2,000
98-07	ALL	Advance Project Design	1,000	2003	2003			1,000		1,000
98-08	ALL	Annual Improvements	700	2003	2003			700		700
98-09	OT	Environmental Assessment & Cleanup	2,000	2003	2003			2,000		2,000
98-10	AF	Equipment	750	2003	2003			750		750
		Anchorage International Airport Total				\$9,100		\$20,250	\$11,491	\$40,841
		Fairbanks International Airport		2003	2003	\$2,300		\$920		\$3,220
2004										
04-01	OT	North Airpark Access Road Construction	\$9,000	2004	2004			\$9,000		\$9,000
04-02	AF	Runway Extension	6,200	2004	2004	5,580		620		6,200
01-02	OT	Airport Security Upgrades	1,450	2001	2004			1,000		1,000
01-07	OT	Roads/Utilities Reconstruction/Upgrade	1,500	2001	2001			2,000		2,000
02-01	AF	Airfield Pavement Rehabilitation	10,000	2002	2008	1,800		200		2,000
02-05	TE	Terminal Apron Reconstruction	11,600	2002	2009	2,160		240		2,400
98-07	ALL	Advance Project Design	1,000	2004	2004			1,000		1,000
98-08	ALL	Annual Improvements	700	2004	2004			700		700
98-09	OT	Environmental Assessment & Cleanup	2,000	2004	2004			2,000		2,000
98-10	AF	Equipment	750	2004	2004			750		750
		Anchorage International Airport Total				\$9,540		\$17,510		\$27,050
		Fairbanks International Airport		2004	2004	\$1,125		\$1,075		\$2,200
2005										
05-01	AF	Cargo Apron Reconstruction	\$6,000	2005	2009	\$2,700		\$300		\$3,000
05-02	AF	Taxiway K Resurfacing	1,500	2005	2005			1,500		1,500
98-06	AF	Terminal Rehabilitation	10,200	1998	2007			3,000		3,000
99-06	OT	Snow Storage Area Construction	4,500	1999	2005			1,500		1,500
01-11	AF	Part 150 Noise Program Implementation	15,000	2001	2009	2,700		300		3,000
02-03	AF	South Airpark Taxiway Expansion	6,700	2002	2005	3,150		350		3,500
02-05	TE	Terminal Apron Reconstruction	11,600	2002	2009	2,160		240		2,400
98-07	ALL	Advance Project Design	1,000	2005	2005			1,000		1,000
98-08	ALL	Annual Improvements	700	2005	2005			700		700
98-09	OT	Environmental Assessment & Cleanup	2,000	2005	2005			2,000		2,000
98-10	AF	Equipment	800	2005	2005			800		800
		Anchorage International Airport Total				\$10,710		\$11,690		\$22,400

TABLE IV - 1
ANCHORAGE INTERNATIONAL AIRPORT
ANNUAL ADP COSTS

#	Cost Center	Project Title	Total Estimated Project Cost (\$000's)	Project Dates (Fiscal Year)		Proposed Funding Sources (000s)			
				Begin	End	AIP	FIIWA	Airport/Local	Bond Issue
		Fairbanks International Airport		2005	2005	\$1,125		\$1,075	
2006									
06-01	AF	Runway 6R-24L Overlay and Groove	\$2,000	2006	2006	\$1,800		\$200	
06-02	AF	Taxiways R & E Resurfacing	2,000	2006	2006			2,000	
98-02	AF	Cargo Fueling Apron Expansion	9,700	1998	2006			4,500	
99-03	AF	Airfield Blast Protection	4,900	1999	2006			1,500	
01-07	OT	Roads/Utilities Reconstruction/Upgrade	2,000	2006	2006			2,000	
01-08	AF	Storm Drain Construction	10,300	2001	2006			2,000	
02-01	AF	Airfield Pavement Rehabilitation	10,000	2002	2008	1,800		200	
98-07	ALL	Advance Project Design	1,000	2006	2006			1,000	
98-08	ALL	Annual Improvements	750	2006	2006			750	
98-09	OT	Environmental Assessment and Cleanup	2,000	2006	2006			2,000	
98-10	AF	Equipment	800	2006	2006			800	
		Anchorage International Airport Total				\$3,600		\$16,950	
		Fairbanks International Airport		2006	2006	\$1,125		\$1,075	
2007									
07-01	AF	Lake Hood Strip/Apron Resurfacing	\$300	2007	2007			\$300	
07-02	AF	Land Acquisition	1,000	2007	2007			1,000	
07-03	AF	Runway 14-32 West Airpark Parallel Taxiway	12,000	2007	2007			12,000	
98-06	AF	Terminal Rehabilitation	10,200	1998	2007			3,000	
01-11	AF	Part 150 Noise Program Implementation	15,000	2001	2009	2,700		300	
02-05	TE	Terminal Apron Reconstruction	11,600	2002	2009			2,400	
98-07	ALL	Advance Project Design	1,000	2007	2007			1,000	
98-08	ALL	Annual Improvements	700	2007	2007			700	
98-09	OT	Environmental Assessment & Cleanup	2,000	2007	2007			2,000	
98-10	AF	Equipment	800	2007	2007			800	
		Anchorage International Airport Total				\$2,700		\$23,500	
		Fairbanks International Airport		2007	2007	\$1,125		\$1,075	
2008									
08-01	AF	Runway 6L-24R Overlay and Groove	\$2,000	2008	2009	\$1,800		\$200	
02-01	AF	Airfield Pavement Rehabilitation	10,000	2002	2008			2,000	
98-07	ALL	Advance Project Design	1,000	2008	2008			1,000	
98-08	ALL	Annual Improvements	750	2008	2008			750	
98-09	OT	Environmental Assessment & Cleanup	2,000	2008	2008			2,000	
98-10	AF	Equipment	800	2008	2008			800	
		Anchorage International Airport Total				\$1,800		\$6,750	\$0
		Fairbanks International Airport		2008	2008	\$1,125		\$1,075	
2009									
01-11	AF	Part 150 Noise Program Implementation	\$15,000	2001	2009	\$2,700		\$300	
02-05	TE	Terminal Apron Reconstruction	11,600	2002	2009			2,000	
05-01	AF	Cargo Apron Reconstruction	6,000	2005	2009	2,700		300	
98-07	ALL	Advance Project Design	1,000	2009	2009			1,000	

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TAB V - 1
ANCHORAGE INTERNATIONAL AIRPORT
ANNUAL ADP COSTS

#	Cost Center	Project Title	Total Estimated Project Cost (\$000's)	Project Dates (Fiscal Year)		Proposed Funding Sources (000s)				
				Begin	End	AIP	FIIWA	Airport/Local	Bond Issue	Total
98-08	AIL	Annual Improvements	750	2009	2009			750		750
98-09	OT	Environmental Assessment & Cleanup	2,000	2009	2009			2,000		2,000
98-10	AF	Equipment	800	2009	2009			800		800
		Anchorage International Airport Total				\$5,400		\$7,150	\$0	\$12,550
		Fairbanks International Airport		2009	2009	\$1,125		\$1,075		\$2,200
		Grand Total - Anchorage (2)	\$549,555			\$151,003	\$26,300	\$173,052	\$199,200	\$549,555
		Grand Total - Fairbanks	\$44,133			\$20,540	-	\$23,593	-	\$44,133

(1) Part of the Cargo Letter of Intent.

(2) Anchorage International Airport ADP includes Lake Hood Capital Projects

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TABLE IV - 2
ANCHORAGE INTERNATIONAL AIRPORT
SOURCES AND USES OF FUNDS FOR TEN-YEAR ADP
WITH LOI FUNDS

	Projected (000s)													Total	% of Total
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009			
Sources of Funds:															
Airport & Airline Funds															
Proceeds from Bond Issues	\$ -	\$ 40,984	\$ 57,375	\$ 55,551	\$ 33,800	\$ 11,491	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 199,200	37.5%	
AIP Entitlement Funds (1)															
75% Passenger	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 23,400	4.4%	
25% Passenger	650	650	650	650	650	650	650	650	650	650	650	650	7,800	1.5%	
Total Passenger Entitlements	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 31,200	5.9%	
Cargo	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	35,040	6.6%	
Total AIP Entitlements	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 66,240	12.5%	
AIP Discretionary Funds (LOI)	\$ -	\$ 4,675	\$ 4,675	\$ 3,950	\$ 4,155	\$ 4,370	\$ 4,600	\$ 4,845	\$ 5,105	\$ 5,380	\$ 6,295	\$ -	\$ 48,050	9.1%	
FIHWA	\$ 1,000	\$ -	\$ 22,300	\$ -	\$ 3,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 26,300	5.0%	
Sources of Funds	\$ 6,520	\$ 51,179	\$ 89,870	\$ 65,021	\$ 46,475	\$ 21,381	\$ 10,120	\$ 10,365	\$ 10,625	\$ 10,900	\$ 11,815	\$ 5,520	\$ 339,790	64.0%	
Airport Cash Flow	\$ 18,777	\$ 13,739	\$ 14,485	\$ 14,774	\$ 15,070	\$ 15,371	\$ 15,679	\$ 15,992	\$ 16,312	\$ 16,638	\$ 16,971	\$ 17,311	\$ 191,120	36.0%	
Total Sources of Funds	\$ 25,297	\$ 64,918	\$ 104,354	\$ 79,795	\$ 61,545	\$ 36,752	\$ 25,799	\$ 26,357	\$ 26,937	\$ 27,538	\$ 28,786	\$ 22,831	\$ 530,910	100.0%	
Uses of Funds:															
ADP Projects	\$ 24,392	\$ 64,097	\$ 102,425	\$ 134,951	\$ 65,550	\$ 40,841	\$ 27,050	\$ 22,400	\$ 20,550	\$ 26,200	\$ 8,550	\$ 12,550	\$ 549,555		
Net Deficit Before Airport Cash Flow	\$ (17,872)	\$ (12,918)	\$ (12,555)	\$ (69,930)	\$ (19,075)	\$ (19,460)	\$ (16,930)	\$ (12,035)	\$ (9,925)	\$ (15,300)	\$ 3,265	\$ (7,030)	\$ (209,765)		
Total Net Surplus(Deficit)	\$ 905	\$ 821	\$ 1,930	\$ (55,156)	\$ (4,005)	\$ (4,089)	\$ (1,251)	\$ 3,957	\$ 6,387	\$ 1,338	\$ 20,236	\$ 10,281	\$ (18,645)		
Total LOI Request															
75% Passenger Entitlements	\$ -	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ -	\$ 19,500		
Discretionary Funds	-	4,675	4,675	3,950	4,155	4,370	4,600	4,845	5,105	5,380	6,295	-	48,050		
Total LOI Request	\$ -	\$ 6,625	\$ 6,625	\$ 5,900	\$ 6,105	\$ 6,320	\$ 6,550	\$ 6,795	\$ 7,055	\$ 7,330	\$ 8,245	\$ -	\$ 67,550		

(1) Assumes the growth in enplanements will exactly offset the decline in the Federal Entitlement Fund, therefore zero growth.

TABLE IV - 3
ANCHORAGE INTERNATIONAL AIRPORT
SOURCES AND USES OF FUNDS FOR TEN-YEAR ADP
WITHOUT LOI FUNDS

	Projected (000s)													
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total	% of Total
Sources of Funds:														
Airport & Airline Funds														
Proceeds from Bond Issues	\$ -	\$ 40,984	\$ 57,375	\$ 55,551	\$ 33,800	\$ 11,491	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 199,200	41.3%
AIP Entitlement Funds (1)														
75% Passenger	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 1,950	\$ 23,400	4.8%
25% Passenger	650	650	650	650	650	650	650	650	650	650	650	650	7,800	1.6%
Total Passenger Entitlements	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 2,600	\$ 31,200	6.5%
Cargo	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	2,920	35,040	7.3%
Total AIP Entitlements	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 66,240	13.7%
AIP Discretionary Funds (LOI)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	0.0%
HIWA	\$ 1,000	\$ -	\$ 22,300	\$ -	\$ 3,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 26,300	5.4%
Sources of Funds														
	\$ 6,520	\$ 46,504	\$ 85,195	\$ 61,071	\$ 42,320	\$ 17,011	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 5,520	\$ 291,740	60.4%
Airport Cash Flow	\$ 18,777	\$ 13,739	\$ 14,485	\$ 14,774	\$ 15,070	\$ 15,371	\$ 15,679	\$ 15,992	\$ 16,312	\$ 16,638	\$ 16,971	\$ 17,311	\$ 191,120	39.6%
Total Sources of Funds	\$ 25,297	\$ 60,243	\$ 99,679	\$ 75,845	\$ 57,390	\$ 32,382	\$ 21,199	\$ 21,512	\$ 21,832	\$ 22,158	\$ 22,491	\$ 22,831	\$ 482,860	100.0%
Uses of Funds:														
ADP Projects	\$ 24,392	\$ 64,097	\$ 102,425	\$ 134,951	\$ 65,550	\$ 40,841	\$ 27,050	\$ 22,400	\$ 20,550	\$ 26,200	\$ 8,550	\$ 12,550	\$ 549,555	
Net Deficit Before Airport Cash Flow														
	\$ (17,872)	\$ (17,593)	\$ (17,230)	\$ (73,880)	\$ (23,230)	\$ (23,830)	\$ (21,530)	\$ (16,880)	\$ (15,030)	\$ (20,680)	\$ (3,030)	\$ (7,030)	\$ (257,815)	
Total Net Surplus(Deficit)	\$ 905	\$ (3,854)	\$ (2,745)	\$ (59,106)	\$ (8,160)	\$ (8,459)	\$ (5,851)	\$ (888)	\$ 1,282	\$ (4,042)	\$ 13,941	\$ 10,281	\$ (66,695)	
Total LOI Request														
75% Passenger Entitlements	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
Discretionary Funds	-	-	-	-	-	-	-	-	-	-	-	-	-	
Total LOI Request	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	

(1) Assumes the growth in enplanements will exactly offset the decline in the Federal Entitlement Fund, therefore zero growth

V. BENEFIT-COST ANALYSIS--RAMP/APRON PROJECTS

This chapter describes the project objectives, methodology and assumptions, alternatives and results of the Benefit-Cost Analysis ("BCA") performed for the three Ramp/Apron LOI Projects in accordance with the BCA Guidance. The BCA for the fourth airside LOI Project, the reconstruction of Runway 6L/24R, is described in Chapter VI. The fifth LOI Project, the Domestic TRP, does not require a BCA because it is being funded with entitlement funds only.

The results of these BCAs are presented in both total and on a stand-alone basis. The principal objectives of the LOI Projects are (i) to provide additional airside capacity to accommodate anticipated demand, (ii) to maintain current levels of safety and (iii) to reduce airside delay. The LOI Projects also will enhance the capacity of the national transportation system and will allow the Airport to provide facilities necessary to meet rapidly growing forecast demand. While these projects will not result in additional aircraft operations, they will allow the Airport to accommodate forecast demand at a higher level of service and efficiency with lower O&M costs.

The FAA requires sponsors of projects requiring discretionary funding in excess of \$5 million to perform a BCA, and demonstrate that the total benefits of a project exceed the total cost, to be eligible for federal discretionary funding. The results of both BCAs demonstrate that the LOI Projects' benefits exceed their costs and therefore meet the requirement set forth in the FAA's BCA Guidance document.

1. PROJECT OBJECTIVES, DESCRIPTIONS AND JUSTIFICATIONS

Three of the four airside LOI Projects relate to apron and ramp expansion necessary to efficiently serve cargo and passenger aircraft demand. The principal objective of each of the four airside LOI Projects is to enhance Airport efficiency and to increase system capacity regionally, nationally and globally.

The three Ramp/Apron LOI Projects consist of the following components, which are illustrated in Exhibit V-I:

- Terminal Apron Replacement
- RON/Cargo Apron Reconstruction
- Cargo Fueling Apron Expansion

Collectively, the LOI Projects will increase capacity, which will enable the Airport to efficiently accommodate forecast passenger and cargo demand without excessive delays and pavement maintenance costs throughout the planning period. Each LOI Project is described below.

a. Terminal Apron Replacement

Project Description: This project entails replacing the existing asphalt apron with a concrete apron approximately 1,300 feet long and 250 feet deep in conjunction with the new jet and commuter gates being constructed at Concourse C. This reconstructed apron will provide parking for both jet and commuter aircraft upon completion of the TRP, which is described in Chapter III. The apron replacement adjacent to Concourse C also includes approximately 800,000 square feet of asphalt apron replacement adjacent to the new concrete apron.



**Anchorage
International
Airport**

Phase I LOI Apron and Near-Term Capital Projects

**Exhibit
V-1**

The TRP includes extending the holdrooms in Concourse A behind the ticket counters 30 feet toward the airfield. The terminal apron replacement project will extend the concrete aprons at Gates A1 and A2 by 30 feet to maintain the existing 250-foot-deep concrete apron. Asphalt aprons at Gates A3 through A8 would be replaced with concrete out to 250 feet from the terminal. An area at the east end of Concourse A would be leveled (currently there is a grade drop) to allow for safer taxiing of aircraft and operation of Ground Service Equipment ("GSE") to Gates A7 and A8 and to the commuter gates on the inside of Concourse A. This will provide a second taxilane into the commuter positions on the east side of Concourse A. A former fire station in this area will be demolished as part of the project. This area will be converted to additional apron space for GSE storage or other uses.

Project Justification: The existing asphalt apron fronting the existing Concourse C and surrounding the parking positions at Concourses A and B is aged, cracked and in poor condition. Lack of immediate and effective repair will require rapidly escalating maintenance costs because of frequent patching and repair to preserve the use of this apron area for aircraft parking. Expanding the Concourse A concrete apron to maintain a 250-foot apron depth will help reduce apron maintenance costs, when compared to the alternative of an asphalt apron, and will ensure that the existing safety levels are maintained.

The development of a second taxilane access to the Concourse A gates will further enhance operational performance. Currently, if an aircraft is departing from one of the commuter positions on the inside of Concourse A at the same time an aircraft arrives for one of those gates, the arriving aircraft must hold outside the channel until the departure is clear, thereby incurring delay. Additionally, push back operations from the jet positions at the end of the Concourse A block the taxilane for both arriving and departing aircraft. The provision of a second taxilane into the area inside of Concourse A will reduce head-to-head operations, thereby enhancing safety and reducing congestion and delay.

b. RON/Cargo Apron Reconstruction

Project Description: As part of this project, three existing cargo refueling positions adjacent to the passenger terminal will be converted to joint use cargo hardstands/RON positions. The three 747-sized parking positions will be reconfigured to serve as many as five 757s. This project would involve replacing the existing asphalt pavement around the cargo positions with full-strength concrete pavement, which will lower maintenance costs and provide the added flexibility required for the RON parking. Additionally, approximately 800,000 square feet of existing, aging asphalt pavement will be replaced with new asphalt.

Project Justification: The terminal programming study² identified the need for at least five RON parking positions near the domestic terminal. Carriers now double- and triple-park aircraft at the terminal overnight because of lack of gate and remote parking positions. The condition of the 25-year-old terminal apron pavement is rapidly deteriorating and requires a high level of maintenance to preserve a safe operation. Double- and triple-parking overnight aircraft exacerbates the deterioration of the

² Anchorage International Airport Terminal Expansion Study, Domestic Terminal Facilities Requirements, Hirsch Associates, December 22, 1997

pavement and creates safety hazards to passengers walking between multiple aircraft to reach their aircraft. This practice also results in congestion and delay by blocking access to the terminal and to adjacent gates. The proposed RON positions are the closest available positions to the terminal gates, allowing for convenient towing of aircraft between the terminal and the pad. They can be used for cargo fueling and transfer during the daytime when they are not being used by passenger carriers.

c. Cargo Fueling Apron Expansion

Project Description: This multi-use project entails the construction of five new Design Group VI cargo fueling positions to replace the two lost during construction of the new Concourse C and the three temporarily lost during construction of the RON parking positions. Completion of all of the LOI Projects will result in a net increase of three cargo hardstands at the Airport. Access taxiways, tug road tie-ins and hydrant fueling would be included in the project. The cargo fueling positions would be relocated to the west side of the Airport at the proposed West Airpark. The new location will support and enhance a future third-party cargo development by providing some of the required taxiway access; in turn, the third-party developer would provide some of the ground support services for cargo carriers using the cargo apron.

Project Justification: International transit cargo operations have increased by nearly 50 percent in the last five years with the expansion of operations by most cargo airlines and new service by such airlines as Atlas, EVA, Cathay Pacific, Polar Air Cargo, Asiana, Air China, Singapore and Malaysia. The cargo airlines have been forced to refuel at available gates at the international terminal during peak periods because of insufficient capacity on the existing fueling apron. However, the international gates are already fully occupied with passenger flights during peak periods.

Furthermore, inadequate facilities cause cargo fueling at the international terminal to be inefficient and costly. The construction of the west cargo apron will enable international transit cargo airlines to continue to fuel quickly and conveniently, making ANC more attractive for these important customers.

In addition to providing relief during fueling operations, this apron will be used for other functions that will enhance air traffic control operational efficiency, reduce delay and maintain safety. When not needed for refueling, the apron could be used to stage departures awaiting air traffic control clearance without interfering with other inbound and outbound taxiing aircraft. The use of these new fueling positions will reduce congestion in the terminal area. Multiple uses of the expanded fueling area will provide added flexibility for air traffic controllers, thereby reducing workload and delay and enhancing efficiency and capacity.

The net result of these three Ramp/Apron LOI Projects will be an increase in the number of cargo fueling/transfer positions by three and a reduction in airside congestion, delay and operating and maintenance costs while maintaining high levels of safety. Construction of these projects will allow the Airport to effectively meet the rapidly growing demand for its apron facilities without adversely impacting the Airport's operational efficiency.

2. BCA METHODOLOGY AND ASSUMPTIONS

The benefits of the three Ramp/Apron LOI Projects were defined using a ramp chart analysis methodology. A ramp chart is a method of depicting the timing of passenger and freighter operations and their most likely assignment to available terminal gates or hardstand parking positions. For this analysis, passenger and freighter operations associated with a year 2000 level of design day activity were assigned to available aircraft parking positions for both the Preferred Alternative and the Base Case scenarios. Aircraft size limitations, airline gate assignments and anticipated gate scheduling procedures associated with both scenarios were considered to ensure that the appropriate aircraft were allocated to available parking positions. Given the LOI Projects' objective of efficiently serving forecast demand, all flights were assumed to be accommodated in both scenarios. However, because of insufficient parking positions and apron areas, certain flights in the Base Case would incur delay, added taxi time or additional operating costs relative to the Preferred Alternative. These impacts provide the foundation for quantifying an incremental operational benefit of the Preferred Alternative relative to the Base Case scenario.

It is recognized that the variability inherent in airfield performance may result in additional incremental benefits beyond those identified in this stochastic analysis. Experience at other major hub airports has demonstrated that average delay per operation increases exponentially as demand approaches capacity. Additionally, failure to reconstruct the terminal apron will result in increased gate closures for maintenance and repaving of the aging pavement. As a result, higher levels of delay are likely to be incurred under the Base Case, relative to the Preferred Alternative, than identified in this analysis. Quantification of such delays is the subject of an ongoing simulation analysis being conducted by the FAA System Capacity Office. Because this document must be submitted prior to the completion of the FAA's detailed delay study, it was determined that a stochastic approach would yield the most conservative results and still assure compatibility with the pending FAA analysis. In this case, "conservative" means that actual delay savings expected to result from the implementation of the LOI Projects will most likely be greater than those defined herein.

Key assumptions associated with the development of the year 2000 design day flight schedule and the ramp chart analysis are described in the following sections.

a. Forecast Activity

This analysis was conducted based on the revised TAF for Anchorage as described in Chapter II. While the enplanement forecast used herein is identical to the current TAF, the operations forecast was slightly adjusted to reflect current information about general aviation and freighter operations, as explained in Chapter II.

b. Future Design Day Flight Schedule

For purposes of defining aircraft delay for the Base Case and the Preferred Alternative, a future flight schedule was developed to represent a typical day in the year 2000. This flight schedule was prepared based on actual operating data for the passenger and cargo aprons in July and August 1997 and future activity projections from the revised TAF. The future flight schedule only includes passenger and freighter operations expected to operate on the terminal ramp and related hardstand positions. Airlines that utilize remote exclusive ramp areas will also accrue some benefits from the proposed projects. For example, Northwest Airlines occasionally uses the terminal hardstand positions as an

overflow during their peak periods. Nonetheless, to be conservative, these airlines were excluded from the analysis.

Many freight carriers rely on hardstand positions on the terminal ramp, as well as available gates at the international terminal, to refuel and to transfer cargo and service aircraft. Because the Ramp/Apron LOI Projects will have a significant impact on the freighter apron and terminal gates, this analysis reflects the expected activity levels and ramp use associated with both freighter and passenger aircraft.

Based on the revised TAF, passenger and freighter operations on the project ramp areas are expected to increase throughout the forecast period. It is assumed that design day activity levels will increase at a rate proportional to the annual forecast in the near term. Accordingly, 55 departures were added to the 249 departures of the year 1997 flight schedule to represent a year 2000 flight schedule. The additional flights were added in such a way that the future hourly departure profile remained proportional with the existing departure profile. This methodology recognized the marketing windows for aircraft at the origin and destination airports. However, some flights were added during non-peak periods to accurately portray airline scheduling techniques that maximize ramp utilization. Flights were added in a manner that complies with fleet mix and user mix projections. **Exhibit V-2** depicts the hourly departure profiles for both the baseline and future design day flight schedules.

The purpose of the LOI Projects is to efficiently serve forecast demand throughout the planning horizon while relieving apron congestion and maintaining the safe operation of the Airport. Therefore, the effective use of the proposed Ramp/Apron Projects will depend on their ability to serve aircraft demand on a design day or peak hour basis. The future design day flight schedule provides the basis for ascertaining how well demand would be served under both the Base Case and the Preferred Alternative.

c. Preferred Alternative Gate Allocation

The completion of the proposed terminal redevelopment and the LOI Projects will result in additional aircraft parking positions and operating flexibility. **Exhibit V-3** depicts the aircraft parking plan expected to be available under the Preferred Alternative. Although the actual airline use agreements have not yet been finalized, this parking plan represents one likely scenario and provides a reasonable basis for evaluating the benefits of completing the proposed Ramp/Apron Projects. The likely aircraft capability of each parking position is summarized in **Table V-1**.

Historically, the hardstand positions adjacent to the terminal have been used primarily for cargo transfers and technical fuel stops. As part of the Preferred Alternative, the apron areas around positions R2 through R4 will be repaved to form a continuous concrete pad so that the area can be used to accommodate the RON needs for up to five Boeing 757s (without the reconstruction, only three aircraft can be accommodated, regardless of size). As traffic demand increases, it is assumed that other hardstand positions could be used to meet additional overnight parking needs for the passenger airlines and as temporary holding positions during the day for passenger flights awaiting gate availability.

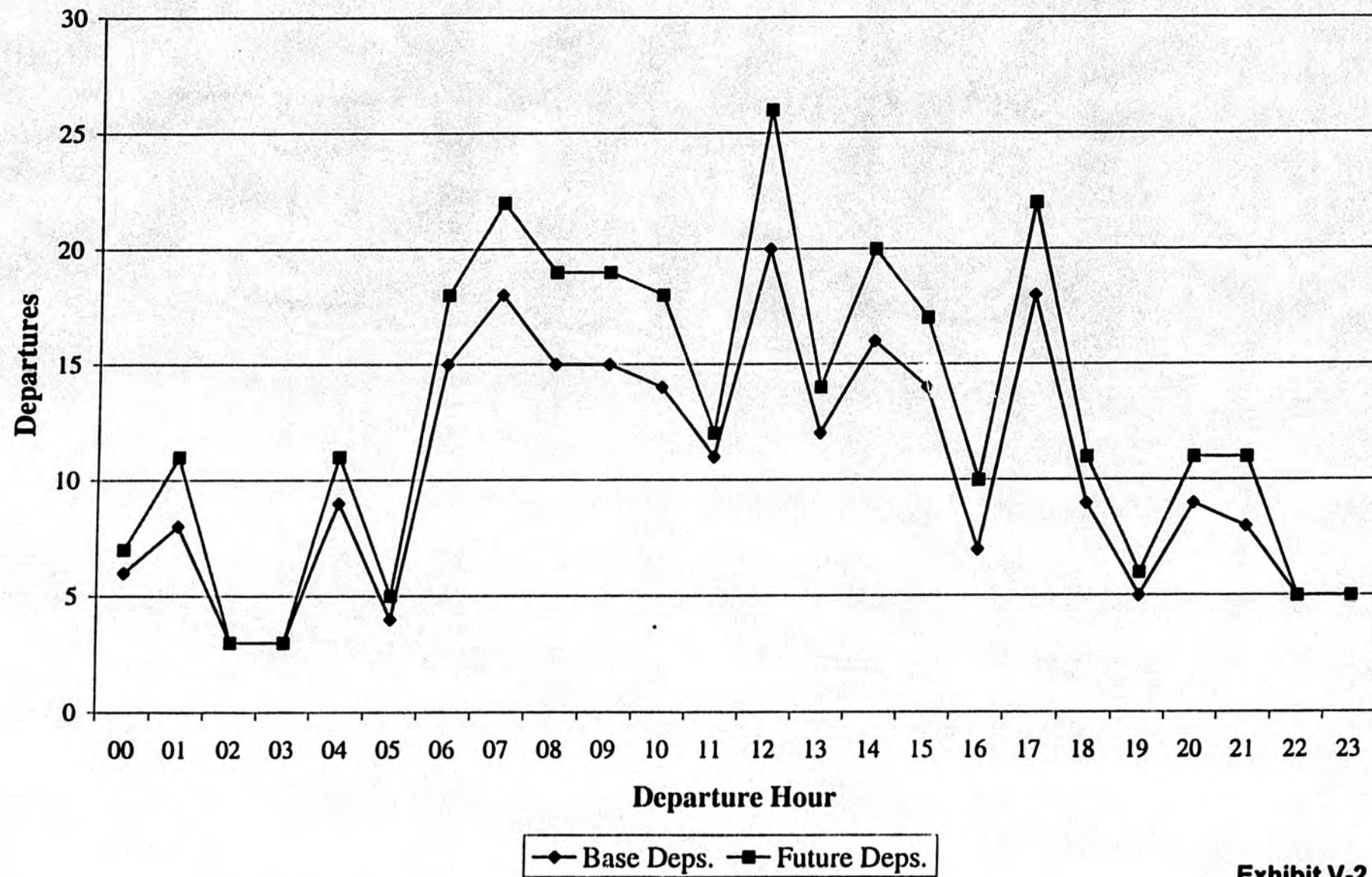
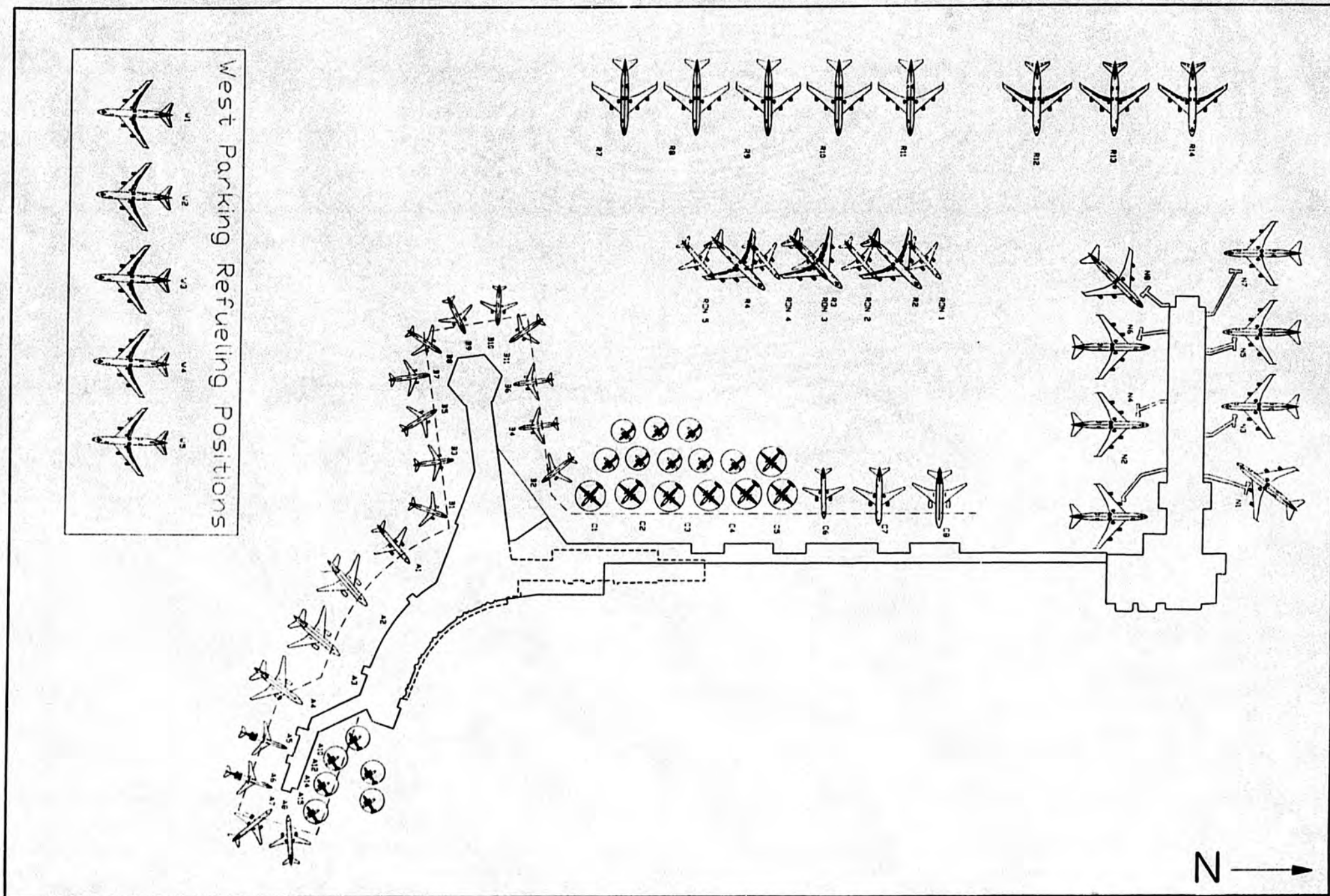


