Alaska International Airport System
"AeroNexus"

Planning Study

September 2013

ALASKA INTERNATIONAL AIRPORT SYSTEM

PLANNING STUDY

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LIST OF ACRONYMS

ACI-NA.....Airports Council International-North America
AIAS ..... Alaska International Airport System
AIP ..... Airport Improvement Program
ANC ..... Ted Stevens Anchorage International Airport
ASIG ..... Aircraft Service International Group
BRICS.....Brazil, Russia, India, China, and South Africa
CMGTW .....certificated maximum gross takeoff weight
CPE .....cost per enplanement
DFW.....Dallas-Fort Worth International Airport
FAA..... Federal Aviation Administration
FAI .....Fairbanks International Airport
FEDC .....Fairbanks Economic Development Corporation
FIS.....Federal Inspection Service
G212.....Russian routes
GA.....general aviation
ICCA.....International Congress and Convention Association
IFR .....instrument flight rule
ISER..... Institute of Social and Economic Research
JBER .....Joint Base Elmendorf Richardson
JFK.....John F. Kennedy International Airport
LAWA.....Los Angeles World Airports
LAX ..... Los Angeles International Airport
LCK..... Rickenbacker International Airport
LHD .....Lake Hood Airport
MIA.....Miami International Airport
NOPAC..... North Pacific
O&D.....origin and destination
ONT ..... Ontario International Airport
ORD ..... O'Hare International Airport
PDX.....Portland International Airport
PRC..... People's Republic of China
SEA-Tac..... Seattle-Tacoma International Airport
U.S. .....United States
USDOT ..... United States Department of Transportation
USEPA..... United States Environmental Protection Agency
UPS .....United Parcel Service
VFR.....visual flight rule

EXECUTIVE SUMMARY

The Alaska International Airport System, comprised of Ted Stevens Anchorage International Airport (Anchorage) and Fairbanks International Airport (Fairbanks), initiated the Alaska International Airport System Planning Study to determine how to optimize use of the capacity of both the Anchorage and Fairbanks International Airports to attract and retain international technical stop (refueling and crew change) cargo traffic.

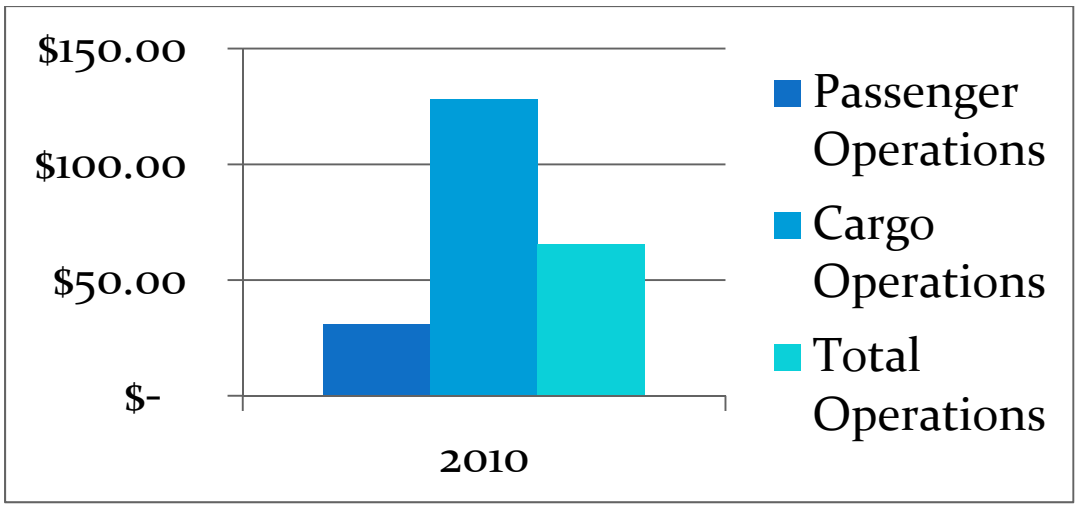
This study provides technical information and broad recommendations for future actions for the Alaska International Airport System. No specific improvements are recommended in this analysis - specific improvements will be evaluated in the Anchorage and Fairbanks Airport Master Plans, currently under way. The Master Plans will propose more detailed long-range plans for each airport using data and findings from this study.

