

Assignment 2: Runway Length Analysis

Date Due: February 7, 2014

Instructor: Trani

Reading Assignment: Read Chapters 1 through 3 of the FAA Advisory Circular 150/5325-4b before working on this homework.

Problem 1

Design the runway length for a new General Aviation airport to be constructed at a site located 3,400 feet above sea level. A temperature survey at the site indicates a mean daily maximum temperature of the hottest month of 93 degree F. The aircraft fleet mix expected to operate at the airport is shown in Table 1.

Table 1. Expected Aircraft Fleet at Proposed Airport.

Aircraft Type	Sampled Aircraft	Aircraft Based at Airport
Single Engine Piston	Cessna 172, Cirrus SR-22, Beechcraft Bonanza A36	80
Multi-engine Piston	Piper Navajo, Cessna 421C and Beechcraft B58 Baron	20

- a) Find the recommended runway length required to serve aircraft listed in Table 1. Consider the correction factors if applicable.
- b) If the airport wants to serve small corporate jets such as the Cessna Citation 550, estimate the new runway length requirement.
- c) Estimate the runway length to support medium size corporate jets such as the Cessna Citation 680 Sovereign and the Raytheon Hawker 400. Comment on the differences found in parts (a-c).

Problem 2

- a) Explain in simple terms the effect of temperature on runway length.
- b) Explain in simple terms the effect of airfield elevation on runway length.




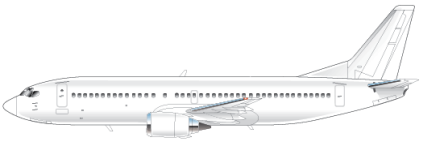

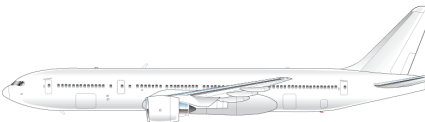

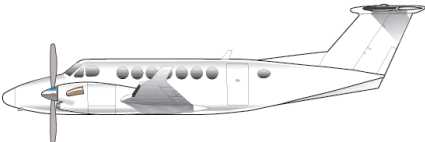
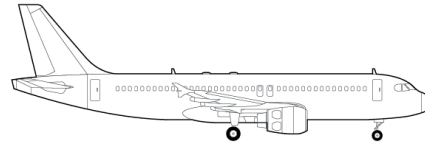
Problem 3

The airport manager of Virginia Tech Montgomery County wants to extend the runway to accommodate Large corporate jets such as the Cessna Citation X (model 650) and the Falcon 900. Find the runway length needed to accommodate such aircraft.

Problem 4

Name the following aircraft and state their FAA aircraft design group. Use the course notes and the Internet as needed.

Here is a list of possible choices (more choices than pictures to add a little challenge): Airbus A320-200, Cessna 172, Boeing 757-200, Boeing 747-400, Boeing 737-400, Embraer 145, Boeing 757-200, Boeing 777-200, Jetstream 31, Gulfstream V, Pilatus PC-12, Bombardier DeHavilland Dash 8 and Bombardier CRJ-200.

Aircraft	Aircraft Design Group	Taxiway Design Group	Aircraft Name
			
			
			
			
			
			
			
			
			

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