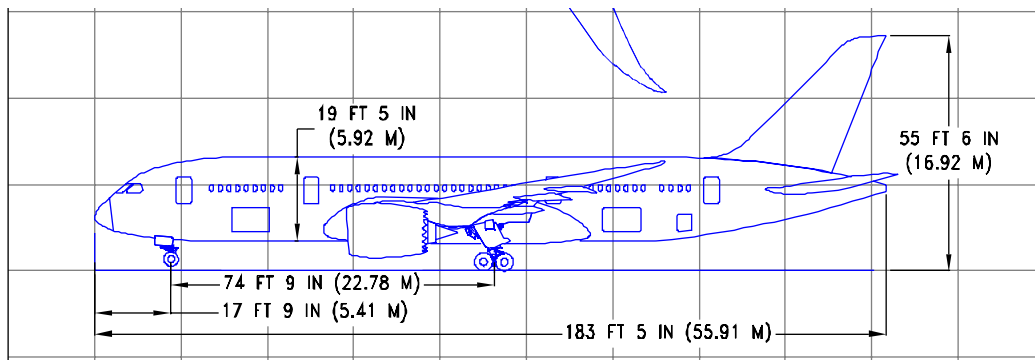


Aircraft Systems Field Exam



The Boeing 787 is currently in initial flight test. Boeing has published many of the aircraft specifications (eg 787-8, **Seating:** 210 to 250 passengers, **Range:** 7,650 to 8,200 nmi **Cruise Speed:** Mach 0.85, **Maximum Takeoff Weight:** 484,000 lbs). Boeing has not publically released any information on takeoff field length. In the 787 airport compatibility manual Boeing states; "Takeoff Field Length information to be updated upon availability of 787-8 Flight Test Data. This question will focus on the requirements, performance trades and testing for takeoff field length.

1. Should the 787-8 require a "balanced field length" or can it use the takeoff field length to clear a 50 ft obstacle as the basis for the takeoff field length?
2. Presuming that Boeing has a requirement for takeoff field length, which they have not published. Discuss the factors which would determine this requirement and how Boeing would determine the values.
3. Discuss the design factors on the vehicle which will influence the balanced field performance of the aircraft and how balanced field performance will trade against the specifications described in the introductory paragraph.
4. If you were given the responsibility to design the verification and flight test program for takeoff field length describe how you would go about this. Explain in as much detail as possible.
5. Why do you think that Boeing is unwilling to publish takeoff performance data at this point but willing to publish other performance specifications?