Forecasts/Runway Capacity Analysis

Anchorage had 215,564 operations (landings and takeoffs) in 2010 and operations are forecasted to grow by 1.4% per year with a diverse mix of passenger, cargo, and general aviation aircraft. By comparison, Fairbanks had 121,981 operations in 2010, and operations are forecasted to grow by an average of 1.2% per year. Anchorage is more likely than Fairbanks to reach unacceptable airfield delay during the 20-year planning horizon. Anchorage could reach unacceptable airfield delay when aircraft operations reach 258,000 per year. At 258,000 operations, carriers are projected to experience 30 minutes of average peak hour delay, more than 10% of the time, during the critical hours of the day (when international cargo operations are at their peak).

Delays cost passenger carriers an average of $31/minute/operation. Delays to cargo carriers are much higher, at an average of $129/minute/operation. This equates to over $15 million in additional annual operating costs for all of Anchorage’s cargo carriers for each minute of delay by Future 2 (282,000 operations).

Additional Annual Aircraft Operating Costs for Each Minute of Delay at Anchorage



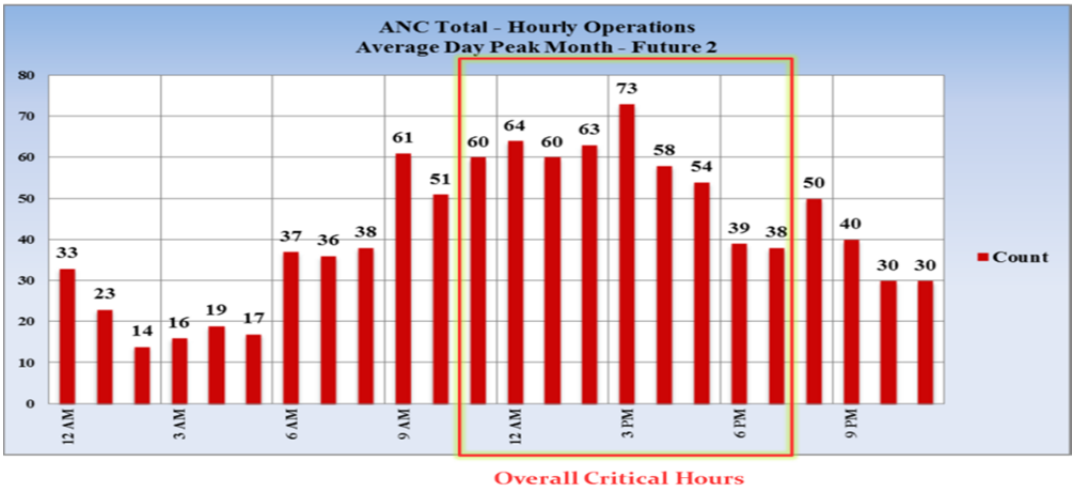
*Source: HNTB Analysis of USDOT BTS Data

Technical stop and integrated cargo carriers are the most sensitive to delays. Delays during Anchorage's peak periods can mean a missed curfew or a missed cargo sort at another hub. Integrated cargo carriers are particularly delay-sensitive. Most of their cargo is going to Asia and Lower 48 cargo hubs where it is sorted, inspected, processed through customs, and reloaded during time critical sort windows. Anchorage delays can have a down-line domino effect: sort windows missed; cargo delayed; delivery commitments unfulfilled; unhappy customers; business lost.

At 258,000 operations and 30 minutes of average delay in the critical hour, runway delays will likely cause some technical stop carriers and the integrated carriers to change how they operate at Anchorage and some may reduce or eliminate Anchorage operations.

