Review

G. White

W&B

- Note: CG Forward of Center of Lift
- Recall Units
  - Arm (length – say inches)
  - Item (lbs)
  - Moment (in-lbs)
  - CG (length – say inches)
- Another Term for Arm
  - Moment-Arm
  - Station

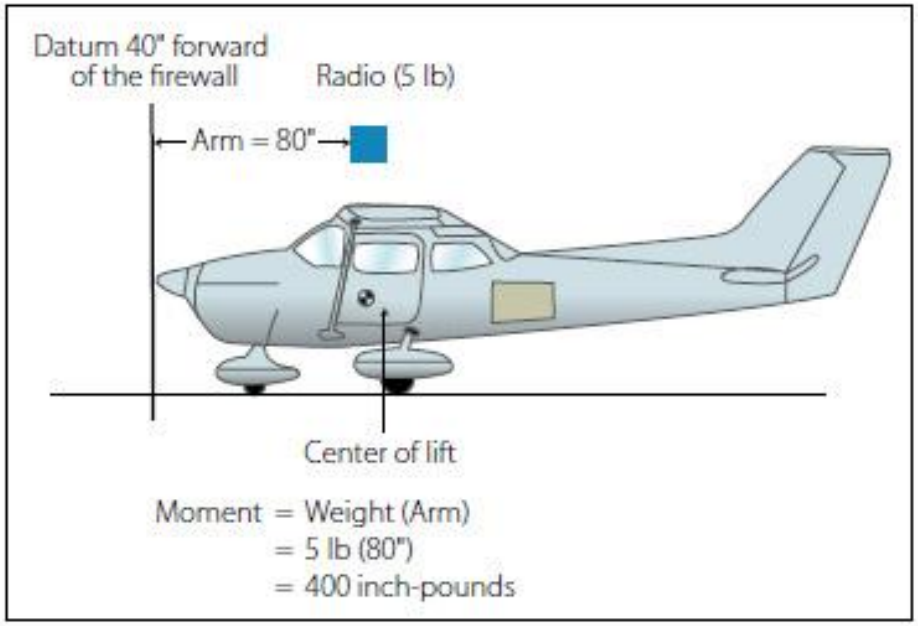


Figure 4-2. Moment of a radio located aft of the datum.

W&B (cont.)

- Recall CG Equation

CG = Total Moments/Total Weight

If CG of Empty Airplane is 30” and Total Moments = 4,200 ft-lbs – what is Empty Weight?

