Federal Aviation Administration

Memorandum

Date: March 21, 2023

To: Kristi Warden, AAL-600

From: Evelyn Martinez, APP-1 (Acting) EVELYN J MARTINEZ Digitally signed by EVELYN J MARTINEZ Date: 2023.03.21 12:50:01 -04'00'

Michael Hines, APP-400 MICHAEL S HINES Digitally signed by MICHAEL S HINES Date: 2023.03.21 08:00:53 -04'00'

Dave Cushing, APP-500 DAVID F CUSHING Digitally signed by DAVID F CUSHING Date: 2023.03.21 08:18:46 -04'00'

Prepared by: Benjamin Mello and Kent Duffy, APP-400

Subject: Noatak Airport Replacement Airport Runway Length Justification

Purpose

The existing Noatak Airport (WTK) needs to be relocated as the current location of the airport sits on the banks of Noatak River, which is experiencing bank erosion due to permafrost thaw[1]. Noatak is not connected by a road system, so its airport provides the sole transportation method for fuel, groceries, and all other commodities for the community. The replacement airport seeks a similar runway length to the existing airport of 4,000 feet, in order to support continued operation of cargo aircraft that deliver vital supplies to the community. The requested runway length exceeds the normal runway length calculated for the critical aircraft of 3200 feet, via application of FAA Order 5100.38 *AIP Handbook*, AC 150/5000-17 *Critical Aircraft and Regular Use*, and AC 150/5325-4B, *Runway Length for Airport Design*. For this reason, a specific determination is required by APP-1 for construction of the requested runway length of 4000 feet using AIP funds, since it exceeds the length of the critical aircraft.[2] AAL RO, APP-400 and APP-500 support this determination.

Background

Noatak is located in the Northwest Arctic Borough with a population of 570 according to the 2020 Census. It is the only settlement on the 400-mile long Noatak River. Climate change is altering the Noatak River by reducing water levels in the summer; this causes permafrost subsistence and erosion year round. Since Noatak is isolated, is only

[1] Climate Change in Noatak, Alaska, ANTHC -- https://anthc.org/wp-content/uploads/2016/01/CCH_AR_062011_Climate-Change-in-Noatak.pdf

[2] Section 3-11. The Use of Critical Aircraft for Justification.

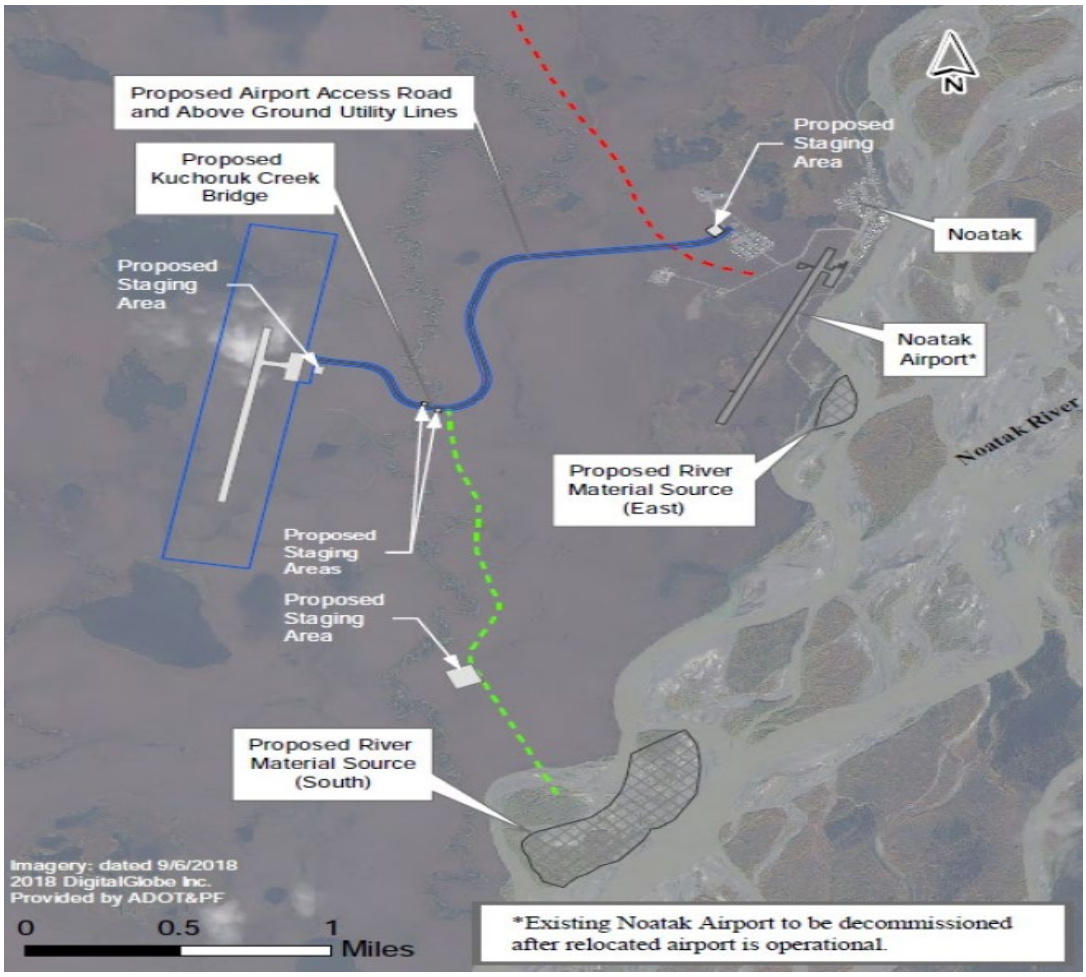
connected to the regional ice road system seasonally, and the river no longer provides barge service due to shallow depths, its airport plays a vital role in providing access to food, fuel, and other commodities for the community.

