6.5 WEIGHT AND BALANCE DATA AND RECORD (Continued)

PA-46-350P	Serial Number	Registration Number	Page Number

Date	Item No.	Description of Article or Modification	Added (+) Removed (-)	Weight Change Wt. (Lb.)	Weight Change Arm (In.)	Weight Change Moment /100	Running Basic Empty Weight Wt. (Lb.)	Running Basic Empty Weight Moment /100

WEIGHT AND BALANCE RECORD (cont)
Figure 6-7 (cont)

6.7 GENERAL LOADING RECOMMENDATIONS

For all airplane configurations, it is the responsibility of the pilot in command to make sure that the airplane always remains within the allowable weight vs. center of gravity while in flight.

The following general loading recommendation is intended only as a guide. The charts, graphs, instructions and plotter should be checked to assure that the airplane is within the allowable weight vs. center of gravity envelope.

(a) Pilot Only
Load rear baggage compartment first.

(b) 2 Occupants - Pilot and Passenger in Front
Load rear baggage compartment first. Without aft baggage, fuel load may be limited by forward envelope for some combinations of optional equipment.

(c) 3 Occupants - 2 in front, 1 in rear
Baggage in nose may be limited by forward envelope.

(d) 4 Occupants - 2 in front, 2 in rear
Fuel may be limited for some combinations of optional equipment.

(e) 5 Occupants - 2 in front, 1 in middle, 2 in rear
Investigation is required to determine optimum baggage load.

(f) 6 Occupants - 2 in front, 2 in middle, 2 in rear
With six occupants fuel and/or baggage may be limited by envelope. Load forward baggage compartment first.

NOTE

With takeoff loadings falling near the aft limit, it is important to check anticipated landing loadings since fuel burn could result in a final loading outside of the approved envelope.

Always load the fuel equally between the right and left tanks.

6.9 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT

(a) Add the weight of all items to be loaded, except fuel, to the basic empty weight to determine zero fuel weight.

(b) Use the Loading Graph (Figure 6-13) to determine the moment of all items to be carried in the airplane.

(c) Add the moment of all items to be loaded to the basic empty weight moment.

(d) Divide the total moment by the total weight to determine the zero fuel weight C.G. location.

(e) By using the figures of item (a) and item (d) (above), locate a point on the C.G. range and weight graph (Figure 6-15). If the point falls within the C.G. envelope, the loading meets the weight and balance requirements.

(f) Add the weight of the fuel to be loaded to the total weight calculated for item (a) to determine ramp weight.

(g) Use the loading graph (Figure 6-13) to determine the moment of the fuel to be loaded and add to the total moment determined for item (c).

(h) Subtract the weight and moment of the fuel allowance for engine start, taxi, and runup.

(i) Divide the total moment by the total weight to determine takeoff C.G.

(j) Locate the takeoff weight center of gravity on the C.G. Range and Weight Graph (Figure 6-15). If the point falls within the C.G. envelope, the loading meets the weight and balance requirements.

(k) Subtract the Estimated Fuel Burnoff from the Takeoff Weight to determine the Landing Weight C.G.

(l) Locate the landing weight center of gravity on the C.G. Range and Weight Graph (Figure 6-15). If the point falls within the C.G. envelope, the loading meets the weight and balance requirements.

6.9 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT (Continued)

	Weight (Lb)	Arm Aft of Datum (Inches)	Moment (In.-Lb)
Basic Empty Weight	2745	134.20	368379
Pilot and Front Passenger	340	135.50	46070
Passengers (Center Seats)	170	177.00	30090
Passengers (Rear Seats)	340	218.75	74375
Baggage (Forward) (100 Lb Limit)	100	88.60	8860
Baggage (Aft) (100 Lb Limit)	70	248.23	17376
Zero Fuel Weight (4100 Lb Max.)	3765	144.79	545150
Fuel (120 Gal./720 Lb Max. Usable)	552	150.31	82971
Ramp Weight (4318 Lb Max.)	4317	145.99	628121
Fuel Allowance for Engine Start, Taxi, & Runup (3 Gal./18 Lb Max.)	-18	150.31	-2706
Takeoff Weight (4300 Lb Max.)	4299	145.48	625415

The center of gravity (C.G.) for the takeoff weight of this sample loading problem is at 145.48 inches aft of the datum line. Locate this point (145.48) on the C.G. range and weight graph (Figure 6-15). Since this point falls within the weight - C.G. envelope, this loading meets the weight and balance requirements.

Takeoff Weight	4299	145.48	625415
Minus Estimated Fuel Burn-off (climb & cruise) @ 6.0 Lb/Gal.	-480	150.31	-72149
Landing Weight	3819	144.87	553266

Locate the center of gravity of the landing weight on the C.G. range and weight graph (Figure 6-15). Since this point falls within the weight - C.G. envelope, the loading is acceptable for landing.

IT IS THE SOLE RESPONSIBILITY OF THE PILOT IN COMMAND TO ENSURE THAT THE AIRPLANE IS LOADED PROPERLY AT ALL TIMES.