Exhibit V-2



**Anchorage
International
Airport**

Preferred Alternative Gate Allocation

**Exhibit
V-3**

Table V-1
Anchorage International Airport
Preferred Alternative Gate Allocation

Gate	Maximum Aircraft	Gate Use	Gate	Maximum Aircraft	Gate Use
A1	757	Passenger	N1	747-300 1/	PAX, Cargo
A2	DC10-40	Passenger	N2	747-300 1/	PAX, Cargo
A3	DC10-40	Passenger	N3	747-300 1/	PAX, Cargo
A4	DC10-40	Passenger	N4	747-300 1/	PAX, Cargo
A5	727-200	Passenger	N5	747-300 1/	PAX, Cargo
A6	727-200	Passenger	N6	747-300 1/	PAX, Cargo
A7	757	Passenger	N7	747-300 1/	PAX, Cargo
A8	757	Passenger	N8	747-300 1/	PAX, Cargo
A10	2 Small Commuter	Passenger	R2	747-400	Cargo, Fuel
A11	Not Available		R3	747-400	Cargo, Fuel
A12	2 Small Commuter	Passenger	R4	747-400	Cargo, Fuel
A13	Not Available				
A14	1 Small Commuter	Passenger	RON 1	757	RON
A15	1 Small Commuter	Passenger	RON 2	757	RON
			RON 3	757	RON
B1	A320	Passenger	RON 4	757	RON
B2	A320	Passenger	RON 5	757	RON
B3	A320	Passenger			
B4	A320	Passenger	R5	Not Available	
B5	A320	Passenger	R6	Not Available	
B6	A320	Passenger			
B7	A320	Passenger	R7	747-300	Cargo, Fuel
B8	A320	Passenger	R8	747-300	Cargo, Fuel
B9	A320	Passenger	R9	747-300	Cargo, Fuel
B10	A320	Passenger	R10	747-300	Cargo, Fuel
B11	A320	Passenger	R11	747-300	Cargo, Fuel
			R12	747-400	Cargo, Fuel
C1	3 Large Commuter	Passenger	R13	747-400	Cargo, Fuel
C2	1 Small Commuter	Passenger	R14	747-400	Cargo, Fuel
C3	3 Large Commuter	Passenger			
C4	3 Small 1 Large	Passenger	W1	747-400	Fuel
C5	4 Small Commuter	Passenger	W2	747-400	Fuel
C6	757	Passenger	W3	747-400	Fuel
C7	767-300	Passenger	W4	747-400	Fuel
C8	DC10-40	Passenger	W5	747-400	Fuel

1/ Gates Can accommodate 747-400's but the adjacent gate would be restricted to 747-300

d. Base Case Gate Allocation

The following Base Case assumptions reflect a likely course of action that results in the maximum utilization of available aircraft parking positions in the event the LOI is not issued and the projects are subsequently not constructed as planned. For the Base Case gate allocation, it was assumed that the utilization of the terminal gate and hardstand positions would remain similar to that currently available at the Airport, with some minor modifications. Because of the age and condition of Concourse, this concourse will be taken out of service and demolished this winter. Therefore, for purposes of the Base Case analysis, Concourse C is demolished, and the commuter gates are relocated to Concourse B. To accommodate this shift, Delta Air Lines would be relocated from its existing gates in Concourse A to the International Terminal. The Delta gates on Concourse A would then be redeveloped and used by Alaska Airlines. This gate transfer will replace the gates Alaska Airlines would lose on Concourse B, as well as provide Alaska Airlines with a small increase in gate capacity.

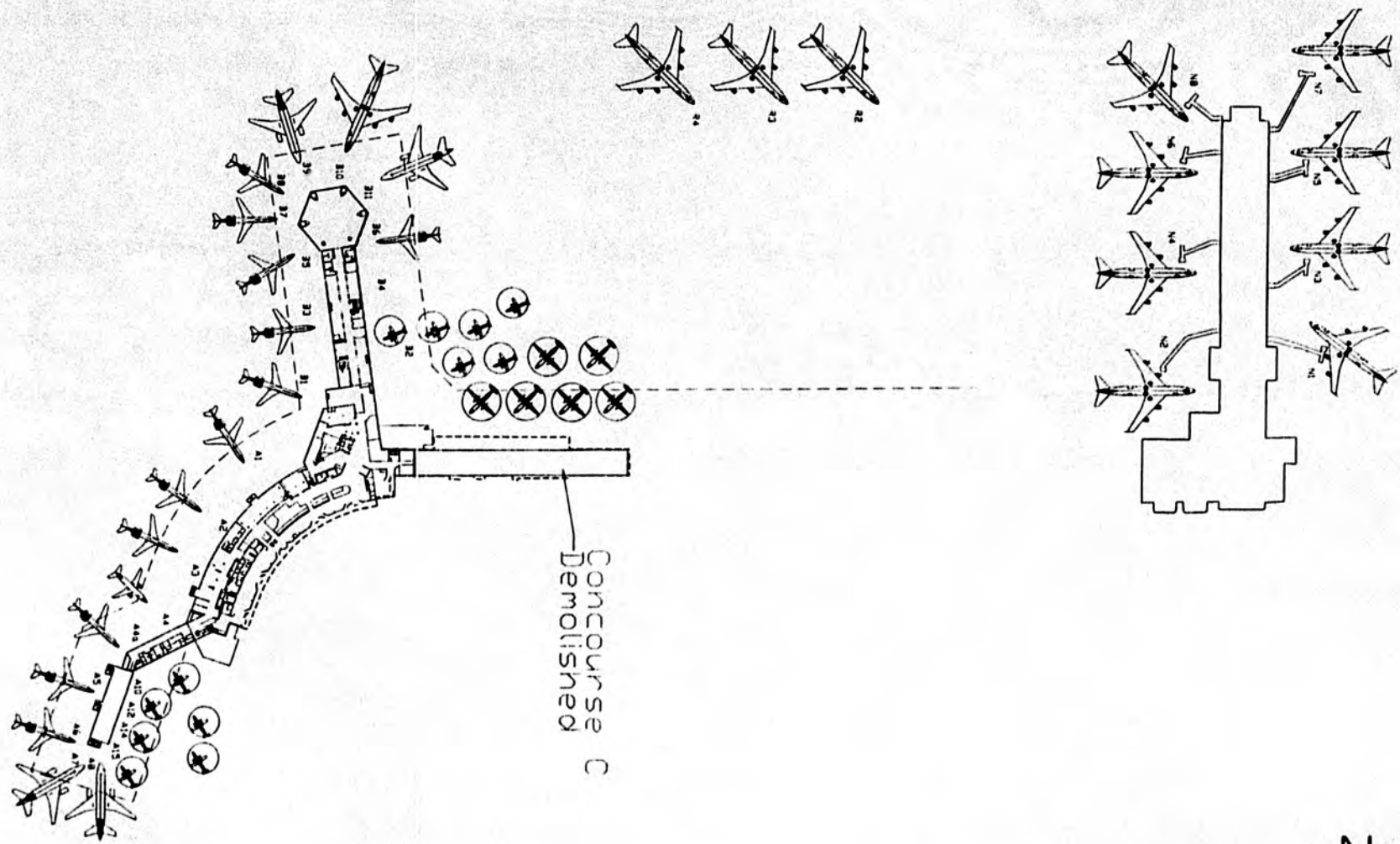
The existing freighter hardstands would remain available in the Base Case, with the exception of the two positions at the end of Concourse C, which will be lost because of pavement construction. Three new hardstand positions north of R2, which are already programmed and scheduled for construction in 1998, would also be available. Additionally, as with the Preferred Alternative, it was assumed that, as passenger demand increases, the hardstands will be used for airline RON parking and as temporary holding positions for aircraft awaiting a terminal gate assignment. **Exhibit V-4** depicts the aircraft parking positions included in the Base Case gate allocation, and **Table V-2** summarizes the aircraft capability of each existing position positions scheduled to be built in 1998.

To maximize use of available ramp in the Base Case, it is assumed that cargo flights would continue to use positions in the North Terminal for cargo transload operations. Domestic passenger flights, however, would not be able to use the North Terminal gates because of security requirements and the need to prevent the mixing of domestic and international passengers. Domestic passenger flights would therefore incur delays while waiting the availability of a domestic gate. (Special accommodations would be made to serve domestic flights on gates N2 and N4 during construction.)

e. Project Phasing

The phasing and sequencing of the projects is designed to minimize the operational impacts and passenger disruptions during construction and maximize economies of scale in construction costs. The construction phasing schedule allows the Airport to maintain operations during construction and brings airside improvements on-line with the TRP phasing plan. Construction of the airside projects will occur during Alaska's summer construction season.

- Construction of the Terminal Apron Replacement is scheduled to coincide with the TRP beginning in 1998 and ending in 2004. The aircraft parking apron adjacent to the terminal will accommodate the new gate configuration under the TRP and be sequenced with the TRP.



**Anchorage
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Baseline Gate Allocation

**Exhibit
V-4**

Table V-2
Anchorage International Airport
Base Case Gate Allocation

Gate	Maximum Aircraft	Gate Use
A1	727-200	Passenger
A2	727-200	Passenger
A3	727-200	Passenger
A4	737	Passenger
A4a	727-200	Passenger
A5	727-200	Passenger
A6	727-200	Passenger
A7	757	Passenger
A8	757	Passenger
A10	2 Small Commuter	Passenger
A11	Not Available	
A12	2 Small Commuter	Passenger
A13	Not Available	
A14	1 Small Commuter	Passenger
A15	1 Small Commuter	Passenger
B1	727-200	Passenger
B2	6 Small Commuter	Passenger
B3	727-200	Passenger
B4	6 Large Commuter	Passenger
B5	727-200	Passenger
B6	727-200	Passenger
B7	727-200	Passenger
B8	727-200	Passenger
B9	DC10-40	Passenger
B10	DC10-40	Passenger
B11	DC10-40	Passenger
C1		
C2		
C3 (A-D)		
C4 (A-D)		
C5 (A-D)		

Gate	Maximum Aircraft	Gate Use
N1	747-300 1/	PAX, Cargo
N2	747-300 1/	PAX, Cargo
N3	747-300 1/	PAX, Cargo
N4	747-300 1/	PAX, Cargo
N5	747-300 1/	PAX, Cargo
N6	747-300 1/	PAX, Cargo
N7	747-300 1/	PAX, Cargo
N8	747-300 1/	PAX, Cargo
R2	747-300	Cargo, Fuel
R3	747-300	Cargo, Fuel
R4	747-300	Cargo, Fuel
R5	Unavailable	
R6	Unavailable	
R7	747-300	Cargo, Fuel
R8	747-300	Cargo, Fuel
R9	747-300	Cargo, Fuel
R10	747-300	Cargo, Fuel
R11	747-300	Cargo, Fuel
R12 2/	747-400	Cargo, Fuel
R13 2/	747-400	Cargo, Fuel
R14 2/	747-400	Cargo, Fuel

1/ Gates Can accommodate 747-400's but the adjacent gate would be restricted to 747-300

2/ Currently programmed positions assumed to be part of the baseline

Q:\ANC\Gate_use.xls\Baseline

03/01/98

- The RON/Cargo Apron Reconstruction is expected to be constructed in 2000, because the practice of double and triple parking at the terminal gate aprons cannot continue under the new terminal configuration.
- To replace fueling positions lost under the TRP and provide for continuing the operations during construction, the Cargo Fueling Apron Expansion construction is planned at the beginning of the program in 1999 and to be completed in 2000.

f. Evaluation Period

The physical life of the LOI Projects is likely to be more than 20 years, assuming routine maintenance continues to occur as required. Based on FAA guidelines and industry standards, a 20-year evaluation period is considered appropriate and was therefore applied in this analysis.

3. BASE CASE AND PREFERRED ALTERNATIVES

The BCA was performed by evaluating the benefits and costs of the LOI Projects relative to a Base Case Alternative. The Base Case is not defined as a "do-nothing" scenario, but rather as a scenario representing a course of action that might occur if the LOI Projects are not constructed. Other alternatives that might meet the LOI Projects' purposes and needs were considered, but were not considered in detail during the BCA because they would likely result in greater cost and/or less benefit than the Preferred Alternative. These alternatives include the construction of additional ramp elsewhere on the Airport, such as the north ramp area. The Base Case and LOI Project alternatives are described below.

a. Identification of the Base Case

The Base Case for this analysis assumes that the FAA does not approve the LOI Application and, as a result, the LOI Projects are not implemented as planned. Because the apron pavement is in dire need of repair and because the Airport must still achieve its objective of serving forecast demand, a "do nothing" scenario is not considered to be a prudent or reasonable option. It is assumed that the Airport would not allow the apron pavement to fail, nor would it refuse to serve passenger and cargo demand. Accordingly, in the Base Case, it is assumed that the Airport would continue to maintain the existing ramp pavement in a safe operating condition through a process of annual patching, joint sealing, crack sealing and semi-annual resurfacing. While this technique would be more costly than the Preferred Alternative and would require more frequent closures of limited aircraft parking positions, it would enable the Airport to continue its mission, albeit at a higher cost and lower level of service.

It is assumed in the Base Case that Concourse C would be demolished, but not replaced, and Delta Air Lines would be relocated to the International Terminal. Instead of reconstructing the ramp pavement, semi-annual asphalt overlays would be performed to prevent the pavement from failing. While some elements of the terminal program would likely still be constructed as expected to meet passenger demand, the lack of adequate airside apron/ramp facilities would jeopardize the full realization of terminal benefits. Specifically, because of insufficient parking positions and the lack of flexibility to dynamically accommodate the anticipated aircraft fleet mix, certain passenger and cargo

operations would be assigned to sub-optimal locations and, as a result, airlines and passengers would incur additional costs including, but not limited to, the following:

- Added taxi time and congestion for using more distant hardstand positions;
- Added capital costs for rehabilitating/constructing additional remote parking positions;
- Added opportunity costs for missing departure windows necessary to serve certain markets; and
- Added passenger delays because of longer airfield travel times and congestion.

The ability to avoid these Base Case costs is defined as a benefit of implementing the preferred alternative.

The Base Case is assumed to include the construction of three Group VI aircraft hardstand parking positions north of the existing positions. This project is not one of the LOI Projects because it already is programmed and funded and therefore assumed to be available in both the Base Case and the Preferred Alternative. Construction of these positions is scheduled to begin this summer.

b. Overview of Alternatives

Alternatives to constructing the LOI Projects that are capable of meeting their purpose and need were considered in this analysis. The option of doing nothing was discarded from further analysis because it would not meet the objective of efficiently serving forecast demand and minimizing pavement maintenance costs. Similarly, demand management strategies are not a viable option because they would not allow forecast demand to be served and they do not recognize the limited windows of operation required to serve major markets in the Pacific Rim, Europe and North America.

Other locations for constructing remote aircraft parking positions are available within the Airport's boundaries, including the north area ramp. However, all such sites would require greater operational costs because of greater taxi distances, would require greater capital costs for ramp construction and would have a greater potential environmental impact. It was further determined that no "excess" ramp space is available for passenger or cargo aircraft parking because all available existing ramp is fully utilized for general aviation, maintenance, cargo or other aviation functions. As a result, the Preferred Alternative represents the optimal course of action that would accomplish the LOI Projects' objectives and that would result in the greatest benefit-cost relationship. As an alternative, the Base Case as defined herein represents the most likely course of action if the Preferred Alternative is not adequately funded. All other alternatives would result in a lower net present value and therefore were discarded from more detailed analysis.

4. PROJECT COSTS

The total cost of the three Ramp/Apron LOI Projects consists of the initial capital investment and the ongoing O&M expenses, as discussed below.

a. Capital Costs

The capital investment required for the three Ramp/Apron Projects is \$42.4 million, of which \$38.7 million is included in the LOI Application. The capital cost of each project is shown below:

• Terminal Apron Replacement	\$23.0 million
• RON/Cargo Apron Reconstruction	\$ 6.0 million
• Cargo Fueling Apron Expansion	<u>\$13.4 million</u>
Total	<u>\$42.4 million</u>

These costs are presented in 1997 dollars and include design costs and other contingencies. Capital investments represent total construction costs and a \$400,000 capital expenditure for a snow loader required to service the additional surface of the cargo fueling apron expansion.

The present value for the capital costs of these projects is:

• Terminal Apron Replacement	\$17.3 million
• RON/Cargo Apron Reconstruction	\$ 4.9 million
• Cargo Fueling Apron Expansion	<u>\$11.3 million</u>
Total Present Value	<u>\$33.5 million</u>

b. O&M Costs

The Terminal Apron Replacement, RON/Cargo Apron Expansion and Cargo Fueling Apron Expansion projects for which funding is sought under this LOI Application collectively represent an O&M cost increase of \$91,350 in pavement maintenance over the Base Case on a present value basis discounted at the FAA-specified rate of 7.0 percent. This is because the significant O&M savings of the Terminal Apron Replacement and RON/Cargo Apron Reconstruction are offset by the additional O&M expenses from the Cargo Fueling Apron Expansion with its additional labor cost of \$100,000 per year for snow removal.

Project 1—Terminal Apron Replacement

This project involves replacing 730,000 square feet of asphalt apron around Concourses A, B and C with concrete surfaces, which will reduce annual O&M expenses by approximately \$217,000 per year (in 1997 dollars). Over the 20-year life of the concrete structure, this produces a present value savings of \$1,886,246. These savings result from both a lower annual initial O&M cost per square foot for concrete (\$.21) versus asphalt (\$.54) and a longer life cycle for concrete (20 years) versus asphalt (seven years). For asphalt, the O&M expenses increase at a compounded rate of 5.0 percent per year over the seven-year life cycle, representing the increased maintenance associated with the deterioration of the surface.

Concrete has a significant advantage over asphalt in that the surface is more durable and the annual per square foot O&M expenses do not escalate for the first six years. After the initial six years of the surface life, the marginal deterioration of the surface increases O&M expenses by less than 2.0 percent during the second five-year period and 5.2 percent for the third five-year period. In the final six-year period in the concrete surface

life cycle, annual O&M expenses are 10.0 percent above those in the first. Accordingly, the O&M savings from concrete as opposed to asphalt are significant.

Project 2--RON/Cargo Apron Reconstruction

This project involves replacing and expanding the current asphalt and concrete base cargo RON apron with 250,000 square feet of concrete. The present value of the discounted cash flow of O&M savings is \$829,239 for the 20-year life of the project.

As with the first project, the savings are the result of both a lower annual O&M cost per square foot for concrete (\$.21) versus asphalt (\$.54) and a longer life cycle for concrete (20 years) versus asphalt (seven years).

Project 3--Cargo Fueling Apron Expansion

This project involves construction of a new surface of 1.162 million square feet of concrete to serve as a cargo fueling apron. Because this is a new facility, there are no O&M expense savings over similar existing facilities. Construction of this facility represents an additional O&M cost whose present value is \$2,806,835, which includes a marginal cost of \$100,000 per year for additional labor costs for snow removal.

Summary

The present value of the discounted cash flows (discounted at the 7.0 percent mandatory FAA rate) for O&M expenses from these three projects are:

Terminal Apron Replacement Savings	\$1,886,246
RON/Cargo Apron Reconstruction Savings	\$ 829,239
Cargo Fueling Apron Expansion Cost	<u>(\$2,806,835)</u>
Total Present Value of O&M Cost	(\$ 91,350)

5. PROJECT BENEFITS

a. Gate Delay Savings per Operation

Development of the LOI Projects will result in an overall reduction in average gate delay per operation when compared to the Base Case. The Ramp/Apron Projects will increase the number and capability of aircraft parking positions at the Airport, both at the terminal building for passenger processing and at hardstands used by freight carriers to transfer cargo and service transiting aircraft. A ramp chart analysis was used to evaluate the benefit of these additional parking positions.

A ramp chart analysis is a process whereby a design day flight schedule is matched to the capabilities of a gate system to determine the ability of a gate system to accommodate the schedule. In this evaluation, the ramp chart analysis was used to allocate flights in the future design day schedule to both the Preferred Alternative and Base Case terminal gate and hardstand parking positions. The analysis considered the airline and aircraft gate allocation constraints, gating procedures and physical gate characteristics, which are discussed in Sections 2b and 2c of this chapter. The evaluation resulted in a ramp chart for each gate allocation scenario that illustrates how the parking positions might be used throughout the day. The ramp chart also identified the flights that could not be accommodated as scheduled at a gate or hardstand position.

Exhibits V-5 and V-6 depict the ramp charts for the Preferred Alternative and Base Case, respectively. The left side of the ramp chart indicates the individual terminal gates and the remote hardstand positions. The time of day is indicated along the top of the chart. The individual bars on the inside of the ramp chart depict the time periods that an aircraft is occupying each gate. Information identifying each particular flight is shown within the bars. The flight bars have been color-coded to represent passenger and freighter operations. In both ramp charts, the flight bars for the freighter operations are green and the passenger flights are red. The color behind the gate numbers indicate the

gate use. Yellow indicates the domestic passenger gates and red indicates the cargo hardstands that would be restricted by use of the new RON positions.

The red flight bars on gates marked R2 through R14 represent passenger flights that could not be accommodated at a passenger gate. The passengers on these flights could be served in one of two ways. They could either be delayed until a terminal gate becomes available or they could be transferred from the hardstand to the terminal by a passenger bus. For purposes of this analysis, it was assumed that the passenger flights would be delayed until a terminal gate became available. Although the busing operation might be considered a reasonable option, it would require additional capital costs for the construction of a passenger bus dock and holdroom and for the acquisition of buses. It also would result in incremental O&M costs for labor, maintenance and fuel. Moreover, the buses on the ramp would result in added ramp congestion and passenger inconvenience. Because the marginal costs of a busing operation are expected to be higher than the marginal cost of incurring additional aircraft delay, the busing option was not evaluated.

Instead, the amount of time that individual flights would have to wait for a terminal gate was considered to be the gate delay. The combined gate delay of all the ungated flights was determined for each alternative, which represents the total gate delay in the design day for each alternative. The total gate delay for each alternative was allocated among all passenger operations in the 2000 design day flight schedule to determine the average delay per operation in the design day. The difference between the gate delay for the Base Case and the Preferred Alternative is the total gate delay savings in the design day. Applying this total delay over all of the passenger operations in the design day determines the average delay savings per passenger operation that will result from the project. Table V-3 summarizes the calculation of average gate delay and overall gate delay savings per passenger operation.

Table V-3
Summary of Average Delay per Operation - Year 2000 Design Day

Passenger Air Carrier Operations	Minutes of Gate Delay		Total Daily Gate Delay Savings (Minutes)	Gate Delay Savings Per Operation (Minutes)
	Base Case	Alternative		
374	621	240	381	1.0

Average delay per passenger operation typically increases exponentially as demand increases relative to capacity. For purposes of this analysis, however, it is assumed that the average delay per operation will increase at a rate proportional to the increase in operations, which tends to understate the likely delay savings.

b. Taxiing/Maneuvering Delay Savings per Operation

The airport cargo/terminal ramp redevelopment project will provide a second taxilane into the commuter parking positions on the east side of Concourse A (Gates A10 through A15). Under the Base Case, the single taxilane access to the Concourse A ramp occasionally results in head-to-head operations during peak periods. Specifically, when an arriving aircraft and a departing aircraft enter the channel at the same time, the arrival is forced to hold outside of the channel until the departing aircraft has left the gate area.

OPERATIONS
FREIGHTER OPS
PASSENGER OPS

GATE	2000																							
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
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Anchorage
International
Airport

Baseline Ramp Chart

OPERATIONS
FREIGHTER OPS
PASSENGER OPS

Exhibit
V-6

Development of the second taxilane will reduce taxi and maneuvering delay by allowing bi-directional traffic into the parking positions.

To evaluate the delay reduction benefits of the additional taxilane, the ramp chart for the Base Case was evaluated to determine how many times in the design day opposing traffic would be encountered on the taxilane. Two operations were deemed to be opposing if the scheduled departure time of any flight at gates A10 through A15 occurred within 7.5 minutes either before or after the scheduled arrival time of a flight at one of these gates. The 15-minute window around the scheduled arrival time will allow for variation in on-time performance for either the arrival or departure.

It was estimated that it would take a typical aircraft 1.1 minutes to exit the channel, assuming a 10-knot taxi speed, before the arriving aircraft can enter. Therefore, it was assumed that each aircraft experiencing a head-to-head operation would incur 1.1 minutes of delay. If multiple aircraft were to arrive or depart at the same time, the delay would increase correspondingly.

Based on the 2000 design day flight schedule, a total of 22 flights would be delayed in the design day because of the single taxilane for a total of 23.5 minutes. Using a conservative estimated annual to design day operations ratio of 300, 117.3 hours of delay would be experienced in 2000 because of the single taxilane. On average, this represents the opportunity to reduce delay per operation by .05 minutes per operation. Development of the second taxilane will eliminate this delay. Table V-4 below summarizes the average taxi/maneuvering delay savings in the year 2000 resulting from the addition of the second taxilane.

Table V-4
Summary of Concourse A Taxi/Maneuvering Delay Savings

Design Day Delayed Flights	Design Day Minutes Per Delay	Design Day Delay (Minutes)	Annual Delay (Minutes)	2000 Annual Passenger Operations	Average Annual Delay Per Operation
22	1.1	23.5	7,037	145,388	0.05

As was the case with average gate delay, the average maneuvering delay savings will likely increase exponentially as demand increases. For purposes of this analysis, however, it is conservatively assumed that marginal delay increases proportionately to demand.

c. Aircraft Operating Cost per Operation

In the analysis of delay costs for aircraft operations, the appropriate base cost of aircraft operations must be determined. The cost of delay is defined as the marginal cost of operating the aircraft. These costs are variable and are the product of the number of hours of aircraft operation. Fixed costs (i.e., taxes, insurance, rentals) and accounting conventions (i.e., depreciation, amortization, allowances) are excluded from these calculations as they do not increase or decrease as a factor of hours of operation.

The FAA collects information on aircraft operating expenses through Form 41 filings from air carriers and publishes it in the Economic Values for Evaluation of FAA and

Regulatory Programs. These values were used to determine hourly operating costs that are relevant to the aircraft fleet at ANC. The fleet mix at the Airport contains a large number of different types of aircraft, from large Boeing 747 passenger and freighter aircraft to the smallest general aviation aircraft. To determine an average operating cost for ANC, all of the aircraft operating at the Airport were grouped into one of the following categories based on aircraft type and engine configuration:

Turbofan 4-Engine – Narrowbody	Turbofan 4-Engine – Widebody
Turbofan 3-Engine – Narrowbody	Turbofan 3-Engine – Widebody
Turbofan 2-Engine – Narrowbody	Turbofan 2-Engine – Widebody
Turboprop 4-Engine	Turboprop 2-Engine
Piston	

The average aircraft operating cost used in this analysis was calculated based on a weighted average of the Form 41 variable operating cost ("VOC") and percentage of the ANC Fleet Mix for each of the aforementioned aircraft categories. This average was calculated for the existing (1996) fleet mix, as well as for projected fleet mixes in 2001 and 2016. The weighted average ground operating costs for aircraft operating at ANC is presented below:

	1996	2001	2016	2017
Departure Cost Per Delay (variable cost per minute)	\$14.47	\$15.01	\$16.50	\$16.60

This methodology is presented in greater detail in the report entitled "Benefit-Cost Estimate for Runway 6L/24R Reconstruction at Anchorage International Airport," dated November 20, 1997 by HNTB Corporation, which is attached as **Appendix A**.

d. Annual Aircraft Delay Savings

The annual savings in aircraft delay costs were calculated based on the average delay savings of 1.05 minutes per operation under the Preferred Alternative relative to the Base Case in 2000. This figure consists of the marginal savings in gate delay and maneuvering delay. While it is recognized that delay increases exponentially with demand, it is conservatively assumed in this analysis that average delay would increase proportionally with annual operations. Accordingly, this results in a savings of 1.15 minutes per operation in 2004. Because all phases of construction will not be completed until 2004, any incremental savings during the construction period would be deferred until completion of construction. Subsequently, this analysis did not realize any aircraft operations savings until 2004.

