

Jackson, Peter J (DOT)

From: Khera, Paul (DOT)
Sent: Wednesday, February 9, 2022 2:57 PM
To: Edic, Heather M (FAA)
Cc: Jackson, Peter J (DOT); Woodby, Martin H (DOT)
Subject: RE: 52796 Port Lions - Runway Length

Thank you Heather,

You got this back to us in quick time and I very much appreciate the help you provided today. Enjoy the rest of the day knowing that you made our DOT&PF team very happy!

Paul Khera, A.A.E., ACE

Aviation Planner
Alaska DOT&PF
6860 Glacier Highway
P.O. Box 112506
Juneau, Alaska 99811-2506
Office: 907-465-4445

From: Edic, Heather M (FAA) <Heather.M.Edic@faa.gov>
Sent: Wednesday, February 9, 2022 2:51 PM
To: Khera, Paul (DOT) <paul.khera@alaska.gov>
Cc: Jackson, Peter J (DOT) <peter.jackson@alaska.gov>; Woodby, Martin H (DOT) <martin.woodby@alaska.gov>
Subject: RE: 52796 Port Lions - Runway Length

CAUTION: This email originated from outside the State of Alaska mail system. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good Afternoon Paul,

Attached is the Port Lions Forecast and Critical Aircraft Determination Approval Letter.

Thanks,

Heather Edic

Community Planner, FAA
Alaskan Region Airports Division
heather.m.edic@faa.gov
Tel: (907) 271-5026

From: Khera, Paul (DOT) <paul.khera@alaska.gov>
Sent: Tuesday, January 18, 2022 3:37 PM
To: Edic, Heather M (FAA) <Heather.M.Edic@faa.gov>
Cc: Jackson, Peter J (DOT) <peter.jackson@alaska.gov>; Woodby, Martin H (DOT) <martin.woodby@alaska.gov>
Subject: FW: 52796 Port Lions - Runway Length

Hi Heather,

As we put together the project for the Port Lions Airport, Martin determined, using AC 150/5325-4B, that runway length required would be 2750'. If you concur, please send me an FAA memo stating that this is the length of runway eligible for AIP funding and that you approve of the forecast (attached).

Thank you,

Paul Khera, A.A.E., ACE

Aviation Planner
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Juneau, Alaska 99811-2506
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From: Jackson, Peter J (DOT) <peter.jackson@alaska.gov>

Sent: Tuesday, January 18, 2022 2:03 PM

To: Khera, Paul (DOT) <paul.khera@alaska.gov>

Subject: 52796 Port Lions - Runway Length

Paul,
Below is what Martin sent me. Please review and comment as needed.
Thanks,
Peter

Good Afternoon Peter,

The steps listed in AC 150/5325-4B Paragraph 102b "Procedure and Rationale for Determining Recommended Runway Lengths" are as follows:

(1) Step #1. Identify the list of critical design airplanes that will make regular use of the proposed runway for an established planning period of at least five years. For Federally funded projects, the definition of the term "substantial use" quantifies the term "regular use" (see Paragraph 102a(8).)

(2) Step #2. Identify the airplanes that will require the longest runway lengths at maximum certificated takeoff weight (MTOW). This will be used to determine the method for establishing the recommended runway length. Except for regional jets, when the MTOW of listed airplanes is 60,000 pounds (27,200 kg) or less, the recommended runway length is determined according to a family grouping of airplanes having similar performance characteristics and operating weights. Although a number of regional jets have an MTOW less than 60,000 pounds (27,200 kg), the exception acknowledges the long range capability of the regional jets and the necessity to offer regional jet operators the flexibility to interchange regional jet models according to passenger demand without suffering operating weight restrictions. When the MTOW of listed airplanes is over 60,000 pounds (27,200 kg), the recommended runway length is determined according to individual airplanes. The recommended runway length in the latter case is a function of the most critical individual airplane's takeoff and landing operating weights, which depend on wing flap settings, airport elevation and temperature, runway surface conditions (dry or wet), and effective runway gradient. The procedure assumes that there are no obstructions that would preclude the use of the full length of the runway.