SAMPLE LOADING PROBLEM
(NORMAL CATEGORY)
Figure 6-9

6.9 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT (Continued)

	Weight (Lb)	Arm Aft of Datum (Inches)	Moment (In.-Lb)
Basic Empty Weight			
Pilot and Front Passenger		135.50	
Passengers (Center Seats)		177.00	
Passengers (Rear Seats)		218.75	
Baggage (Forward) (100 Lb Limit)		88.60	
Baggage (Aft) (100 Lb Limit)		248.23	
Zero Fuel Weight (4100 Lb Max.)			
Fuel (120 Gal./720 Lb Max. Usable)		150.31	
Ramp Weight (4318 Lb Max.)			
Fuel Allowance for Engine Start, Taxi, & Runup (3 Gal./18 Lb Max.)	-18	150.31	-2706
Takeoff Weight (4300 Lb Max.)			

The center of gravity (C.G.) for the takeoff weight of this sample loading problem is at 145.48 inches aft of the datum line. Locate this point (145.48) on the C.G. range and weight graph (Figure 6-15). Since this point falls within the weight - C.G. envelope, this loading meets the weight and balance requirements.

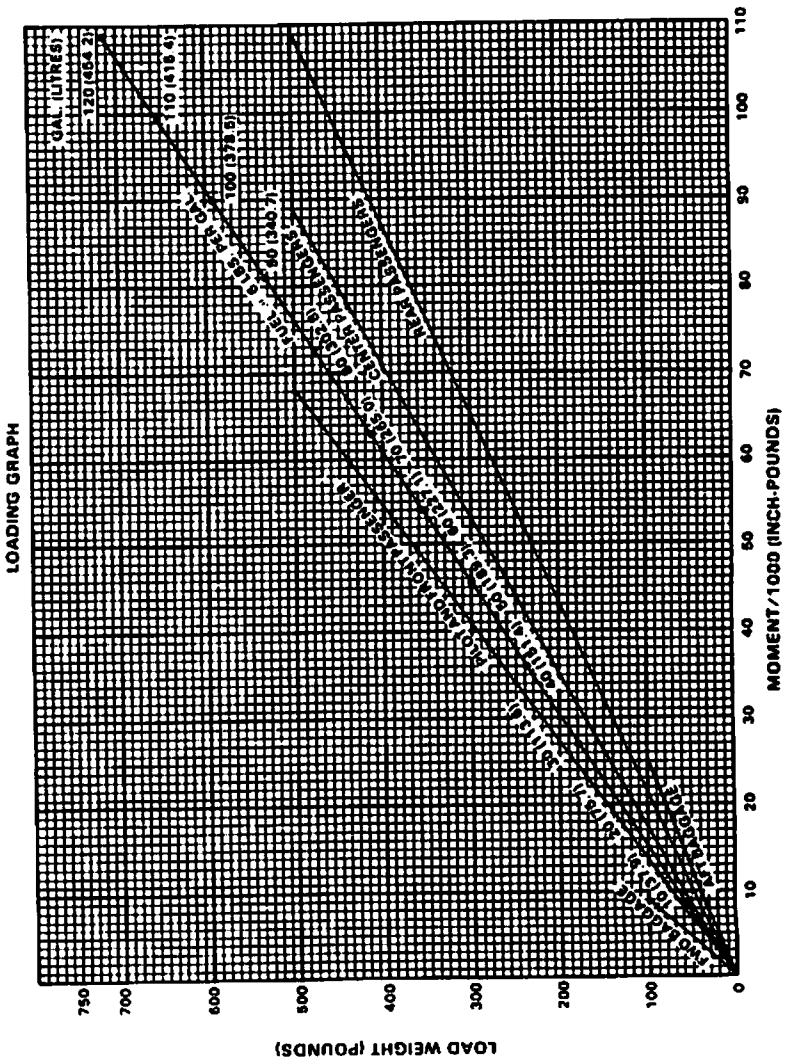
Takeoff Weight			
Minus Estimated Fuel Burn-off (climb & cruise) @ 6.0 Lb/Gal.		150.31	
Landing Weight			

Locate the center of gravity of the landing weight on the C.G. range and weight graph (Figure 6-15). Since this point falls within the weight - C.G. envelope, the loading is acceptable for landing.

IT IS THE SOLE RESPONSIBILITY OF THE PILOT IN COMMAND TO ENSURE THAT THE AIRPLANE IS LOADED PROPERLY AT ALL TIMES.