The annual delay savings are shown in the following **Table V-5**:

Table V-5
Annual Aircraft Delay Savings

Year	Delay Savings		Aircraft Cost	
	Per Minute of Operation	Air Carrier Operations	Per Minute of Delay	Delay Savings
2004	1.15	153,101	\$15.31	\$2,698,039
2005	1.17	155,123	\$15.41	\$2,787,757
2006	1.18	157,173	\$15.51	\$2,880,386
2007	1.20	159,316	\$15.61	\$2,978,400
2008	1.21	161,487	\$15.71	\$3,079,619
2009	1.23	163,688	\$15.81	\$3,184,152
2010	1.25	165,919	\$15.91	\$3,292,109
2011	1.26	168,184	\$16.01	\$3,403,733
2012	1.28	170,483	\$16.11	\$3,519,152
2013	1.30	172,818	\$16.21	\$3,638,496
2014	1.32	175,188	\$16.30	\$3,761,902
2015	1.34	177,594	\$16.40	\$3,889,510
2016	1.35	180,037	\$16.50	\$4,021,465
2017	1.37	182,517	\$16.60	\$4,157,918
Total				\$47,292,639

The total savings over the period are \$47.3 million in 1997 dollars. In terms of Present Value, total aircraft delay savings are \$19.0 million.

e. Passenger Cost of Delay (per hour)

The passenger cost of delay used in this analysis is that determined by the FAA Office of Aviation Policy in the bulletin Treatment of Values of Passenger Time in Economic Analysis. This value is estimated at \$26.70 per hour (in 1997 dollars), which equates to \$.45 per minute.

f. Annual Passenger Delay Savings

The annual savings in passenger delay costs were calculated based on the marginal aircraft delay savings and the TAF annual passengers, as shown in the following **Table V-6**:

Table V-6
Annual Passenger Delay Savings

Year	Delay Savings		Passenger Cost	
	Per Minute of Operation	Passengers	Per Minute of Delay	Delay Savings
2004	1.15	5,087,054	\$0.45	\$2,605,474
2005	1.17	5,252,724	\$0.45	\$2,723,861
2006	1.18	5,423,774	\$0.45	\$2,851,826
2007	1.20	5,604,164	\$0.45	\$2,986,838
2008	1.21	5,790,288	\$0.45	\$3,128,096
2009	1.23	5,982,462	\$0.45	\$3,275,963
2010	1.25	6,180,348	\$0.45	\$3,430,454
2011	1.26	6,384,905	\$0.45	\$3,592,374
2012	1.28	6,596,361	\$0.45	\$3,762,089
2013	1.30	6,814,951	\$0.45	\$3,939,978
2014	1.32	7,040,919	\$0.45	\$4,126,443
2015	1.34	7,274,517	\$0.45	\$4,321,903
2016	1.35	7,516,005	\$0.45	\$4,526,800
2017	1.37	7,765,653	\$0.45	\$4,741,596
Total				\$50,015,695

The total passenger delay cost savings over the period are \$50.0 million in 1997 dollars. In terms of Present Value, total savings are \$19.8 million.

g. Freighter Cost of Delay

While the Airport has found little precedent for a methodology to document cargo savings, it nevertheless has been a focus of the Airport's investigation because of cargo's unique dominance at ANC, as compared to other airports. For example, for every minute an express cargo carrier is delayed during summer months, 75 to 100 packages averaging approximately 8 lbs. each miss their connections at a cost of approximately \$42 per pound. According to carrier representatives interviewed by Keiser & Associates, curfews and "slots" in limited access Asian airports, such as Narita, are extremely costly to miss, with downstream effects felt for flights in succeeding days. In fact, the cost of a cargo flight missing connections can be as high as \$80,000 according to air carrier information. Despite the expected cargo savings, the operational benefits expected to result from this project are conservatively defined based on aircraft and passenger savings alone.

h. Avoidable Capital Costs

There are two capital costs that would occur under the Base Case and not under the Preferred Alternative. If the Concourse C apron is not extended, commuters would have to be relocated from Concourse C because it will be demolished. Passengers would access aircraft parked on the C Concourse apron from new commuter gates and at Gates B2 and B4. The security screening area would be relocated, Gates B2 and B4 would be modified and a commuter walkway would be constructed at a cost of \$500,000 in 1997 dollars. Failure to implement the RON parking positions and cargo refueling apron projects would necessitate rehabilitation of additional remote parking positions at a cost

of \$700,000 in 1997 dollars. These avoidable costs have a present value of approximately \$1.0 million.

6. NET PRESENT VALUE ANALYSIS

The financial evaluation in this section is based upon determining the LOI Projects' Net Present Value ("NPV"), as required by the FAA. The NPV determines the present worth of future benefits and costs. The procedure converts the "opportunity cost" of money back to today's level. That is, a dollar today is worth more than a dollar received in 20 years. A positive NPV indicates that a project will return more in benefits than it will cost, while a negative NPV indicates the project costs are more than its savings. This NPV analysis, however, only considers the monetary impact; items such as safety, security and other difficult-to-quantify benefits or costs must be considered separately.

The following steps were taken to determine the NPV:

- The capital cost of the LOI Projects was determined and allocated over their planning and construction schedule. It is assumed that the total cost is stated in 1998 dollars and that the cost of construction will occur according to the phasing plan. The net present value of the total capital costs is \$32.5 million, which represents \$33.5 million in capital expenditures netted against \$1.0 million in avoidable capital costs (\$600,000 to rehab additional remote parking positions and \$400,000 in relocating commuters from Concourse C to B2 and B4).
- The marginal benefits were defined based on the annual delay savings and a slight increase in O&M expenses. The present value of O&M costs is \$91,350, and the present value of delay savings is \$19,796,198 for passengers and \$18,982,679 for aircraft operations.
- The evaluation period is 20 years because this is the economic life span most commonly assumed by the FAA.
- In order to convert future costs and benefits into today's dollars, a present value discount factor is used. In accordance with the BCA Guidance, a 7.0 percent annual discount factor is applied.
- The annual benefits and costs are summed over the 20-year period to determine a total cost and total benefit and then are discounted to arrive at their present values.

The difference between the total benefits and costs represents the NPV of the investment. A positive amount shows the project's benefits exceed its costs over time, while a negative figure would show the project's cost exceeds its benefits.

The net present value of the LOI Ramp/Apron LOI Projects, detailed in Table V-7, is \$6,250,609, indicating a net positive economical benefit for these projects.

Ramp/Apron LOI Projects Summary:

Capital Costs	(\$33,485,046)
Avoidable Costs	<u>1,048,126</u>
Net Capital Costs	(\$32,436,920)
O&M Costs	(\$91,350)
Delay Costs Savings - Operations	18,982,679
Delay Cost Savings - Passengers	<u>19,796,198</u>
Net Operating Savings	\$38,687,527
Net Present Value	\$6,250,607

Table V-7
Anchorage International Airport
Net Present Value Comparative Analysis - LOI Ramp/Apron Projects

	Marginal Costs				Marginal Benefits			
	Capital	Purchase of New	O&M	Total	Avoidable	Delay Cost Savings		Total
	Construction Costs	Snow Loader	Costs		Costs	Operations	Passenger	
1998	0	0	0	0	0	0	0	0
1999	(12,000,000)	0	0	(12,000,000)	1,200,000	0	0	1,200,000
2000	(18,000,000)	0	0	(18,000,000)	0	0	0	0
2001	0	(400,000)	(113,030)	(513,030)	0	0	0	0
2002	(3,000,000)	0	(95,622)	(3,095,622)	0	0	0	0
2003	(6,000,000)	0	(77,343)	(6,077,343)	0	0	0	0
2004	(3,000,000)	0	(65,374)	(3,065,374)	0	2,698,039	2,605,474	5,303,513
2005	0	0	(30,596)	(30,596)	0	2,787,757	2,725,861	5,513,618
2006	0	0	(4,185)	(4,185)	0	2,880,386	2,851,826	5,732,212
2007	0	0	23,546	23,546	0	2,978,400	2,986,838	5,965,238
2008	0	0	52,664	52,664	0	3,079,619	3,128,096	6,207,716
2009	0	0	69,744	69,744	0	3,184,152	3,275,963	6,460,115
2010	0	0	101,846	101,846	0	3,292,109	3,430,454	6,722,562
2011	0	0	135,554	135,554	0	3,403,733	3,592,374	6,996,108
2012	0	0	(44,091)	(44,091)	0	3,519,152	3,762,089	7,281,241
2013	0	0	(17,680)	(17,680)	0	3,638,496	3,939,978	7,578,475
2014	0	0	(12,439)	(12,439)	0	3,761,902	4,126,443	7,888,345
2015	0	0	16,679	16,679	0	3,889,510	4,321,903	8,211,413
2016	0	0	47,253	47,253	0	4,021,465	4,526,800	8,548,265
2017	0	0	79,355	79,355	0	4,157,918	4,741,596	8,899,514
Total	(42,000,000)	(400,000)	66,280	(42,333,720)	1,200,000	47,292,639	50,015,695	98,508,335
Total - PV (@ 7%)	(33,179,888)	(305,158)	(91,350)	(33,576,396)	1,048,126	18,982,679	19,796,198	39,827,004

NPV

LOI Ramp/Apron Projects

\$6,250,609

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VI. BENEFIT-COST ANALYSIS--RUNWAY 6L/24R RECONSTRUCTION

This chapter describes the objectives, methodology, assumptions, alternatives and results of the BCA for the reconstruction of Runway 6L/24R. The information in this chapter is based on information contained in HNTB's report in Appendix A. Certain sections of the analysis have been updated to reflect the revised TAF and to respond to previous FAA comments.³

1. PROJECT OBJECTIVES, DESCRIPTION AND JUSTIFICATION

a. Project Description

The project entails reconstruction of Runway 6L/24R to Aircraft Design Group V (Boeing 747-400) standards (see **Exhibit VI-1**). The project includes the following items:

- Reconstruct Runway 6L/24R, including excavation and replacement of the paved surfaces and subsurface of the runway, safety area and blast protection.
- Replace the runway lighting system with new edge, centerline and touchdown zone lights.
- Correct drainage problems.
- Widen taxiway fillets.

Phase I of the project already has been funded and will be performed in 1998. Phase II of the project is included in this LOI Application and is scheduled to occur in 1999.

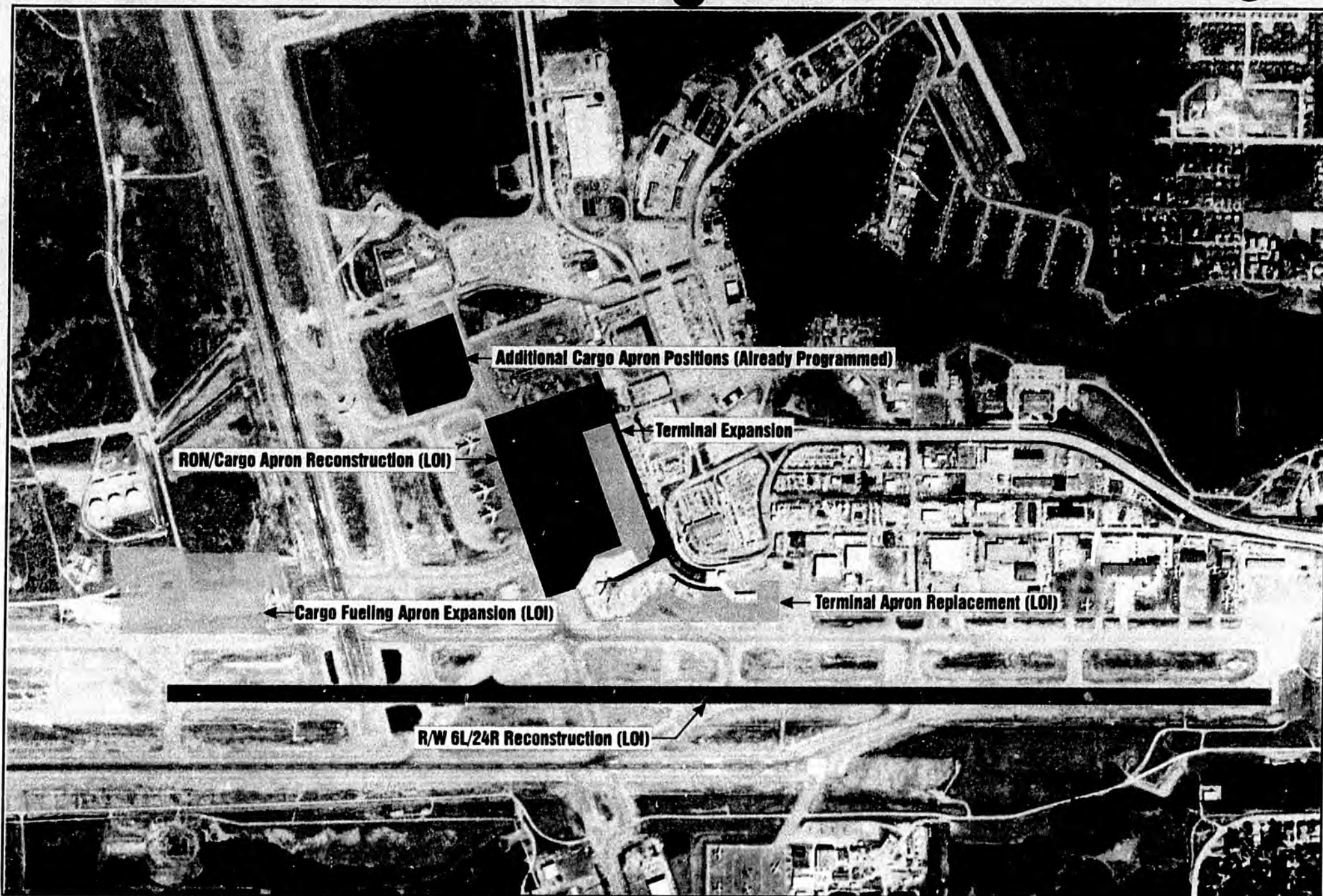
b. Project Justification

The purpose of this project is to maintain safety and capacity, to reduce maintenance and life cycle costs and to enhance operational efficiency. The reconstruction of this runway as planned will accomplish these objectives by minimizing runway downtime, reducing taxi time and delay and providing additional air traffic control and flexibility for accommodating Group VI aircraft.

Runway 6L/24R was originally constructed in 1951 for narrowbody aircraft and, because of its poor surface condition, it is weight-restricted to aircraft smaller than the Boeing 737. Even with the published weight restriction, it still must be used by widebody aircraft when one of the other two runways is closed for construction, maintenance, servicing of landing aids or snow removal. This regular use by heavy aircraft has hastened runway deterioration. Such operations cannot safely continue unless the runway is reconstructed.

The runway surface is cracking, breaking up and delaminating. The inadequate substructure is responsible for much of the pavement failure, as well as the frost heaving, which has produced irregularity in the runway surface. Sections of the runway blast protection and safety area's substructure are also heaving, cracking and breaking up. The runway surface is not grooved for traction, and the lighting system requires constant repair because it is over 25 years old. Risk to aircraft from FOD is high, and the runway is frequently closed for emergency repairs and clean up of broken pavement. In addition

³ January 28, 1997 memorandum from APP-500 to AAL-600 "Comments on Benefit-Cost Estimate Runway 6L/24R Reconstruction at Anchorage International Airport."



**Anchorage
International
Airport**

Phase I LOI and Near-Term Capital Projects

**Exhibit
VI-1**

to the pavement problems, the aged electrical system requires increasingly frequent and costly repairs and may fail earlier than the pavement.

2. BCA METHODOLOGY AND ASSUMPTIONS

The benefits expected to result from the reconstruction of Runway 6L/24R are twofold. First, this project will result in a reduction of O&M costs because of lower maintenance and life cycle costs. Second, the existing weight limitation will enhance air traffic control flexibility and result in reduced operational delay and taxi time. The reduction in delay and taxi time is defined based on the opportunity to improve runway use and to reduce the number of days in which the runway would otherwise be closed for maintenance. The assumptions related to this analysis are defined based on information in the HNTB report and are summarized as follows.

a. Forecast Activity

The BCA for the Runway 6L/24R Reconstruction Project was performed based on the revised TAF, as described in Chapter II. This analysis has been adjusted accordingly, in response to FAA comments.

b. Runway Downtime

One or more of the runways is frequently closed for snow removal, resurfacing or reconstruction or because of unsafe operating conditions at various times. Runway closure reduces capacity and increases aircraft and passenger delay. The following assumptions were used to determine such delay for each of the alternatives:

Base Case and Preferred Alternative

- Each runway is shut down for snow removal for approximately 69.5 hours per year.
- Runway 6R/24L is shut down for 75 days in 2007 and 2017 for repaving.
- Runway 14/32 is shut down for 75 days in 2006 and 2016 for repaving.

Preferred Alternative

- Runway 6L/24R is shut down for three months (91.25 days) in 1998 and five months (152 days) in 1999 for reconstruction.
- Runway 6L-24R is shut down for 75 days in 2009 and 2015 for repaving.

Base Case

- Runway 6L/24R is shut down for three months (91.25 days) in 1998 for Phase I and 75 days in 1999 for Phase II of resurfacing.
- Runway 6L/24R is shut down for 60 days in 2000 for Phase III of resurfacing and drainage and safety area improvements.
- Runway 6L/24R is shut down for three months (91.25 days) for blast protection improvements in 2002.
- Runway 6L/24R is shut down for 75 days for repaving in 2002, 2009 and 2015.

These assumptions are based on the most likely construction phasing requirements for the Base Case and for the Preferred Alternative.

c. **Project Phasing**

Phase I of this project is currently programmed and is scheduled to occur in 1998. The remainder of the project, Phase II, is part of this LOI Application and is scheduled to occur in 1999.

d. **Evaluation Period**

The physical life of the LOI Projects is likely to be more than 20 years, assuming routine maintenance continues to occur as required. Based on FAA guidelines and industry standards, a 20-year evaluation period is considered appropriate and was therefore applied in this analysis.

3. **BASE CASE AND PREFERRED ALTERNATIVES**

Two alternatives analyzed: the Base Case and the Preferred Alternative.

a. **Base Case**

According to the BCA Guidance, the Base Case represents "the best course of action that would be pursued in the absence of a major initiative to obtain the specified objectives." It is intended to represent a reference point against which both the incremental costs and incremental benefits of the proposed alternative are measured.

It was considered unrealistic that ANC would allow the runway to fail, even if FAA discretionary funds were not forthcoming. Previous analyses conducted on the Airport's behalf have demonstrated that the aircraft and passenger delay costs resulting from runway failure would be close to \$1 billion over the 20-year period of the analysis. Even after conversion to present value terms, the cost would be in excess of \$300 million.

Given the Airport's current financial constraints and obligations, the most likely Base Case would be reconstructing the runway only to Boeing 737 standards without centerline or touchdown lighting. Because of financial constraints, this resurfacing and associated drainage improvements would be phased over three years. This alternative would prohibit use of Runway 6L/24R by heavy aircraft, except when other runways are closed for maintenance, snow removal or other operational necessities.

If Runway 6L/24R were rebuilt to this lesser standard and runway capacity constraints made it necessary to operate heavy aircraft on it with the same frequency as today, progressive failure of the runway surface could be expected in less than 10 years. The runway would have to be repaved every five years to avoid progressive failure.

b. **Preferred Alternative**

The Preferred Alternative is the reconstruction of Runway 6L/24R to Aircraft Design Group V (Boeing 747-499) standards, as described above.

4. **PROJECT COSTS**

The total cost of the Runway 6L/24R Reconstruction Project consists of capital costs and O&M expenses. Capital, major repair and O&M costs were estimated by Airport staff and are represented in 1997 dollars.

a. Capital Costs

The capital cost is estimated to be \$22.5 million for the Base Case, as described below:

- \$4.0 million in 1998 for Phase I of resurfacing
- \$2.1 million in 1999 for Phase II of resurfacing
- \$2.9 million in 2000 for Phase III of resurfacing
- \$2.5 million in 2000 for safety/drainage area improvements
- \$3.5 million in 2002 for blast protection
- \$7.5 million in 2002, 2009 and 2015 for repaving and subsurface repair

The capital cost of the Preferred Alternative is \$19.0 million, including repaving costs, which is lower than the Base Case by \$3.5 million. The net present value of the Preferred Alternative is \$1.3 million lower than the present value of the Base Case. Capital costs were developed based on previous runway resurfacing projects completed within the past five years.

b. O&M Costs

Major repairs include periodic repaving at different frequencies for each alternative. The marginal reduction in pavement maintenance costs associated with the Preferred Alternative reflects a project benefit and therefore is documented in Section 5c. The repaving costs of Runway 6R/24L and 14/32 are not included because they would be the same under each alternative and therefore would not represent marginal costs. Similarly, other O&M costs, such as snow removal, also would be identified under both alternatives and therefore would not result in marginal costs.

5. PROJECT BENEFITS

Three general benefit categories were estimated: reduction in taxi time, reduction in delay and reduction of O&M costs. In accordance with the FAA BCA Guidelines, only the marginal benefits are included in the analysis--the difference in benefits between the Preferred Alternative and the Base Case.

a. Reduction in Taxi Time

Runway 6L/24R is one of two closely spaced parallel runways at the Airport. As noted earlier, use of Runway 6L/24R is normally restricted to aircraft smaller than the Boeing 737. The other parallel runway, Runway 6R/24L, is the primary air carrier departure runway. Most commonly, aircraft arrive on Runways 6R and 6L and depart on Runway 32. The second most common runway use configuration at ANC is to arrive on Runway 14 and to depart on Runways 24R and 24L. These runway use procedures are consistent with the Airport's noise abatement program and minimize overflights of adjacent noise-sensitive residential developments located east and south of the Airport.

The landing threshold for Runway 6R is approximately 4,700 feet east of the Runway 6L threshold. Similarly, the landing threshold for Runway 24R is approximately 4,300 feet east of the Runway 24L threshold. As a result of this runway stagger, taxi distances can differ substantially between the two parallel runways. When Runways 24R and 24L are used for landing, aircraft destined for any point on the Airport would experience significantly shorter taxi distances by landing on Runway 24R in lieu of Runway 24L.

Similarly, arriving air cargo aircraft destined for the East Airpark would experience reduced taxi distances by landing on Runway 6L in lieu of Runway 6R. On the other hand, air carrier and air cargo aircraft destined for the terminals and the north air cargo area would not benefit from landing on Runway 6L in lieu of Runway 6R.

The strengthening of Runway 6L/24R would allow more frequent use by heavy aircraft within the limits of noise abatement policies. Based on analysis of current Airport operations, this project would reduce annual average taxi times in the following instances:

1. When aircraft are arriving on Runways 6R and 6L, those aircraft based in the eastern end of East Airpark could reduce taxi times by approximately 2.25 minutes per landing by using Runway 6L in lieu of Runway 6R. On an annual average basis, this reduction would save 8.10 minutes per day.
2. During the relatively rare periods when Runways 6R and 6L must be used for departures, aircraft that do not require the longer runway could reduce taxi time by 2.73 minutes by departing on Runway 6L in lieu of 6R. On an annual average basis, this reduction would save 1.72 minutes per day.
3. Although arrivals on Runways 24R and 24L do not occur frequently, virtually all aircraft would reduce taxi times by 1.27 minutes by landing on Runway 24R in lieu of Runway 24L. On an annual average basis, this reduction would save 2.86 minutes per day.
4. Aircraft in the East Airpark that do not require the longest available runway would reduce taxi times by 0.52 minutes for departure using Runway 24R in lieu of Runway 24L. On an annual average basis, this reduction would save 0.03 minutes per day.
5. Taxi times savings were reduced by 12.3 percent (45 downtime days/365 days) in years where the reconstructed runway is scheduled for repaving

Collectively, these efficiencies would decrease taxi times at the Airport by an annual average of 12.71 minutes per day. Because the taxi time savings represent an annual average (as opposed to a peak day average), it can be multiplied by 365 to yield the annual total delay savings of 77 hours. This taxi time savings would increase each year as operation demand increases, assuming runway use remains equivalent to expected conditions.

Based on the direct aircraft operating cost described in Chapter V, the present value of the taxi time saving is \$1.7 million for aircraft operations. Similarly, this project will result in a passenger savings, based on the value of passengers' time, as described in Chapter V. The present value of passenger savings is \$800,000.

b. Delay Benefits

Average delays for the Base Case and the Preferred Alternative were estimated using the FAA's methodology in Chapter 2 of Advisory Circular AC No. 150/5060-5, Airport Capacity and Delay manual. The application of this methodology provides a basis for estimating aircraft delays based on fleet mix, demand level and runway use. Detailed assumptions used in this analysis are consistent with the information presented in the

HNTB Report (see Appendix A). The data was adjusted to reflect the revised TAF as described in Chapter II.

The present value of the marginal aircraft operational delay savings is \$7,321,223, and the present value of the marginal passenger savings is \$2,781,771. These present value calculations reflect the required 7.0 percent discount rate and the value of aircraft delay and passenger delay.

c. O&M Savings

O&M costs were defined for the Base Case and the Preferred Alternative based on existing Airport experience for each existing runway. Currently, runways 6R/24L and 14/32 are strengthened for Boeing 747 standards and are in significantly better condition than Runway 6L/24R. The O&M cost estimates for Runway 6L/24R reflect the following assumptions:

- Under the Preferred Alternative, a marginal reduction in pavement maintenance would occur because of the superior condition of the runway.
- The higher O&M costs under the Base Case reflect the increased repairs that would be required as a result of the occasional use by aircraft heavier than the Boeing 737 with the continued inadequate sub-base.

The following steps were applied to calculate the annual O&M costs for each alternative:

- Recent annual runway O&M costs were obtained for the Airport's three runways.
- New maintenance levels for each alternative were estimated based on recent maintenance levels.
- Estimates were partially based on field maintenance system records.
- Future O&M costs were projected based on HNTB's past maintenance project experience at the Airport.

Under the Preferred Alternative, repaving would be required every 10 years at a cost of \$2.0 million for each repaving. Under the Base Case, repaving and subsurface repair would be required every five years at a cost of \$2.5 million for each repaving. In summary, the reduction in O&M costs represents a present value savings of \$1,628,830.

6. NET PRESENT VALUE ANALYSIS

The financial evaluation is based upon determining the Runway 6L/24R Reconstruction Project's net present value, as required by the FAA, by taking the following steps:

- The capital cost of the Runway 6L/24R Reconstruction Project was determined and allocated over its planning and construction schedule. It is assumed that the total cost is stated in 1997 dollars and that the cost of construction will occur according to the phasing plan. The present value of total capital costs is \$14,807,210.
- The avoidable capital costs, which represent the capital expense of the Base Case, has a present value of \$16,108,154.
- The annual total taxi time, delay savings and O&M savings are based on the assumptions discussed earlier. In summary, the present value of the project's benefits is \$30,399,359.

- To convert future benefits and costs into current dollars, a present value discount factor is used. In accordance with FAA policy, a 7.0 percent annual discount factor is applied.
- The present value of the benefits and costs are presented in **Table VI-1**. The annual benefits and costs are summarized over the 20-year period to determine the total benefits and costs.

The net present value of the Runway 6L/24R Reconstruction Project, as detailed in **Table VI-2**, is \$15,592,149.

Summary:

Present Value Capital Costs	(\$14,807,210)
Present Value Avoidable Capital Costs (Base Case)	\$16,108,154
Present Value Taxiing Efficiency Savings	2,559,381
Present Value Delay Cost Savings	10,102,994
Present Value O&M Savings	1,628,830
Net Operating Savings	\$30,399,359
Net Present Value	\$15,592,149

7. NET PRESENT VALUE LOI PROJECTS

Table VI-2 presents the net present value of the LOI Projects for the period 1998 - 2017. The total net present value is \$21,842,758, which demonstrates the significant benefits the Airport, the airlines and their passengers will realize upon implementation of these projects. When completed, these projects will continue to strengthen the Airport's competitive position in the global cargo hub market.

8. SYSTEM BENEFITS

Collectively, the LOI projects will result in benefits to the overall national airspace system above and beyond the specific benefits defined in proceeding sections. Given the Airport's critical role as a connecting and transfer station for cargo and passengers and as the major cargo gateway to Asia, savings in delays incurred because of increased efficiency at Anchorage will result in additional savings at downline airports elsewhere in the system. The LOI airside project will result in a marginal reduction in missed connections. Since inbound freighters from Asia and Europe routinely connect with flights to airports throughout the U.S., each missed connection in Anchorage results in delays, throughout the system. The reduction in missed connections resulting from the LOI projects, therefore, will enhance overall system efficiency. This savings would be incurred through a reduction in delay, congestion and controller workload, as well as a direct reduction in the cost to cargo airlines, freight forwarders and other business throughout the U.S. that depend on an efficient national airspace system.

Table VI-1
Anchorage International Airport
Net Present Value Comparative Analysis - Runway 6L/24 R Reconstruction

	Marginal Costs		Marginal Benefits					
	Capital Construction Costs	Avoidable Costs	Taxi Time Cost Savings		Delay Cost Savings		O&M Savings	Total
			Operations	Passenger	Operations	Passenger		
1998	0	4,000,000	0	0	0	0	0	4,000,000
1999	(6,600,000)	2,100,000	0	0	(2,414,000)	(896,000)	0	(1,210,000)
2000	(10,400,000)	5,400,000	159,552	72,061	2,225,000	819,000	0	8,675,613
2001	0	0	164,229	74,944	0	0	317,340	556,512
2002	0	6,000,000	170,205	78,150	2,875,000	1,055,000	(49,620)	10,128,735
2003	0	0	176,181	81,415	0	0	248,420	506,016
2004	0	0	182,158	84,792	4,341,000	1,604,000	(91,940)	6,120,010
2005	0	0	188,134	88,296	0	0	232,700	509,130
2006	0	0	194,110	91,901	0	0	264,740	550,751
2007	0	0	200,087	95,637	0	0	296,780	592,503
2008	0	0	206,063	99,478	0	0	328,820	634,361
2009	0	2,500,000	168,470	82,178	0	0	136,000	2,886,647
2010	0	0	218,016	107,486	0	0	272,000	597,502
2011	0	0	223,992	111,660	0	0	304,040	639,692
2012	0	0	229,969	115,953	0	0	336,080	682,002
2013	0	0	235,945	120,371	0	0	368,120	724,436
2014	0	0	241,921	124,915	9,035,000	3,616,000	(91,940)	12,925,896
2015	0	2,500,000	247,898	129,588	0	0	232,700	3,110,186
2016	(2,000,000)	0	253,874	134,395	0	0	264,740	653,009
2017	0	0	259,850	139,338	0	0	296,780	695,968
Total	(19,000,000)	22,500,000	3,720,655	1,832,556	16,062,000	6,198,000	3,665,760	53,978,971
Total - PV (@ 7%)	(14,807,210)	16,108,154	1,725,105	834,276	7,321,223	2,781,771	1,628,830	30,399,360

NPV
 6L/24R Reconstruction

15,592,149

Table VI-2
Anchorage International Airport
Net Present Value Comparative Analysis - LOI Projects

	Ramp/Apron Projects		6L/24R Reconstruction		Combined LOI Projects	
	Costs	Benefits	Costs	Benefits	Costs	Benefits
1998	0	0	0	4,000,000	0	4,000,000
1999	(12,000,000)	1,200,000	(6,600,000)	(1,210,000)	(18,600,000)	(10,000)
2000	(18,000,000)	0	(10,400,000)	8,675,613	(28,400,000)	8,675,613
2001	(513,030)	0	0	556,512	(513,030)	556,512
2002	(3,095,622)	0	0	10,128,735	(3,095,622)	10,128,735
2003	(6,077,343)	0	0	506,016	(6,077,343)	506,016
2004	(3,065,374)	5,303,513	0	6,120,010	(3,065,374)	11,423,523
2005	(30,596)	5,513,618	0	509,130	(30,596)	6,022,748
2006	(4,185)	5,732,212	0	550,751	(4,185)	6,282,963
2007	23,546	5,965,238	0	592,503	23,546	6,557,742
2008	52,664	6,207,716	0	634,361	52,664	6,842,077
2009	69,744	6,460,115	0	2,886,647	69,744	9,346,763
2010	101,846	6,722,562	0	597,502	101,846	7,320,065
2011	135,554	6,996,108	0	639,692	135,554	7,635,799
2012	(44,091)	7,281,241	0	682,002	(44,091)	7,963,243
2013	(17,680)	7,578,475	0	724,436	(17,680)	8,302,910
2014	(12,439)	7,888,345	0	12,925,896	(12,439)	20,814,241
2015	16,679	8,211,413	0	3,110,186	16,679	11,321,599
2016	47,253	8,548,265	(2,000,000)	653,009	(1,952,747)	9,201,274
2017	79,355	8,899,514	0	695,968	79,355	9,595,482
Total	(42,333,720)	98,508,335	(19,000,000)	53,978,971	(61,333,720)	152,487,305
Total - PV (@ 7%)	(33,576,396)	39,827,004	(14,807,210)	30,399,360	(48,383,606)	70,226,364
NPV						
LOI Projects - Combined		\$6,250,609		\$15,592,149		\$21,842,758



Appendix A

**BENEFIT-COST ESTIMATE FOR RUNWAY 6L-24R
RECONSTRUCTION AT
ANCHORAGE INTERNATIONAL AIRPORT**

**SUBMITTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE FAA
BENEFIT COST GUIDANCE OF JUNE 1997**

**Prepared for the State of Alaska Department of Transportation and Public
Facilities, Anchorage International Airport**

By

**HNTB Corporation
99 Canal Center Plaza, Alexandria, VA**



**Anchorage
International
Airport**

State of Alaska DOT & PF
P.O. Box 196960
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(907) 266-2525
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November 20, 1997

Re: **Benefit Cost Analysis for Runway 6L/24R
Reconstruction Project**

Mr. Ronnie Simpson, Manager
Federal Aviation Administration
Airports Division
222 W. 7th Avenue, #14 (AAL-600)
Anchorage, AK 99513-7587

Dear Mr. Simpson:

Under FAA's Airport Capital Improvement Program, Anchorage International Airport (Airport) requested discretionary funding for reconstruction of Runway 6L/24R. In addition to the information previously submitted under our Innovative Finance Application, we submit the enclosed Benefit-Cost Estimate for reconstruction of Runway 6L/24R.

