

FLIGHT PLANNING EXAMPLE (Cont.)

7.) Flight Summary:

Total Flight Time 149 min
 Total Range 390 sm
 Total Fuel Required 25 US gal/151 lbs

FLIGHT PLANNING INFORMATION SUPPLEMENT

Takeoff and landing performance is of primary interest in operating an aircraft because it defines the runway length requirements. In addition to the importance of proper piloting technique, any factor which affects the velocity or acceleration during the takeoff run will affect the takeoff distance. Likewise, any factor which affects the landing velocity or deceleration during the landing roll will affect landing distance. Because not all factors affecting takeoff and landing performance are included in the accompanying charts, the following information is provided.

1.) Factors Addressed in the Performance Charts:

- A.) Ambient Temperature
- B.) Pressure Altitude
- C.) Gross Weight
- D.) Headwind Component

Runway surface: paved, level, dry.

2.) Factors Not Addressed in the Performance Charts:

Percent increase in distance required
for ground roll and total
distance over a 50 ft obstacle.

**** NOTE **** Factors are cumulative and must be added.

	Takeoff	Landing
A.) Runway Surface:		
Dry Grass (Short - Less Than 5 in)	20%	20%
Dry Grass (Tall - Greater Than 5 in)	25%	30%
Wet Grass (Short)	25%	30%
Wet Grass (Tall)	30%	40%
Soft Ground or Deep Snow	25% +	25% +
B.) Runway Slope: (Each 2 Degrees)	(Uphill) 10%	(Downhill) 10%
C.) Tailwind Component: (Equal to 10% of Liftoff Speed)	20%	20%

**** NOTE ****

High humidity will reduce engine power as much as 10% and increase takeoff run proportionally.

Numerous variables prevent the precise measurement of the effects of runway surface on rolling resistance. Figures related to runway surface are estimates, and can deviate vastly. A wet and/or icy runway, together with the effects of hydroplaning will greatly reduce braking effectiveness and increase stopping distance up to as much as **six times** normal. Tall grass, soft ground and snow all increase rolling resistance and shorten landing roll, but no set figures are given for their effect.

TAKEOFF PERFORMANCE

PA-24-180 * 2550 LBS GROSS WEIGHT

Takeoff Ground Run and Total Distance Over a 50 ft Obstacle (Zero Degrees of Flap)

Runway conditions: paved, level, dry.

Weight lbs	Pressure Altitude	Temperature Deg F/C	Ground Run At Wind Velocity			Total Distance At Wind Velocity		
			0 mph	10 mph	20 mph	0 mph	10 mph	20 mph
2100	Sea Level	40/05	880	660	460	1450	1100	850
2550	Sea Level	40/05	1280	1000	720	2000	1600	1300
2100	Sea Level	60/15	940	720	500	1550	1200	950
2550	Sea Level	60/15	1370	1060	760	2250	1750	1450
2100	Sea Level	80/27	1000	780	540	1650	1300	1050
2550	Sea Level	80/27	1460	1120	800	2450	1900	1600
2100	2000 ft	30/-1	1000	780	580	1650	1300	1000
2550	2000 ft	30/-1	1450	1100	800	2350	1850	1500
2100	2000 ft	50/10	1060	820	500	1850	1450	1150
2550	2000 ft	50/10	1540	1170	860	2600	2050	1700
2100	2000 ft	70/21	1120	860	620	2050	1600	1300
2550	2000 ft	70/21	1630	1240	920	2850	2250	1900
2100	4000 ft	20/-7	1120	870	620	1900	1500	1200
2550	4000 ft	20/-7	1640	1250	920	2700	2200	1800
2100	4000 ft	40/05	1200	920	660	2100	1700	1400
2550	4000 ft	40/05	1740	1350	980	3000	2500	2000
2100	4000 ft	60/15	1280	970	700	2300	1900	1600
2550	4000 ft	60/15	1840	1450	1040	3300	2800	2200

Example shown in **bold type**: Airplane weight = 2550 lbs * Airport altitude = 2000 ft * Air temperature = 70 degrees F or 21 degrees C * Headwind component = 10 mph.

Takeoff ground run distance = 1240 ft. Total distance over 50 ft obstacle = 2250 ft.

Also see Takeoff Performance chart. (Figure 5-08)

Figure 5-01