The existing Noatak Airport (WTK) is classified as a non-hub commercial service airport under NPIAS criteria. WTK is owned and operated by the Alaska Department of Transportation (ADOT). The airport has one gravel runway, Runway 1/19, 3,992' x 60' with Medium Intensity Runway Lightss. RNAV approaches are available to both runway ends. The critical aircraft is a Cessna 208B Grand Caravan (C208), an A-II small turboprop, which provides scheduled service several times a week to/from the village.

The attached documentation from ADOT describes how the airport is vital to the continued existence of the Noatak community.

Replacement Airport Runway Length Needs

As shown on the figure below, the replacement airport (+099) will be constructed approximately 1.5 miles west of the existing airport. It is anticipated that the existing critical aircraft (C208) will continue to be the critical aircraft. Using AC 150/5325-4B, ADOT has calculated a runway length of 2,800' for use by small aircraft. APP-410 calculates a runway length of 1900' for the C208 using the aircraft's flight manual. However, a minimum runway length of 3200-feet is normally needed for RNAV approaches per FAA Order 8260, TERPS. Accordingly, a runway length of 3200-feet would be justified for AIP funding using the typical parameters.



Based on communication between the ADOT, Everts Air Cargo, and Lynden Air Cargo (the cargo operators who service the Noatak village), the operator's preferred minimum runway length is 5,000' for their DC-6 and the C-130 aircraft. Everts Air Cargo delivers most of the community's fuel by DC-6 aircraft. On a fuel delivery day, Everts flies round trips from Kotzebue 50 miles to the south to Noatak, transporting fuel from Kotzebue's bulk fuel facility. Other large freight is often transported by Lynden Air Cargo C-130s. The C-130 is used to transport large and heavy building materials that will not fit in the smaller aircraft. The DC-6 and C-130 aircraft also operate for on-demand cargo and yearly for the seasonal construction of the Ice Road to Kotzebue (AK). Using FAA TFMSC data, the AAL RO indicates there are about 24 annual operations of these aircraft types at WTK.

At WTK, the cargo aircraft are typically landing with significant payload (and then departing with less weight after offloading), and have demonstrated the ability to operate safely on the existing runway of about 4000-feet. ADOT concurs that a runway

length of 4000-feet has historically proven adequate to support the occasional yet vital air services needed to transport cargo to roadless communities. Effectively, construction of a 4000-foot runway at the replacement airport is maintaining the same essential minimum capability that exists at the current airport.