We urge your support for reconstruction of Runway 6L/24R for Boeing 747 and smaller aircraft operations for the following reasons:

- Produces life cycle costs savings - Reconstruction is significantly less expensive than frequent resurfacing with high annual maintenance costs.
- Enhances the National Aviation System capacity through traffic efficiency and delay reductions.
- Provides runway use flexibility and support of the Airport's growing air cargo operations. Rate of growth was 13% and 17% in the last two years.
- Supports the Air Traffic Control Tower's and the Airport's high priority to operate two full strength runways at all times, even when one runway is closed for maintenance or snow removal.
- Consistent with the Congressional intent language to give priority consideration for discretionary funding requests by Anchorage International Airport.

Thank you for considering funding this important project. We would be pleased to answer any questions or provide any further information required to assist FAA's review of this request.

Sincerely,

Morton V. Plumb, Jr.
Director

cc: Jane Mehrtens, APP-520
Airports Financial Assistance Division
Federal Aviation Administration
U.S. Department of Transportation
800 Independence Avenue, S.W.
Washington, D.C. 20591

Richard G. Wilson, Airport Development Manager
Tom Middendorf, Airport Planning Manager

FAA-LTR.DOC

**Benefit Cost Estimate for Runway 6L-24R Reconstruction
at Anchorage International Airport**

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**Benefit-Cost Estimate for Runway 6L-24R Reconstruction
at Anchorage International Airport**

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**Benefit-Cost Estimate for Runway 6L-24R Reconstruction
at Anchorage International Airport**

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EXECUTIVE SUMMARY

Benefit-Cost Estimate for Runway 6L-24R Reconstruction at Anchorage International Airport

This executive summary outlines the findings of the benefit-cost analysis performed for the proposed reconstruction of Runway 6L-24R at Anchorage International Airport (AIA). The analysis was conducted in accordance with the FAA Airport Benefit-Cost Guidance published June 2, 1997.

The analysis contained herein demonstrates that the proposed runway reconstruction project has a **net present value of \$14.7 million** over the twenty year period of analysis. These net benefits are broken out as follows:

- \$9.5 million in aircraft and passenger delay savings;
- \$2.7 million in more efficient airside traffic flows; and
- \$2.5 million in reduced life cycle costs.

Additional benefits that could not be rigorously quantified include:

- Air freight and express package delivery delay benefits;
- System benefits to the airlines as a result of reduced interruptions due to more frequent runway closures in future years; and
- Operational improvements due to improved lighting.
- Delay and traffic efficiency benefits for AIA's current cargo growth in excess of forecast levels

The benefits may be understated because they are measured against an ambitious base case scenario which includes a complete resurfacing of Runway 6L-24R. The base case scenario recognizes that the capacity provided by the runway is so important that AIA will not allow the runway to fail even if Federal funds are not forthcoming. Previous analyses have demonstrated that the runway would fail within five years without reconstruction, resurfacing, or excessive maintenance and aircraft operating weight restrictions. Without Runway 6L-24R, aircraft and passengers using the Airport would incur delay costs in excess of \$300 million over the next twenty years. Those analyses did not consider the recent double-digit growth in cargo operations which would also be jeopardized by a major reduction in capacity.

Financial constraints will prevent the Airport from reconstructing Runway 6L-24R unless FAA discretionary funds are forthcoming.

Benefit-Cost Estimate for Runway 6L-24R Reconstruction at Anchorage International Airport

This report discusses the benefit-cost analysis conducted for the proposed reconstruction of Runway 6L-24R at Anchorage International Airport (AIA). The analysis was conducted in accordance with the FAA Airport Benefit-Cost Guidance published June 2, 1997.

The analysis begins with a description of the project and its purpose. It continues with a discussion of the assumptions used in the benefit-cost analysis including the definition of alternatives, the period of analysis and forecast, runway downtime, aircraft and passenger delay costs, traffic flow efficiency and delay assumptions. Incremental benefits and costs are then presented on a year-by-year basis. The stream of benefits and costs is then converted to present value terms using the FAA methodology.

1. Project Description

The project assumes reconstruction of Runway 6L-24R to Aircraft Design Group V (Boeing 747-400) standards. The project includes the following items:

- Reconstruct Runway 6L-24R including excavation and replacement of the paved surfaces and subsurface of the runway, safety area, and blast protection;
- Replace the runway lighting system with new edge, centerline and touchdown zone lights;
- Correct drainage problems;
- Widen taxiway fillets;

2. Project Purpose

Runway 6L-24R was originally constructed for narrow-body aircraft, and currently it is weight restricted to aircraft smaller than the Boeing 737 because of design standards and its deteriorating surface condition. Even with the published weight restriction it still must be used by wide-body aircraft when any other runway is closed for construction, maintenance, servicing of landing aids, and snow removal. This regular use by heavy aircraft has hastened runway deterioration, and it cannot continue unless the runway is reconstructed.

The runway surface is cracking, breaking up, and delaminating. The inadequate substructure is responsible for much of the pavement failure as well as the frost heaving which has produced irregularity in the runway surface. Sections of the runway blast protection and safety area's substructure are also heaving, cracking, and breaking up. The runway surface is not grooved for traction, and the lighting system requires constant repairs because it is over 25 years old. Risk to aircraft from FOD is increasing and the runway is frequently closed for emergency repairs and clean up of broken pavement. In addition to the

pavement problems, the aged electrical system requires increasingly frequent and costly repairs, and may fail earlier than the pavement.

3. Assumptions

This subsection includes the critical assumptions that are required for the benefit-cost analysis, including the definition of the base case and alternative, future airport operating environment, aircraft variable operating costs and passenger value of time, and traffic flow efficiency and delay assumptions.

3.1 Alternatives

Two alternatives were analyzed, the runway reconstruction alternative (project) and the base case alternative. The project alternative has been described above.

3.1.1 Base Case

According to the FAA Benefit-Cost Guidelines, the base case represents "the best course of action that would be pursued in the absence of a major initiative to obtain the specified objectives." It is intended to represent a reference point against which both the incremental costs and incremental benefits of the proposed alternative are measured.

Again, it was considered unrealistic that AIA would allow the runway to fail, even if FAA discretionary funds were not forthcoming. Previous analyses conducted on behalf of AIA have demonstrated that the aircraft and passenger delay costs resulting from runway failure would be close to \$1.0 billion over the twenty year period of analysis. Even after conversion to present value terms, the cost would be in excess of \$300 million.

Given AIA's current financial constraints and obligations, the most likely base case would be reconstructing only to Boeing 737 aircraft standards without centerline or touchdown zone lighting. Because of financial constraints, this resurfacing and associated drainage improvements would be phased over three years. This alternative would prohibit use of Runway 6L-24R by heavy aircraft except when other runways are closed for maintenance or snow removal or for other operational necessity.

If Runway 6L-24R were rebuilt to this lesser standard, and runway capacity constraints made it necessary to operate heavy aircraft on it with the same frequency as today, progressive failure of the runway could be expected in less than 10 years. The runway would have to be repaved every five years to avoid progressive failure.

3.2 Period of Analysis

The period of analysis was assumed to be 20 years dating from the completion of the project, consistent with industry standards and FAA guidance.

3.3 Forecast

Table 1 presents the forecast assumptions used in the benefit-cost analysis. Forecasts by weight category, aircraft operations by type and passengers are required for the delay analysis.

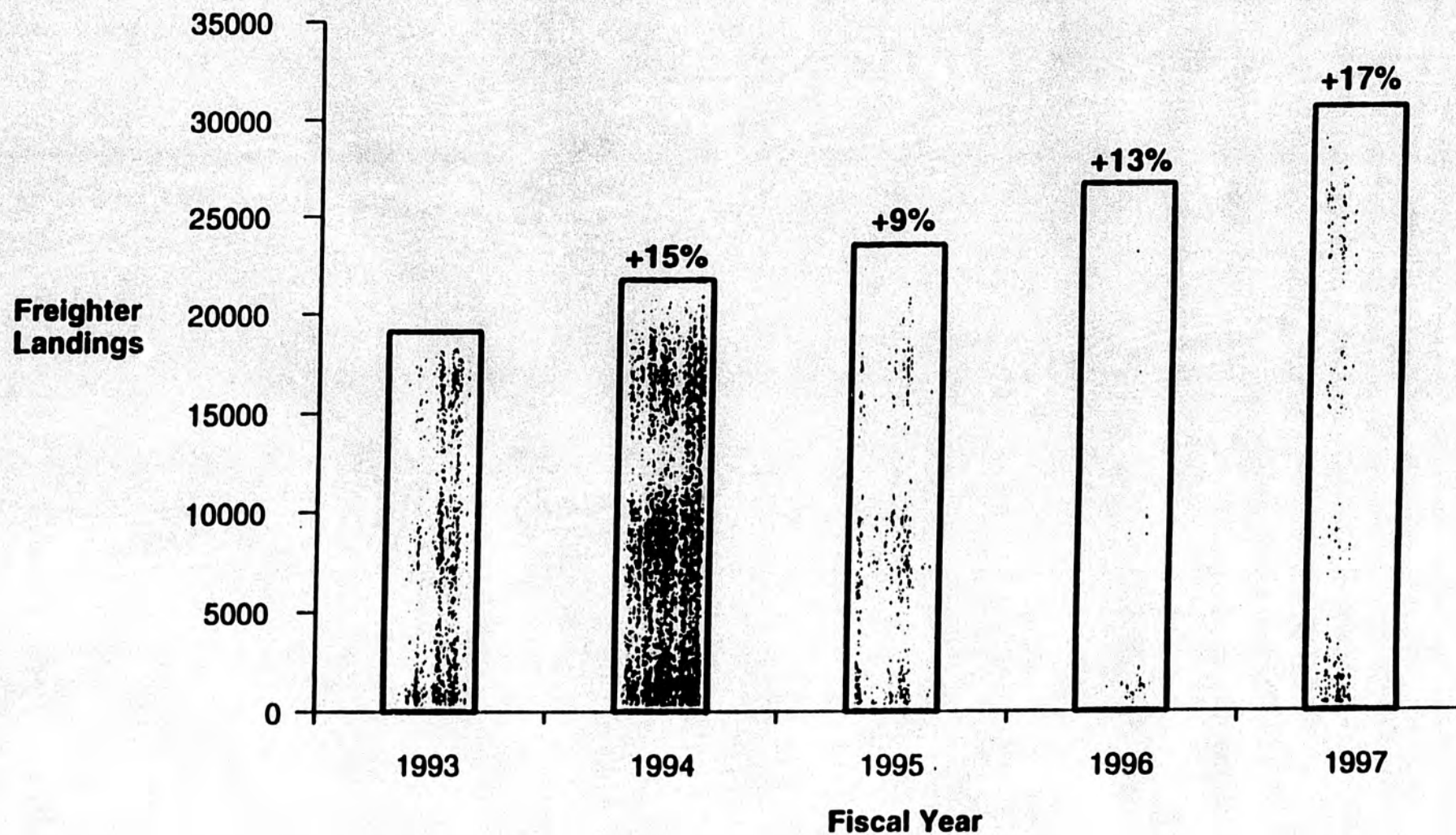
Projections of the Airport fleet mix for 1996, 2001 and 2016 were obtained from the Part 150 study currently being conducted for the Airport. Other years were linearly interpolated or extrapolated. The Aircraft Weight Categories used in this analysis correspond to the FAA categories used for capacity analysis in FAA AC No: 150/5060-5, Airport Capacity and Delay. These categories are; A&B (less than 12,500 lbs.), C (12,500 to 300,000 lbs.), and D (300,000+ lbs. and 757's) weight categories

The passenger forecasts were estimated by applying the growth rates for enplaned and transfer passengers in the 1993 forecast developed by the Airport Master Plan consultant to 1996 base year passenger levels. The methodology and assumptions used to adjust the forecast are consistent with the methodology used to develop the Part 150 forecast.

Although no air freight and express package delivery benefits are quantified in this analysis, it should be noted that cargo is a rapidly growing sector of AIA aviation activity, and is exceeding forecast levels. AIA's FY 1997 cargo landings grew 17%, 13% in 1996, and 9% in 1995. The 1993 Airport Master Plan forecast projected a growth of 1.7% and 19,800 cargo landings for FY 97 and actual cargo landings for FY 97 were 31,379 (see Figure 1).

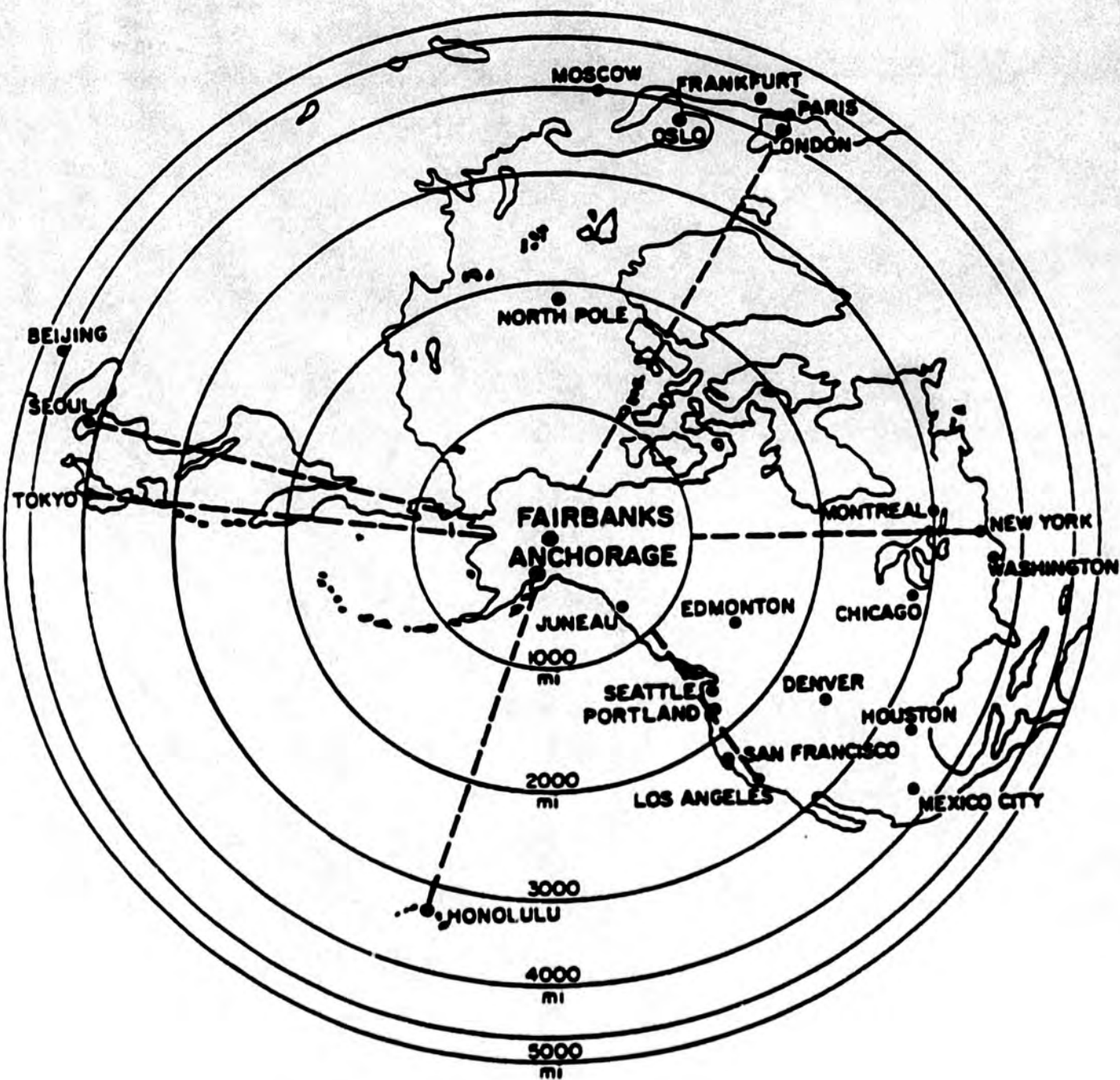
Several factors drive AIA's rapid cargo growth. These include geographic location, more goods moving by air, increased numbers of freighter operators, success of low cost freighter operators, growth of alliances to expand the frequency to more destinations, US/Japan and other bilateral improvements, and increased service between South Asia and North America. Figure 2 shows AIA's position as a logical transshipment point, in particular between North America and East Asia.

In November 1997, USDOT renewed the Expanded Cargo Transfer Flexibility Order for Alaskan airports. This unique order allows foreign carriers to conduct a variety of cargo transfer activities at AIA. This has stimulated carrier interest in establishing additional hubbing operations at AIA. United Airlines and Polar Air recently joined Federal Express, UPS, and Northwest in establishing cargo hubbing operations at the AIA.



AIA CARGO TRAFFIC
FY93 - FY97
FREIGHTER LANDINGS AND
YEAR-TO-YEAR PERCENTAGE INCREASES

FIGURE 1



GLOBAL PROJECTION CENTERED
ON ANCHORAGE AND
FAIRBANKS, ALASKA

FIGURE 2

Within the first six months after the order was issued, several carriers began planning with airport management at AIA to determine how and where cargo transfer/interlining operations can be carried out. Three nationally known air cargo facility developers applied for land leases at AIA to construct multi-tenant cargo facilities. One of the developers plans to construct a major facility in 1998.

3.4 Runway Downtime

One or more of the runways is frequently closed for snow removal, resurfacing, reconstruction, or unsafe operating conditions at various times. When runways are shut down they reduce capacity and increase aircraft and passenger delay, and in turn affect the estimates of delay benefits. The following assumptions were used for each of the alternatives:

All Alternatives

- Each runway shut down for snow removal approximately 69.5 hours per year.
- Runway 6R-24L shut down 75 days in 2007 and 2017 for re-paving.
- Runway 14-32 shut down 75 days in 2006 and 2016 for re-paving.

Boeing 747-400 Reconstruction (Project) Alternative

- Runway 6L-24R shut down 3 months (91.25 days) in 1998 and 5 months (152 days) in 1999 for reconstruction.
- Runway 6L-24R shut down 75 days in 2009 and 2019 for re-paving.

Base Case (Resurfacing) Alternative

- Runway 6L-24R shut down for 3 months (91.25 days) in 1998 for Phase 1, and 75 days in 1999 for Phase 2 of resurfacing.
- Runway 6L-24R shut down for 60 days in 2000, for Phase 3 of resurfacing and drainage and safety area improvements.
- Runway 6L-24R shut down for 3 months (91.25 days) for blast protection improvements in 2002.
- Runway 6L-24R shut down for 75 days for re-paving in 2004, 2009, 2014 and 2019.

3.5 Aircraft and Passenger Costs

Table 2 shows the variable operating cost (VOC) assumptions for aircraft at AIA. Aircraft block hour costs were obtained from the FAA's Economic Values for Evaluation of Federal Aviation Administration and Regulatory Programs and converted to 1997 dollars. VOC fuel and oil and maintenance costs were reduced 50 percent for taxiing aircraft, since engines are not run at full power under those circumstances. The VOC costs for the individual aircraft categories were weighted by the fleet mix developed for the Part 150 Study to produce an average aircraft VOC for the Airport for 1996, 2001 and 2016.

The average value of passenger time was obtained from the FAA's Office of Aviation Policy and Plans' Bulletin, Treatment of Values of Passenger Time in Economic Analysis. The value is estimated at \$26.70 per hour or \$0.45 per minute.

3.6 Traffic Flow Efficiency Assumptions

The strengthening of Runway 6L-24R would allow more frequent use by heavy aircraft within the limits of noise abatement policies. Based on analysis of current Airport operations, it would permit increased taxiing efficiencies (decreased taxi time and cost) in the following four instances:

1. When aircraft are arriving on Runways 6R and 6L, those aircraft based in the eastern end of East Airpark could reduce taxi times by approximately 2.25 minutes per landing by using Runway 6L in lieu of Runway 6R. On an annual average basis, this reduction would save a total of 8.1 minutes per day.
2. During the relatively rare periods when Runways 6R and 6L must be used for departures, aircraft which do not require the longer runway could reduce taxi time by 2.73 minutes by departing on Runway 6L in lieu of Runway 6R. On an annual average basis, this reduction would save 1.72 minutes per day.
3. Although arrivals on Runways 24R and 24L do not occur frequently, virtually all aircraft would reduce taxi times by 1.27 minutes by landing on Runway 24R in lieu of Runway 24L. On an annual average basis, this reduction would save 2.86 minutes per day.
4. Aircraft in the East Airpark which do not require the longest available runway would reduce taxi times by 0.52 minutes for departure by using Runway 24R in lieu of Runway 24L. On an annual average basis, this reduction would save 0.03 minutes per day.

Collectively, these efficiencies would decrease taxi times at AIA by 12.71 minutes per day, or roughly 77 hours per year.

3.7 Delay Assumptions

Table 3 shows the estimates of average aircraft delay per operation for Anchorage under alternative runway use configurations for 1996, 2001, and 2016. Average delays were estimated using the FAA's methodology in Chapter 2 of Advisory Circular AC no: 150/5060-5, Airport Capacity and Delay manual. For the three runway configuration it was assumed the conditions prevailing for FAA Figure 16 in Figure 2-1 of the Capacity and Delay manual would occur 70 percent of the time and those prevailing for FAA Figure 17 in Figure 2-1 of the Capacity and Delay manual would occur 30 percent of the time. The fleet mix and fleet mix index for each year was obtained from the forecasts presented in Table 1.

4. Estimate of Benefits

Three general benefit categories were estimated, improved traffic flow efficiency, delay benefits, and other benefits. In accordance with the FAA Benefit-Cost guidance, these estimates are incremental benefits - the difference in benefits between the project alternative and the base case.

4.1 Traffic Flow Efficiency

The runway layout at AIA is shown in Figure 3. Runway 6L-24R is one of two closely spaced parallel runways at AIA. As noted earlier, use of Runway 6L-24R is normally restricted to aircraft smaller than the Boeing 737. The other parallel runway, Runway 6R-24L is the primary air carrier aircraft arrival runway. Runway 32, the crosswind runway is the primary air carrier departure runway. Most commonly, aircraft arrive on Runways 6R and 6L and depart on Runway 32. The second most common runway use configuration at AIA is to arrive on Runway 14 and depart on Runways 24R and 24L. These runway use strategies are consistent with the Airport's noise abatement program. These strategies minimize overflights of adjacent noise sensitive residential development located to the east and south of AIA (see Figure 4).

As shown in Figure 3, the landing threshold for Runway 6R is located approximately 4,700 feet to the west of the Runway 6L threshold. Similarly, the landing threshold for Runway 24R is located approximately 4,300 feet east of the Runway 24L threshold. As a result of this runway stagger, taxi distances can differ substantially between the two parallel runways. When Runways 24R and 24L are used for landing, aircraft destined for any point on the airport would experience significantly shorter taxi distances by landing on Runway 24R in lieu of Runway 24L. Similarly, arriving air cargo aircraft destined for the East Airpark would experience reduced taxi distances by landing on Runway 6L in lieu of Runway 6R. On the other hand, air carrier and air cargo aircraft destined for the terminals and the north air cargo area would not benefit from landing on Runway 6L in lieu of Runway 6R.

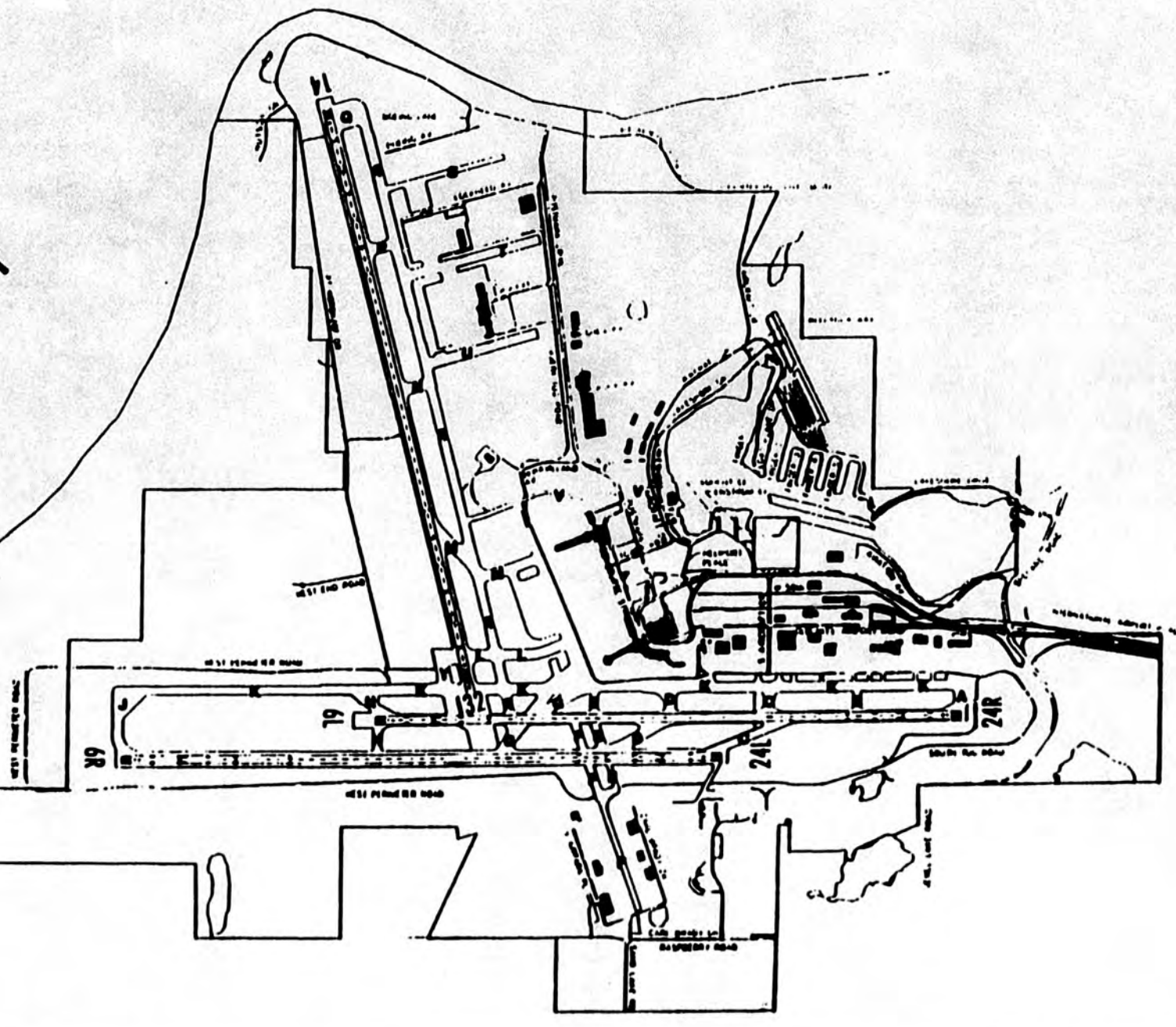
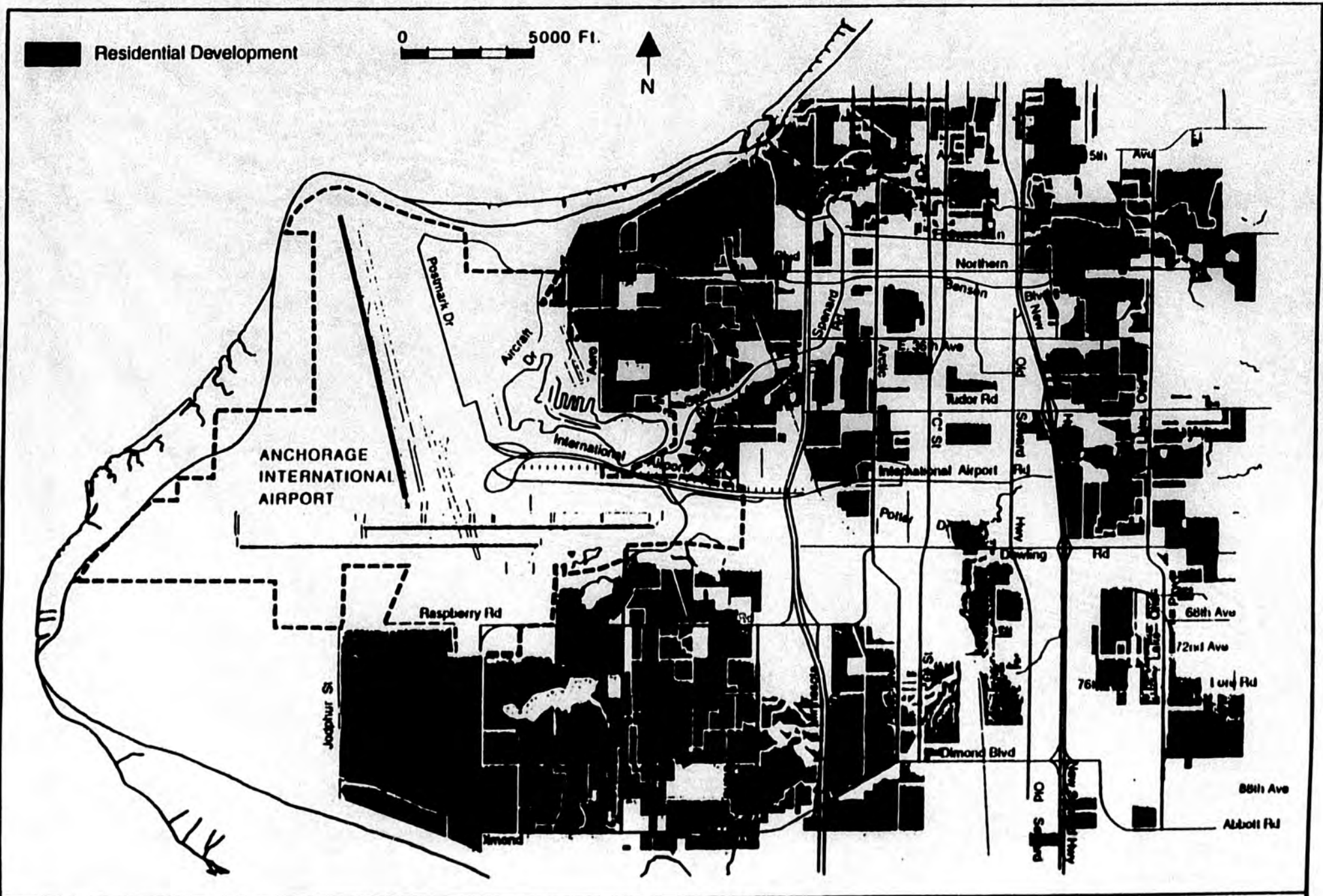


FIGURE 3



ANCHORAGE INTERNATIONAL AIRPORT

FIGURE 4

Table 4 shows the estimates of improved traffic flow efficiency resulting from the shorter taxi times for large aircraft able to use Runway 6L-24R after reconstruction. These benefits only apply to the runway reconstruction scenario. The number and type of affected operations and the travel time savings were estimated in Section 3.6. The daily minutes of delay were assumed to increase at the same rate as aircraft operations in that category.