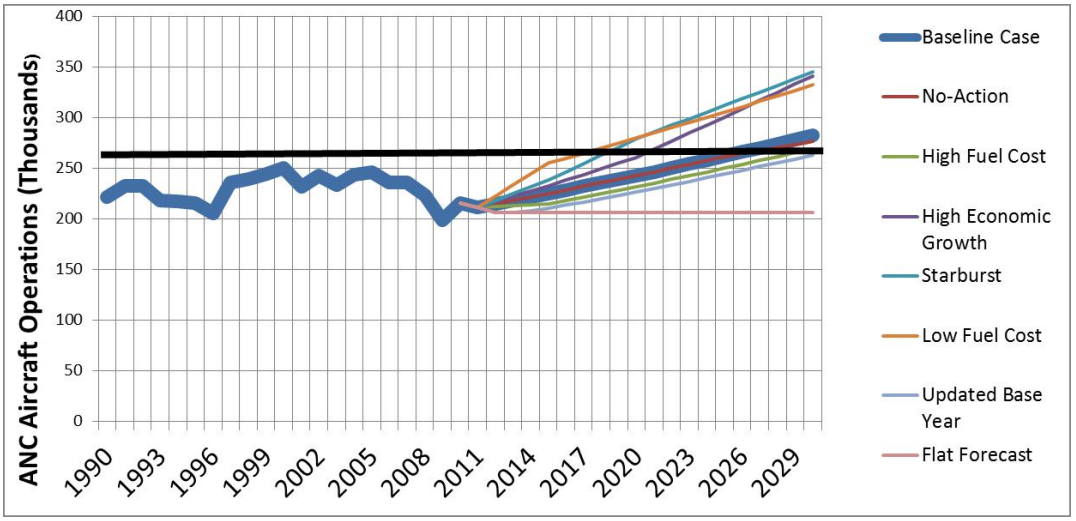
Anchorage's critical peak hours of existing and future operations occur between 11 a.m. and 7 p.m. with the peak hour being 3 p.m. This coincides with the timeframe that most technical stop flights occur.

Total Operations



When 258,000 operations will occur has a high degree of uncertainty primarily because international cargo operations are difficult to forecast. Many highly variable factors influence the amount of future North America-Asia air cargo, and the share of that cargo stopping at Anchorage. Using this study's baseline forecast, 258,000 operations could occur in approximately 2024. Using other high and low forecast scenarios, it could occur during a wide range of time, from as early as 2016 to beyond 2030, or it may never happen, as shown in the forecast scenarios graphic below.

Anchorage International Airport
Forecast Scenarios and 258,000 Operations Trigger Point



Alternatives - Shifting Traffic to Fairbanks

Primary alternatives available to Anchorage to address potential critical hour delays are: do nothing, change runway use to better use existing capacity, build runway capacity, or shift some traffic to an alternate airport. This study primarily examines the latter, shifting some traffic to another Alaska airport, Fairbanks.

Previous studies have looked at shifting traffic to a new airport on Fire Island or at Point MacKenzie. These alternatives were deemed infeasible, and remain so. Other ideas such as expanding Kenai Airport or using the Cold Bay Airport or Joint Base Elmendorf Richardson for international cargo operations have numerous problems, and are far less practical than use of Fairbanks as an alternative to Anchorage. Fairbanks formerly had technical stop operations by Lufthansa, Cargolux, and Air France, handling up to four technical stop aircraft of these carriers on the ground at one time.

Using an airfield capacity/delay simulation tool, this study examined the effect of shifting some of Anchorage's technical stop traffic to Fairbanks, as a way to reduce Anchorage delays and retain technical stop operations at the Alaska International Airport System. The analysis showed that Fairbanks' runway/taxiway system can handle a move of 50% (45 daily flights) or 100% (90 daily flights) of Anchorage's technical stop traffic without creating airfield delay concerns.

The table below compares the reduction in delay at Anchorage in Future 1 (242,000 operations) and Future 2 (282,000 operations) from moving 50% of Anchorage's technical stops to Fairbanks. It reduces Anchorage's occurrence of unacceptable delays (over 30 minutes) from 75% of the time (without move) to just 13% of the time (with move) at Future 2. Future 1 and Future 2 are forecasted to occur in 2020 and 2030, respectively, under the Baseline Forecast, but when they actually occur is very uncertain.