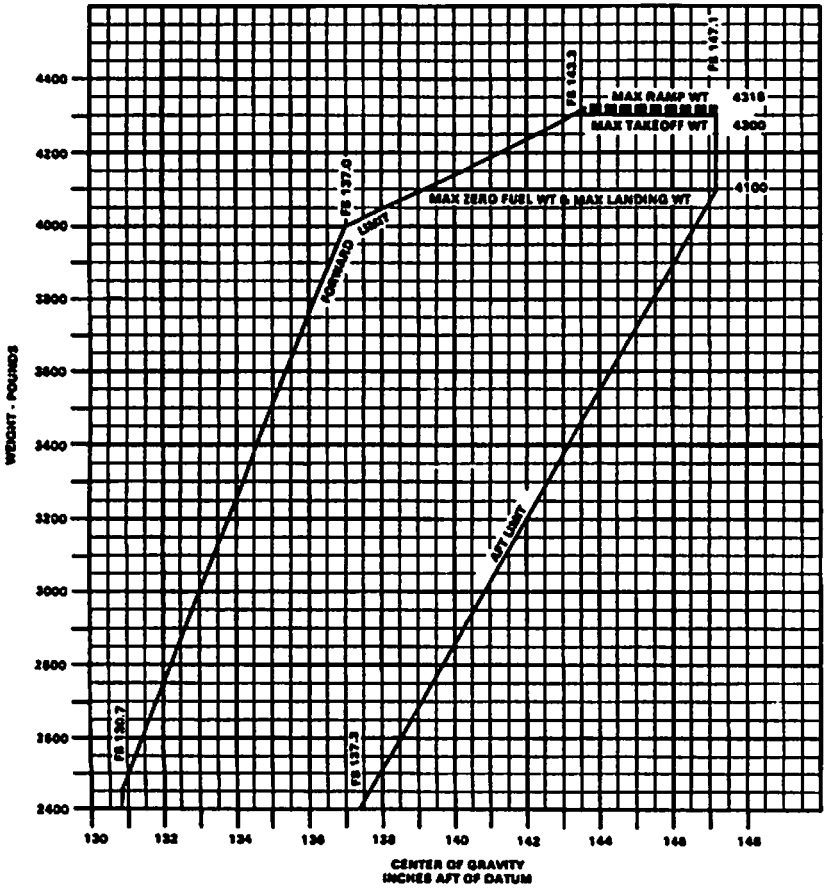
WEIGHT AND BALANCE LOADING FORM (NORMAL CATEGORY)
Figure 6-11

6.9 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT (Continued)



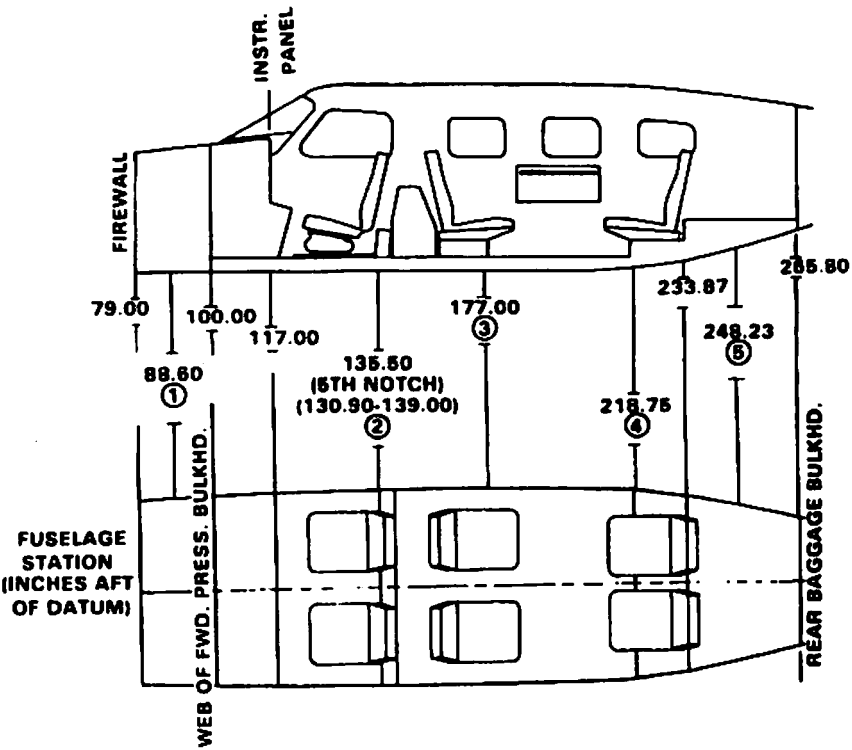
LOADING GRAPH
Figure 6-13

6.9 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT (Continued)



C.G. RANGE AND WEIGHT GRAPH
Figure 6-15

6.11 INSTRUCTIONS FOR USING THE WEIGHT AND BALANCE PLOTTER (Continued)



1. CENTROID OF FORWARD BAGGAGE AREA.
2. PILOT AND PASSENGER C.G. ON HORIZONTALLY ADJUSTABLE SEATS POSITIONED FOR AVERAGE OCCUPANT. NUMBERS IN PARENTHESES INDICATE FORWARD AND AFT LIMITS OF OCCUPANT C.G.
3. C.G. OF CENTER OCCUPANTS
4. C.G. OF REAR OCCUPANTS.
5. CENTROID OF REAR BAGGAGE AREA.

LOADING ARRANGEMENTS
Figure 6-21