

T.O.L.D. Performance Workbook

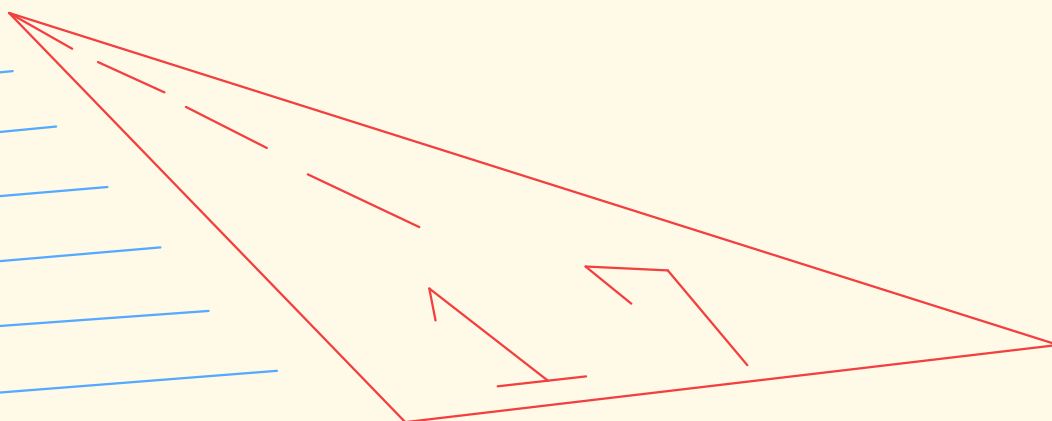


Table of contents

1. Front Cover
2. Table of Contents
3. Chapter 1: Takeoff Calculations
 4. KCVO
 5. KTMK
 6. C83
 7. KESW
 8. KLVM
9. Chapter 2: Landing Calculations
 10. KBIH
 11. KTVL
 12. S33
 13. O22
 14. S16

Chapter 1: Takeoffs

For EACH Scenario (just like in the real world) you must determine: **Is it safe to depart?**

In order to determine if its safe, you must

- 1.) determine runway to use
- 2.) choose takeoff technique
- 3.) calculate takeoff distance
- 4.) compare takeoff ditance to runway length
- 5.) consider margin-of-error & personal minimums.

SECTION 5 PERFORMANCE

CESSNA
MODEL 152

CRUISE CONDITIONS

Total distance	285 Nautical Miles
Pressure altitude	5500 Feet
Temperature	20°C (16°C above standard)
Expected wind enroute	10 Knot Headwind

LANDING CONDITIONS

Field pressure altitude	2000 Feet
Temperature	25°C
Field length	3000 Feet

TAKEOFF

The takeoff distance chart, figure 5-5, should be consulted, keeping in mind that the distances shown are based on the short field technique. Conservative distances can be established by reading the chart at the next higher value of altitude and temperature. For example, in this particular sample problem, the takeoff distance information presented for a pressure altitude of 2000 feet and a temperature of 30°C should be used and results in the following:

Ground roll	980 Feet
Total distance to clear a 50-foot obstacle	1820 Feet

These distances are well within the available takeoff field length. However, a correction for the effect of wind may be made based on Note 3 of the takeoff chart. The correction for a 12 knot headwind is:

$$\frac{12 \text{ Knots}}{9 \text{ Knots}} \times 10\% = 13\% \text{ Decrease}$$

This results in the following distances, corrected for wind:

Ground roll, zero wind	980
Decrease in ground roll (980 feet × 13%)	127
Corrected ground roll	853 Feet

Total distance to clear a 50-foot obstacle, zero wind	1820
Decrease in total distance (1820 feet × 13%)	237
Corrected total distance to clear 50-foot obstacle	1583 Feet

