



National Weather Association Aviation Meteorology Committee

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NAVIGATION

START
(From
Beginning)



PAUSE



PLAY
(After Pause)



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Note

Allow animation to finish or
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Weather Theory for Pilots

Introduction

Although, specifically intended for new or low-time pilots, Aircraft Performance provides those without formal recurrent training programs with primary and refresher training in the fundamental of determining aircraft performance and its application to flight operations.

probable cause(s)—NTSB probable cause is NOT a legal determination and may NOT be used in any suit or action. Only a Court can determine cause and assign liability.



Weather Theory for Pilots

Aircraft Performance



Weather Theory for Pilots

Determining Pressure Altitude



Airport Elevation = 400 ft.



Weather Theory for Pilots

Runway Gradient/Crosswind

Magnetic Wind Direction

The only time pilots can expect to receive “official” wind direction in relation to magnetic north is from a control tower, an FSS providing Local Airport Advisory (LAA), ATIS recording/broadcast, or AWOS/ASOS radio broadcast.



Weather Theory for Pilots

Performance Calculations

AIRCRAFT: N738ZL PILOT: P. Pilot DATE: 1-4-20XX

PERSONAL MINIMUMS:

CEILING	VISIBILITY	WIND	X/WIND	FUEL

ENVIRONMENTAL CONDITIONS (TAKEOFF):

TIME	WIND	VIS	SKY	TEMP	DP	ALSTG	ELEV	RY	LENGTH	SLOPE

GO ☐ NO GO ☐

DEPARTURE CALCULATIONS:

ELEVATION	± PA COR	PRESS ALT	HD/WIND	X/WIND

GO ☐ NO GO ☐

AIRCRAFT PERFORMANCE:

	GROUND RUN	CLEAR 50' OBSTL	CLIMB @ 1000' AGL
TAKEOFF			

GO ☐ NO GO ☐



Weather Theory for Pilots

Weight & Balance



LOADING	WEIGHT	MOMENT/1000
EMPTY WT. (POH)		
FUEL @ 6 lbs/gal		
OIL @ 7.5 lbs/gal		
PILOT & PASSENGER		
REAR PASSENGERS		
BAGGAGE AREA 1		
BAGGAGE AREA 2		
RAMP		
TAXI ALLOWANCE		
TAKE OFF		
ENROUTE (-)		
LANDING		

WEIGHT AND BALANCE CALCULATIONS?

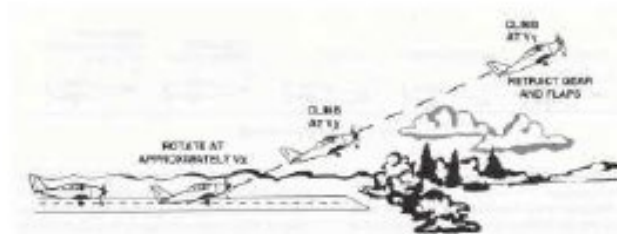
GO ☐ NO GO ☐

CHECK BY: _____ DATE: _____
(CFI/DISPATCHER)



Weather Theory for Pilots

Takeoff Performance

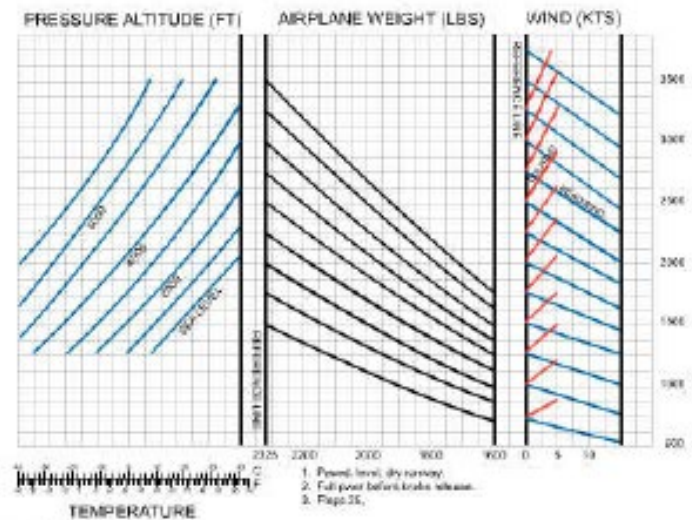


CONDITIONS:
 Flaps 10°
 Full Throttle Prior to Spike Release
 Paved, Level, Dry Runway

WEIGHT (LBS)	PRESS ALT (FT)	0°C		10°C		20°C		30°C		40°C	
		GRD ROLL	50' CRS	GRD ROLL	50' CRS	GRD ROLL	50' CRS	GRD ROLL	50' CRS	GRD ROLL	50' CRS
2500	S.L.	685	1290	745	1545	850	1440	885	1545	925	1655
1000	760	1370	820	1475	840	1535	850	1700	920	1630	
2000	835	1510	900	1625	970	1750	1085	1885	1125	2030	
3000	920	1670	990	1800	1070	1940	1190	2025	1225	2260	
4000	1010	1850	1080	2000	1160	2165	1270	2240	1365	2535	
5000	1115	2080	1205	2235	1300	2425	1405	2635	1510	2860	
6000	1235	2340	1335	2515	1440	2740	1555	2965	1675	3265	
7000	1370	2610	1480	2850	1600	3125	1730	3430	1865	3775	
8000	1520	2975	1655	3270	1780	3610	1925	4030	2085	4485	

NOTES:

1. Decrease distance 10% for each 9 knots headwind.
2. For tailwinds up to 10 knots, increase distance by 12% for each 2 knots.
3. For operation on dry, grass runway, increase distance by 15% for the "ground roll" figure.

