P-2018

DISCUSS AIRCRAFT WEIGHT AND BALANCE

CONDITIONS

You are a Mission Scanner trainee and must discuss aircraft weight and balance.

OBJECTIVES

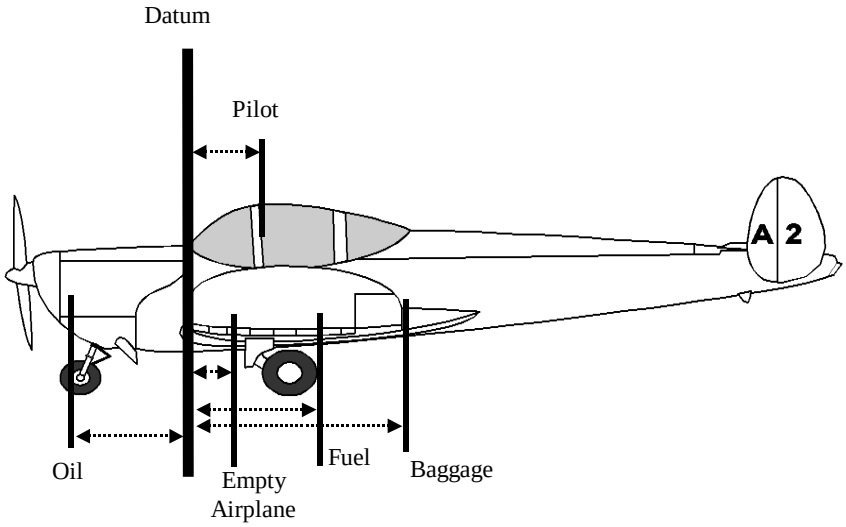
Discuss aircraft weight and balance criteria and describe the potential consequences of exceeding gross weight limits, and being "tail heavy" or "nose heavy."

TRAINING AND EVALUATION

Training Outline

1. As a Mission Scanner trainee, a basic knowledge of aircraft weight and balance and the consequences of exceeding weight and balance limits are essential.

2. The amount of lift produced by the aircraft is limited, so you must not load the aircraft beyond set limits. An overloaded aircraft may not be able to take off or may exhibit unexpected and potentially lethal flight characteristics. *Be honest about your weight and the weight of your luggage when loading the aircraft.*



3. The weight of the aircraft and its instruments is called the "empty weight." For each flight the pilot computes further increases in weight for the items required for the flight. Examples are:

a. Fuel and oil. Fuel weighs approximately six pounds per gallon, so this is an important factor. On larger aircraft carrying a heavy load, the pilot may not fill the fuel tanks completely in order to meet weight limits. *This limits range and must be done carefully; re-check fuel status every hour*.
b. Pilot and crew, and everything they carry onboard.
c. Extra equipment that is permanently stowed in the aircraft. This includes tow bars, chocks, and survival gear.

4. Balance refers to the location of the center of gravity (c.g.) of an aircraft and is critical to stability and safety of flight.

a. If the aircraft is loaded "tail heavy" the c.g. moves aft and the aircraft becomes less stable. In the worst case, this can make it difficult or impossible to recover from a stall.
b. If the aircraft is loaded "nose heavy" the c.g. moves forward. This can lead to a condition where the pilot cannot raise the aircraft's nose in slow flight conditions such as takeoff and landing.

5. The pilot computes the aircraft c.g. as part of the "Weight & Balance" calculations done before each flight. She then checks the c.g. to ensure it is within manufacturer's limitations.

Additional Information

More detailed information on this topic is available in Chapter 2 of the MART.

Evaluation Preparation

Setup: Access to an aircraft is desirable.

Brief Student: You are a Scanner trainee asked the basics about aircraft weight and balance and limits.

Evaluation

Performance measures	Results	
1. Discuss the consequences of exceeding the aircraft's weight limit.	P	F
2. Discuss the potential consequences of a "tail heavy" and a "nose heavy" aircraft.	P	F
3. Discuss the importance of being accurate and honest about your and your luggage weight.	P	F

Student must receive a pass on all performance measures to qualify in this task. If the individual fails any measure, show what was done wrong and how to do it correctly.