SCENARIO 1, Corvallis Takeoff

METAR KCVO 111656Z 22012KT 10SM SCT25 12/9 A2988

Magnetic Variation = 14°30' E



OREGON

169

CORVALLIS MUNI (CVO)(KCVO) 4 SW UTC-8(-7DT) N44°29.81' W123°17.37'

250 B TPA-1050(800) NOTAM FILE CVO

RWY 17-35: H5900X150 (ASPH) S-35, D-73, 2S-127, 2D-100 HIRL

RWY 17: MALSR, VASI(V4L)-GA 3.0° TCH 45'

RWY 35: REIL VASI(V4L)-GA 3.0° TCH 51'

RWY 10-28: H3100X75 (ASPH) S-51, D-65, 2D-100 MIRL

RWY 28: PAPI(P4L)-GA 3.0° TCH 25'. Thld dsplcd 228'. Railroad.

RUNWAY DECLARED DISTANCE INFORMATION

RWY 10:	TORA-3100	TODA-3100	ASDA-3100	LDA-3100
RWY 17:	TORA-5900	TODA-5900	ASDA-5900	LDA-5900
RWY 28:	TORA-3100	TODA-3100	ASDA-3100	LDA-2872
RWY 35:	TORA-5900	TODA-5900	ASDA-5900	LDA-5900

SERVICE: S4 FUEL 100LL, JET A 0X1, 2, 3 LGT ACTVT MALSR Rwy 17, REIL Rwy 35; PAPI Rwy 28; VASI Rwy 17 and Rwy 35; HIRL Rwy 17-35 and MIRL Rwy 10-28-CTAF.

AIRPORT REMARKS: Attended 1600Z±-dusk. Migratory waterfowl and other birds on and invof arpt. Rwy 10-28 has white side stripes. Surf cond not reported daily 0100-1600Z± and all times Saturdays and Sundays.

AIRPORT MANAGER: (541) 766-6783

WEATHER DATA SOURCES: AWOS-3PT 135.775 (541) 754-0081.

COMMUNICATIONS: CTAF/UNICOM 123.075

® CASCADE APP/DEP CON 127.5 (1400-0730Z±)

® SEATTLE CENTER APP/DEP CON 125.8 (0730-1400Z±)

CLEARANCE DELIVERY PHONE: For CD ctc Cascade Appch at 541-607-4674/4675, when Appch clsd ctc Seattle ARTCC at 253-351-3694.

RADIO AIDS TO NAVIGATION: NOTAM FILE CVO.

(VOR) (DH) VOR/DME 115.4 CVO Chan 101 N44°29.97' W123°17.62' at fld. 242/18E.

VOR unusable:

- 061°-073° byd 40 NM
- 097°-129° byd 40 NM
- 151°-334° byd 40 NM
- 335°-345° byd 40 NM bto 28,000'
- 346°-044° byd 40 NM

ILS 111.9 I-CVO Rwy 17. Class IT.

5-12

TAKEOFF DISTANCE

SHORT FIELD

CONDITIONS:
Flaps 10°
Full Throttle Prior to Brake Release
Paved, Level, Dry Runway
Zero Wind

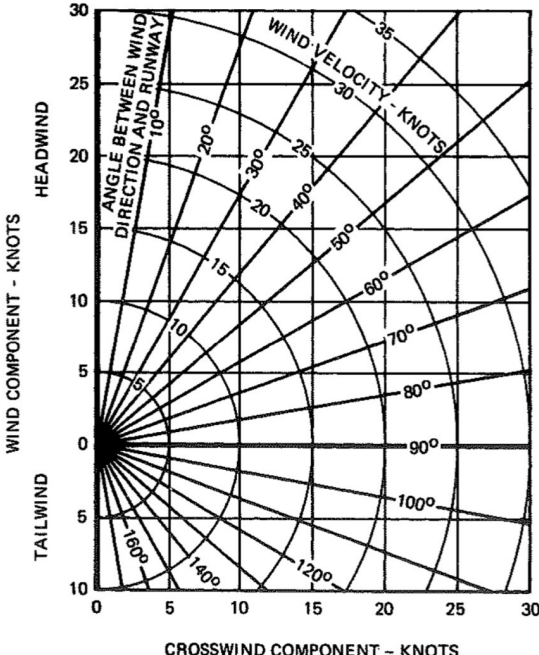
- NOTES:
- Short field technique as specified in Section 4.
 - Prior to takeoff from fields above 3000 feet elevation, the mixture should be leaned to give maximum RPM in a full throttle, static runup.
 - Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
 - For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure.

