Homework 7

Study Questions

Commercial AVF 221

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_ Score\_\_\_\_\_

Weight and Balance Handbook

1. List the 4 factors that are effected by improper loading in terms of efficiency
2. What is the responsibility chain for proper weight and balance control (start with engineers)
3. Who has the responsibility on every flight to know the max allowable weight and CG limits?
4. What are they for the Bonanza?
5. Can severe uncoordinated maneuvers cause structural failure?
6. What must be done with weight in a high density altitude situation?
7. Name some other factors that would require a reduction in weight to maintain safety
8. For positive longitudinal stability to result where must the CG be located referenced to the center of lift?
9. Name some problems with a forward CG
10. Name some problems with an aft CG
11. Which condition requires more tail down force?
12. Name the 2 elements that are vital in the weight and balance considerations of an aircraft

Define:

1. Arm
2. Datum
3. Moment
4. Type Certificate Data Sheet
5. MAC
6. LEMAC
7. TEMAC
8. Zero fuel weight

PHAK (chapter 10)

1. List the performance deficiencies of an over loaded aircraft
2. When is a nose heavy loading condition most likely to cause problems?
3. Who sets the limits for the CG location?
4. Where do most manufactures locate the fuel tanks with respect to the CG?
5. What FAR requires establishment of the ranges of weights and CGs?
6. In what 3 documents may the manufacturer provide this information?
7. Under part 91 are there specified requirements to conduct weight and balance calculations prior to each flight?
8. Does the addition of nuts, bolts, washers and rivets require a weight and balance check?
9. The Bonanza’s GW is 3,400lbs. What maximum weight meets the criteria for negligible weight change?
10. When are part 135 aircraft exempted from the 36 month weigh-in requirement?
11. Work up a weight and balance for Bonanza 82964.

Given: Pilot 160lbs @ 89, Pass 150lbs @ 89, 1 Backseater (Mother-in-law) 300 @ 127, 93.5lbs in baggage compartment, T/O full fuel - 80 total 74 useable, fuel used 60 gallons

|  |  |  |  |
| --- | --- | --- | --- |
| Beech F-33A | Weight | Arm | Mom/100 |
| Basic Empty Wt | 2264.50 | 80.65 | 1826.42 |
| Front SeatFwd Pos.Aft Pos. |  | 8589 |  |
| Rear SeatFwd Pos.Aft Pos. |  | 121150 |  |
| Baggage |  | 150 |  |
| Fuel(\_74\_\_\_gal) |  | 75 |  |
| -Taxi T/O fuel | -12 | 75 |  |
| T/O Condition |  |  |  |
| Less fuel used |  | 75 |  |
| Landing Condition |  |  |  |

In on takeoff? \_\_\_\_\_\_

In on landing? \_\_\_\_\_\_

How far out on landing? \_\_\_\_\_\_

How much cargo must be shifted to the front seat passenger position (Arm 89) to bring the CG into limits for the landing configuration? \_\_\_\_\_\_\_ (show your W/S formula work below)

Are we still in limits for takeoff after the shift? \_\_\_\_\_\_\_

How much weight is left in the cargo area? \_\_\_\_\_\_