

**Weight and Balance Table****N8502V Seneca PA-34-200**

LOADING		WEIGHT lbs	Arm Aft Datum Inches	MOMENT lbs-inch/1000
1	Licensed Basic Weight	2807.62	85.49	240030.56
2	Pilot and Front Passenger			
3	Passengers (Center Seats)			
4	Passengers (Rear Seats)			
5	Passenger (Jump Seat)			
6	Useable Fuel (6lbs/Gallon) Standard Tanks 93 Gal. Maximum			
7	Baggage (Forward)			
8	Baggage (Aft)			
10	Total Loaded Airplane		C of G	
*It is the responsibility of the pilot to ensure that the airplane is loaded properly.				

In order to achieve the performance, safety and good flying characteristics which are designed into the aircraft, the Seneca must be flown with the weight and center of gravity (C.G./CofG) position within the approved envelope. The aircraft offers a tremendous flexibility of loading. You can carry a large payload (distributed in a variety of combinations of passengers and cargo) or a large amount of fuel. However, you cannot fill the aircraft with seven adults and full fuel tanks. With the flexibility comes responsibility. The pilot must ensure that the airplane is loaded within the loading envelope before the pilot makes a take-off.

Misloading carries consequences for any aircraft. An overloaded airplane will take off, climb or cruise and well as when it is properly loaded. The heavier the airplane is loaded the less single-engine performance it will have, and the pilot may be deprived of one of the safety advantages of twin-engine flight.

Center of gravity is determining factor in flight characteristics. If the C.G. is too far aft, the airplane may rotate prematurely on take-off or try to pitch up during climb. Longitudinal stability will be reduced. This can lead to inadvertent stalls and even spins; and spin recovery becomes more difficult as the center of gravity moves aft of the approved limit.

A properly loaded aircraft, however, will perform as intended. The Seneca is designed to provide excellent performance and safety within the flight envelope. Using the basic weight and C.G. location, the pilot can easily determine the weight and C.G. position for the loaded airplane by means of a plotter which is furnished with the aircraft or compute the total weight and moment and then determine whether they are within the approved envelope.

IT IS THE RESPONSIBILITY OF THE PILOT TO ENSURE THAT THE AIRPLANE IS LOADED PROPERLY.

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 Student Name

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 Flight Date and Time

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 Instructor Name

Assume a basic weight and C.G. location of 2807.62 pounds and 85.49 inches respectively. We wish to carry a pilot and 5 passengers. Two men weighing 180 and 200 pounds will occupy the front seats, two women weighing 115 and 135 pounds will occupy the middle seats and two children weighing 80 and 100 pounds will ride in the rear. Two 25-pound suitcases will be tied down in the front baggage compartment and two suitcases weighing 25 pounds and 20 pounds respectively will be carried in the rear compartment. We wish to carry 60 gallons of fuel. We will be within the safe envelope?

1. Add the weight of all items to be loaded to the licensed empty weight.
2. Use the loading graph to determine the moment of all items to be carried in the airplane.
3. Add the moment of all items to be loaded to the licensed empty weight moment.
4. Divide the total moment by the total weight to determine the C.G. location.
5. By using the amounts of 1. (weight of all items to the loaded and basic empty weight) and 4. (C.G. Location), locate the point on the C.G. Range and Weight Graph. If the point falls within the C.G. envelope, the loading meets the weight and balance requirements.