Determination

APP concurs that a runway length of 4,000-feet is essential for continuation of vital air cargo service to the community of Noatak at its replacement airport. A shorter runway length would jeopardize the occasional cargo service provided by larger aircraft to transport vital supplies to the community. This would likely result in increased cost of goods and transportation in a location that already is hindered by high cost of living. The additional runway length needed is a modest 800-feet longer than AIP's normal parameters under AC 150/5000-17 and AC 150/5325-4B. AIP participation to construct a 4,000-foot runway is justified to meet the public need.

Attachments:
Email from Jonathan Linquist, dated 01/12/23, to submit AAL RO request
ADOT correspondence on runway length rational at WTK

CC:
APP file for WTK and replacement airport
Lisa Holden, APP-2 (acting)
Luis Loarte, APP-410

From:	Linquist, Jonathan (FAA)
To:	Hines, Michael (FAA); Reinhardt, William (FAA); Duffy, Kent (FAA)
Cc:	Warden, Kristi (FAA); Clark, Rodney (FAA); Moss, Katrina (FAA); Zettler, Patrick (FAA); Sanches, David J (FAA); Mamrol, Peter J (FAA)
Subject:	Request for APP-400 Concurrence - Runway length at Noatak (WTK) Replacement Airport
Date:	Thursday, January 12, 2023 11:26:59 AM
Attachments:	Noatak Runway Length.pdf

Good morning Mike and all,

The Alaska Region requests concurrence from APP-400 on the subject of runway length justification at the Noatak Airport (WTK) in remote northwest Alaska.

Airport relocation is being planned in the near-term at Noatak due to the vulnerabilities of existing airport infrastructure to riverbank erosion [replacement airport approved by APP-1 on 1/31/2008]. As part of the relocated airport planning, the sponsor will be requesting AIP-participation in the construction of a similar-length runway for the new airport as exists at the current airport. This runway length appears to be in excess of that required for the regular-use critical aircraft as evaluated per AC 150-5325-4B *Runway Length Requirements for Airport Design*.

The airport sponsor has presented a compelling argument for the investment in a runway length that's needed to support aircraft with fewer than 500 annual operations. The Alaskan Region Airports Division has received this argument as valid and compelling. As such, the division is seeking concurrence from APP-400 for unique justification of the requested runway length at Noatak. A document containing the information submitted from Alaska DOT&PF (the airport sponsor) is attached to this email. A brief summary of the main points is presented below:

- The existing airport at Noatak is 4,000 feet in length and receives passenger/mail service on close to a daily schedule, a route predominately flown by small category A-II aircraft, which the sponsor has calculated requires a 2,800' runway.
- The Native Village of Noatak is not connected to any road system, and no barge service is available to support the delivery of essential fuel and supplies – leaving air service as the only viable transportation option.
- All fuel and material needed to support the community is currently flown into the existing airport on large cargo aircraft (C-130 and DC-6). These operations are relatively few (estimating an average of 24 per year based on IFR traffic counts between 2002-2022) but are critical to the viability of Noatak.
- These large cargo aircraft typical of regional freight deliveries require longer minimum runway length to operate, and generally do not operate at airports with runway lengths shorter than 4,000 even with weight restrictions.

Construction of a minimum 4000-foot runway at Noatak is justified for AIP participation, as this will allow for the relocated airport to continue to support critical public need that is met by these cargo aircraft operations.

Thanks,

//Signed//
JONATHAN LINQUIST
Lead Community Planner
FAA Alaskan Region Airports Division
Tel: 907-271-5040

FAA comment: Based on AC150/5325, the critical aircraft assumed for Noatak does not appear to justify the construction of a 4,000-foot runway. Provide analysis to support this runway length, or provide documentation on why this runway length would be justified for AIP participation.

DOT response:

The public need at Noatak demonstrates that Federal investment is justified for airport facilities beyond the AIP-defined Critical Aircraft.

The FAA NPIAS lists Noatak as a commercial service, local non-primary airport. The existing 3992' gravel-surfaced runway serves as the sole transportation method for fuel, groceries, and all other commodities for the community. Noatak is isolated and not connected by a road system to the surrounding communities. Although Noatak is located long a river it has no barge service due to the shallow river depth. The 2020 census indicates 570 people live in Noatak.