WEIGHT LBS	TAKEOFF SPEED KIAS		PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	LIFT OFF	AT 50 FT		GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
1670	50	54	S.L.	640	1190	695	1290	755	1390	810	1495	875	1605
			1000	705	1310	765	1420	825	1530	890	1645	960	1770
			2000	775	1445	840	1565	910	1690	980	1820	1055	1960
			3000	855	1600	925	1730	1000	1870	1080	2020	1165	2185
			4000	940	1775	1020	1920	1100	2080	1190	2250	1285	2440
			5000	1040	1970	1125	2140	1215	2320	1315	2525	1420	2750
			6000	1145	2200	1245	2395	1345	2610	1455	2855	1570	3125
			7000	1270	2470	1375	2705	1490	2960	1615	3255	1745	3590
			8000	1405	2800	1525	3080	1655	3395	1795	3765	1940	4195

Figure 5-5. Takeoff Distance

SECTION 5
PERFORMANCE

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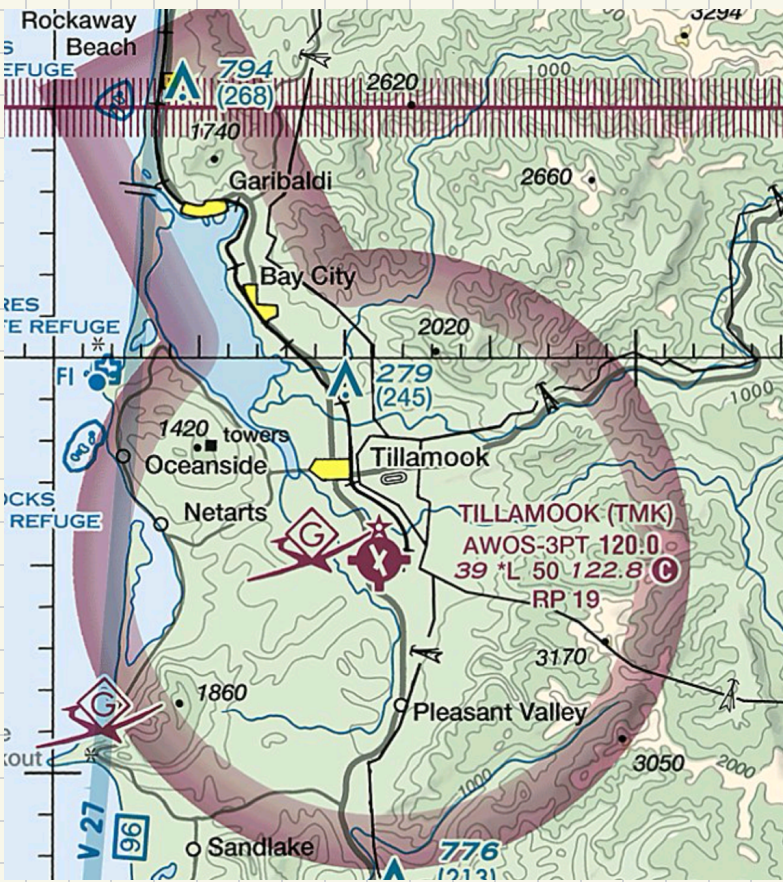


Original Issue

SCENARIO 2, Tillamook Takeoff

METAR KTMK 291454Z 35006KT 6SM FEW003 10/10 A2990

Magnetic Variation = 15° E



TILLAMOOK (TMK)(KTMK) 3 S UTC-8(-7DT) N45°25.10' W123°48.86'

39 B NOTAM FILE TMK

RWY 13-31: H5001X75 (ASPH) S-60, D-75, 2D-125 MIRL 0.4% up SE

RWY 13: REIL. PAPI(P2L)—GA 3.0° TCH 42'. Trees.