Most of the affected aircraft would be cargo aircraft. Passenger delay for affected passenger jets was estimated by assuming a 150 seat narrow-body jet (larger than a Boeing 737) at a 60 percent load factor (90 passengers per affected passenger aircraft operation).

Traffic flow efficiency benefits were reduced by 12.33 percent (45 downtime days/365 days) in years where the reconstructed runway is scheduled for re-paving.

4.2 Delay Benefits

Table 5 presents the estimated delay costs for each alternative. The average aircraft delay under each alternative is a function of the average delay by alternative estimated in Table 3 and the percentage of time the Airport operates under each configuration under each alternative. The percentage of time under each use configuration is determined by the runway downtime assumptions presented in Section 3.4.

In 1999, the base case alternative has a lower level of average delay than the project alternative because the runway is down for 75 days rather than 5 months. In 2000, 2002, 2004 and 2014, the project alternative creates lower delays than the base case because of reduced downtime. The resurfacing alternative has lower downtimes towards the beginning but more frequent downtimes later because more frequent re-paving is required.

Each of the alternatives has delay spikes in 2006, 2007, 2009, 2016, 2017, and 2019 because of the required re-paving of the runways.

The incremental delay benefit for the project alternative is equal to the difference in delay costs compared to the base case.

4.3 Other Benefits

Other benefits that are more difficult to quantify are:

- Air freight/express package delivery delay benefits from the more efficient transportation of cargo and reduced delays to cargo shipments. Although the benefits are difficult to measure the relative distribution among alternatives should be similar to the traffic flow and delay benefits.

- System benefits should accrue to the airlines as a result of reduced interruptions due to runway closure in the later years. If delays resulting from runway closure become too frequent, airlines may choose to route through another US or foreign airport. The impact of AIA delays on international passenger or cargo service can be significant. For example, if outbound flights to Asia miss Asian airport curfews, the carrier might be required to use an alternate airport, pay a punitive landing fee, or purchase substitute services in the case of package delivery. AIA delays could create a domino effect on arrival and departure schedules, requiring three to four days to recover. These costs are estimated by one cargo hub carrier at \$2-3 million per incident.
- The project alternative would also include Centerline Lighting and Touchdown Zone Lighting which would improve operational efficiencies and safety.
- Traffic efficiency and delay benefits from the current cargo growth level at AIA which was not included in the 1993 Master Plan projections.

5. Costs

Table 6 summarizes the incremental benefits by year and also includes gross and incremental costs in 1997 dollars. Capital, major repair, and O&M costs were estimated by Airport staff.

5.1 Capital Costs

Capital costs are estimated as follows:

- **Base Case**
 - \$4.0 million in 1998 for Phase 1 of resurfacing
 - \$2.1 million in 1999 for Phase 2 of resurfacing
 - \$2.9 million in 2000 for Phase 3 of resurfacing
 - \$2.5 million in 2000 for safety area/drainage improvements
 - \$3.5 million in 2002 for blast protection
- **Project Alternative**
 - \$14.2 million in 1998 for Phase 1 of reconstruction
 - \$2.8 million in 1999 for Phase 2 of reconstruction

Capital cost estimates were based on previous runway resurfacing projects completed within the past five years.

5.2 Major Repairs

Major repairs include periodic re-paving required at different frequencies for each alternative. The re-paving costs of Runway 6R-24L and 14-32 are not included because they would be the same under each alternative.

Under the project alternative, re-paving would be required every ten years and would cost \$2 million each time. Under the resurfacing alternative, re-paving and subsurface repair would be required every five years and would cost \$2.5 million each time.

5.3 O&M Costs

O&M costs are based on existing Airport experience for each of the existing runways. Currently, runways 6R-24L and 14-32 are strengthened for Boeing 747 standards and are in significantly better condition than Runway 6L-24R. The O&M cost estimates in Table 6 are for Runway 6L-24R and reflect the following assumptions:

- Under the reconstruction (project) alternative, they include the reduced repairs that would be incurred because of the superior condition of the runway.
- The higher O & M costs under the base case (resurfacing) alternative reflect the increased repairs that would be required as a result of the occasional use by aircraft heavier than the Boeing 737 with the continued inadequate sub-base.

The annual runway 6L-24R maintenance and operating costs provided by AIA are based on the annual expenditures for field and equipment maintenance. This is a conservative annual cost estimate in that it excludes costs for utilities, equipment storage and maintenance facilities, equipment amortization, management/oversight, and State of Alaska, Department of Transportation support functions such as payroll, personnel, etc.

The following steps were applied to calculate the annual maintenance and operating costs for each alternative:

- Recent annual runway maintenance and operating costs were obtained for the Airport's three 10,000+ foot runways.
- Maintenance levels for each alternative were estimated by adjusting the recent maintenance levels.
- Estimates were partially based on field maintenance management system records.
- Future maintenance and operating costs were projected based on past maintenance project experience at AIA.

6. Summary

Table 7 converts the results of Table 6 to present value terms using a discount rate of 7.0 percent as stated in the FAA Airport Benefit-Cost Guidance. Table 8 summarizes the results of Table 7.

The analysis demonstrates that the proposed runway reconstruction project, as compared to the base case, has a net present value of \$14.7 million over the twenty year period of analysis. These net benefits are broken out as follows:

- \$9.5 million in aircraft and passenger delay savings;
- \$2.7 million in more efficient airside traffic flows; and
- \$2.5 million in reduced life cycle costs.

Additional benefits that could not be rigorously quantified include:

- Air freight/express package delivery delay benefits;
- System benefits to the airlines as a result of reduced interruptions due to more frequent runway closures in future years;
- Operational improvements due to improved lighting; and
- Delay and traffic efficiency benefits for AIA's current cargo growth in excess of forecast levels.

The benefits may be understated because they are measured against a base case scenario which includes a complete resurfacing of Runway 6L-24R. The base case scenario recognizes that the capacity provided by the runway is so important that AIA will not allow it to fail even if Federal funds are not forthcoming. Previous analyses have demonstrated that the runway would fail within five years without reconstruction, resurfacing, or excessive maintenance and aircraft operating weight restrictions. Without Runway 6L-24R, aircraft and passengers using the Airport would incur delay costs in excess of \$300 million over the next twenty years. Those analyses did not consider the recent double-digit growth in cargo operations, which would also be jeopardized by a major reduction in capacity.

The results of the analysis show that, from an economic standpoint, the project alternative is superior to the resurfacing alternative by approximately \$14.7 million. Either alternative would be vastly superior to allowing runway 6L-24R to be permanently closed.

A benefit-cost ratio could not be calculated because the life cycle costs of the reconstruction (project) alternative are lower than for the resurfacing (base case) alternative. This results in a negative incremental cost which would cause the benefit-cost ratio to be negative. Table A-1 in Appendix A shows an alternative case in which the reductions in future maintenance and repair costs are portrayed as benefits rather than reductions in project cost. This produces a benefit-cost ratio of 5.55 with an identical net present value of \$14.7 million.

As noted earlier, financial constraints would prevent the Airport from completing the resurfacing (base case) alternative in a single phase without FAA discretionary funds, and therefore prevents the alternative from being developed as efficiently and cost-effectively as possible. Table A-2 in Appendix A shows an alternative in which FAA discretionary funding allows the resurfacing to be conducted in one phase. This revised base case would lower the net present value of the reconstruction alternative from \$14.7 million to slightly under \$12.0 million. In conclusion, the proposed reconstruction provides substantial economic benefits over any potential resurfacing alternative.

Table 1
Anchorage International Airport
Forecast Assumptions Used in Analysis

	1996	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Daily Aircraft Departures By Mix Index (a)																							
Passenger Carrier																							
A&B	7.59	7.73	7.81	7.88	7.95	8.03	8.10	8.18	8.26	8.33	8.41	8.49	8.56	8.64	8.72	8.79	8.87	8.95	9.02	9.10	9.18	9.25	9.33
C	148.86	155.12	158.26	161.39	164.52	168.36	172.19	176.03	179.86	183.70	187.54	191.37	195.21	199.04	202.88	206.72	210.55	214.39	218.22	222.06	225.90	229.73	233.57
D	12.03	12.92	13.37	13.81	14.26	15.00	15.74	16.48	17.23	17.97	18.71	19.45	20.19	20.93	21.67	22.41	23.16	23.90	24.64	25.38	26.12	26.86	27.60
Subtotal	168.48	175.78	179.43	183.08	186.73	191.384	196.038	200.692	205.346	210	214.654	219.308	223.962	228.616	233.27	237.924	242.578	247.232	251.886	256.54	261.194	265.848	270.502
Cargo																							
A&B	6.22	6.68	6.91	7.14	7.37	7.66	7.95	8.25	8.54	8.83	9.12	9.41	9.71	10.00	10.29	10.58	10.87	11.17	11.46	11.75	12.04	12.33	12.63
C	12.08	12.98	13.43	13.88	14.33	14.70	15.07	15.44	15.81	16.18	16.55	16.92	17.29	17.66	18.03	18.40	18.77	19.14	19.51	19.88	20.25	20.62	20.99
D	44.87	48.36	50.11	51.85	53.60	55.88	58.16	60.44	62.72	65.00	67.28	69.56	71.84	74.12	76.40	78.68	80.96	83.24	85.52	87.80	90.08	92.36	94.64
Subtotal	63.17	68.022	70.448	72.874	75.3	78.242	81.184	84.126	87.068	90.01	92.952	95.894	98.836	101.778	104.72	107.662	110.604	113.546	116.488	119.43	122.372	125.314	128.256
General Aviation																							
A&B	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57	62.57
C	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12	3.12
D	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69	65.69
Military																							
A&B	2	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
C	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93	2.93
D	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93	4.93
Total																							
A&B	78.38	78.98	79.29	79.59	79.89	80.26	80.63	81.00	81.36	81.73	82.10	82.47	82.84	83.21	83.58	83.95	84.31	84.68	85.05	85.42	85.79	86.16	86.53
C	166.99	174.15	177.74	181.32	184.9	189.11	193.31	197.52	201.72	205.93	210.14	214.34	218.55	222.75	226.96	231.17	235.37	239.58	243.78	247.99	252.20	256.40	260.61
D	56.9	61.28	63.48	65.67	67.86	70.88	73.90	76.92	79.95	82.97	85.99	89.01	92.03	95.05	98.07	101.09	104.12	107.14	110.16	113.18	116.20	119.22	122.24
Subtotal	302.27	314.42	320.50	326.57	332.65	340.25	347.84	355.44	363.03	370.63	378.23	385.82	393.42	401.01	408.61	416.21	423.80	431.40	438.99	446.59	454.19	461.78	469.38
Total Percentage Mix																							
A&B	25.9%	25.1%	24.7%	24.4%	24.0%	23.6%	23.2%	22.8%	22.4%	22.1%	21.7%	21.4%	21.1%	20.7%	20.5%	20.2%	19.9%	19.6%	19.4%	19.1%	18.9%	18.7%	18.4%
C	55.2%	55.4%	55.5%	55.5%	55.6%	55.8%	55.8%	55.6%	55.6%	55.6%	55.6%	55.6%	55.6%	55.5%	55.5%	55.5%	55.5%	55.5%	55.5%	55.5%	55.5%	55.5%	55.5%
D	18.8%	19.5%	19.8%	20.1%	20.4%	20.8%	21.2%	21.6%	22.0%	22.4%	22.7%	23.1%	23.4%	23.7%	24.0%	24.3%	24.6%	24.8%	25.1%	25.3%	25.6%	25.8%	26.0%
Subtotal	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Annual Operations (b)																							
Passenger Carrier	123,000	128,300	131,000	133,600	136,300	139,700	143,100	146,500	149,900	153,300	156,700	160,100	163,500	166,900	170,300	173,700	177,100	180,500	183,900	187,300	190,700	194,100	197,500
Cargo Carrier	46,100	49,700	51,400	53,200	55,000	57,100	59,300	61,400	63,600	65,700	67,900	70,000	72,200	74,300	76,400	78,600	80,700	82,900	85,000	87,200	89,300	91,500	93,600
General Aviation	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000	48,000
Military	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600	3,600
Total	220,700	229,600	234,000	238,400	242,900	248,400	254,000	259,500	265,100	270,600	276,200	281,700	287,300	292,800	298,300	303,900	309,400	315,000	320,500	326,100	331,600	337,200	342,700
Annual Passengers (c)																							
Enplaned and Deplaned	4,084,775	4,422,000	4,599,000	4,783,000	4,974,000	5,148,000	5,328,000	5,514,000	5,707,000	5,907,000	6,114,000	6,328,000	6,549,000	6,778,000	7,015,000	7,261,000	7,515,000	7,778,000	8,050,000	8,332,000	8,624,000	8,926,000	9,238,000
Transit	678,508	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000	679,000
Total	4,763,283	5,101,000	5,278,000	5,462,000	5,653,000	5,827,000	6,007,000	6,193,000	6,386,000	6,586,000	6,793,000	7,007,000	7,228,000	7,457,000	7,694,000	7,940,000	8,194,000	8,457,000	8,729,000	9,011,000	9,303,000	9,605,000	9,917,000
Passengers/Passenger Op (d)																							
	33.2	34.5	35.1	35.8	36.5	36.9	37.2	37.6	38.1	38.5	39.0	39.5	40.1	40.6	41.2	41.8	42.4	43.1	43.8	44.5	45.2	46.0	46.8

(a) Part 150 Analysis, Appendix D, Operational Summary

(b) Daily departures times (2 operations/departure) times 365 days.

(c) 1996 annual enplaned and deplaned passengers projected to increase at Leigh Fisher Master Plan growth rates.

(d) Passengers divided by operations.

Sources: As noted and HNTB analysis.

Table 2

**Anchorage International Airport
Aircraft Variable Operating Costs**

Equipment Type	1 Turboprop, 4- Engine Widebody (B-747)	2 Turboprop, 4- Engine Narrowbody	3 Turboprop, 3- Engine Widebody	4 Turboprop, 3- Engine Narrowbody (B-737)	5 Turboprop, 2- Engine Widebody	6 Turboprop, 2- Engine Narrowbody (B-737)	7 Turboprop, 4 Engine (DC-4)	8 Turboprop, 2-Engine Alaska	9 Piston Alaska
Block Hour Costs									
Crew (a)	\$ 811.67	\$ 498.56	\$ 646.68	\$ 488.31	\$ 500.00	\$ 328.22	\$ 148.78	\$ 70.51	\$ 61.78
Fuel & Oil (a)	\$ 1,875.57	\$ 708.10	\$ 1,228.08	\$ 873.81	\$ 888.00	\$ 438.05	\$ 144.44	\$ 145.31	\$ 117.57
Maintenance (a)	\$ 708.64	\$ 332.68	\$ 615.65	\$ 221.42	\$ 388.31	\$ 187.29	\$ 387.74	\$ 156.52	\$ 96.13
Total	\$ 3,395.88	\$ 1,539.34	\$ 2,490.41	\$ 1,583.54	\$ 1,688.31	\$ 953.56	\$ 680.97	\$ 372.34	\$ 275.48
Price Adjustment (b)	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Total in 1987 Dollars (c)	\$ 4,718.39	\$ 2,138.81	\$ 3,460.29	\$ 1,883.31	\$ 2,347.18	\$ 1,324.92	\$ 846.17	\$ 517.35	\$ 382.76
Total in 1987 \$/minute	\$ 78.64	\$ 35.65	\$ 57.67	\$ 31.30	\$ 39.12	\$ 22.08	\$ 15.77	\$ 8.62	\$ 6.38
Tax/Block (d)	50%	50%	50%	50%	50%	50%	50%	50%	50%
Estimated Tax Total	\$ 2,103.70	\$ 1,018.80	\$ 1,568.55	\$ 807.80	\$ 1,083.15	\$ 640.89	\$ 414.88	\$ 221.43	\$ 188.63
Price Adjustment (b)	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Tax Total in 1987 dollars (e)	\$ 2,823.08	\$ 1,415.82	\$ 2,178.41	\$ 1,261.68	\$ 1,521.64	\$ 880.48	\$ 576.45	\$ 307.88	\$ 234.38
Tax Total in 1987 \$/minute	\$ 48.72	\$ 23.60	\$ 36.32	\$ 21.83	\$ 25.36	\$ 14.84	\$ 9.61	\$ 5.13	\$ 3.91

Equipment Type	1986 Daily Dept	Weights	VOC/ Minute	2001 Daily Dept	Weights	VOC/ Minute	2016 Daily Dept	Weights	VOC/ Minute
Arrival Delay Costs Per Minute (f)									
1	34.13	11.3%	\$ 78.64	48.86	12.0%	\$ 78.64	63.35	16.6%	\$ 78.64
2	7.41	2.5%	\$ 35.65	7.88	2.3%	\$ 35.65	6.9	1.5%	\$ 35.65
3	10.63	3.5%	\$ 57.67	13.1	3.8%	\$ 57.67	23.66	5.3%	\$ 57.67
4	8.57	2.8%	\$ 31.30	8.62	2.6%	\$ 31.30	4.9	1.1%	\$ 31.30
5	1.45	0.5%	\$ 39.12	2.82	0.9%	\$ 39.12	7.38	1.7%	\$ 39.12
6	70.25	23.2%	\$ 22.08	77.70	23.4%	\$ 22.08	107.29	24.0%	\$ 22.08
7	21.68	7.2%	\$ 15.77	38.88	8.1%	\$ 15.77	38.81	8.7%	\$ 15.77
8	84.44	27.0%	\$ 8.62	81.66	27.6%	\$ 8.62	128.38	28.7%	\$ 8.62
9	63.73	21.1%	\$ 6.38	63.73	19.2%	\$ 6.38	63.73	14.3%	\$ 6.38
Aggregate	382.29		\$ 22.87	332.87		\$ 23.75	448.81		\$ 28.18
Departure Delay Costs Per Minute (g)									
1	34.13	11.3%	\$ 48.72	48.86	12.0%	\$ 48.72	63.35	16.6%	\$ 48.72
2	7.41	2.5%	\$ 23.60	7.88	2.3%	\$ 23.60	6.9	1.5%	\$ 23.60
3	10.63	3.5%	\$ 36.32	13.1	3.8%	\$ 36.32	23.66	5.3%	\$ 36.32
4	8.57	2.8%	\$ 21.83	8.62	2.6%	\$ 21.83	4.9	1.1%	\$ 21.83
5	1.45	0.5%	\$ 25.36	2.82	0.9%	\$ 25.36	7.38	1.7%	\$ 25.36
6	70.25	23.2%	\$ 14.84	77.70	23.4%	\$ 14.84	107.29	24.0%	\$ 14.84
7	21.68	7.2%	\$ 9.61	38.88	8.1%	\$ 9.61	38.81	8.7%	\$ 9.61
8	84.44	27.0%	\$ 5.13	81.66	27.6%	\$ 5.13	128.38	28.7%	\$ 5.13
9	63.73	21.1%	\$ 3.91	63.73	19.2%	\$ 3.91	63.73	14.3%	\$ 3.91
Aggregate	382.29		\$ 14.47	332.87		\$ 15.81	448.81		\$ 18.58

(a) FAA, Economic Values for Evaluation of Federal Aviation Administration and Regulatory Programs, October 1989. Values expressed in 1987 dollars.

(b) U.S. Bureau of Economic Analysis, GDP Price Deflator.

(c) Total multiplied by price adjustment factor.

(d) Adjustment factor used to convert block hour costs for fuel and maintenance to aircraft operating costs for landing aircraft.

(e) Estimated taxi cost times price adjustment.

(f) Block hour costs weighted by fleet mix for 1986, 2001, and 2016.

(g) Taxi costs weighted by fleet mix for 1986, 2001, and 2016.

Sources: As noted and HNTB analysis.

Table 3

**Anchorage International Airport
Estimated Delay per Operation**

	Current R/W Configuration	R/W Configuration with 6L-24R or 6R-24L closed	R/W Configuration with 14-32 Closed	R/W Configuration with one R/W Open
Runway Use Configuration (a)	16 and 17	14 and 15	2	1
1996				
Fleet Mix (b)				
A&B	25.9%	25.9%	25.9%	25.9%
C	55.2%	55.2%	55.2%	55.2%
D	18.8%	18.8%	18.8%	18.8%
Mix Index (c)	1.116	1.116	1.116	1.116
Annual Operations (b)	220,700	220,700	220,700	220,700
Annual Service Volume (d)	295,500	225,000	285,000	210,000
Ratio (e)	0.75	0.98	0.77	1.05
Delay per Aircraft (min.) (f)	0.8	2.1	0.85	3.2
2001				
Fleet Mix (b)				
A&B	24.0%	24.0%	24.0%	24.0%
C	55.6%	55.6%	55.6%	55.6%
D	20.4%	20.4%	20.4%	20.4%
Mix Index (c)	1.168	1.168	1.168	1.168
Annual Operations (b)	242,900	242,900	242,900	242,900
Annual Service Volume (d)	295,500	225,000	285,000	210,000
Ratio (e)	0.82	1.08	0.85	1.16
Delay per Aircraft (min.) (f)	1	3.8	1.15	5.9
2016				
Fleet Mix (b)				
A&B	19.1%	19.1%	19.1%	19.1%
C	55.5%	55.5%	55.5%	55.5%
D	25.3%	25.3%	25.3%	25.3%
Mix Index (c)	1.314	1.314	1.314	1.314
Annual Operations (b)	326,100	326,100	326,100	326,100
Annual Service Volume (d)	350,500	265,000	340,000	240,000
Ratio (e)	0.93	1.23	0.96	1.36
Delay per Aircraft (min.) (f)	1.6	7.65	1.85	10.9

(a) Runway use configurations from Figure 2-1, FAA AC No: 150/5060-5, Airport Capacity and Delay.

(b) Table 1.

(c) $C + (3 \times D)$ from FAA AC No: 150/5060-5.

(d) From Figure 2-1, FAA AC No: 150/5060-5.

(e) Annual operations divided by annual service volume.

(f) From Figure 2-2, FAA AC No: 150/5060-5.

Sources: As noted and HNTB analysis.

Table 4
Anchorage International Airport
Estimate of Incremental Traffic Flow Efficiency
(Cost and Benefits in 1997 Dollars)

	1996	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Aircraft Operations																							
Boeing 747																							
Daily Minutes of Delay Savings(a)	5.33	5.74	5.95	6.16	6.37	6.64	6.91	7.18	7.45	7.72	7.99	8.26	8.53	8.80	9.08	9.35	9.62	9.89	10.16	10.43	10.70	10.97	11.24
Cost per Minute (b)	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72	\$ 48.72
Daily Savings (c)	\$ 259.67	\$ 279.88	\$ 289.98	\$ 300.08	\$ 310.19	\$ 323.38	\$ 336.58	\$ 349.77	\$ 362.97	\$ 376.16	\$ 389.36	\$ 402.55	\$ 415.74	\$ 428.94	\$ 442.13	\$ 455.33	\$ 468.52	\$ 481.72	\$ 494.91	\$ 508.11	\$ 521.30	\$ 534.50	\$ 547.69
Annual Savings (d)	\$ 94,778	\$ 102,154	\$ 105,843	\$ 109,531	\$ 113,219	\$ 118,035	\$ 122,851	\$ 127,667	\$ 132,483	\$ 137,299	\$ 142,115	\$ 146,931	\$ 151,747	\$ 156,563	\$ 161,379	\$ 166,195	\$ 171,011	\$ 175,827	\$ 180,643	\$ 185,459	\$ 190,275	\$ 195,091	\$ 199,907
Boeing 727																							
Daily Minutes of Delay Savings(a)	2.77	2.89	2.95	3.01	3.07	3.14	3.21	3.28	3.35	3.42	3.49	3.56	3.63	3.70	3.76	3.83	3.90	3.97	4.04	4.11	4.18	4.25	4.32
Cost per Minute (b)	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03	\$ 21.03
Daily Savings (c)	\$ 58.24	\$ 60.74	\$ 61.99	\$ 63.24	\$ 64.49	\$ 65.96	\$ 67.42	\$ 68.89	\$ 70.36	\$ 71.82	\$ 73.29	\$ 74.76	\$ 76.23	\$ 77.69	\$ 79.16	\$ 80.63	\$ 82.09	\$ 83.56	\$ 85.03	\$ 86.49	\$ 87.96	\$ 89.43	\$ 90.90
Annual Savings (d)	\$ 21,259	\$ 22,171	\$ 22,627	\$ 23,083	\$ 23,539	\$ 24,074	\$ 24,610	\$ 25,145	\$ 25,681	\$ 26,216	\$ 26,751	\$ 27,287	\$ 27,822	\$ 28,358	\$ 28,893	\$ 29,429	\$ 29,964	\$ 30,500	\$ 31,035	\$ 31,570	\$ 32,106	\$ 32,641	\$ 33,177
Narrowbody Jet (Twin Engine)																							
Daily Minutes of Delay Savings(a)	4.58	4.78	4.87	4.97	5.07	5.19	5.30	5.42	5.53	5.65	5.76	5.88	5.99	6.11	6.22	6.34	6.46	6.57	6.69	6.80	6.92	7.03	7.15
Cost per Minute (b)	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84	\$ 14.84
Daily Savings (c)	\$ 67.97	\$ 70.89	\$ 72.35	\$ 73.81	\$ 75.26	\$ 76.98	\$ 78.69	\$ 80.40	\$ 82.11	\$ 83.82	\$ 85.54	\$ 87.25	\$ 88.96	\$ 90.67	\$ 92.38	\$ 94.10	\$ 95.81	\$ 97.52	\$ 99.23	\$ 100.94	\$ 102.66	\$ 104.37	\$ 106.08
Annual Savings (d)	\$ 24,810	\$ 25,875	\$ 26,407	\$ 26,939	\$ 27,471	\$ 28,096	\$ 28,721	\$ 29,346	\$ 29,971	\$ 30,596	\$ 31,221	\$ 31,846	\$ 32,470	\$ 33,095	\$ 33,720	\$ 34,345	\$ 34,970	\$ 35,595	\$ 36,220	\$ 36,845	\$ 37,470	\$ 38,095	\$ 38,719
Total Unadjusted Savings	\$ 140,847	\$ 150,200	\$ 154,876	\$ 159,552	\$ 164,229	\$ 170,205	\$ 176,181	\$ 182,158	\$ 188,134	\$ 194,110	\$ 200,087	\$ 206,063	\$ 212,040	\$ 218,016	\$ 223,992	\$ 229,969	\$ 235,945	\$ 241,921	\$ 247,898	\$ 253,874	\$ 259,850	\$ 265,827	\$ 271,803
Downtime after Reconstruction (l)	n/a	n/a	n/a	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Adjusted Savings (m)	\$ -	\$ -	\$ -	\$ 159,552	\$ 164,229	\$ 170,205	\$ 176,181	\$ 182,158	\$ 188,134	\$ 194,110	\$ 200,087	\$ 206,063	\$ 212,040	\$ 218,016	\$ 223,992	\$ 229,969	\$ 235,945	\$ 241,921	\$ 247,898	\$ 253,874	\$ 259,850	\$ 265,827	\$ 271,803
Passengers																							
Daily Minutes of Delay Savings (Pax Ops) (a)	4.16	4.34	4.43	4.51	4.60	4.71	4.82	4.92	5.03	5.14	5.24	5.35	5.46	5.57	5.67	5.78	5.89	6.00	6.10	6.21	6.32	6.42	6.53
Passengers/Operation (f)	90	93.4	95.1	97.0	98.9	99.9	100.9	102.0	103.2	104.4	105.7	107.1	108.6	110.1	111.6	113.3	115.0	116.8	118.6	120.6	122.6	124.6	126.6
Minutes of Passenger Delay Savings (g)	374.7	405.2	421.1	437.9	455.1	470.2	485.9	502.2	519.0	536.5	554.6	573.3	592.6	612.7	633.4	654.9	677.2	700.2	724.0	748.7	774.3	800.7	828.0
Value of Time per Passenger Hour (h)	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70	\$ 26.70
Value of Time Per Passenger Minute (i)	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45
Daily Passenger Savings (j)	\$ 186.74	\$ 180.33	\$ 187.39	\$ 194.87	\$ 202.50	\$ 209.25	\$ 216.24	\$ 223.46	\$ 230.96	\$ 238.74	\$ 246.79	\$ 255.12	\$ 263.72	\$ 272.64	\$ 281.87	\$ 291.45	\$ 301.34	\$ 311.59	\$ 322.19	\$ 333.18	\$ 344.55	\$ 356.32	\$ 368.48
Annual Passenger Savings (k)	\$ 60,859	\$ 65,820	\$ 68,397	\$ 71,129	\$ 73,912	\$ 76,376	\$ 78,926	\$ 81,563	\$ 84,301	\$ 87,140	\$ 90,079	\$ 93,119	\$ 96,258	\$ 99,513	\$ 102,881	\$ 106,379	\$ 109,990	\$ 113,730	\$ 117,598	\$ 121,609	\$ 125,762	\$ 130,058	\$ 134,496
Downtime after Reconstruction (l)	n/a	n/a	n/a	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Adjusted Savings (n)	\$ -	\$ -	\$ -	\$ 71,129	\$ 73,912	\$ 76,376	\$ 78,926	\$ 81,563	\$ 84,301	\$ 87,140	\$ 90,079	\$ 93,119	\$ 96,258	\$ 99,513	\$ 102,881	\$ 106,379	\$ 109,990	\$ 113,730	\$ 117,598	\$ 121,609	\$ 125,762	\$ 130,058	\$ 134,496

- (a) HNTB analysis.
 (b) Taxi delay cost from Table 3.3.
 (c) Daily minutes of delay savings times cost per minute.
 (d) Daily savings times 365 days.
 (e) Daily minutes of delay savings for passenger aircraft from HNTB analysis.
 (f) Average passengers per narrowbody jet aircraft. Assumes 150 seat Boeing 737 at 60 percent load factor.
 (g) Minutes of passenger aircraft delay savings times passengers per aircraft.
 (h) FAA Office of Aviation and Plans' Bulletin, Treatment of Values of Passenger Time in Economic Analysis, June 1997.
 (i) Value of passenger time per hour divided by 60 minutes.
 (j) Daily minutes of passenger delay savings multiplied by value of time per minute.
 (k) Daily passenger savings times 365 days.
 (l) Amount of time reconstructed runway is down for repaving.
 (m) Unadjusted savings adjusted for times runway is not in operation.
 (n) Unadjusted passenger savings adjusted for times runway is not in operation.

Sources: As noted and HNTB analysis.