The table also shows that moving one of the technical stop carriers with 32 daily operations (16 flights) to Fairbanks reduces Anchorage's average peak hour delay as much as 10 minutes per operation. This exercise was done to determine the impacts of getting one technical stop carrier to move initially from Anchorage to Fairbanks to understand how an incremental shift of traffic might benefit Anchorage.

Average Anchorage Delay in Minutes
Tech Stop Airlines Moved to Fairbanks

Critical Hours for Integrated Carriers					
	242K Annual Operations (Future 1)		282K Annual Operations (Future 2)		
	Without Move	With 50% Move	Without Move	With 50% Move	With 32 Ops Moved
62 Percent of Time (Configuration 1 VFR)	18.1	6.3	42.1	9	31.4
22 Percent of Time (Configuration 2 VFR)	7.2	6.3	20.3	11.2	
10 Percent of Time (Configuration 1 IFR)	21.8	11.3	57.7	31.2	43.5
3 Percent of Time (Configuration 4 VFR)	>60	>60	>60	>60	

Other Facilities and Services

This study also examined other facilities and services at Anchorage and Fairbanks required by technical stop carriers, to identify potential needs that should be examined further in Anchorage's and Fairbanks' master plans. This examination found:

- Runways at both airports are currently designed to handle technical stop aircraft.
- Fairbanks has parking for six technical stop aircraft, but can only fuel up to three per hour today with a 60-minute turn time. The existing 6 hardstands could handle approximately 25 to 35 daily technical stop flights, depending on the times of day they use Fairbanks. If 50% of Anchorage's technical stop traffic were to shift to Fairbanks (45 daily flights), Fairbanks would need 9 to 10 tech stop hardstands.
- Anchorage has parking for 14 technical stop aircraft, and would need 19 by Future 2, if technical stops did not shift to Fairbanks and Anchorage's 16 supplemental parking spots are not reallocated to tech stops.
- Fairbanks' fuel storage may need to be modified with additional truck refill spots, a hydrant system, and additional on-airport storage expansion, depending on the number and time of day of technical stops.
- Fairbanks requires less deicing than Anchorage due to drier weather.
- Anchorage has an excellent supply of large aircraft mechanics, a parts pool, and a wide-body aircraft hangar; Fairbanks has none of these, plus it has colder winter weather.

- Fairbanks' more limited passenger service makes crew changes less efficient. Fairbanks may have better hotel availability and prices than Anchorage during peak summer tourism months, but Anchorage has more national brands.

Alaska International Airport System Existing Technical Stop Facilities and Services Summary

	Fairbanks International Airport	Anchorage International Airport
Runways	11,800' - CAT III	12,400' - CAT III
		11,584' - CAT I
		10,600' - CAT II
	Rare closure of runway for snow removal	Usually able to keep 2 runways open during snow removal
Taxiways	Full parallel taxiway	Full parallel taxiways
	Short taxi distance for technical stop departures	Short taxi distance for technical stop departures/arrivals
	Minimal congestion, except during diversions	Some congestion along Taxiway K and in terminal area
Aprons	6 drive-through hardstands	14 drive-through hardstands
		16 push back supplemental hardstands
Fuel	984,000 gallons storage on airport	56 million gallons storage on airport and at port
	60 minutes to fill a technical stop aircraft	60 minutes to fill a technical stop aircraft
	Fuel more expensive than Anchorage	Fuel less expensive than Fairbanks
Deice	Minimal deicing due to drier climate and less freeze/thaw cycles	Frequent deicing
Maintenance	Colder climate and lack of hangar space	Availability of FedEx hangar
	Lack of certified mechanics and parts	Certified mechanics and parts pool
Services	Adequate crew hotels	Adequate crew hotels
	Catering available	Catering available
	International trash removal	International trash removal