(3) Step #3. Use table 1-1 and the airplanes identified in step #2 to determine the method that will be used for establishing the recommended runway length. Table 1-1 categorizes potential design airplanes according to their MTOWs. MTOW is used because of the significant role played by airplane operating weights in determining runway lengths. As seen from table 1-1, the first column separates the various airplanes into one of three weight categories.

Small airplanes, defined as airplanes with MTOW of 12,500 pounds (5,670 kg) or less, are further subdivided according to approach speeds and passenger seating as explained in chapter 2. Regional jets are assigned to the same category as airplanes with a MTOW over 60,000 pounds (27,200 kg). The second column identifies the applicable airport design approach (by airplane family group or by individual airplanes) as noted previously in step #2. The third column directs the airport designer to the appropriate chapter for design guidelines and whether to use the referenced tables contained in the AC or to obtain airplane manufacturers' airport planning manuals (APM) for each individual airplane under evaluation. In the later case, APMs provide the takeoff and landing runway lengths that an airport designer will in turn apply to the associated guidelines set forth by this AC to obtain runway lengths. The airport designer should be aware that APMs go by a variety of names. For example, Airbus, the Boeing Company, and Bombardier respectively title their APMs as "Airplane Characteristics for Airport Planning," "Airplane Characteristics for Airport Planning," and "Airport Planning Manuals." For the purpose of this AC, the variously titled documents will be referred to as APM. Appendix 1 lists the websites of the various airplane manufacturers to provide individuals a starting point to retrieve an APM or a point of contact for further consultation.

(4) Step #4. Select the recommended runway length from among the various runway lengths generated by step #3 per the process identified in chapters 2, 3, or 4, as applicable.

(5) Step #5. Apply any necessary adjustment to the obtained runway length, when instructed by the applicable chapter of this AC, to the runway length generated by step #4 to obtain a final recommended runway length. For instance, an adjustment to the length may be necessary for runways with non-zero effective gradients. Chapter 5 provides the rationale for these length adjustments.

Given the critical aircraft determination for Port Lions Airport (ORI) of the Piper PA-32 Cherokee 6 (A-I), the recommended runway length was determined by completing the above steps.

STEP 1. The critical aircraft for Port Lions Airport is the Piper PA-32 Cherokee 6

STEP 2. The only critical aircraft is the Piper PA-32, and its maximum certified takeoff weight is 3,400 lbs. Therefore, the recommended runway length is determined according to a family grouping of airplanes having similar performance characteristics and operating weights.

STEP 3. From Table 1-1, the design guidelines are located in Chapter 2.

STEP 4. From Chapter 2, the design procedure for small airplanes requires the following information: the critical design airplanes under evaluation, approach speed in knots (1.3 x stall speed), number of passenger seats, airport elevation above mean sea level, and the mean daily maximum temperature of the hottest month at the airport.