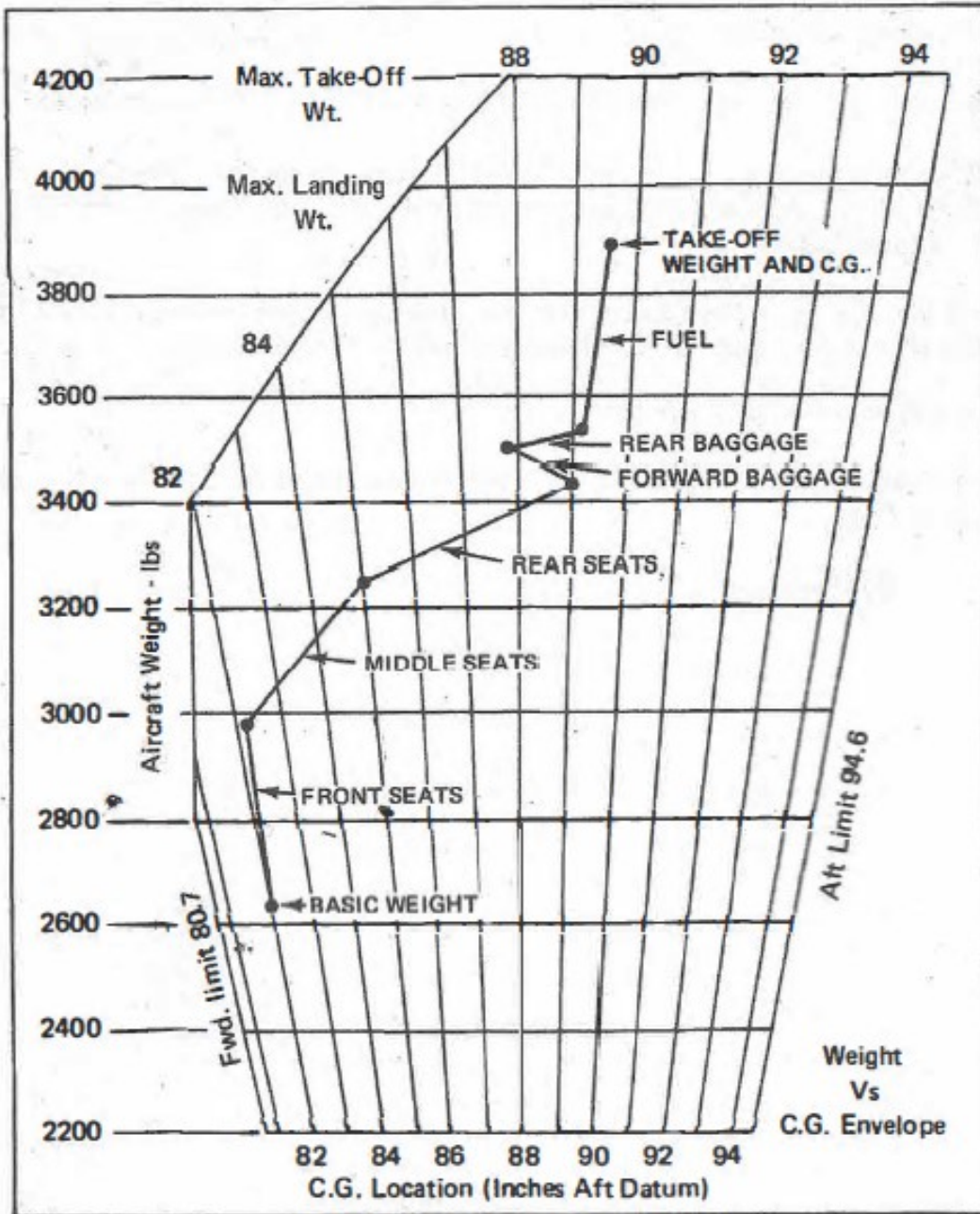
**SAMPLE LOADIGN PROBLEM (Normal Category)**

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The center of gravity (C.G./CofG) of this sample loading problem is at \_\_\_\_\_ inches aft of the datum line. Locate this point ( \_\_\_\_\_ ) on the C.G. range and weight graph. If this point falls within the weight-C.G. envelope, this loading meets the weight and balance requirements.

**IT IS THE RESPONSIBILITY OF THE PILOT TO ENSURE THAT THE AIRPLANE IS LOADED PROPERLY.**

**SAMPLE PROBLEM**



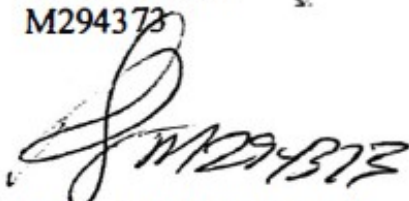
Moment change due to retracting Landing Gear = -32 in.-lbs.