Carrier Input

During the preparation of Alaska International Airport System forecasts, 12 international cargo carriers currently using Anchorage were asked about the disadvantages of operating from Fairbanks compared to Anchorage. Their disadvantages of using Fairbanks are listed below:

- No response/not interested (4 responders);
- Longer distances on route flown than Anchorage (2);
- Inadequate deicing facilities; need for 24/7 United States Customs Service and United States Department of Agriculture operating hours; and availability of ground handling, ramp and warehouse;

- Not a good experience when previously using Fairbanks as an alternate to Anchorage; no chocks; bad catering;
- Single runway, cold weather effects on ground handling, cargo handling/storage, and flight crews;
- Lack of ground support equipment, recently had a 14 hour delay; and
- Less frequent/more expensive crew positioning than Anchorage.

Incentives Analysis

An Incentives Analysis examined financial incentives that airports may offer to air carriers, to determine if incentives might be a tool the Alaska International Airport System could use to encourage a shift of traffic to Fairbanks. It found that the Federal Aviation Administration rules governing incentives mostly address passenger carrier incentives; much interpretation is required for application of these guidelines to technical stops and to the use of airline rates and charges to manage congestion. To ensure acceptance by regulators, the Alaska International Airport System should proactively solicit Federal Aviation Administration engagement and approval prior to developing an incentive program.

In general airport incentives, governed by Federal Aviation Administration rules, are allowed for up to two years to encourage new air service, defined as service to a new destination, new non-stop service, a new entrant carrier, or increased frequencies. An airport may offer incentives in the form of airport fee reductions, fee waivers, or use of airport revenue for certain promotional costs, but an airport may not offer air service subsidies. Other public and private sector entities can also offer incentives unbounded by Federal Aviation Administration restrictions, as long as the airport is not involved.

Incentives programs for cargo carriers offered at Rickenbacker International Airport, Dallas-Fort Worth International Airport, Miami International Airport, Los Angeles World Airports, Seattle-Tacoma International Airport, and Portland International Airport were examined. Many included a mix of airport and local government/private incentives. Portland's incentives program was specifically established to challenge Anchorage as a transpacific technical stop.

Potential Alaska International Airport System-provided incentives include waiving or reducing the landing fee, fuel flowage fee, aircraft parking fee, Federal Inspection Service fees, and terminal rent (if applicable). Completely waiving of all of these fees is estimated to save a hypothetical technical stop carrier $2,832 per flight.

The capability for private sector service and commodity providers at Fairbanks to encourage and facilitate additional technical stop operations by offering incentives and supporting services will most likely be based on market dynamics. If established, these incentives might include fuel pricing, ground handling services, crew lodging, crew transportation, and deicing services.

A Fairbanks incentive program is most likely to be successful if it focuses initially on technical stop carriers that already see some economic advantages to operate from Fairbanks due to geography. Carrier route systems emphasizing flights over Russian airspace (e.g., to and from the People's Republic of China), and eastern North American points would have shorter routes to Fairbanks.

For an incentive program to be accepted by the airlines not participating in the incentives program, the benefits of reduced Anchorage operating delays and reduced need for capacity-related capital projects would need to be apparent.

Because Anchorage operations levels have dropped for several years, diminishing the need to address Anchorage capacity issues, offering incentives should only be considered after Anchorage sees multiple years of international cargo traffic growth, and is confident growth will continue.

Risk Assessment

The Alaska International Airport System, the airlines, and Alaska residents bear some risk of Alaska International Airport System taking action or failing to take action to address Anchorage airfield capacity/delay issues. International cargo carriers face the greatest potential operational risk and benefit under each of the options, but all carriers (passenger and cargo) face financial risks. In turn, Alaska residents face potential consequences of reduction of air service and/or reduction in economic benefits provided by air cargo operations.