RWY 31: PAPI(P2L)—GA 3.5° TCH 40'. Tree.

RWY 01-19: H2911X75 (ASPH) S-40, D-46, 2D-67 MIRL

RWY 01: PAPI(P2L)—GA 4.0° TCH 45'.

RWY 19: PAPI(P2L)—GA 3.0° TCH 40'. Rgt ttc.

SERVICE: FUEL 100LL, JET A LGT ACTVT REIL Rwy 13; MIRL Rwy 13-31 and Rwy 01-19—CTAF. PAPI Rwy 13 and 31 and Rwy 01 and 19 oper cont.

AIRPORT REMARKS: Attended 1700-0100Z. Ultralight acft on and in/ov arpt. Ocnl flocks of birds on or near arpt. Rwy 01 markings fading and chipping. Rwy 19 markings fading and chipping. Rwy 13 nrs faded.

AIRPORT MANAGER: 503-842-2413

WEATHER DATA SOURCES: AWOS-3PT 120.0 (503) 842-8792.

COMMUNICATIONS: CTAF/UNICOM 122.8

Ⓡ SEATTLE CENTER APP/DEP CON 124.2

CLEARANCE DELIVERY PHONE: For CD etc Seattle ARTCC at 253-351-3694.

RADIO AIDS TO NAVIGATION: NOTAM FILE MMV.

NEWBERG (VH) (DH) VOR/DME 117.4 UBG Chan 121 N45°21.19' W122°58.69' 256° 35.6 NM to fld. 1443/21E.

VOR unusable:

- 095°-105° byd 40 NM
- 106°-120° byd 40 NM blo 7,800'
- 106°-120° byd 60 NM
- 135°-328° byd 40 NM
- 329°-346° byd 40 NM blo 5,000'
- 329°-346° byd 70 NM
- 347°-080° byd 40 NM

SEATTLE
H-18, L-1C
IAP

5-12

TAKEOFF DISTANCE

SHORT FIELD

CONDITIONS:
Flaps 10°
Full Throttle Prior to Brake Release
Paved, Level, Dry Runway
Zero Wind

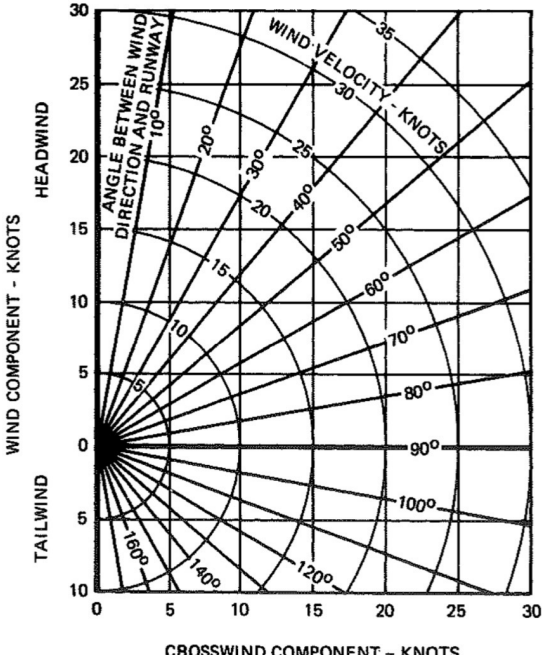
- NOTES:
- Short field technique as specified in Section 4.
 - Prior to takeoff from fields above 3000 feet elevation, the mixture should be leaned to give maximum RPM in a full throttle, static runup.
 - Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
 - For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure.