Hint – look at units carefully

Pressure and Density Altitude

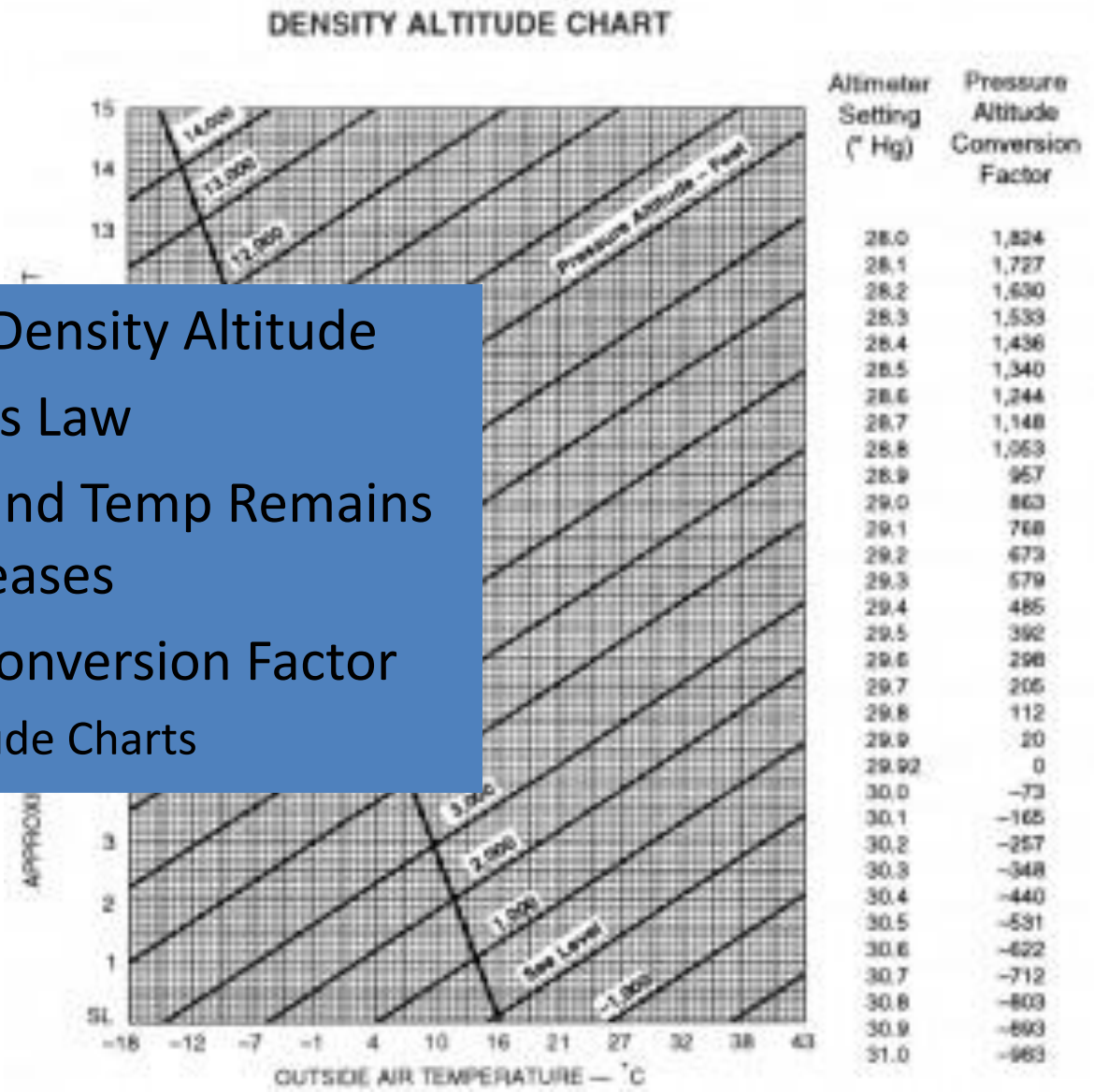
- Pressure Altitude is Referenced to 29.92” Hg
  - If Station Pressure is 30.52” Hg and Station Altitude is 1,000’
  - Pressure Altitude = ?
  - Recall for Each 0.1” Increase in Baro, Pressure Altitude Decreases About 100’
  - Therefore 30.52”-29.92” = +0.6” or -600’
  - So Pressure Altitude ~ 1,000’-600’ = 400’
- When Flying Above 18,000’ MSL we Set Altimeter to 29.92” and Thus We Fly Pressure Altitude

Density Altitude

- Density Altitude is Different Than Pressure Altitude in Most Cases
- Varies by Temp, Pressure, and Moisture
  - From Ideal Gas Law
  - P*V = n*R*T
  - As T Increases and for the Same Volume and Pressure, n (number of gas moles) Must Decrease
  - Therefore, We Have a Higher Density Altitude

Density Altitude (cont.)

- Pressure Also Changes Density Altitude
- Again, Refer to Ideal Gas Law
- If Pressure Decreases, and Temp Remains the Same, Then n Decreases
- See Pressure Altitude Conversion Factor
  - Not On All Density Altitude Charts



Density Altitude (cont.)

- Molar Mass of Dry Air ~ 28.97 g/mol
- Molar Mass of H2O ~ 18.02 g/mol
- Therefore
  - Adding Water Vapor to Air Reduces Density
  - Same Effect as Increasing Temperature
- A Smaller Effect Than Temp or Pressure
  - Usually Neglected

If Temp or Moisture of Air Increases, Density Altitude Increases

If Pressure of Air Decreases, Density Altitude Increases

Airspace and FAR Review

- Jepp DVD