Table 8
Anchorage International Airport
Estimate of Delay Costs
(Cost and Benefits in 1997 Dollars)

	1996	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Avg. Delay/Operation by R/W Configuration (min.) (a)																							
Current	0.80	0.88	0.92	0.96	1.00	1.04	1.08	1.12	1.16	1.20	1.24	1.28	1.32	1.36	1.40	1.44	1.48	1.52	1.56	1.60	1.64	1.68	1.72
8L-24R or 6R-24L closed	2.10	2.78	3.12	3.46	3.80	4.08	4.31	4.57	4.83	5.08	5.34	5.60	5.85	6.11	6.37	6.62	6.88	7.14	7.39	7.65	7.91	8.16	8.42
14-32 closed & 2 R/W open	0.85	0.97	1.03	1.09	1.15	1.20	1.24	1.29	1.34	1.38	1.43	1.48	1.52	1.57	1.62	1.66	1.71	1.76	1.80	1.85	1.90	1.94	1.99
single runway open	3.20	4.28	4.82	5.36	5.90	6.23	6.57	6.90	7.23	7.57	7.90	8.23	8.57	8.90	9.23	9.57	9.90	10.23	10.57	10.90	11.23	11.57	11.90
A/C Arrival Cost per Min. of Delay (b)	\$ 14.47	\$ 14.69	\$ 14.79	\$ 14.90	\$ 15.01	\$ 15.11	\$ 15.21	\$ 15.31	\$ 15.41	\$ 15.51	\$ 15.61	\$ 15.71	\$ 15.81	\$ 15.91	\$ 16.01	\$ 16.11	\$ 16.21	\$ 16.30	\$ 16.40	\$ 16.50	\$ 16.60	\$ 16.70	\$ 16.80
A/C Depart. Cost per Min. of Delay (b)	\$ 22.87	\$ 23.23	\$ 23.40	\$ 23.58	\$ 23.75	\$ 23.91	\$ 24.07	\$ 24.24	\$ 24.40	\$ 24.56	\$ 24.72	\$ 24.88	\$ 25.04	\$ 25.21	\$ 25.37	\$ 25.53	\$ 25.69	\$ 25.85	\$ 26.01	\$ 26.18	\$ 26.34	\$ 26.50	\$ 26.66
Aircraft Cost Per Minute of Delay (c)	\$ 18.67	\$ 18.96	\$ 19.10	\$ 19.24	\$ 19.38	\$ 19.51	\$ 19.64	\$ 19.77	\$ 19.90	\$ 20.03	\$ 20.17	\$ 20.30	\$ 20.43	\$ 20.56	\$ 20.69	\$ 20.82	\$ 20.95	\$ 21.08	\$ 21.21	\$ 21.34	\$ 21.47	\$ 21.60	\$ 21.73
Aircraft Operations (d)	220,700	229,600	234,000	238,400	242,900	248,400	254,000	259,500	265,100	270,600	276,200	281,700	287,300	292,800	298,300	303,900	309,400	315,000	320,500	326,100	331,600	337,200	342,700
Passenger Cost Per Minute of Delay (e)	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45	\$ 0.45
Total Passengers (d)	4,763,283	5,101,000	5,276,000	5,462,000	5,653,000	5,827,000	6,007,000	6,193,000	6,386,000	6,586,000	6,793,000	7,007,000	7,228,000	7,457,000	7,694,000	7,940,000	8,194,000	8,457,000	8,729,000	9,011,000	9,303,000	9,605,000	9,917,000
Base Case Alternative (Resurfacing)																							
Runway Configuration (Percent) (f)																							
Current	74.21%	78.66%	82.77%	86.21%	89.21%	92.77%	95.21%	97.66%	99.21%	99.66%	99.86%	99.91%	99.96%	99.91%	99.91%	99.91%	99.91%	99.91%	99.91%	99.91%	99.91%	99.91%	99.91%
8L-24R or 6R-24L closed	25.53%	21.08%	18.97%	13.97%	10.79%	7.23%	4.79%	2.34%	0.79%	0.34%	0.14%	0.09%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%	0.04%
14-32 closed & 2 R/W open	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%
single runway open	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Weighted Delay per Operation (g)	1.37	1.38	1.38	1.02	1.55	1.10	1.85	1.18	1.26	2.10	1.30	2.28	1.39	1.43	1.47	1.51	2.70	1.59	1.68	2.98	1.71	3.13	
Annual Delay Costs																							
Aircraft Operations (h)	5,942,000	6,185,000	6,351,000	4,780,000	7,524,000	5,478,000	9,481,000	6,226,000	6,824,000	11,722,000	7,452,000	13,357,000	8,340,000	8,805,000	9,287,000	9,781,000	17,957,000	10,818,000	11,719,000	21,084,000	12,482,000	23,331,000	
Passengers (i)	3,099,000	3,251,000	3,365,000	2,554,000	4,025,000	2,934,000	5,082,000	3,353,000	3,889,000	6,362,000	4,054,000	7,321,000	4,598,000	4,885,000	5,187,000	5,503,000	10,178,000	6,182,000	6,753,000	12,260,000	7,330,000	13,826,000	
Subtotal	9,041,000	9,436,000	9,716,000	7,334,000	11,549,000	8,410,000	14,573,000	9,579,000	10,713,000	18,084,000	11,516,000	20,678,000	12,938,000	13,690,000	14,474,000	15,284,000	28,135,000	17,000,000	18,472,000	33,344,000	19,822,000	37,157,000	
B-747 Reconstruction Alternative																							
Runway Configuration (Percent) (j)																							
Current	74.21%	57.54%	99.21%	99.21%	99.21%	99.21%	99.21%	99.21%	99.21%	78.66%	78.66%	99.21%	78.66%	99.21%	99.21%	99.21%	99.21%	99.21%	99.21%	78.66%	78.66%	99.21%	78.66%
8L-24R or 6R-24L closed	25.53%	42.20%	0.53%	0.53%	0.53%	0.53%	0.53%	0.53%	0.53%	21.08%	21.08%	0.53%	21.08%	0.53%	0.53%	0.53%	0.53%	0.53%	0.53%	21.08%	21.08%	0.53%	21.08%
14-32 closed & 2 R/W open	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	20.81%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	0.26%	20.81%	0.26%	0.26%	0.26%
single runway open	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Weighted Delay per Operation (g)	1.37	1.85	0.97	1.02	1.08	1.10	1.14	1.18	1.26	2.10	1.30	2.28	1.39	1.43	1.47	1.51	1.55	1.59	1.68	2.98	1.71	3.13	
Annual Delay Costs																							
Aircraft Operations (h)	5,942,000	8,261,000	4,466,000	4,780,000	5,120,000	5,478,000	5,843,000	6,226,000	6,824,000	11,722,000	7,452,000	13,357,000	8,340,000	8,805,000	9,287,000	9,781,000	10,294,000	10,818,000	11,719,000	21,084,000	12,482,000	23,331,000	
Passengers (i)	3,099,000	4,342,000	2,366,000	2,554,000	2,739,000	2,934,000	3,138,000	3,353,000	3,889,000	6,362,000	4,054,000	7,321,000	4,598,000	4,885,000	5,187,000	5,503,000	5,834,000	6,182,000	6,753,000	12,260,000	7,330,000	13,826,000	
Subtotal	9,041,000	12,603,000	6,832,000	7,334,000	7,859,000	8,410,000	8,981,000	9,579,000	10,713,000	18,084,000	11,516,000	20,678,000	12,938,000	13,690,000	14,474,000	15,284,000	16,128,000	17,000,000	18,472,000	33,344,000	19,822,000	37,157,000	
Incremental Delay Benefits (Compared to Base Case) (k)																							
Aircraft Operations	-	(2,078,000)	1,865,000	-	2,404,000	-	3,638,000	-	-	-	-	-	-	-	-	-	7,863,000	-	-	-	-	-	-
Passengers	-	(1,091,000)	999,000	-	1,286,000	-	1,954,000	-	-	-	-	-	-	-	-	-	4,344,000	-	-	-	-	-	-
Subtotal	-	(3,167,000)	2,864,000	-	3,690,000	-	5,592,000	-	-	-	-	-	-	-	-	-	12,007,000	-	-	-	-	-	-

(a) Table 3.3
(b) Table 3.2
(c) Average of arrival and departure delay.
(d) Table 3.1
(e) Table 3.4
(f) Please see runway down time assumptions in text.
(g) Average delay by runway configuration weighted by percent of time in each runway configuration.
(h) Annual operations times minutes of delay per operation times average aircraft cost per minute.
(i) Annual passengers times minutes of delay per operation times average value of time per passenger minute.
(j) Please see runway downtime assumptions in text.
(k) Total base case delay less total delay under alternative.

Table 6

(a) Table 3.4.
(b) Table 3.5.
(c) Anchorage International Airport.
(d) B-747 Reconstruction Alternative costs less base case costs.
(e) B-747 Reconstruction Alternative incremental benefit less incremental costs

Table 8
Anchorage International Airport
Summary of Benefit Cost Analysis: 1998-2019

747 Reconstruction Alternative

	Undiscounted (1997 Dollars) (a)	Discounted (b)
Incremental Benefits		
More Efficient Traffic Flows		
Aircraft	4,202,435	1,838,049
Passenger	1,947,404	842,201
Delay		
Aircraft	13,514,000	6,130,955
Passenger	7,492,000	3,371,512
Total	27,155,838	12,182,718
Incremental Costs		
Capital	2,000,000	3,240,657
Major Repair	(6,000,000)	(2,683,173)
O&M	(5,700,150)	(3,123,453)
Total	(9,700,150)	(2,565,969)
Net Benefit/Cost	36,855,988	14,748,686
Net Present Value Compared to Base Case		14,748,686
Benefit/Cost Ratio (c)		n/a

(a) Table 6.

(b) Table 7.

(c) Not applicable because total project costs are less than total base case costs.

Sources: As noted and HNTB analysis.

APPENDIX A

Appendix A-1

Anchorage International Airport Summary of Benefit Cost Analysis: 1998-2019 Repair and Maintenance Savings Redefined as Benefits

747 Reconstruction Alternative

	Undiscounted (1997 Dollars) (a)	Discounted (b)
Incremental Benefits		
More Efficient Traffic Flows		
Aircraft	4,202,435	1,838,049
Passenger	1,947,404	842,201
Delay		
Aircraft	13,514,000	6,130,955
Passenger	7,492,000	3,371,512
Maintenance/Repair Reductions		
Major Repair	6,000,000	2,683,173
O&M	5,700,150	3,123,453
Total	38,855,988	17,989,343
Incremental Costs		
Capital	2,000,000	3,240,657
Total	2,000,000	3,240,657
Net Benefit/Cost	36,855,988	14,748,686
Net Present Value Compared to Base Case		14,748,686
Benefit/Cost Ratio (c)		5.55

(a) Table 6.

(b) Table 7.

(c) Incremental benefit divided by incremental cost.

Sources: As noted and HNTB analysis.

Appendix A-2

Anchorage International Airport Summary of Benefit Cost Analysis: 1998-2019 Assumes Funding Available for Accelerated Base Case

747 Reconstruction Alternative

	Undiscounted (1997 Dollars) (a)	Discounted (b)
Incremental Benefits		
More Efficient Traffic Flows		
Aircraft	4,202,435	1,838,049
Passenger	1,947,404	842,201
Delay		
Aircraft	11,494,000	4,366,608
Passenger	6,430,000	2,443,920
Total	24,073,838	9,490,779
Incremental Costs		
Capital	2,500,000	3,236,535
Major Repair	(6,000,000)	(2,683,173)
O&M	(5,774,650)	(3,042,761)
Total	(9,274,650)	(2,489,399)
Net Benefit/Cost	33,348,488	11,980,178
Net Present Value Compared to Base Case		11,980,178
Benefit/Cost Ratio (c)		n/a

(a) Table 6. Adjusted for accelerated resurfacing schedule.

(b) Table 7. Adjusted for accelerated resurfacing schedule.

(c) Not applicable because total project costs are less than total base case costs.

Sources: As noted and HNTB analysis.

Appendix B

Anchorage International Airport

Preliminary Air Cargo Forecast

Prepared for

Anchorage International Airport
State of Alaska DOT & PF



February 16, 1998

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Anchorage International Airport

Preliminary Air Cargo Forecast

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Anchorage International Airport

Preliminary Air Cargo Forecast

1.0 INTRODUCTION

The forecast of aviation demand is a key element in both the short and long term development of Anchorage International Airport. Forecasts provide a basis for determining the type, size, and timing of airside and landside facilities development and consequently influence virtually all phases of the airport planning process.

The purpose of the air cargo forecast is to evaluate the historic, existing, and projected level of air cargo activity at Anchorage International Airport in order to provide decision makers with sufficient information with which to make important resource allocation choices.

The focus of this particular effort is to provide a preliminary estimate of air cargo volumes and freighter landing over the short term five year planning horizon. Information from this effort will be expanded to include derivative forecasts on air cargo peaking and fleet mix and will be included in the air cargo/airfield master plan currently underway in as a separate effort.

The base year for this forecast will be 1996 and the forecast years will include years 1997, 1998, 1999, 2000, and 2001. Demand elements will include domestic and international enplaned and deplaned freight and mail, and freighter landings.

2.0 THE AIR CARGO INDUSTRY

Air cargo is an increasingly significant portion of the overall activity that takes place at Anchorage International Airport. In 1996, air cargo carriers accounted for approximately 70 percent of the runway landing fees assessed at the airport. Air cargo is also a significant contributor to the Alaskan economy. According to a study prepared by the Institute of Social and Economic Research at the University of Anchorage (*The Economic Contribution of the Anchorage International Airport*, October 1995) the total economic impact of international cargo services at Anchorage in 1994 was approximately 2,700 jobs and \$78 million in payroll. This figure does not take into account either the cost savings which Alaskans receive from the presence of large cargo carriers in the state, or the potential benefits that the presence of these carriers have in influencing firms to locate in Anchorage because of the access to international trade destinations that these carriers provide.

Domestic air cargo carriers provide for the timely and economical delivery of goods between the lower forty-eight, Anchorage, and interior towns and villages. Often, air is the only link for many Alaskan towns and villages to the outside world. In 1996, over 100,000 tons of mail and freight were flown within the State of Alaska by Anchorage based carriers.

2.1 INDUSTRY BACKGROUND

In its simplest form, the air cargo market is made up of freight and mail. Air mail is contracted out by the U.S. Postal Service and travels in the lower deck baggage/cargo compartments of commercial passenger aircraft and on freighters operated by contractors. Air freight refers to all cargo other than mail and passenger baggage. Air freight activity can be divided into a number of components: that conducted by the passenger airlines, the traditional all-cargo carriers, and the service oriented integrated carriers. The passenger airlines and traditional all-cargo airlines provide similar types of service, that is, inexpensive transport and little through service, although at different scales. The passenger airlines, such as Alaska Airlines and Delta Air Lines, emphasize the use of "belly space" of their scheduled passenger aircraft, while the traditional air cargo airlines, such as Northern Air Cargo, Polar Air Cargo, and American International Freight, have entire fleets dedicated to air cargo and have few limits on cargo size or type (some passenger carriers, such as Alaska Airlines, also have aircraft dedicated to hauling freight or run "combis," e.g. aircraft that are designed to carry a combination of both cargo and passengers on the main deck). In addition, both passenger carriers and the all-cargo carriers are often dependent on an established support structure of freight forwarders and consolidators located near the airport. The traditional services provided by these two types of carriers are generally oriented to the needs of large-volume shippers, such as manufacturers who ship in large quantities.

The express and small-package carriers, are relatively new to the industry and, beginning in the mid 1970s, have been responsible for the exceptional growth in the air cargo industry. These integrated carriers use their own aircraft and ground transport, and essentially provide door-to-door service for both small package and heavy freight. The express services, formally geared to the smaller shippers, such as professional associations, retailers, and individuals, who require individual attention, are also attracting large scale shippers as clients by providing a full range of logistics services. Representative of this type of service are Federal Express, UPS, Emery Worldwide, and Airborne Express.

The growth patterns of the traditional airport-to-airport carrier compared to the integrated carriers are also very different. The real growth of the traditional air freight industry started over thirty years ago; today, its market is fairly stabilized. It is generally accepted that the prospects for growth of the traditional air freight industry are limited to the growth of the overall economy and to changes in transportation costs. Typically, if the economy is in a period of expansion, the volume of shipments is expected to increase and all transportation modes will experience an increased level of activity. Conversely, in a recession, the volume of air freight will be effected downwards. The volume of freight shipped by air will also be sensitive to the shipping tariffs of other modes of transportation.

Unlike the traditional air freight industry, however, the integrated express and small-package cargo industry is still in a period of rapid expansion. This industry represents an innovation that is challenging traditional freight, and is still very much in a rapid growth phase. This is the area where most of the growth in air cargo occurred over the last few years. Most recently, air-express market trends suggest that customers of traditional air freight want express for large shipments as well as small.

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2.2 MAJOR AIR CARGO CARRIERS

Exhibit 1 lists the top 25 world air freight carriers in terms of freight ton kilometers (FTKs). Over 50 percent of the world's air freight travels in the lower deck baggage/cargo compartments of passenger airlines. Of the top 25 airlines, only seven are all-cargo carriers with two integrated all-cargo carriers placing first and fourth among all carriers on the list.

Exhibit 2.1: Top 25 Airlines in Freight Ton Kilometers (1996)

<u>Rank</u>	<u>Carrier</u>	<u>Freight Ton Kilometers</u>
1	FedEx	8,148,999
2	Lufthansa	6,448,000
3	Korean Airlines	4,991,587
4	United Parcel Service	4,892,637
5	Air France	4,659,388
6	Japan Airlines	4,170,959
7	Singapore Airlines	4,115,582
8	KLM	3,783,956
9	British Airways	3,506,787
10	Northwest Airlines	3,279,621
11	Cathay Pacific	3,230,748
12	American Airlines	2,949,200
13	Alitalia	2,758,590
14	United Airlines	2,607,296
15	China Airlines	2,388,379
16	Cargolux	2,021,000
17	EVA	1,932,718
18	Delta Air Lines	1,724,260
19	Swissair	1,634,904
20	Nippon Air Cargo	1,611,221
21	Emery Worldwide	1,409,199
22	Thai International	1,320,300
23	Polar Air Cargo	1,274,555
24	Varig International	1,248,114
25	American International	1,191,756

Source: Air Transport World

* All-cargo airlines

FedEx continues to lead all airlines in the air cargo business, followed by Lufthansa German Airlines, which operates a separate cargo division with a fleet of 17 dedicated freighters. Six of the top ten airlines, and 15 of the 25 top airlines in the world, have scheduled operations at Anchorage International Airport.

2.3 TRENDS

Following a period of relatively slow growth that corresponded to the recessionary period of 1988-1993, world air cargo traffic increased more than 12 percent. This overall growth rate slowed

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somewhat in 1995, which showed a growth rate of 7.7 percent in schedule cargo traffic, but the growth in the international cargo market exceeded its 1994 level by 22 percent. For 1996, world air freight traffic grew at 6.93 percent, while preliminary International Air Transport Association (IATA) reports indicate that international cargo traffic for 1997 has increased 11 percent. Total international air express traffic has been reported to have grown 15.7 percent from 1996 to 1997. Domestic air cargo for the first 11 months of 1997 increased 5.6 percent above the same period in 1996, while international cargo volume was ahead by 15.8 percent, according to figures released by the Air Transport Association.

According to Boeing, worldwide air cargo is expected to rise 6.7 percent per year over the next 20 years. This growth relates to an improved world economy and accelerating rates of international trade, spurred by the rapid globalization of business and the spread of free trade agreements and open skies policies. Moreover, the increasing adoption by businesses of new manufacturing practices that use just-in-time (JIT) delivery of component parts and finished products to keep inventory costs low, as well as lower rates in the air cargo industry because of increased efficiencies and excess aircraft capacities, have prompted shippers to use air transport to deliver many products with relatively low value-to-weight ratios that previously were rarely shipped by air.

The increasing preference for using air transportation as a shipment mode is related less to the value of the commodity itself, and more to the value of having it exactly when needed, so as to quickly respond to emergencies and changing customer preferences, as well as to reduce inventory and warehousing costs. The speed and reliability of air transport is particularly suited to the needs of time sensitive industries that are willing to pay a high transport cost to avoid the even higher costs and competitive disadvantages of delayed or uncertain delivery. These include the toy and apparel industries, whose products are subject to demands that are highly seasonal, capricious, and unpredictable, and the agricultural produce industry, whose perishable products have a very limited shelf-life. It also includes the manufacturing of high tech products that are customized to order and/or have very short life cycles.

Now, small package express companies such as FedEx and to some extent, UPS, have expanded into the medium and heavyweight market and are focusing on providing second and third day "time-definite" deliveries rather than overnight service. These companies are also expanding into international markets and competing with traditional freight forwarders, who control approximately 80 percent of the market, to establish direct relationships with industrial shippers.

3.0 FACTORS AFFECTING INDUSTRY GROWTH

The air cargo industry, like most industrial groups, is dependent upon population growth, gains in the economy, and growth in international trade. The volume of freight shipped by air will also be sensitive to the shipping tariffs of other modes of transportation. In addition to the primary influence of economic activity, many other factors can influence the levels of world air cargo, particularly the express and small package carriers. These factors include changing inventory management techniques, deregulation and liberalization of trade, national development programs, and a never ending stream of air-eligible commodities.

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At the local level, many of these same factors apply. However, extreme change in freight volumes at a particular airport more often results from the initiation of new carriers or services than from overall industry growth or decline.

3.1 THE ECONOMIC CLIMATE

It is generally accepted that prospects for overall growth in the traditional air freight industry are limited to the growth of the overall economy and to changes in transportation costs. Typically, if the economy is in a period of expansion, the volume of shipments is expected to increase and all transportation modes will experience an increased level of activity. Conversely, in a recession, the volume of air freight will be affected downwards. The purpose of this section is to review some key components of the world, national, Asian, and local economic indicators and growth rates.

World Economy

Globally, world economic growth has averaged less than half that of the United States. Real gross domestic product -- the output of goods and services produced by labor and property, is an important measurement of the health of the world economy. Worldwide real gross domestic product (GDP) increased at an annual rate of only 0.9 percent during the 1990s, including an absolute decline of 0.4 percent in calendar year 1991. Growth in 1993 averaged 1.2 percent while growth in 1994 measured 2.2 percent. With the exception of Eastern Europe, Venezuela, and Turkey, whose economies are still experiencing structural problems, global economic activity was relatively strong in 1996. Economic growth in the Pacific Basin averaged 7.1 percent while the economies in Latin America countries averaged 3.0 percent. Canada is in the midst of a robust expansion phase (GDP up 3.8 percent) while economic recovery appears to be taking shape in Western Europe (GDP up 2.3 percent). Until recently, Japan, recovering from its longest recession in the post-war period, lagged all other OECD countries in terms of economic growth.

The Boeing Airplane Group projects that in mature economies, it is expected that GDP growth will average between 2 percent and 3 percent per year over the next decade, then decline slightly beyond

2006 as populations age. In contrast, Boeing predicts that GDP growth in developing regions may average more than 7 percent over the long term. According to Boeing, fast-developing economies may experience several years of high growth, followed by a pause as economic and social structures adjust to new levels of income.



Source: Boeing 1997 Current Market Outlook
Exhibit 3.1

Forecasts used by the FAA expect world economic growth to greatly exceed that of the United States, increasing at an annual rate of 3.4 percent. The FAA forecast

model expects growth to be greatest in the Far East/Pacific Rim and Latin America, expanding at annual rates of 4.7 percent. The FAA predicts that economic growth in Europe/Africa/Middle East will average 2.7 percent.

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United States Economy

In the United States real gross domestic product (GDP) has increased at an average annual rate of 2.6 percent in the years 1992-1996; private industries increased 3.2 percent, and government showed minimal growth. The real gross product of all private industry groups except agriculture, forestry, and fishing increased; the increases ranged from 8.2 percent in durable goods manufacturing to 2.3 percent in finance, insurance, and real estate (FIRE).

By detailed industry, two of the four fastest growing industries were in durable goods manufacturing: Electronic and other electric equipment increased 23.8 percent, and industrial machinery and equipment increased 13.1 percent. These two industries were also two of the four fastest growing industries in 1995. The two other fast-growing industries in 1996 were transportation by air (18.4 percent) and metal mining (14.8 percent). It should be noted that industries with the highest rates of air freight usage include electronic components and accessories, plastics, computers and computing devices, laboratory and diagnostic equipment, magnetic and optical recording media, automotive equipment and parts, refrigeration and service machinery, and miscellaneous apparel and accessories. All of these industries showed above average growth in 1996.

Contributions to real GDP growth.— Growth rates alone do not indicate the extent to which industries contribute to the growth of real GDP; the contribution also depends on the industry's relative size. In 1992-96, durable goods manufacturing was the largest contributor, 0.8 percentage point, to the 2.6-percent growth in real GDP; services was the next largest, 0.5 percentage point. For 1995, durable goods manufacturing contributed 0.9 percentage point to the growth in real GDP, and services contributed 0.7 percentage point. For 1996, durable goods manufacturing and services each contributed 0.7 percentage point.

Real gross domestic product (GDP) increased 3.3 percent in the third quarter of 1997, according to the "preliminary" estimates of the national income and product accounts (NIPA's). Consumer spending and business fixed investment were the major contributors to the third-quarter increase in GDP. Government spending and residential investment increased modestly, and the change in business inventories and net exports of goods and services decreased substantially.

According to a study conducted by an economic research firm for the American Trucking Associations (ATA), the U.S. transportation industry will carry 13.2 billion tons of freight and generate \$547.7 billion in revenue by the year 2006. The study predicts that a three- to five-percent annual rise in international trade will help drive a 30-percent increase over 1996 revenues of \$420.2 billion, and a 21-percent increase over 1996 volume of 10.9 billion tons. Air freight shipments, while accounting for 1.3 percent of the freight-transportation market, will see the greatest increases due to the faster growth in the commodities that are moved by containerized and intermodal shipments over bulk commodities, such as coal, primary metal products and crude oil.

The study also projected that revenues for air freight and rail intermodal shipments will jump by 121 percent (from \$13.3 billion to \$29.4 billion) and 55 percent (\$5.6 billion to \$8.7 billion) respectively as more high-valued commodities such as electrical equipment, food products and

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textiles travel by these modes. General freight volume will grow substantially by 1.3 billion tons, from 38 percent of all shipments to 41 percent, gaining in market-share over bulk freight.

Asian Economy

Almost all of the international air cargo activity passing through Anchorage International Airport is Trans-Pacific service. The recent financial crises in Asia, as well as the underlying structural problems that were their root cause, are expected to substantially lower the region's growth prospects over the next two years. Standard & Poor's DRI has produced an interim forecast for the Asian economies that reflects this reassessment. Among the four key developing nations of Southeast Asia, growth is likely to average 3.5 percent in 1998 and 1.6 percent in 1999, as they cope with excess capacity, falling asset prices, and banking problems. The sharp currency depreciations will raise regional inflation to double-digit rates in 1998. On the positive side, it is expected that these devaluations will improve the region's competitiveness. But given that roughly 40 percent of Asia's trade is intra-regional, export-led growth will be something of a challenge. Over the medium term, average Asian GDP growth is unlikely to exceed 6 percent, in light of the large capacity overhang in many key industries such as autos, semiconductors, steel, and petrochemicals.

According to DRI, the slowdown in Asia may have a significant impact on the rest of the world. It is expected that Japan will be hit the hardest: roughly half of its exports go to Asia. With its domestic demand expected to remain weak, it is expected that Japanese GDP growth will be lowered by roughly a full percentage point. Since about one-third of U.S. exports go to Asia (including Japan), U.S. growth is likely to be reduced by 0.3-0.5 percentage point. But less than 10 percent of Europe's exports are bound for Asia; therefore, the impact of the Asian downturn on European growth will be quite modest. Overall, the direct and indirect effect of the Asian crises could reduce real world GDP growth by as much as 0.5 percentage point.

For the long term, economists predict that the Southeast Asian currency crisis of 1997 are not a sign of the end of Asian growth, but rather a recurring, if difficult to predict, pattern of financial instability that often accompanies rapid economic growth. It is expected that, in the long term, growth will continue because most of Asia has adopted capitalism as the organizing basis of economic life and has become deeply integrated into the global economy.

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Exhibit 3.2: Growth Prospects for Asian Economies, 1995-2005

<u>GDP Per Capita Relative to U.S.</u>				Projected Per Capita Growth Rate, 1996-2005
<u>Economy</u>	<u>1965</u>	<u>1995</u>	<u>Projected in 2005</u>	
Four Tigers	17.3 %	72.2 %	98.5 %	2.8 %
Hong Kong	30.1 %	98.4 %	116.5 %	2.1 %
Singapore	15.9 %	85.2 %	107.0 %	2.5 %
South Korea	9.0 %	48.8 %	83.6 %	3.5 %
Taiwan	14.2 %	56.2 %	88.0 %	3.1 %
 China	 3.2 %	 10.8 %	 38.2 %	 6.0 %
 Southeast Asia	 10.0 %	 21.2 %	 45.7 %	 4.5 %
Indonesia	5.2 %	13.1 %	35.8 %	5.0 %
Malaysia	14.3 %	36.8 %	71.2 %	3.9 %
Philippines	10.7 %	9.4 %	28.5 %	5.3 %
Thailand	9.7 %	25.6 %	47.4 %	3.8 %
 South Asia	 8.5 %	 9.2 %	 21.3 %	 4.4 %
Bangladesh	9.9 %	8.5 %	17.2 %	3.9 %
India	6.5 %	7.8 %	24.4 %	5.5 %
Pakistan	7.7 %	7.7 %	18.1 %	4.4 %
Sri Lanka	10.1 %	12.6 %	25.3 %	3.9 %

Source: Foreign Affairs, Nov./Dec. 1997.

As shown in Exhibit 3.2 above, Asian economies are expected to see healthy increases in future growth, but are likely to grow more slowly in the next 30 years than in the past thirty years because of both capital deepening and demographic changes.

In spite of the currency crisis, 1997 has been an excellent year for cargo carriers on transpacific routes. Westbound traffic growth was hampered by the strong U.S. dollar, but that was more than offset by the growth in air exports from Asia to the Americas. Moreover, carriers get better yields on the eastbound leg, so they attribute a lot more importance to their traffic flows out of Asia.

It is expected that while passenger revenues will drop significantly for many Asian carriers, cargo growth will continue as exports will be dictated more by the European and US markets than domestic markets. An International Air Transport Association (IATA) survey of 69 scheduled airlines concluded that in spite of its problems, survey respondents expect Southeast Asian air freight to grow 10.3% per year. Korean Airlines, in recent industry news articles, have indicated that cargo demand from Europe and the U.S. will increase 15 percent 1997 over 1996. The steady growth in air freight volumes to Europe is due mostly to the emergence of eastern European countries as major buyers of Korean made goods. Domestic carriers such as Northwest, United, and FedEx have all reported increasing all-cargo freighter service between the U.S. and Asia. Early reports have indicated that cargo tonnage at Macao International Airport (a key gateway to China) grew 142% during the first eleven months of 1997.

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Alaska

Historically, the Alaskan economy has been driven by booms in the resource extraction industries. Since the 1970's both the State and Anchorage economies have been strongly influenced by the petroleum industry, which accounted for almost 50 percent of Alaska's Gross Domestic Product (GDP) in 1989. Other long term influences on the Alaskan economy have been mining, fishing and timber, government employment, and tourism.

Over the past few years, the economy has matured and diversified and growth has slowed somewhat as the economy transitions to one with a larger commercial and retail industry base. The oil industry has matured and most likely future growth will be limited to new finds. The fishing industry has been historically second to oil in importance to the state. According to industry reports, prospects for growth appear to be constrained into the future due to market problems with the Japanese, quotas on salmon and halibut fishing, and reduction in the lengths of the fishing season. Due to environmental concerns and federal action, future growth in the timber industry is also expected to be constrained. A bright spot in future economic growth is the tourist industry, which has increased every year over the past thirty years.

Forecasts by the Institute of Social and Economic Research (ISER) at the University of Anchorage for the Anchorage International Airport 1989 Master Plan Update project a rate of employment growth of 1.2 percent for the state to year 2012.

According to the Anchorage Economic Development Corporation (AEDC), a mild surge in economic growth made 1997 the ninth consecutive year of growth for the Anchorage economy. The local Anchorage economy grew 1.48 percent adding an estimated 1,792 new jobs. Much of the growth is attributed to the success of health services, air transportation, and communications. AEDC anticipates a growth rate of 1.5 percent in 1998.

3.2 OTHER FORECAST FACTORS

As discussed previously, prospects for growth in the traditional air freight industry are generally limited to the growth of the overall economy and to changes in transportation costs. Until the late 1970s this was true for the whole industry. In the early 1980s, this relationship became less clear as GDP-based models began to consistently under-predict air freight movements. Beginning in the early 1980s, customers began to shift their cargo, typically higher value goods generating higher yields, from traditional cargo channels to the service oriented express carriers. The timing of this shift suggests a relationship between the widespread adoption of office computing equipment and the burgeoning demand for premium delivery services. Beginning with a four percent market share, growth rates for the express segment of the cargo industry since 1977 has averaged 25 percent per year and claims close to 60 percent of the domestic market today.