The Potential Effects of Delays on Airlines, Alaska International Airport System, and Communities

Who is Affected by Delay?	Potential Effect of Delay
Airlines	• Increased operating costs • Late cargo deliveries - lost customers/lost revenues • International cargo carriers leave Alaska International Airport System • Loss of airport revenues from cargo carriers - higher landing fees paid by remaining carriers
Alaska International Airport System	• Higher landing fees make the airports less attractive for existing carriers to maintain marginally profitable routes and make it more difficult to attract new air service
Communities	• Potential reductions in flights and increases in fares • Potential loss of jobs and income, particularly from air cargo

If international cargo traffic left Anchorage because of delays, it would have a large effect on the Alaska International Airport System landing fee. For example, if all of the technical stop carriers were to leave Anchorage, the landing fee would double for the carriers still at Alaska International Airport System. If all technical stop carriers and half of the integrated carrier traffic were to leave Anchorage, the landing fee would triple.

If the Alaska International Airport System builds capacity that is not needed, or before it is needed, most of the costs of capacity infrastructure will be borne by the Alaska International Airport System airlines in the form of significantly increased landing fees, without a commensurate reduction in operating costs associated with delay.

The Alaska International Airport System has the risk of investing in infrastructure to support a shift of international cargo traffic to Fairbanks, without certainty that cargo carriers will move to Fairbanks or that they will stay there once they have moved. However the implications of those risks are much lower than the risks of building a runway at Anchorage.

A potential loss of international cargo traffic puts Anchorage and Fairbanks residents, and potentially residents in other Alaskan communities at risk of losing jobs, income, and potentially

air service. According to the McDowell Group, international cargo contributed 3,416 jobs and $292 million to Anchorage economy in 2012.

FINDINGS/RECOMMENDATIONS

The Alaska International Airport System Planning Study analysis, findings and recommendations should be used to guide future actions to retain and attract international cargo operations, including the Anchorage and Fairbanks Airport Master Plans and Part 150 studies currently under way. Some key findings and recommendations for the Alaska International Airport System include:

- Unacceptable delays are forecast to occur at Anchorage when operations reach 258,000 operations per year under current runway use procedures, but the timeframe for reaching this level of operations is very uncertain. If operations and unacceptable delay reach this level, the Alaska International Airport System will be at risk of losing air service from tech stop and integrated carriers.
- Shifting 50% of Anchorage's peak hour tech stop operations to Fairbanks is a cost-effective way to address potential Anchorage airfield delay problems, and would eliminate the need to construct a new Anchorage runway over the next 20 years. Fairbanks' runway can handle the shifted tech stop traffic, with minimal runway delays.
- Since the Alaska International Airport System cannot force tech stop carriers to fly from either airport, master planning at both Anchorage and Fairbanks should examine facility needs with and without a shift of tech stop flights from Anchorage to Fairbanks.
- Financial incentives by the Alaska International Airport System or others could be offered to induce Anchorage tech stop carriers to shift to Fairbanks. Alaska International Airport System-sponsored incentives come at a cost to all the other carriers operating from the Alaska International Airport System, but are less expensive and risky than construction of a new runway. Shifting tech stops from Anchorage to Fairbanks, including an incentive program, should be tested prior to construction of a runway at Anchorage.
- Efforts to shift tech stops to Fairbanks should involve private service providers on and off the airport who would serve tech stop carriers, such as hotels, aircraft maintenance,

fueling and deicing, and carriers who would supply air service for crew changes. These groups might also offer incentives.

- Anchorage operations levels have dropped for several years, diminishing the need to address Anchorage capacity issues. Offering incentives to shift tech stop traffic to Fairbanks should only be considered after Anchorage sees multiple years of international cargo traffic growth, and is confident growth will continue.
- If the Alaska International Airport System experiences strong growth in international cargo operations, but is unsuccessful in shifting traffic to Fairbanks, Anchorage should pursue other alternatives to increase airfield capacity. Other capacity enhancing alternatives that do not require capital costs or incentive costs should also be explored in the Anchorage Master Plan. This may include consideration of changing Anchorage's runway use program to maximize efficiency, reduce delays, and maximize use of existing infrastructure before making new infrastructure investments. If a new runway is needed at Anchorage, a trigger point of about 10-15 years prior to reaching 258,000 operations should be used.