WEIGHT LBS	TAKEOFF SPEED KIAS		PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	LIFT OFF	AT 50 FT		GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
				S.L.									
1670	50	54	S.L.	640	1190	695	1290	755	1390	810	1495	875	1605
			1000	705	1310	765	1420	825	1530	890	1645	960	1770
			2000	775	1445	840	1565	910	1690	980	1820	1055	1960
			3000	855	1600	925	1730	1000	1870	1080	2020	1165	2185
			4000	940	1775	1020	1920	1100	2080	1190	2250	1285	2440
			5000	1040	1970	1125	2140	1215	2320	1315	2525	1420	2750
			6000	1145	2200	1245	2395	1345	2610	1455	2855	1570	3125
			7000	1270	2470	1375	2705	1490	2960	1615	3255	1745	3590
		8000	1405	2800	1525	3080	1655	3395	1795	3765	1940	4195	

Figure 5-5. Takeoff Distance

SECTION 5
PERFORMANCE

CESSNA
MODEL 152

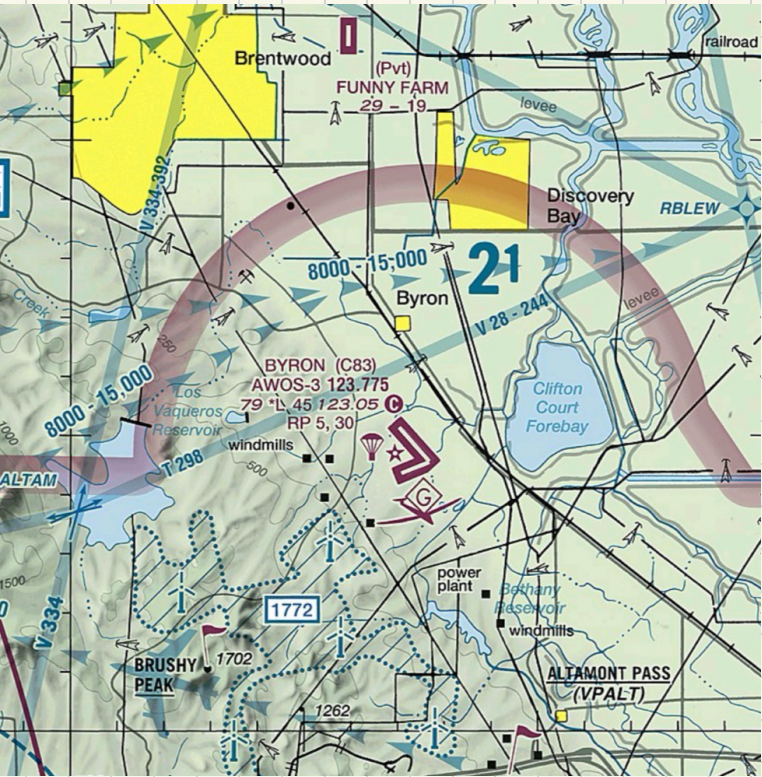


Original Issue

SCENARIO 3, Byron Takeoff

METAR C83 31956Z 33014KT 10SM SKC 22/15 A3012

Magnetic Variation = 13° E



BYRON (C83) 2 S UTC-8(-7DT) N37°49.71' W121°37.55'
79 B NOTAM FILE OAK
RWY 12-30: H4500X100 (ASPH) S-29.5 MIRL 0.4% up NW
RWY 12: Pole.
RWY 30: REIL. PAPI(P2L)—GA 3.5° TCH 25'. Hill. Rgt tlc.
RWY 05-23: H3000X75 (ASPH) S-29.5 MIRL 1.0% up SW
RWY 05: Rgt tlc.
RWY 23: PAPI(P2L)—GA 3.5° TCH 25'.
SERVICE: FUEL 100LL LGT PCL avbl SS-SR. ACTVT REIL Rwy 30; MIRL Rwy 12-30 & Rwy 05-23—CTAF.