An Expanding Integrator/Express Market

Early in the decade, Federal Express (now renamed FedEx) dominated the U.S. express market. As the market grew, however, so did the competition. Airborne Express made the decision early to specialize in the express business; DHL continued to expand its express business in the U.S. market

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while putting most of its effort in the international market, and expanded into heavy freight (shipments over 150 pounds); Purolator was acquired by Emery Worldwide, which was already an express carrier but which also was a heavy freight carrier and was having difficulty handling both types of service in the same operational system; UPS made tremendous strides in competing with Federal Express in the U.S. and international express markets. Both UPS and Federal Express, like DHL, have expanded into the heavy freight business. In acquiring Flying Tigers, Federal Express became a major participant in heavy freight. UPS moved into heavier freight concomitant with the expansion of its system worldwide.

The largest air freight operation in the country (also the world) today is FedEx, followed by UPS and Northwest. FedEx operates over 500 aircraft with a daily global lift capacity of 12.5 million pounds. On average, they move over 2.4 million packages worldwide operating out of 325 airports. Operating 35,000 trucks, FedEx couriers drive over 2.5 million miles per day.

Aggressive US Government Open Skies Policy

An aggressive federal government policy of the liberalization of bilateral air rights between the United States and foreign countries is opening up new markets to the air cargo carrier industry.

The United States government has conducted formal aviation negotiations with 56 foreign governments between January 1989 and March 1996. U.S. officials discussed air cargo issues in at least one negotiating session in talks with 44 of these governments. Most negotiating sessions focused on passenger issues, however, about one-third of the more than 300 individual sessions dealt with air cargo issues.

During this seven year period, the United States amended or inaugurated 74 aviation agreements. Thirty-two of these agreements contained specific provisions governing all-cargo services. Of these, 18 agreements specify separate routes for all-cargo services and 21 agreements define the intermodal rights available to airlines.

The most important news, however, regarding international operations is the Open Skies policy. During the past five years there has been an expansion of the Open Skies policy of the United States. Under an Open Skies agreement, there are no restrictions on routes, the frequency of flights, or the number of airlines that can operate under and which most bilateral restrictions are eliminated. The Open Skies policy has been extended primarily to European countries where the United States has signed Open Skies agreements with 12 European countries (Austria, Belgium, the Czech Republic, Denmark, Finland, Germany, Iceland, Luxembourg, the Netherlands, Norway, Sweden, and Switzerland). The U.S. also signed an agreement with Canada substantially liberalizing the trans-border aviation market. Discussions are currently underway with the United Kingdom, Malaysia, and Chile.

Now the US has begun the quest to further expand the policy to some of the Pacific Rim and Southeast Asian countries. Singapore, Taiwan, and South Korea have joined Singapore in signing Open Skies agreements with the U.S. The American flag carriers will certainly be able to expand their passenger and cargo service, as will the American all cargo carriers. But those foreign flag air carriers who operate freighter aircraft, in addition to their scheduled passenger service, will now have an opportunity to greatly expand their cargo business to and from US cities.

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The international carriers' passenger service and cargo service (even when they operated some freighter aircraft) were always considered jointly when applying for bilateral rights to another foreign destination. If the carrier was denied extended routes for passenger service, it was automatically denied extended routes for its freighter aircraft. Even though the carrier had potential to a particular city, the rights were tied to the approval/disapproval of the passenger service.

Open Skies changes this method of granting rights through the bilateral system. If KLM or Lufthansa elects to operate freighter service to a new US city (not included in their original bilateral authority) they may do so. Lufthansa went a step further and created a subsidiary company, Lufthansa Air Cargo, operating widebody freighters internationally, they are reviewing additional cities to serve. The new cities will be evaluated on the potential for cargo only. This ability allows Lufthansa Air Cargo to select cities other than the traditional passenger gateway.

For the foreign flag carrier from nations that do not enjoy an open skies policy with the U.S. and are held to only cities approved in the bilateral agreements, they are adopting a different strategy. They will continue to operate their freighter schedules to authorized cities but they can operate charters to cities not in their bilateral agreements, upon special approval by the US DOT.

Recent U.S./Japan Bilaterals

An important decision related to bilaterals directly affecting the potential of increased flights through Anchorage was announced on January 30, 1998. On that date, a new pact between the United States and Japan was signed. This new agreement will boost the number of flights and carriers serving the \$10 billion a year market, \$2 billion of which comes from cargo. Under the new agreement, U.S. domestic incumbent carriers, those who already enjoyed extensive rights under the original 1952 treaty (United Airlines, Northwest Airlines, and FedEx), will gain full rights to offer service between any U.S. points to any points in Japan. Nonincumbent all-cargo carriers (UPS and Polar Air), will gain new opportunities to transport goods beyond Japan and one additional all-cargo carrier will be eligible to enter the market in four years. The pact will run for four years, and negotiators will begin discussing greater liberalization in the third year.

United is expected to take advantage of this new agreement by doubling its flights between Tokyo and its Chicago hub; United is also in a position to expand its global network in an alliance with All Nippon Airways, Japan's number two carrier, taking advantage of new rights that allow U.S. airlines to forge links with Japanese carriers. Other U.S. airlines will be allowed to triple their service with a total of 90 new Trans-Pacific flights: American Airlines, Continental Airlines and Delta Air Lines are expected soon to add new flights from hubs in Chicago, Dallas, Atlanta, Houston, and Newark. US Airways and TWA will get to add new flights over the next two years. In exchange, All Nippon Airways and Nippon Cargo Airlines will receive broad access to fly to the U.S. and onward. Japan Airlines will probably form an alliance with a U.S. carrier.

Perhaps the biggest winners in this new agreement are the all-cargo carriers. FedEx, which has a strong presence at Anchorage, will be free to increase its flights between Japan and the rest of Asia, a key to FedEx's growth in the intra-Asian market. FedEx can only serve its hub at Subic Bay in the Philippines with adequate access from Japan. FedEx's expanded rights will include the first direct flights by an all-cargo U.S. airline between Japan and China. Polar Air, another carrier with a

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strong presence in Anchorage, won the right to serve Tokyo and to fly cargo beyond Japan to other points in Asia. Under the new agreement, Polar will be allowed to fly to one point in Asia from each of its Japanese cities. Under a 1996 all-cargo agreement with Japan, Polar was admitted to the market and was allowed to fly to Osaka six times a week. It was allowed to fly to one city beyond Osaka, but was not allowed to carry cargo. United Parcel Service (UPS), also with a strong presence at Anchorage, increased its opportunities with this new agreement. UPS won the right to fly cargo to four destinations beyond Japan. In the past, UPS was allowed to fly cargo only to two points beyond Japan.

Despite the currency crisis in Asia, Japan is still viewed as the most important country in the world's fastest growing travel region and the main gateway to the now export-driven economies of Southeast Asia. This new agreement will most likely increase the potential for an increase in cargo operations at Anchorage International and make the airport more attractive to third party logistics providers.

Alaska Air Cargo Transfer Initiative

In Alaska, state officials came forward to the U.S. DOT with a proposal for a strategy that would benefit Anchorage and Fairbanks Airports and still contribute to the attainment of important national policy objectives. The result was the "Alaska Cargo Transfer Initiative", a proceeding decided by DOT in 1996 in which the State of Alaska and its international airports obtained essentially unlimited cargo transfer flexibility for foreign air carriers. The objective of this initiative was to capture for Alaska, and hence the U.S., a greater share of the large and fast growing Asia-Europe cargo market.

The DOT decision grants all foreign air carriers which currently hold, or which may subsequently receive, effective DOT authority, except Great Britain and Japan, to engage in scheduled foreign air transportation of cargo authority to engage in the following cargo transfer activities at Anchorage and Fairbanks International Airports:

- (1) to transfer cargo from any of their aircraft to any of their other aircraft, provided that both aircraft are operating to/from a point in the carrier's homeland;
- (2) to make changes, at points in Alaska, in the type or number of aircraft used to transport cargo, provided that in the outbound direction the transportation beyond Alaska is a continuation of the transportation from the carrier's homeland to Alaska, and in the inbound direction, the transportation to the carrier's homeland is a continuation of the transportation from behind Alaska;
- (3) to commingle cargo moving in foreign air transportation with cargo traffic not moving in foreign air transportation;
- (4) to discharge cargo in Alaska for transfer to a U.S. carrier for onward carriage to a final destination in the United States or in a third country, and to uplift from Alaska cargo transferred from a U.S. carrier which was transported by that carrier to Alaska from a point of origin elsewhere in the United States or in a third country; and

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(5) to discharge cargo in Alaska for transfer to another foreign carrier for onward carriage to a final destination in a third country, and to uplift from Alaska cargo transferred from another foreign carrier which was transported by that carrier to Alaska from a point of origin in a third country.

This agreement, once its implications have been fully evaluated by the air cargo industry, should play a major role in increasing transload and distribution opportunities at Anchorage International.

Expanded Transnational Alliances and Code-sharing

Since the Northwest/KLM strategic alliance in 1993, there have been approximately 390 airline alliances involving 177 airlines. Strategic alliances are designed to allow carriers to provide seamless service, offer a broader range of services, expand their geographic coverage and provide a larger concentration of services. In some cases the alliance results in major investments between companies, while others are based solely on perceived synergies and productivity gains.

Key alliances include the Star Alliance made up of Lufthansa, United Airlines, SAS, Singapore Airlines, Varig, Air Canada, and Thai International; the British Air/American Airlines alliance; the Delta/Swiss Air alliance; and the Japan Airlines/Lufthansa investments in DHL.

Strategic alliances, combined with the U.S. Open Skies policy, could potentially be the catalyst that makes the Alaska Air Cargo Transfer Initiative work and make inter-lining between alliance partners an important part of the activity at Anchorage.

Globalization, Logistics and Trade

With the worldwide reduction in trade barriers, new communications advancements, and transportation deregulation there has been a growing trend to industrial globalization where various parts of products are manufactured in different areas of the world and then accumulated in a another location for final assembly and distribution. As a result, logistics has moved to the forefront as a way of improving corporate profitability and marketing effectiveness. Logistics is now a significant element of the world economy. In 1995, U.S. companies alone spent \$709 billion on logistics. Further, transportation expenditures totaled \$443 billion with 4 percent (\$18 billion) spent on air cargo.

The increasing preference for using air transportation as a shipment mode is related less to the value of the commodity itself, and more to the value of having it exactly when needed, so as to quickly respond to emergencies and changing customer preferences, as well as to reduce inventory and warehousing costs. The speed and reliability of air transport is particularly suited to the needs of time sensitive industries that are willing to pay a high transport cost to avoid the even higher costs and competitive disadvantages of delayed or uncertain delivery. These include the toy and apparel industries, whose products are subject to demands that are highly seasonal, capricious, and unpredictable, and the agricultural produce industry, whose perishable products have a very limited shelf-life. It also includes the manufacturing of high tech products that are customized to order and/or have very short life cycles.

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A survey by Air Cargo Management Group, an aviation based consulting company, report that international air express services grew at an annual rate of 19.3 percent for the past three years. Total international air express traffic volume grew 15.7 percent from 1996 to 1997.

Big Emerging Markets

Since January 1993, the Department of Commerce (DOC) has been analyzing the interests of the United States in the world economy, and what role the government can play to help American business discover and exploit commercial opportunities abroad. In that process, DOC came to a major conclusion: over the next two decades, the markets that hold the greatest potential for dramatic increases in U.S. exports are not the traditional trading partners of the U.S. in Europe and Japan, which now account for the overwhelming bulk of U.S. trade. Rather, the greatest commercial opportunities are to be found in the Big Emerging Markets (BEMs): the Chinese Economic Area (including China, Hong Kong, and Taiwan), India, Indonesia, South Korea, Mexico, Brazil, Argentina, South Africa, Poland, and Turkey.

These ten markets could account for the same value of exports as either Japan or Europe by the end of this decade. By 2010, they are likely to exceed our exports to both Japan and Europe combined.

Based on this analysis, the current federal administration has re-developed its strategy to make the U.S. competitive in these markets. It is a major policy initiative that focuses on changing attitudes in Washington toward export promotion; activities of key departments and cabinet officers; the growing links between government and business strategies; the development of country strategies for each (BEM); the focus on Big Emerging Sectors; the creation of bilateral forums to promote long-term commercial cooperation; the establishment of commercial centers within the BEMs to promote U.S. exports; the effort to win projects for American firms in the BEMs; the development of a global marketing network to help U.S. firms in the BEMs; the establishment of a strategy center in Washington; and the relationship between global initiatives and the BEMs.

4.0 FORECAST

The purpose this section is to examine the historical air cargo activity at Anchorage International Airport and develop profiles of future cargo demand, review and evaluate industry forecasts, and project air cargo demand for the next five years. It is divided into the following sections:

- Review of Historical Activity at Anchorage International Airport;
- Review of Industry Forecasts; and
- Anchorage International Airport Projections.

This forecast will become the basis to determine future warehouse facility requirements, additional ramp parking for freighter aircraft, and other infrastructure needs and support services for Anchorage International Airport. The forecast will also support the identification of future air cargo development opportunities.

4.1 OVERVIEW OF CARGO ACTIVITY AT ANCHORAGE INTERNATIONAL

Introduction

Anchorage International Airport (ANC) is the major air gateway to the State of Alaska for both passengers and cargo, and its strategic location has made it an important technical stop for air cargo freighters flying between Asia and North America, and between Asia and Europe. Approximately 70 percent of all freight and mail entering Alaska for in-state consumption arrived through Anchorage International Airport in 1997. Preliminary reports indicate landings by both domestic and international freighter aircraft exceeded 30,000 at the airport for calendar year 1997.

A list of air carriers operating at Anchorage International is provided in Exhibit 4.1. As of December 1997, there were 35 scheduled airlines operating at Anchorage and 11 airlines conducting regular seasonal charter service. Twenty airlines are engaged exclusively in international air cargo operations, seven exclusively in domestic cargo operations, and three who operate both international and domestic operations (Alaska Airlines, FedEx, and UPS). As can be noted in Exhibit 4.1, several passenger carriers at the airport also operate all-cargo freighters.

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Exhibit 4.1: Air Carriers Operating at Anchorage International (as of December 1997)

Domestic	
<u>Passenger Operations</u> Alaska Airlines America West Continental Airlines Delta Air Lines Era Aviation Frontier Flying Service Northwest Airlines Peninsula Airways Reeve Aleutian Airways Reno Air South Central Air United Airlines	<u>All-Cargo Operations</u> Airborne Express Air Cargo Express Alaska Central Express Alaska Airlines Empire Airlines Era Airlines Lynden Air Cargo Northern Air Cargo South Central Air
<u>Passenger Charters</u> Hawaiian Airlines Sun Country	
International	
<u>Passenger Operations</u> Aeroflot Air China* Alaska Airlines Asiana Airlines* Cathay Pacific Airways* China Airlines EVA Air* Korean Air transit only*	<u>All-Cargo Operations</u> Air China Air Hong Kong American Transair Asiana Airlines Atlas Air Cathay Pacific Airways* China Airlines EVA Air Evergreen International Airlines FedEx Japan Airlines Korean Air Nippon Cargo Airlines Northwest Air Cargo Polar Air Cargo Singapore Airlines Southern Air Transport United Airlines Worldwide Cargo United Parcel Post World Airways
<u>Passenger Charters</u> Balair Condor Japan Airlines	<u>All-Cargo Charters</u> Aeroflot American International Airlines Emery Worldwide Airlines Gemini Airlines Malaysia Airlines Southern Air Transport Tower Air

Source: ANC Airport Records

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Of the carriers engaged in international service, five carriers - FedEx, UPS, United, Polar and Northwest perform significant transloading operations at the airport. Almost all other carriers engaged in international operations are using Anchorage as a technical stop only for fuel and crew changes. Nevertheless, recent discussions with the international carriers have revealed that many are currently experimenting with the local live and fresh fish business on a limited or seasonal basis.

Air Cargo Traffic

Unlike passenger activity, very little detail exists on current and historical air cargo volumes at Anchorage International Airport. Because it is critical to know the volume and category of cargo that moves through Anchorage in order to prepare a forecast of future demand and determine needed facility requirements and potential opportunities, a significant effort was made to estimate past volumes and to identify existing activity.

The two primary sources used to gather air cargo data were the United States Department of Transportation (DOT) records and a survey of carriers who have significant cargo operations on the airport. DOT records that were reviewed included:

T-100 Data Bank 28DM Domestic Market Data: This file contains data reported by U.S. carriers operating between airports located within the boundaries of the United States and its territories. These data are often referred to as either "Market" or "On-Flight O&D" records. These data fields contain information on passengers, freight and/or mail enplaned at the origin airport and deplaned at the destination airport.

T-100 Data Bank 28DS Domestic Segment Data: This File contains data reported by U.S. carriers operating nonstop between airports located within the boundaries of the United States and its territories. These data fields contain information by aircraft type and service class for departures performed, available capacity and seats, passengers transported, freight and mail transported, scheduled departures, and aircraft hours ramp-to-ramp and airborne.

T-100 Data Bank 28IM International Market Data: This file contains data reported by U.S. and foreign air carriers. For the U.S. carriers, at least one point has to be outside the United States or in one of its territories. All foreign air carrier data must have at least one point in the United States or in one of its territories. These data are often referred to as either "Market" or "On-Flight O&D" records. The data fields contain information on passengers, freight and/or mail enplaned at the origin airport and deplaned at the destination airport.

T-100 Data Bank 28IS International Segment Data: This file contains data reported by U.S. carriers operating nonstop between airports where at least one airport is located outside the boundaries of the United States or its territories. Non-U.S. (foreign) air carriers are required to report all nonstop segments where at least one point is in a U.S. state or territory. These data fields contain information by aircraft type and service class for departures performed, available capacity and seats, passengers transported, freight and mail transported, scheduled departures, and aircraft hours ramp-to-ramp and airborne.

When working with DOT data related to air cargo carriers, there are many reporting gaps. Domestic all-cargo operators are not required to file detailed segment and market traffic data.

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Particularly, those carriers that are identified as air freight forwarders (or in the old Civil Aeronautics Board and DOT parlance, those called "indirect air carriers"), including many who now operate large fleets of aircraft, are exempt from all reporting to DOT. To overcome the lack of DOT statistics for some carriers, personal interviews were conducted with individual carriers.

Summarized below in Exhibit 4.2, and presented graphically in Exhibit 4.3, is the total air freight and air mail handled at Anchorage International Airport from 1990 to 1996. Unless otherwise noted, all cargo in this section is reported in standard tons (one ton equals 2,000 pounds) and years are January 1 through December 31 calendar years.

Exhibit 4.2: Historical Air Cargo Volumes at ANC (Tons)

Year	Freight	Mail	Total*	Percent Change
1990	345,100	59,581	404,700	--
1991	367,700	56,200	423,900	4.7
1992	377,400	62,400	439,800	3.7
1993	326,900	62,100	389,000	-11.6
1994	379,800	67,600	447,400	15.0
1995	427,500	70,800	498,300	11.4
1996	458,000	85,600	543,600	9.1

Source: Keiser & Associates, Inc.

*Columns may not add up due to rounding

As can be seen in the exhibit, with the exception of 1993, air cargo volumes have grown steadily over the past six years, with an average annual growth rate of five percent. The greatest growth in cargo is in international freight, which grew at an average annual growth rate of 13.5 percent. Indications are that 1997 will exceed 1996 figures significantly due to the increase use of the airport as a transload point for international freight. Northwest Airlines, United Airlines, and Polar Air Cargo all began transload operations in mid 1997.

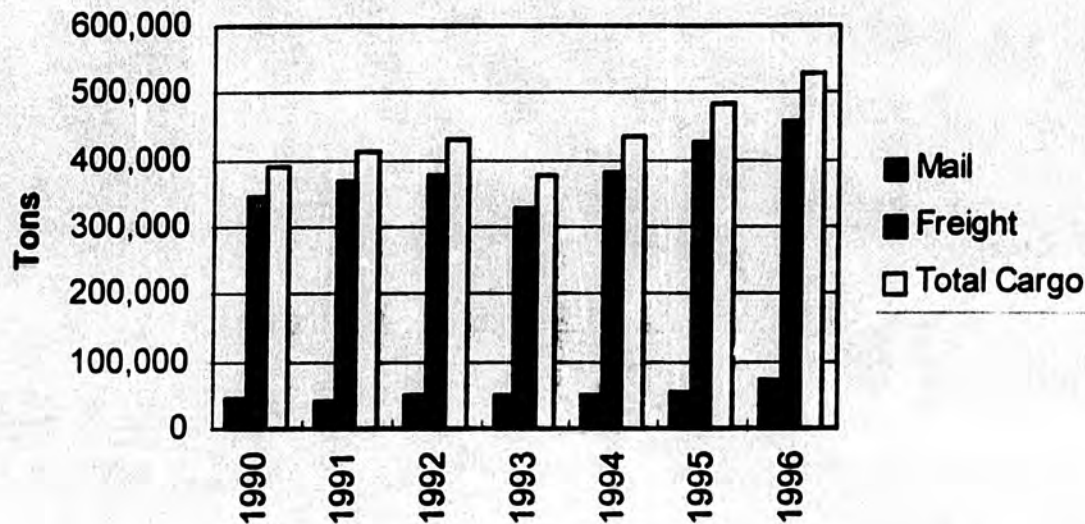
**Anchorage International Airport
Air Cargo Volumes 1990-1996**

Exhibit 4.3

Analysis of Air Freight

A breakout of domestic and international freight is presented in Exhibit 4.4. As can be seen from this exhibit, growth in international freight activity has far surpassed domestic freight volumes. The average annual growth rate for domestic freight is negative 1.6 percent, while international freight volumes have averaged 13.5 percent per year over the past six years. Much of the international growth can be attributed to the introduction of FedEx and UPS operations, which accounted for almost 90 percent of all international freight handled at Anchorage International in 1996.

Exhibit 4.4: Historical ANC Freight Activity (Tons)

Year	Domestic	% Change	International	% Change	Total
1990	227,600	--	117,500	--	345,100
1991	217,800	-4.3	149,900	27.6	367,700
1992	189,000	-13.2	188,400	25.7	377,400
1993	186,800	-1.2	140,100	-25.6	326,900
1994	200,800	7.5	179,000	27.8	379,800
1995	205,900	2.5	221,600	23.8	427,500
1996	206,600	0.3	251,400	13.5	458,000

Source: Keiser & Associates, Inc.

The decline and slow growth in domestic freight volumes is somewhat misleading. Much of the decline in domestic activity is due to the loss of MarkAir's operations and growth in intra-Alaskan traffic is more accurately reflected in mail volumes generated by the bypass mail system.

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The decline and slow growth in domestic freight volumes is somewhat misleading. Much of the decline in domestic activity is due to the loss of MarkAir's operations and growth in intra-Alaskan traffic is more accurately reflected in mail volumes generated by the bypass mail system.

Domestic and International Freight 1990-1996

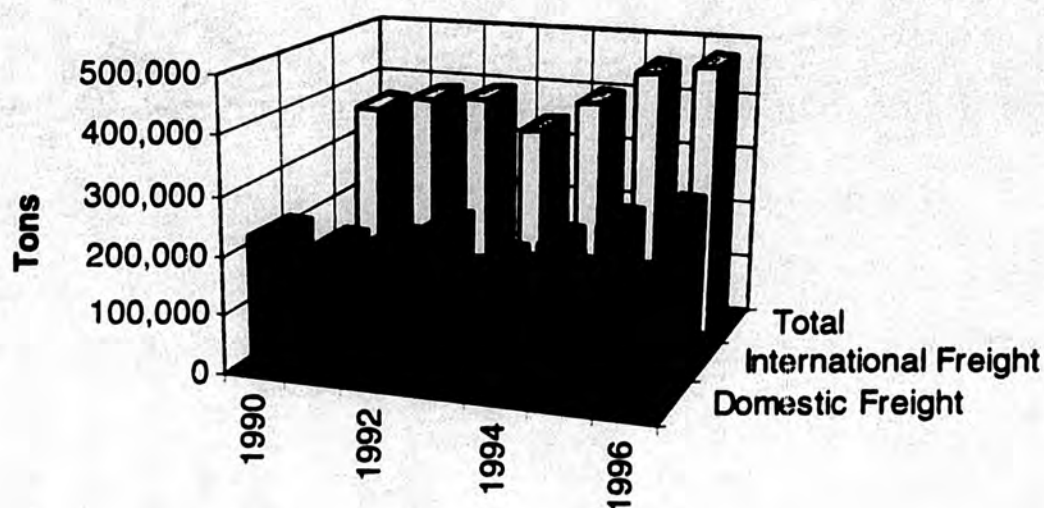


Exhibit 4.5

Most of the international freight traffic at Anchorage is generated by transload, or sometimes called crossload, operations. An international transload typically occurs when a carrier has scheduled one aircraft arriving in Anchorage from international City A with a final destination to international City B; and a second aircraft scheduled to arrive in Anchorage from international City C with a final destination to international City D. At Anchorage, the carrier will transload cargo from the aircraft arriving from City A with cargo destined to City D to the aircraft scheduled to City D; while cargo on the aircraft from City C, destined for City B, will be transferred to the aircraft scheduled for City B. In a transload operation, the cargo is physically deplaned from one aircraft and enplaned onto a second aircraft. The transload may take place over a few hours, or over the course of a few days. Depending upon a particular carrier's type of operation, if a transload of two or more aircraft is performed simultaneously, then sufficient apron space must be available in close proximity to facilitate the transload operation. If the transload takes place over a few days, then sufficient warehouse space must be available for storage and/or sorting.

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Air Mail

Air mail refers to mail under the control and authority of the United States Postal Service (USPS). It is important to distinguish mail from freight as mail is handled, packaged, and contracted out by the USPS using their own air mail facilities (AMF) and manpower. The carriers only load and unload mail pallets or containers, with the USPS responsible for all storage and warehousing operations.

In the State of Alaska, mail is priced and handled differently than in the rest of the U.S. Almost all bulk air mail in Alaska is priced as standard mail B (fourth class parcel post ground mail) to the shipper, but air carriers are paid full air rates by the USPS for the carriage of mail. There also exist a unique system of mail delivery called the bypass mail system. The bypass mail system allows shippers of prepackaged, pre-approved mail in 1,000 pound units to "bypass" delivery to the post office and be tendered directly to an air carrier. All postal shipping regulations must be adhered to and it must be inspected by the postal service before acceptance by the carrier. Most users of the bypass mail system are wholesale grocery outlets. To the carrier, there is little difference between mail tendered directly by the USPS from their AMF or by private shippers using the bypass mail system.

Historical air mail volumes for Anchorage International Airport are shown in Exhibit 4.6. Approximately 96 percent of the mail is domestic with four percent international. As can be seen in the exhibit, there is a greater than 2:1 ratio of enplaned mail to deplaned mail. This ratio reflects the high volume of bypass mail that is generated within the Anchorage region for distribution to outlying communities throughout the rest of the state.

Exhibit 4.6: Historical ANC Air Mail Activity (Tons)

Year	Enplaned	Deplaned	Total	Percent Change
1990	43,600	16,000	59,600	--
1991	39,500	16,700	56,200	-5.7
1992	43,400	19,000	62,400	11.0
1993	43,700	18,400	62,100	-0.4
1994	46,900	20,700	67,600	8.9
1995	47,500	23,300	70,800	4.7
1996	59,900	25,700	85,600	20.9

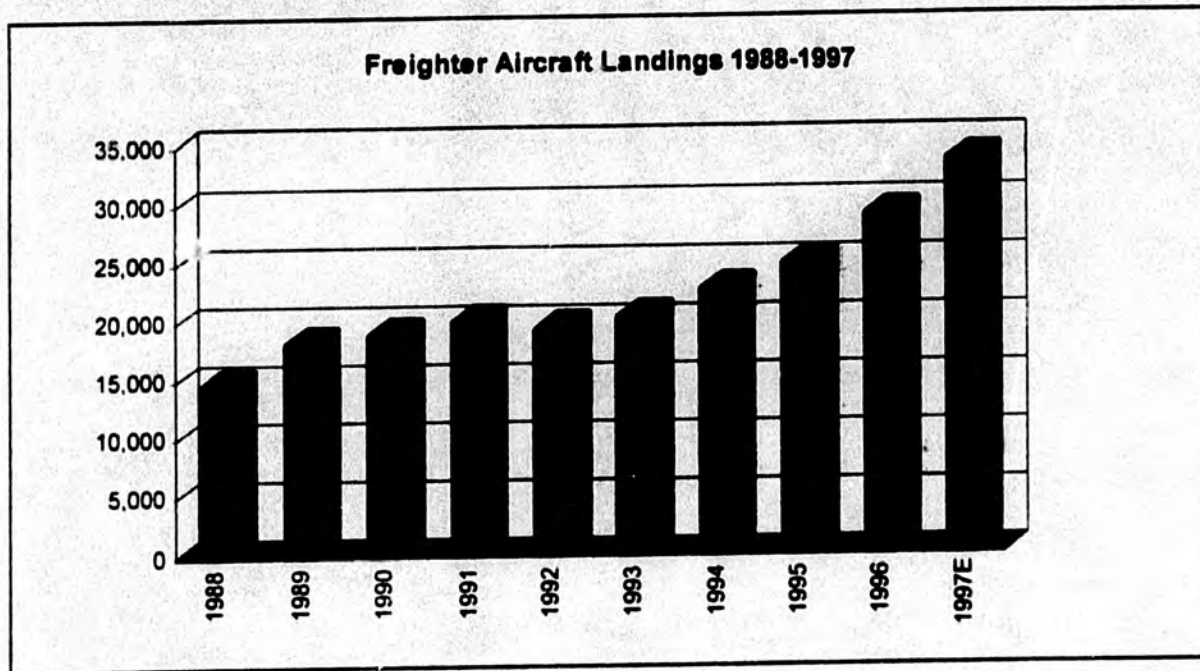
The primary source of mail into Anchorage is through a USPS contract with American International Airways (AIA). AIA operates a DC-8 six days a week from Seattle to Anchorage. During the Christmas holidays, the USPS also charts a B747 that flies daily from Ontario, California to Anchorage via Seattle as well as a second DC-8 from Minneapolis. Mail from the lower 48 is flown to Anchorage by AIA and then distributed to instate air carriers as well as trucked to Fairbanks. All bypass mail originates and terminates in Alaska. International mail is carried primarily by FedEx under contract to the USPS out of Oakland, California. Due to the low shipping rates of intra-Alaskan mail, domestic volumes are quite large at Anchorage and make up the bulk of many the local carriers' cargo operations.

Anchorage International Airport
Preliminary Air Cargo Forecast

Freighter Landings

Freighter landings are an important measure of air cargo activity at Anchorage International Airport. There were 28,882 landings by all-cargo freighter aircraft in 1996, up over 97 percent over the last eight years, representing an average annual growth rate of 8.82 percent. Indications are that freighter landings in 1997 will exceed 1996 levels by almost 16 percent.

Exhibit 4.7



In 1996, five carriers accounted for over 45 percent of the freighter landings at Anchorage, with FedEx leading all carriers with 3,375 landings. The top nine carriers accounting for over 65 percent of the freighter landings are shown below in Exhibit 4.8.

Anchorage International Airport

Preliminary Air Cargo Forecast

Exhibit 4.8: Air Cargo Freighter Landings for 1996

Carrier	Landings	Predominate Aircraft Type	Landed Weight
FedEx	3,634	MD-11F	471,500 lbs.
Korean Airlines	2,935	B747-400F	666,000 lbs.
Northern Air Cargo	2,383	DC-6F	92,000 lbs.
United Parcel Service	2,258	B747-400F	666,000 lbs.
Japan Airlines	1,922	B747-400F	666,000 lbs.
Northwest Airlines	1,783	B747-400F	666,000 lbs.
Nippon Cargo Airlines	1,362	B747-400F	666,000 lbs.
China Airlines	1,328	B747-400F	666,000 lbs.
Alaska Central Express	1,248	Beechcraft 1900	16,100 lbs.
All Other Airlines	10,029	--	--
Total	28,882	--	--

There seems to be a fairly strong statistical correlation (r 0.93) between total air cargo volumes and the number of freighter landings as demonstrated in Exhibit 4.9, but little correlation between freighter landings by a particular carrier and the amount of air cargo enplaned or deplaned by that carrier as demonstrated in Exhibit 4.10.