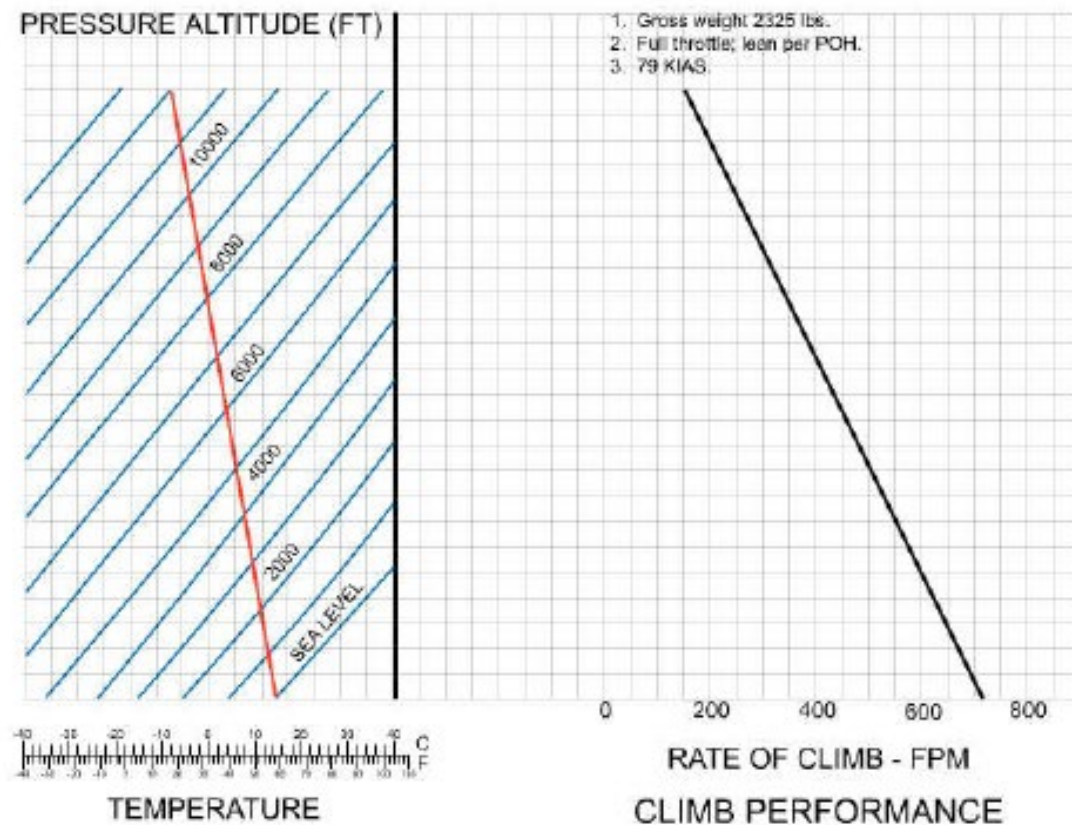


1. Paved, level, dry runway.
2. Full power before brake release.
3. Page 25.



Weather Theory for Pilots

Initial Climb & Enroute Performance



Refer to the Altimetry module in the Application of Weather Theory block for additional discussion, and calculating density altitude.



Weather Theory for Pilots

Landing Performance Performance Calculations

AIRCRAFT: N738ZL PILOT: P. Pilot DATE: 1-4-20XX

PERSONAL MINIMUMS:

CEILING	VISIBILITY	WIND	X/WIND	FUEL
4000 ft	5 SM	20 GUSTS 5	10 KT	2+30

ENVIRONMENTAL CONDITIONS (LANDING): ATIS "U"

TIME	WIND	VIS	SKY	TEMP	DP	ALSTG	ELEV	RY	LENGTH	SLOPE
2025Z	2911G16	10	CLR	22	00	29.89	400	25R	5253	0

GO ☒ NO GO ☐

ARRIVAL CALCULATIONS:

ELEVATION	± PA COR	PRESS ALT	HD/WIND	X/WIND
400 ft	+30 ft	≈ 500 ft	≈ 10 KT	10 KT

GO ☒ NO GO ☐

AIRCRAFT PERFORMANCE:

	GROUND RUN	CLEAR 50' OBSTL	CLIMB @ 1000' AGL
LANDING			

GO ☐ NO GO ☐



Weather Theory for Pilots

Acknowledgements

The mission of the National Weather Association (www.nwas.org) is to support and promote excellence in operational meteorology and related activities. To accomplish this, the Association's objectives are: (1) to provide a medium for all persons interested in weather, including climate, forecasting, observations, observational systems and related research and development for the publishing of letters, pamphlets, periodicals, papers, and Web pages concerning activities in said fields; (2) to provide information, publications, materials, and seminars that will promote forecasting, analysis, observations, training, and education in the meteorological disciplines.

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