Assignment 5: Runway Separations and Air Traffic Control

Date Due: October 6, 2025 (midnight) **Instructor: Trani**

Problem 1

Use Google Earth, Airnav, and Webtrak (https://us.webtrak.aero/) to study runway operations at Charlotte-Douglass International Airport and answer the following questions. Figure 1 illustrates the annotated Webtrak interface to review airport operations.

Use Webtrak and observe the historical flights for September 18, 2025 starting at 3 PM local time. Observe traffic between 3:00 and 3:20 PM to understand the operations at CLT. 3:00 PM local time is hour 15 in Webtrak. You can speed up the replay of runway operations as needed.

a) Use Google Earth to measure the distance between the parallel runway centerlines at CLT.

b) Name the runways used for arrival operations in the period of interest.

c) Based on your observation, can CLT do dual simultaneous arrivals? Explain the runways.

d) Based on your observation, can CLT do triple simultaneous arrivals? Explain the runways.

e) Briefly explain the FAA runway separation rule that applies and the distance between arrival runways in parts (c) and (d).

f) Can CLT do simultaneous departures operations from at least two runways? State the rule used and the runways used.

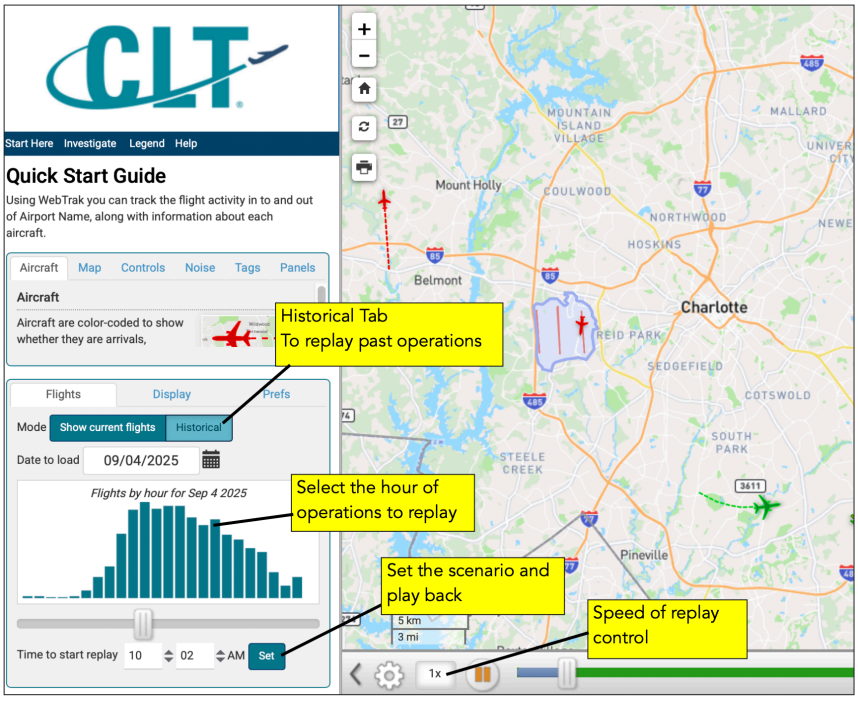

Figure 1. WebTrack 6 Display for Charlotte International Airport (CLT).

Problem 2

Use Google Earth, Airnav, and Webtrak (https://us.webtrak.aero/) to study runway operations at Philadelphia International Airport (PHL) and answer the following questions.

a) Estimate the runway stagger between the thresholds for runways 27L and 27R.

b) Estimate the distance between runways centerlines for runways 27L and 27L.

c) Could PHL operate simultaneous arrivals to runways 27L and 27R using the FAA stagger rule? Explain the required runway separation at PHL for arrivals using the stagger rule.

d) Load the Webtrak data for Philadelphia International Airport (PHL) for September 18, 2025 starting at 4:00 PM local time (Hour 16 in Webtrak). Look at the traffic for 20 minutes (you can speed up the replay as needed).

e) Explain the operations at the airport. Name the runway(s) used for arrivals and departures.

f) Using your knowledge of aircraft runway lengths requirements for landing and takeoff, is the operation at PHL consistent? Explain.

Problem 3

Quick assessment and answers.

Cancun International Airport (CUN)

a) Can the airport conduct simultaneous approaches to the parallel runways in Instrument meteorological conditions?

b) Name the ICAO rule used and the estimated distance between runway centerlines.

London Heathrow Airport (LHR)

c) Can the airport conduct simultaneous approaches to the parallel runways in Instrument meteorological conditions?

d) Name the ICAO rule used and the estimated distance between runway centerlines.

e) Comparing the configurations of Cancun and London, explain how the observed runway separations affect the location of the airport terminals to serve passengers.

Problem 4

Briefly answer the following questions with two sentences.

a) Explain how ADS-B technology has affected the runway separation standards in the United States.

b) Explain why runway separations at higher elevation airports increase.

c) State the minimum parallel runway separation to conduct segregated runway operations in the US (assume instrument meteorological conditions and radar and ADS-B technology available).

d) An Airbus A320 flies from Los Angeles airport to Boston. State a feasible cruise altitude for this flight. Explain the reason of your choice.

e) Are landings on runway 26L and departures on runway 19R at Las Vegas International Airport (LAS) subject to converging runway operations (CRO)? Explain the rule used.