Scheduled air service is provided several times a week for mail and passengers using a Cessna 208B Grand Caravan, which meets the threshold for critical aircraft* by exceeding 500 annual operations (per Advisory Circular 50/5000-17). The Grand Caravan is classified as an A-II small aircraft. Following guidelines of AC 150/5325-4, the recommended runway length for this aircraft is 2,800' (following Figure 2-1, considering "95% of fleet" at a mean daily maximum temperature of approximately 64°F, while not accounting for the gravel surface of the runway).

Noatak has one of the highest costs of living for an Alaskan community, primarily due to the reliance on expensive air transport for all essential goods and services. Disruptions in air service have led to shortages in the past, particularly fuel. Based on reporting by the Washington Post and Anchorage Daily News**, the community's 24,000 gallon fuel tanks ran dry at least twice in 2022. One account indicates a resident traveled by boat 70 miles downstream to Kotzebue to purchase and retrieve a 55-gallon drum of fuel, an undertaking that used upwards of 36 gallons of fuel to complete. The article reported the price of fuel reached $17.99 per gallon of unleaded gasoline and $12.99 per gallon of diesel in 2022. Extreme fuel prices and supply disruptions result in reduced food security as traditional subsistence activities are disrupted, possible damage to infrastructure as residents are unable to heat homes, and the threat of becoming unaffordable to live in the community. **Maintaining the level of air service is critical to meeting the public needs.**

In remote Alaskan communities runway length limits the aircraft fleet that can transport cargo. The Alaska aviation industry has developed around "bush" planes to meet the needs of these remote communities, embracing aircraft that are capable of operating on shorter, gravel-surfaced runways. Everts Air Cargo delivers most of the community's fuel by DC-6 aircraft. On a fuel delivery day, Everts flies from Fairbanks to Kotzebue and then flies round trips from Kotzebue to Noatak, transporting fuel from Kotzebue's bulk fuel facility. Other large freight is often transported by Lynden Air Cargo C-130s. The C-130 is used to transport large and heavy building materials that will not fit in the smaller regional aircraft that operate out of Kotzebue. For example, in 2007 the

* Source: FAA Traffic Flow Management System Counts (TFMSC) for calendar year 2022.
** Press articles: https://www.washingtonpost.com/nation/2022/09/23/noatak-alaska/ and https://www.adn.com/alaska-news/rural-alaska/2022/05/18/fuel-in-the-alaska-village-of-noatak-was-16-a-gallon-the-costs-are-more-than-just-money/

community built a new school building where all the construction materials had to be flown in, which resulted in thirty-five C-130 flights.

A fully loaded DC-6 requires a runway longer than 4000'. According to the August 2021 operation manual for the DC-6, the minimum landing runway length is 4150' for the maximum landing weight with flaps in full down landing position. With flaps in 40 degree landing position the minimum runway length is 5300'. The minimum runway length for max takeoff weight is also 5300'. Airport planning manuals were not available to calculate the runway length of the C-130.

Aircraft already operate at reduced capacity to transport fuel and materials to Noatak. Based on communication with Everts Air Cargo and Lynden Air Cargo, the preferred minimum runway length is 5,000' for the DC-6 and the C-130 aircraft. This preferred runway length is documented in the attached Brush Clearance memo from Lynden Air Cargo. Lynden also requested additional clearing and approach path requirements for the shorter runway length to ensure the safety of their aircraft. The existing Noatak runway length limits the takeoff weight for C-130 aircraft, requiring contractors to either dismantle equipment into smaller/lighter loads or transport items by building an ice road to Kotzebue, during the winter. The preferred minimum 5,000' runway is unavailable at many remote Alaska airports where on-demand air cargo deliveries are still needed. Runway lengths of 4,000-feet represent a compromise, and are found at many airports in Alaska for similar communities that are not connected to the road system, or have limited/no barge access. A runway length of 4,000' has historically proven adequate to support the infrequent, yet critical air services (although still leaving small margins of error for these pilots of larger aircraft).

A shortened runway length would have significant impacts on Noatak, jeopardizing the regional cargo aircraft service currently available to the community. This would cause increased cost of goods and transportation in a location that already is hindered by high cost of living. Therefore, federal investment through the AIP program should allow an exception to the FAA policy of AIP Handbook paragraph 3-11, *The Use of Critical Aircraft for Justification,* at the Noatak Airport. AIP participation for funding the modest runway length in excess of the regular-use aircraft runway length to reinstall a 4,000-foot runway is justified to meet the critical public need.