**Comparison of Freighter Landings
to Cargo Volumes 1990-1996**

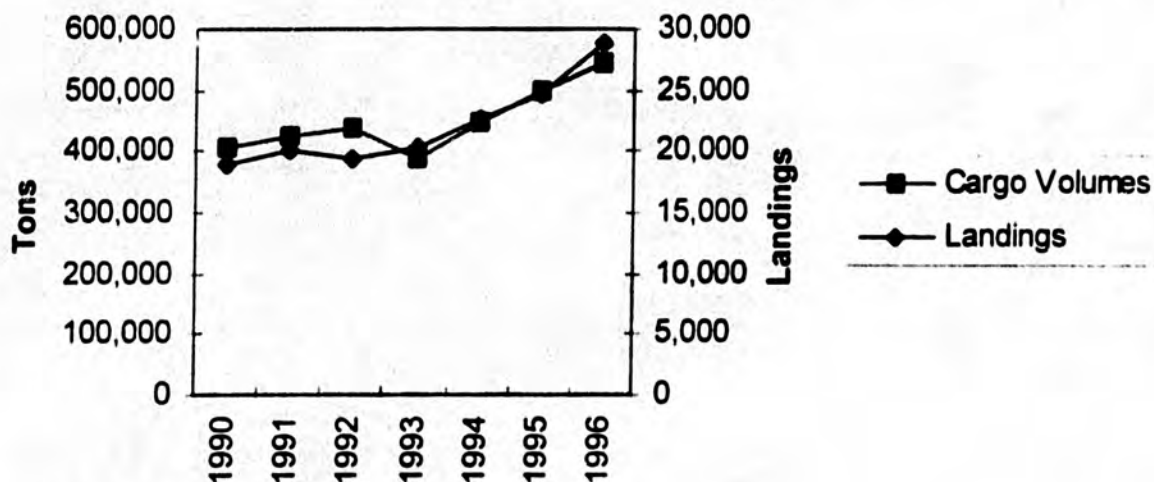


Exhibit 4.9

Anchorage International Airport
Preliminary Air Cargo Forecast

1996 Freighter Landings and Cargo Volumes

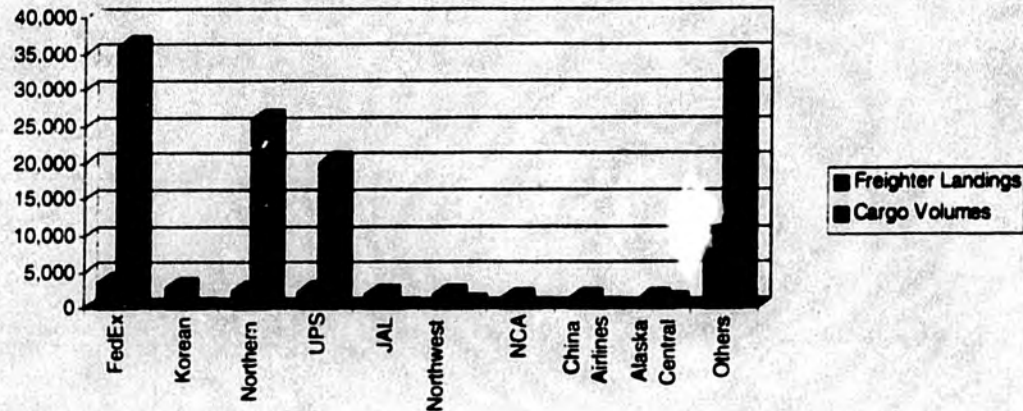


Exhibit 4.10

The lack of a correlation between freighter landings and cargo volumes becomes even more evident when the landed weights of freighter aircraft are considered. Korean Airlines, Japan Airlines, Nippon Cargo Airlines, and China Airlines, all place within the top ten carriers in freighter landings utilizing the Boeing 747-F freighter, but enplane or deplane little, or no cargo, at Anchorage.

Service Patterns

International all-cargo activity at Anchorage is growing rapidly. Since 1993, the number of weekly scheduled arrivals has increased from 262 to 410, an average growth rate of 11.8 percent per year, while the number of destinations flown nonstop has risen from 24 to 30.

Exhibit 4.11 shows the weekly scheduled all-cargo arrivals at Anchorage. These flights include all scheduled widebody freighter operations (747s, 767s, MD-11s, and DC-10s) along with DC-8 operations. Although some flights also carry domestic freight, these operations are predominately international

Anchorage International Airport
Preliminary Air Cargo Forecast

Exhibit 4.11: Growth in International All-Cargo Service at Anchorage International Airport

Weekly Scheduled Arrivals from Nonstop Markets			
<u>Market</u>	<u>1993</u>	<u>1997</u>	<u>Change</u>
SEL	32	63	31
NRT	68	53	-15
JFK	28	43	16
SFO	16	33	19
LAX	23	30	7
ORD	15	28	13
TPE	13	27	14
KIX	0	27	27
HGK	7	17	10
KHV	0	14	14
SDF	15	12	-3
EWR	6	7	1
AMS	5	7	2
MEM	6	6	0
IND	0	5	5
OAK	0	5	5
RFD	0	5	5
DFW	3	4	1
FRA	2	4	2
ONT	5	3	-2
LHR	4	3	-1
ATL	0	3	3
YVR	0	3	3
SEA	8	2	-6
CDG	1	1	0
MSP	1	1	0
SHA	1	1	0
YYZ	1	1	0
PEK	0	1	1
PUS	0	1	1
CTS	1	0	-1
MXP	1	0	-1
NGO	1	0	-1
	262	410	140

Source: OAG May 1997, June 1993

Anchorage International Airport

Preliminary Air Cargo Forecast

Summary

Air cargo is a significant and growing activity at Anchorage International Airport. Overall, air cargo landings have increased 97 percent from 1990 to 1996 and air cargo volumes have increased at an average annual growth rate of five percent. International air freight has led the growth in cargo volumes with a 13.5 percent average annual growth rate, followed by domestic mail with a 6.23 percent growth rate. Domestic air cargo volumes have decreased at an annual rate of 1.6 percent and international mail has grown at 4.8 percent.

Exhibit 4.12 compares total freight and mail volumes to world airport freight and mail volumes as reported by the Airports Council International (ACI).

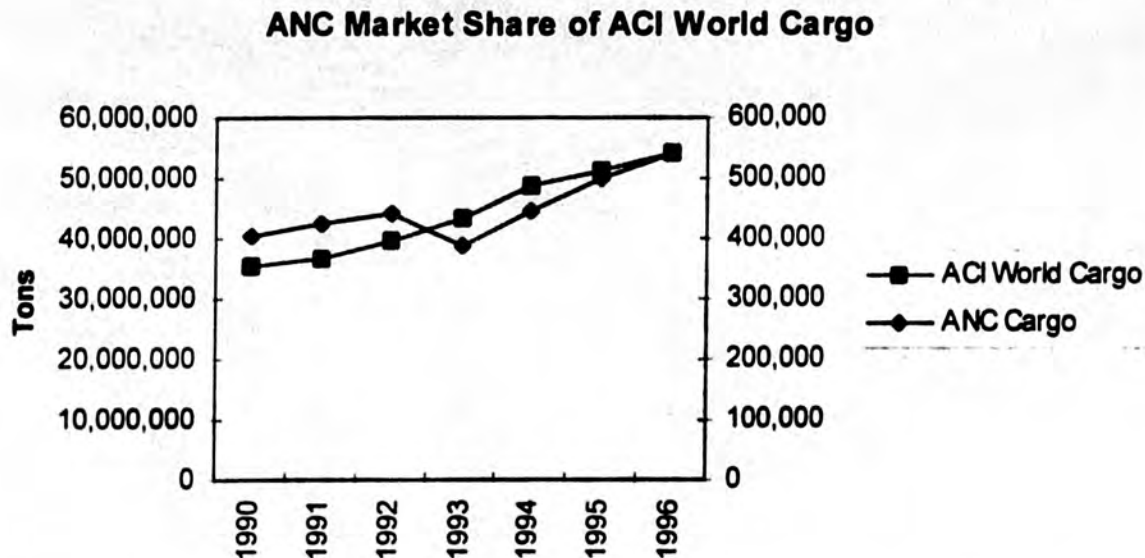


Exhibit 4.12

According to ACI statistics, world cargo volumes for member airports have increased at an average annual growth rate of 7.4 percent from 1990 to 1996. Historically, over the past six years, Anchorage has captured an average 1.03 percent of the world airport cargo market. Over the past three years Anchorage's market share has increased by 12 percent. This increasing market share underscores the importance Anchorage International Airport in the international air cargo arena and the sustainability of air cargo as supportable investment opportunity for the community.

4.2 AIR CARGO INDUSTRY FORECASTS

The industry forecasts reviewed in this section come primarily from the *Boeing 1996/1997 World Cargo Forecasts* and the *FAA Aviation Forecasts for Fiscal Years 1997-2008*, *1997 World Air Freight Industry Analysis and Forecast* by MergeGlobal, Inc., and *U.S. Freight Transportation Forecast* by Standard & Poor's DRI. Historical data was compiled from a variety of sources, including the Airport Council International (ACI), Boeing, the International Civil Aviation Organization (ICAO), the Air Transport Association (ATA), the International Air Transport Association (IATA) and the U.S. Department of Transportation (DOT).

Freight Forecasts

According to a study conducted by Standard & Poor's DRI for the American Trucking Association, the U.S. transportation industry will carry 13.2 billion tons of freight and generate \$547.7 billion in revenue by the year 2006. The study predicts that a three- to five-percent annual rise in international trade will help drive a 30-percent increase over 1996 revenues of \$420.2 billion, and a 21-percent increase over 1996 volume of 10.9 billion tons. Air freight shipments, while accounting for 3.2 percent of the U.S. freight-transportation market, will see the greatest increases due to the faster growth in the commodities that are moved by containerization over bulk commodities, such as coal, primary metal products and crude oil.

The study also projected that revenues for air freight will jump by 121 percent (from \$13.3 billion to \$29.4 billion) as more high-valued commodities such as electrical equipment, food products and textiles travel by air. General freight volume will grow substantially by 1.3 billion tons, from 38 percent of all shipments to 41 percent, gaining in market-share over bulk freight.

Boeing Commercial Airplane Company forecasts a continued long term growth rate of 6.6 percent for world air cargo between 1996 and year 2015. This represents a tripling of air cargo volumes in 20 years. This prediction indicates that international air cargo traffic will expand faster than domestic U.S. markets, with the result that non-U.S. airlines will increase their market share from 68 percent in 1995 to 73 percent by year 2015. Air freight will grow much faster than mail, with an annual rate of 6.7 percent, compared to only 3.4 percent for mail.

On a regional basis, Boeing forecasts indicate that markets involving Asia will achieve the highest growth rates, predicting 9 percent growth for inter-Asia freight traffic and 8 percent growth for North America-Asia traffic. U.S. domestic traffic is projected at 5.4 percent.

The International Air Transport Association predicts that freight traffic will rise faster than passenger growth and estimates a 7 percent per year growth rate through year 2005 for freight. IATA projects freight tonne kilometers will increase 9.5 percent in the Asia Pacific region, 6.5 percent in Latin America and the Caribbean, 6 percent in the Middle East, 5.5 percent in North America, 5 percent in Europe, and 4 percent in Africa.

The International Civil Aviation Organization (ICAO) forecasts a total worldwide growth of scheduled freight tonne kilometers of 7 percent per year through 2005 and a 7.5 percent increase in international scheduled freight services. On a regional basis, ICAO predicts 8.5 percent growth for

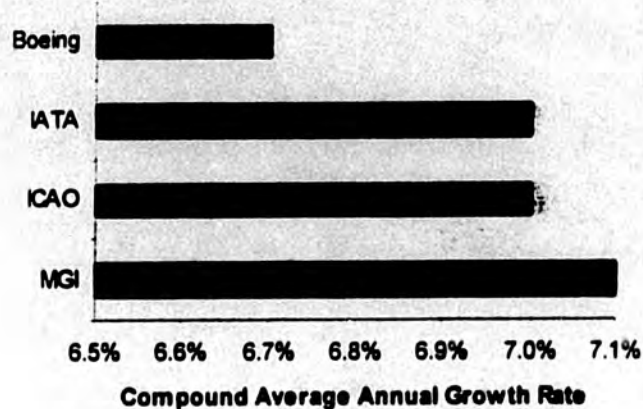
Anchorage International Airport

Preliminary Air Cargo Forecast

Asia, followed by 5.5 percent for the Middle East, 5 percent for Latin America and the Caribbean, and 4 percent growth for the North American market.

Exhibit 4.13

Comparison of World Air Freight Growth Rate Projections



MergeGlobal, Inc., an air freight industry analyst, publishes an extensive annual world freight industry forecast. They predict a long term air freight growth of 7.1 percent through year 2002. They predict the highest growth will be 9.5 percent in the intra-Far East market, followed by a 7.3 percent growth for U.S. International traffic and 5.7 percent for U.S. domestic freight.

Despite the fact that all of the projections described herein

were published prior to the currency crisis in Asia, many analysts in the industry, and many of the carriers interviewed for this project, still expect to see a seven percent growth rate worldwide and expect Asia to be the largest generator of new traffic over the next five years.

U.S. Mail

Forecast of mail prepared by the U.S. Postal Service predict a 4.12 percent average annual growth rate in priority mail for year 2002 and a 2.43 percent growth in express mail. Over all, the USPS predicts a 2.34 percent average annual growth in total mail volumes.

Anchorage International Airport

Preliminary Air Cargo Forecast

Boeing predicts that growth in air mail will range from a low of 2.1 percent to a high of 4.3 percent. According to Boeing, factors that cloud the future growth outlook for mail include inroads by express operators into package mail, electronic transmission of letters and documents, and the USPS entry into the express air freight operations.

USPS Projected Growth Rates 1996-2002

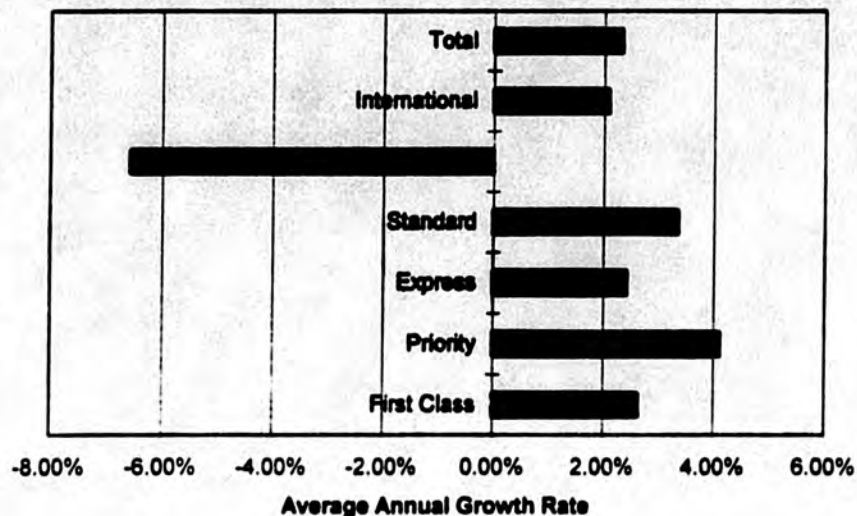


Exhibit 4.14

4.3 ANCHORAGE INTERNATIONAL AIRPORT AIR CARGO FORECAST

The purpose of this section is to forecast air cargo volumes and freighter landings for a five year planning horizon. The base year will be 1996 and forecast years will be 1997, 1998, 1999, 2000, and 2001. This section will be organized as follows:

- Forecast of Freight,
 - Domestic,
 - International;
- Forecast of Mail;
- Freight Landings Forecast, and
- Airport Forecast Summary.

The development of the air cargo demand forecasts will involve both quantitative analysis and subjective judgement. In general, past aviation activity data are examined in anticipation of identifying past trends that will give an indication of future activity levels.

The most reliable approach to estimating aviation demand is through the use of more than one analytical technique. Methodologies considered for these forecasts included regression analysis, time-series extrapolation, market share analysis, and survey analysis.

Anchorage International Airport

Preliminary Air Cargo Forecast

Forecast of Freight Volumes

Factors influencing freight volumes are different for domestic and international freight. To compensate for these differences, domestic freight will be forecasted separately from international.

Domestic Freight Forecast

Domestic freight is freight that is transported within and between the fifty States of the United States and its territories and possessions. The largest carriers of domestic freight at Anchorage are FedEx, Northern Air Cargo, Alaska Airlines, and UPS.

As mentioned at the start of this section, there are many reporting gaps in domestic cargo statistics. Domestic all-cargo operators are not required to file detailed segment and market traffic data. Much of the data collected by DOT is based upon the unique reporting habits of individual carriers which differ from carrier to carrier. As a result, domestic cargo data may be understated or overstated by a significant amount by large volume carriers such as FedEx and UPS.

Much of the domestic freight reported by FedEx is international cargo arriving at Anchorage, clearing customs, transloaded onto different aircraft, and then reported as domestic enplaned freight. In 1996, FedEx accounted for over 65 percent of enplaned domestic freight and over 55 percent of total domestic freight.

Domestic freight projections are presented in Exhibit 4.15. Projections were generated by time series analysis and growth rate models. The growth rate models are based upon the forecast of employment for the state (1.2%), the growth rate of the U.S. economy from 1992-1996 (2.6%), and by Boeing's U.S. domestic cargo industry forecast growth rate (6%).

Exhibit 4.15: Projections of Domestic Freight 1997-2001 (Tons)

	Time Series Trend Analysis	State Employment Growth Rate	US Economic Growth Rate	Boeing Forecast Growth Rate
Historical				
1990	227,600	227,600	227,600	227,600
1991	217,800	217,800	217,800	217,800
1992	189,000	189,000	189,000	189,000
1993	186,800	186,800	186,800	186,800
1994	200,800	200,800	200,800	200,800
1995	205,900	205,900	205,900	205,900
1996	206,600	206,600	206,600	206,600
Forecast				
1997	194,200	209,100	212,000	219,000
1998	191,500	211,600	217,500	232,100
1999	188,900	214,100	233,100	246,100
2000	186,200	216,700	229,000	260,800
2001	183,500	219,300	234,900	276,500

Source: Keiser & Associates, Inc.

Anchorage International Airport

Preliminary Air Cargo Forecast

As can be seen in the exhibit, year 2001 projections ranged from a low of 183,500 tons to a high of 276,500 tons. The time series model, which had a correlation coefficient of 0, reflecting a perfect inverse correlation, projects domestic freight volumes to decline over time based upon historical trends. Both the projections of employment and the U.S. economic growth rates show similar modest gains. The Boeing forecasted growth rate yielded the highest projection of domestic freight.

It is expected that as more carriers become familiar with the new Alaska Air Cargo Transfer Initiative, the portion of domestic traffic between Anchorage and the rest of the United States will see significant increases. These increases will come as the foreign flags form alliances with U.S. domestic carriers to distribute cargo to and from the lower 48 vis-avis Anchorage. Because the potential is there, but will take time to develop, it was judged that the growth rate of 2.6 percent for the short term five year planning is the preferable forecast for domestic cargo at Anchorage, most likely increasing in the five to ten year time frame.

There is a large discrepancy between enplaned and deplaned domestic freight volumes. Historically, enplaned freight volumes have exceeded deplaned freight by an approximately 3:1 ratio. This ratio is expected to continue over the five year forecast period.

Forecast of International Freight

Most growth in air cargo at Anchorage International Airport has been in international freight, which has increased over 110 percent in the six year period since 1990. Two carriers, FedEx and UPS, have accounted for most of the growth.

To forecast international freight growth over the next five years, three models were developed resulting in seven different projections of international freight growth. The first model utilized was a trend analysis, the second projected differing growth rate; while the third looked at market shares for Anchorage. These projections are presented in Exhibits 4.16 and 4.17.

Anchorage International Airport

Preliminary Air Cargo Forecast

Exhibit 4.16 Projections of International Freight 1997-2001 (Tons)

Historical	Trend Analysis	Boeing World Growth Rate	IATA/ICAO Growth Rate	Boeing North America/ Asia Growth Rate	Historical Growth Rate
1990	117,500	117,500	117,500	117,500	117,500
1991	149,900	149,900	149,900	149,900	149,900
1992	188,400	188,400	188,400	188,400	188,400
1993	140,100	140,100	140,100	140,100	140,100
1994	179,000	179,000	179,000	179,000	179,000
1995	221,600	221,600	221,600	221,600	221,600
1996	251,400	251,400	251,400	251,400	251,400
Forecast					
1997	254,800	268,200	269,000	271,500	285,400
1998	273,900	286,200	287,800	293,200	323,900
1999	293,100	305,400	308,000	316,700	367,700
2000	312,200	325,900	329,500	342,000	417,400
2001	331,300	347,700	352,600	369,400	473,700

Source: Keiser & Associates, Inc.

The trend analysis projected international air freight to increase 31 percent over the five year forecast period, but only produced a correlation coefficient of 0.67. The growth rate projections utilized included Boeing's forecast growth rate of 6.7 percent for world freight, the IATA/ICAO projected growth rate of seven percent for world freight, Boeing's eight percent projected growth rate for North America - Asia freight traffic, and finally, Anchorage's historical average annual growth rate of international freight of 13.5 percent for years 1990-1996. These growth rate projections resulted in a range a low of 347,700 tons of freight for year 2001, representing a 35 percent increase, to a high of 473,700 tons, representing a 88 percent increase in freight volumes.

Exhibit 4.17: Market Share Projections of International Freight 1997-2001 (Tons)

Historical	World RTKs	Average Market Share		Increasing Market Share	
		ANC Freight	% Share	ANC Freight	% Share
1990	22,237,000	117,500	0.5284	117,500	0.5284
1991	22,038,000	149,900	0.6802	149,900	0.6802
1992	23,128,400	188,400	0.8046	188,400	0.8046
1993	25,033,400	140,100	0.5600	140,100	0.5600
1994	29,339,700	179,000	0.6101	179,000	0.6101
1995	31,279,000	221,600	0.7082	221,600	0.7082
1996	33,375,000	251,400	0.7533	251,400	0.7533
Forecast					
1997	35,611,000	236,800	0.6650	284,900	0.8000
1998	37,997,000	252,700	0.6650	315,400	0.8300
1999	40,543,000	269,600	0.6650	344,600	0.8500
2000	43,259,000	287,700	0.6650	376,400	0.8700
2001	46,157,000	306,900	0.6650	410,800	0.8900

Source: Keiser & Associates, Inc.

Anchorage International Airport

Preliminary Air Cargo Forecast

The market share model involved a historical review of activity at Anchorage International as a percentage of the larger world market. This technique involved comparing the volume of freight reported at Anchorage from 1990 through 1996 with world revenue tons per kilometer of freight as reported by Boeing. The resulting historical market share trend was then projected into the future using both an average market share, calculated for the six year period, and an increasing market share. The results, shown in Exhibit 4.17, ranged from a low of 306,900 tons in year 2001 to a high of 410,800.

As mentioned earlier, growth in international volumes are expected to show significant increases over the next five years due to new Trans-Pacific transload operations initiated by Northwest Airlines, United Airlines, and Polar Air Cargo in 1997. Prior to 1997, Northwest Airlines and Polar Air Cargo utilized Anchorage as a tech stop for fuel and crew changes and air cargo remained on the aircraft. Beginning in 1997, both carriers and United, which just began all freighter service, started utilizing Anchorage as an international transload point for multiple aircraft.

Because almost all of the international freight traffic generated at Anchorage is Trans-Pacific, it was felt that the Boeing North American - Asian projected growth rate of eight percent was the most reasonable and was selected as the preferable forecast for Anchorage International Airport. This projection results in a 47 percent forecasted increase in international freight at Anchorage International over the five year forecast period.

Total Domestic and International Freight

Forecast of domestic and international freight for Anchorage International Airport for years 1997 through 2001 are presented in Exhibit 4.18.

Exhibit 4.18: Forecast of Air Cargo for Anchorage International Airport 1997-2001 (Tons)

	Domestic Freight	International Freight	Total Freight
1996 (Actual)	206,600	251,400	458,000
Forecast			
1997	212,000	271,500	483,500
1998	217,500	293,200	510,700
1999	223,100	316,700	539,800
2000	229,000	342,000	571,000
2001	234,900	369,400	604,300

Source: Keiser & Associates, Inc.

Forecast of Mail

Volumes of mail passing through Anchorage have shown consistent growth since 1990, with a significant jump in 1996 volumes. Historically, enplaned mail has exceed deplaned mail by 70 percent. As with domestic freight, the high ratio of enplaned to deplaned mail is due to the high volume of consumer goods and resource extraction equipment and supplies flown from Anchorage into the smaller Alaskan communities.

Anchorage International Airport

Preliminary Air Cargo Forecast

Three projections were generated for mail: time series analysis, United States Postal Service (USPS) forecasted growth rate of 4.12 percent, and a historical growth rate projection of 6.23 percent.

Exhibit 4.19: Projections of Mail 1997-2001

Historical	Time Series Trend Analysis	USPS Forecast Growth Rate	Average Annual Growth Rate
1990	59,600	59,600	59,600
1991	56,200	56,200	56,200
1992	62,400	62,400	62,400
1993	62,100	62,100	62,100
1994	67,600	67,600	67,600
1995	70,800	70,800	70,800
1996	85,600	85,600	85,600
Forecast			
1997	82,400	89,100	90,900
1998	86,400	92,800	96,600
1999	90,400	96,600	102,600
2000	94,400	100,600	109,000
2001	98,400	104,700	115,700

Source: Keiser & Associates, Inc.

The USPS growth rate projection of 4.12 percent was selected as the preferred forecast of mail volumes at Anchorage International Airport. International mail is expected to remain at 3.5 percent of the total and the ratio of total enplaned mail to deplaned mail is expected to remain at 2.3:1 for the five year forecast period.

Anchorage International Airport

Preliminary Air Cargo Forecast

Forecast of Freighter Landings

To forecast freighter landings two models were utilized. The first was a simple time series (trend) projection which assumes that factors affecting past activity will continue to affect future activity. The second model used was the application of average annual growth rates to determine the future number of landings at Anchorage International Airport. In this model, the average annual growth rate of landings from 1990 to 1997 was calculated (8.4%) and applied to future years. The results are presented in Exhibit 4.20.

Exhibit 4.20: Projections of Freighter Landings 1997-2001

Historical	Time Series Trend Analysis	ANC Average Annual Growth Rate
1990	18,944	18,944
1991	19,960	19,960
1992	19,357	19,357
1993	20,318	20,318
1994	22,711	22,711
1995	24,811	24,811
1996	28,882	28,882
Forecast		
1997	33,500	33,500
1998	31,600	36,300
1999	33,300	39,400
2000	35,000	42,800
2001	36,700	46,400

Source: Keiser & Associates, Inc.

As can be seen, the time series model resulted in a projection of 36,700 freighter landings in year 2001 with a correlation coefficient of .93. The closer to plus/minus 1, the better the correlation, with .93 representing a good correlation. The average annual growth rate model gave a much higher projection. The 8.4 percent projection resulted in 46,400 landings in year 2001. Based upon the factors reviewed in *Section 3.0 Factors Affecting Industry Growth*, and in particular the new bilateral agreements between the U.S. and Japan, the higher projection was selected as the preferred forecast of freighter landing for Anchorage International Airport.

Anchorage International Airport

Preliminary Air Cargo Forecast

Total Airport Air Cargo Activity

Presented in Exhibit 4.21, and shown graphically in Exhibit 4.22, is the preferred preliminary air cargo forecast for Anchorage International Airport for the five year forecast period (an additional year was added for administrative purposes). Overall, air cargo is forecast to increase at an average annual growth rate of 5.5 percent, with international freight increasing at an average annual growth rate of eight percent. Landings by freighter aircraft are forecast to increase at their historical rate of 8.4 percent over the short term forecast period.

Exhibit 4.21: Forecast of Air Cargo for Anchorage International Airport 1997-2002 (Tons)

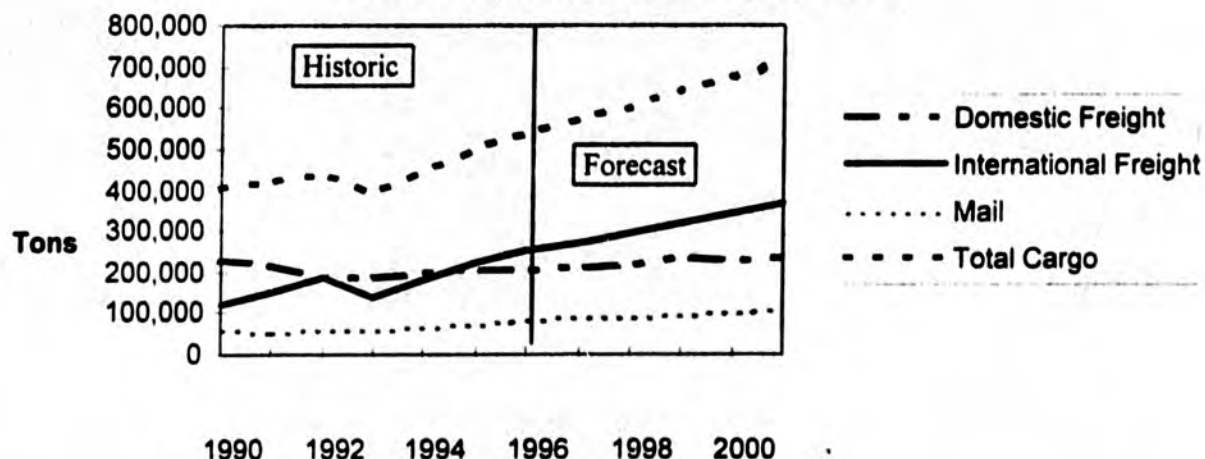
	Domestic Freight	International Freight	Mail	Total Air Cargo	Freighter Landings
1996 (Actual)	206,600	251,400	85,600	543,600	28,882
Forecast					
1997	212,000	271,500	89,100	572,600	33,500
1998	217,500	293,200	92,800	603,500	36,300
1999	223,100	316,700	96,600	636,400	39,400
2000	229,000	342,000	100,600	671,600	42,800
2001	234,900	369,400	104,700	709,000	46,400
2002	241,000	389,400	109,100	739,500	50,300

Source: Keiser & Associates, Inc.

These forecasts were prepared on the basis of the information given in the text and should be used for planning purposes only. The achievement of any forecast is dependent upon the occurrence of future events that cannot be assured; therefore, actual results may vary from the forecast.

Exhibit 4.22

Historical and Forecast Air Cargo Anchorage Int'l. Airport 1990-2001



Anchorage International Airport

Preliminary Air Cargo Forecast

Total Airport Air Cargo Activity

Presented in Exhibit 4.21 is the preferred preliminary air cargo forecast for Anchorage International Airport for the five year forecast period. The short term five year forecast was extended an additional year for administrative purposes. These forecasts were prepared on the basis of the information given in the text and should be used for planning purposes only.

Exhibit 4.21: Forecast of Air Cargo for Anchorage International Airport 1997-2002 (Tons)

	Domestic Freight	International Freight	Mail	Total Air Cargo	Freighter Landings
1996 (Actual)	206,600	267,300	69,800	543,700	28,882
Forecast					
1997	212,000	271,500	72,700	556,200	33,500
1998	217,500	293,200	75,700	586,400	36,300
1999	233,100	316,700	78,800	628,600	39,400
2000	229,000	342,000	82,000	653,000	42,800
2001	234,900	369,400	85,400	689,700	46,400
2002	241,000	389,400	88,900	719,300	50,300

Source: Keiser & Associates, Inc.

The achievement of any forecast is dependent upon the occurrence of future events that cannot be assured; therefore, actual results may vary from the forecast.

Exhibit 4.22

Historical and Forecast Air Cargo Anchorage Int'l. Airport 1990-2001