Weight and Balance Report  
Amendment #8  
Information taken from report dated June 10,2016

Registration C-FCIR		PA34-200	S/N 34-7350252
	Weight	Arm	Moment
	2815.32	85.37	240269.2
Remove			
4220 starter	17.0	33.2	547.4
ADD			
Skytec			
149NLR	9.3	33.2	308.76
total	2807.62	85.49	240030.56

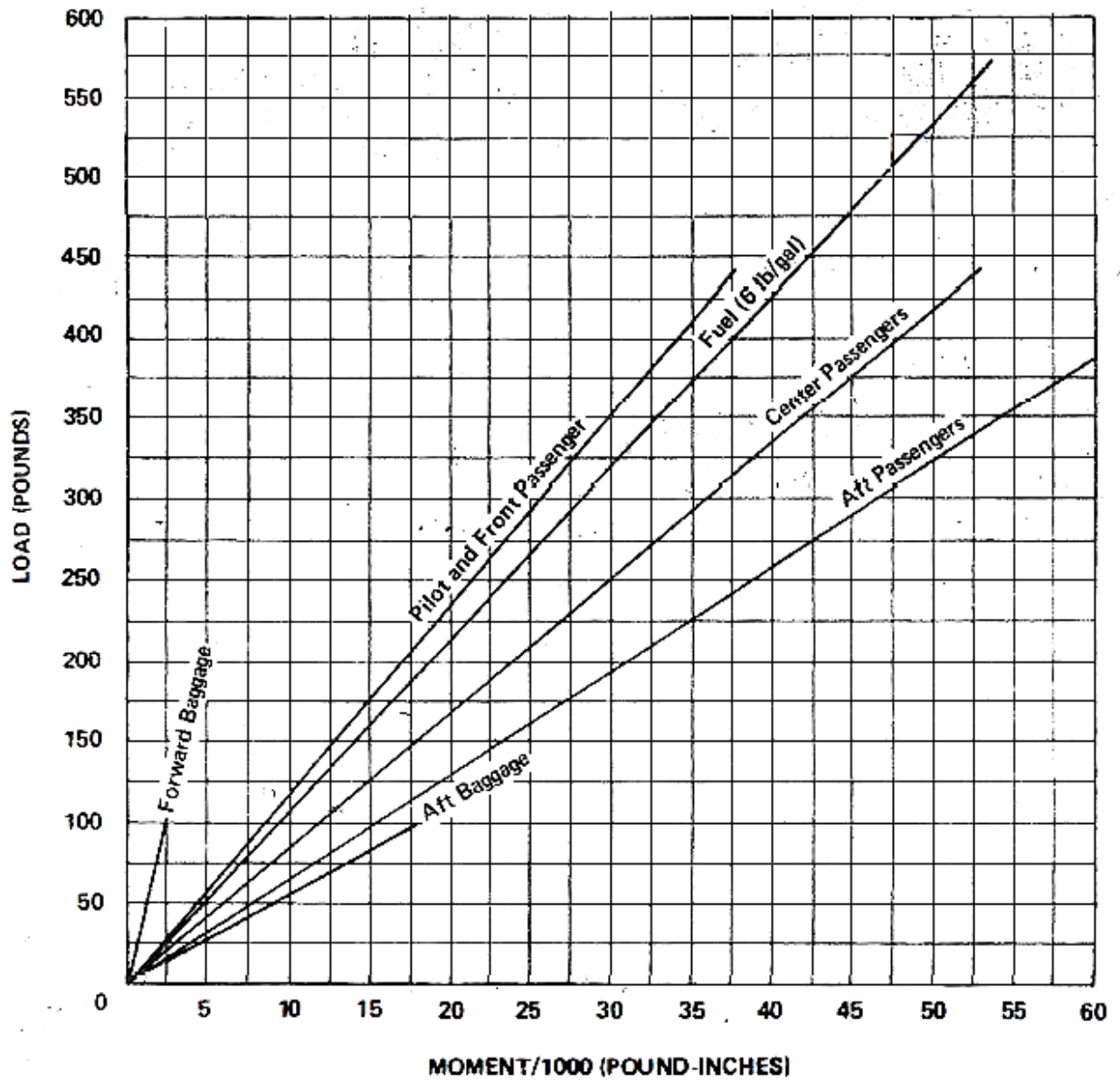
The new empty weight is 2807.62 lbs and centre of gravity is 85.49" aft of datum. The maintenance described above has been performed IAW applicable airworthiness requirements.

Robert Evans,  
M294373



Eag erock Aviation Ltd  
June 24,2016

LOADING GRAPH



C.G. Range and Weight Graph

IT IS THE RESPONSIBILITY OF THE PILOT TO ASCERTAIN THAT THE AIRPLANE ALWAYS REMAINS WITHIN THE ALLOWABLE WEIGHT VS. CENTER OF GRAVITY ENVELOPE WHILE IN FLIGHT.