AIRPORT REMARKS: Attended 1500-2200Zt. Parachute Jumping. Parachute act at NW end of arpt. Ultralight and sailplane act on and invof arpt. Fuel avbl 24 hrs by credit card. Rising terrain with numerous windmills on ridges west of arpt. 100' twr 5100' from Rwy 23. 200' twr 5600' from Rwy 05. Hangar apron and tiedown apron 12,500 lbs maximum. Power plant 2.7 miles SE of arpt producing thermal plumes, avoid overflt blo 1,500' AGL. Rwy 30 calm wind rwy. Freq UAS drone act 7.8 NM diam arnd fld up to 8000 ft.
AIRPORT MANAGER: 925-608-8000
WEATHER DATA SOURCES: AWOS-3 123.775 (925) 634-0906.
COMMUNICATIONS: CTAF/UNICOM 123.05
NORCAL APP/DEP CON 123.85
CLEARANCE DELIVERY PHONE: For CD ctc NorCal Apch at 916-361-0516.
RADIO AIDS TO NAVIGATION: NOTAM FILE MOD.
MODESTO (VH) (DH) VOR/DME 114.6 MOD Chan 93 N37°37.64' W120°57.47' 274° 34.0 NM to fld. 93/17E.
Aerobatic act w/ an area defined as .5 NM rds of MOD032028 (7.5 NM SW 022), blo 4800', avoidance advised dly SR-SS.
VOR unusable:
005°-009° byd 40 NM
028°-083° byd 40 NM
092°-097° byd 40 NM
112°-121° byd 40 NM
130°-145° byd 40 NM blo 4,000'
130°-145° byd 62 NM
146°-156° byd 40 NM
170°-185° byd 40 NM
186°-196° byd 40 NM blo 5,000'
186°-196° byd 49 NM
197°-338° byd 40 NM

SAN FRANCISCO
L-2F, 3B
IAP

5-12

TAKEOFF DISTANCE

SHORT FIELD

CONDITIONS:
Flaps 10°
Full Throttle Prior to Brake Release
Paved, Level, Dry Runway
Zero Wind

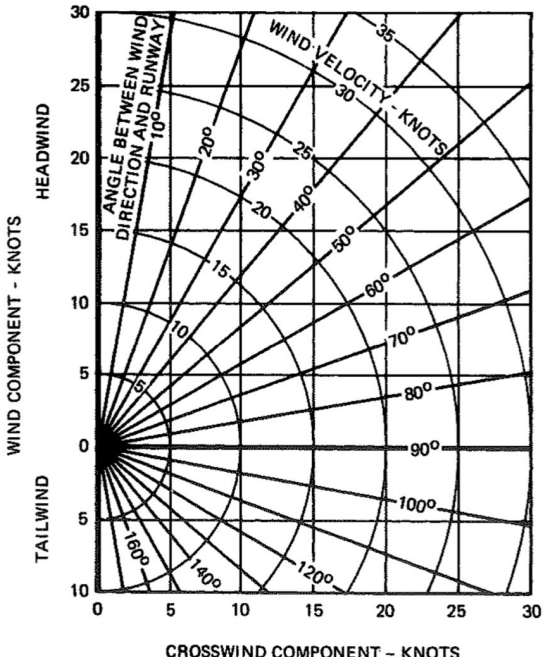
- NOTES:**
- Short field technique as specified in Section 4.
 - Prior to takeoff from fields above 3000 feet elevation, the mixture should be leaned to give maximum RPM in a full throttle, static runup.
 - Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
 - For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure.

