

Assignment 4

Date Due: February 24, 2013

Instructor: Trani

Problem 1

Familiarize yourself with Chapter 6 of the AC 150/5300-13A before trying this problem.

Research in the internet and in Chapter 6 of the FAA AC 150/5300-13 the following airport systems. In one 3-4 sentence paragraph explain what is the purpose of the system and whether or not the system can be located inside the Runway Object Free Area (ROFA).

1. Runway Visual Range (RVR)
2. Airport Surface Detection Equipment (ASDE-X)
3. Distance measuring Equipment (DME)
4. ILS Localizer Antenna (LOC) and ILS Glideslope antenna (GS)
5. Terminal VOR (TVOR)
6. Airport beacon

Problem 2

Use Google Earth software and Airnav (www.airnav.com) to answer the following short questions. Google Earth is used to inspect various airports across the country and perform some preliminary analysis.

For San Francisco International Airport (SFO)

- a) Can simultaneous approaches be conducted on runways 28R and 28L in IMC conditions? Explain the FAA rule used and the distance between the two runways in question.
- b) Can simultaneous approaches be conducted on runways 28R and 28L in VMC and zero wind conditions at the airport? Explain the FAA rule used and the distance between the two runways in question.

For Atlanta International Airport (ATL)

- a) Can ATC conduct simultaneous approaches to two runways at ATL in IMC conditions? Explain the FAA rule used and the distance between the runways in question. Select the two most likely runways used for arrivals if the wind is blowing from the West and aircraft prefer to land against the wind. State the reason for your runway selection.
- b) Can ATC conduct simultaneous approaches to three runways at ATL in IMC conditions? Explain the FAA rule used and the distance between the runways in question.
- c) Can ATC conduct simultaneous departures from two runways at ATL in IMC conditions? Explain the FAA rule used and the distance between the runways in question. Select the two most likely runways used for departures if the wind is blowing from the West and aircraft prefer to takeoff against the wind. State the reason for your runway selection.

For Los Angeles International Airport (LAX)

- a) Can simultaneous approaches be conducted on runways 24R and 25L in IMC conditions at LAX? Explain the FAA rule used and the distance between the two runways in question.
- b) Can simultaneous approaches be conducted by two small aircraft on runways 25R and 25L in VMC conditions if wake is not a factor? Explain the FAA rule used and the distance between the two runways in question.

Problem 3

Briefly answer the following questions:

- a) An airport has two parallel runways separated by 3600 feet. What type of simultaneous parallel operations can this airport perform in IMC conditions. Consider both arrivals and departures. The airport has a standard surveillance radar with a scan rate of 5 seconds. State the FAA rules used in your answer.
- b) Improve the runway capacity situation for airport described in part (a). Can an advanced radar be used to improve the situation? if the answer is yes, state the name of the technology needed.
- c) A proposed new airport for Mexico City airport would be located at 7,200 feet above sea level. The airport authority would like to conduct triple simultaneous instrument approaches in the final phase of the project. Assuming that the Mexican authority uses FAA separation standards, what separation would you recommend for the three arrival runways? State the rule used.
- d) A general aviation airport has two parallel runways separated by 750 feet. Can the airport conduct simultaneous approaches in visual conditions?
- e) LAX has two closely spaced runways on the South side (runways 25L and 25R). LAX has commercial flights using the Boeing 747-400. The aircraft lands on the Southern most runway (25L). If the airport wanted to operate simultaneous VMC approaches to the two south runways, what is the recommended distance between parallel runways? State the FAA rule used.

Problem 4

Briefly answer the following questions:

- a) A United Airlines Boeing 777-200 departs Washington Dulles (IAD) airport for Los Angeles (LAX). The pilot requests an initial altitude to be flown. Which of the two altitudes below is allowed for this flight?
 - i. 34,000 feet
 - ii. 35,000 feetExplain the reason for your selection.
- b) An aircraft traffic controller separates traffic in the Potomac TRACON (Potomac is the TRACON that controls traffic to all three DC area airports). If two aircraft are located 45 nm from the radar antenna, what is the minimum horizontal separation used?
- c) A pilot reports to ATC to be in cruise at flight level 370 over Arizona. What is the altitude of this aircraft above sea level? What is the general direction of flight (i.e., North, South, East, West, lets.). Explain.
- d) Using data from the FAA Aerospace Forecast 2014, explain the general trend of the total number of commercial aircraft in the US fleet used to transport passengers. This includes regional aircraft and mainline aircraft. Comment on the reasons for this trend and its effect in airline load factors today.
- e) Long runways are not the norm in the NAS. Estimate the **percent of paved runways** in the US whose length exceeds 9999 feet.
- f) Propose a reason why airlines decreased airline fares in the peak years of the recession period (2009-2010).
- g) If oil prices are so low now compared to a year ago, why do airlines maintain their fares nearly constant? Offer an explanation.