Critical Aircraft: Piper PA-32 Cherokee 6

Approach speed: 55 knots

Number of passenger seats: 5

Airport elevation above mean sea level: 52 feet ASL

Mean daily maximum temperature of the hottest month at the airport: 61 deg F

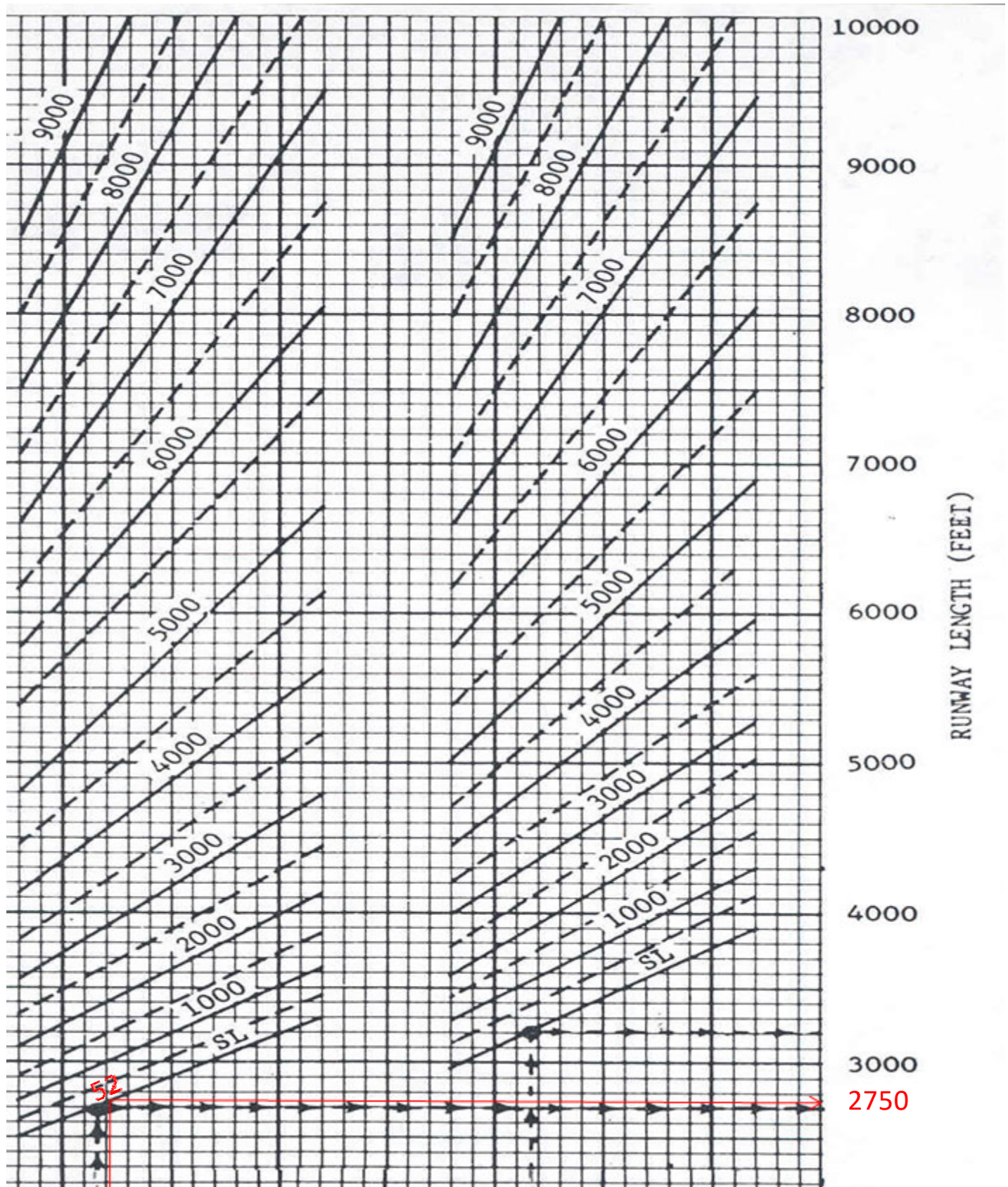
Since the maximum certified takeoff weight is less than 12,500 lbs, the approach speed is more than 50 knots, and the number of passengers is less than 10, the correct design aid to use is Figure 2-1. Once these design parameters are established, the next step is selecting Percentage of Fleet for Figure 2-1. The differences between the two percentage categories are based on the airport's location and the amount of existing or planned aviation activities. The selection is based on the following criteria:

95 Percent of Fleet. This category applies to airports that are primarily intended to serve medium size population communities with a diversity of usage and a greater potential for increased aviation activities. Also included in this category are those airports that are primarily intended to serve low-activity locations, small population communities,

and remote recreational areas. Their inclusion recognizes that these airports in many cases develop into airports with higher levels of aviation activities.

100 Percent of Fleet. This type of airport is primarily intended to serve communities located on the fringe of a metropolitan area or a relatively large population remote from a metropolitan area.

Selecting 95% of Fleet is appropriate since Port Lions Airport is “primarily intended to serve low-activity locations, small population communities, and remote recreational areas”. Figure 2-1 (95% of fleet) is used to determine the recommended runway length for Port Lions Airport as shown below:



STEP 5. Per AC 150/5325-4B, Paragraph 205: for this airplane weight category, no further adjustment to the obtained length from the figures 2.1 or 2.2 is necessary. **Therefore, the recommended runway length for the Port Lions Airport per AC 5325-4B is 2,750 feet.**

Please let me know if you have any questions. Thank you,

Martin Woodby

Peter J. Jackson, PE

Engineer II – Project Manager

Alaska DOT&PF, Southcoast Region

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