WEIGHT LBS	TAKEOFF SPEED KIAS		PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	LIFT OFF	AT 50 FT		GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
1670	50	54	S.L.	640	1190'	695	1290	755	1390	810	1495	875	1605
			1000	705	1310	765	1420	825	1530	890	1645	960	1770
			2000	775	1445	840	1565	910	1690	980	1820	1055	1960
			3000	855	1600	925	1730	1000	1870	1080	2020	1165	2185
			4000	940	1775	1020	1920	1100	2080	1190	2250	1285	2440
			5000	1040	1970	1125	2140	1215	2320	1315	2525	1420	2750
			6000	1145	2200	1245	2395	1345	2610	1455	2855	1570	3125
			7000	1270	2470	1375	2705	1490	2960	1615	3255	1745	3590
			8000	1405	2800	1525	3080	1655	3395	1795	3765	1940	4195

Figure 5-5. Takeoff Distance

SECTION 5
PERFORMANCE

CESSNA
MODEL 152

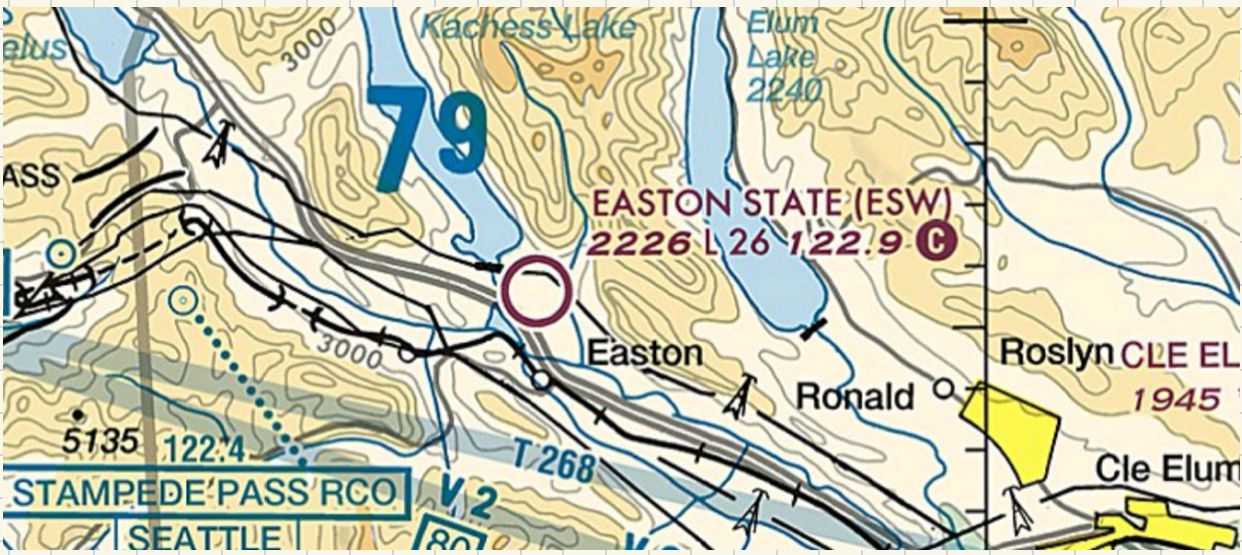


Original Issue

SCENARIO 4, Easton Takeoff

METAR KELN 31956Z 29014KT 10SM SKC 28/10 A3012

Magnetic Variation = 14°30' E



EASTON STATE (ESW)(KESW) 2 N UTC-8(-7DT) N47°15.25' W121°11.13'

2226 NOTAM FILE SEA

RWY 09-27: 2640X100 (TURF) LIRL 0.5% up W

RWY 09: Trees.

RWY 27: Trees.

SERVICE: LGT LIRL Rwy 09-27 ops dusk to dawn when arpt open.

AIRPORT REMARKS: Unattended. CLOSED Oct 1-Jun 1; exc apvd MIL and public safety/law enforcement heli ops. PAEW and wildlife on or invof rwy.

AIRPORT MANAGER: 360-618-2477

COMMUNICATIONS: CTAF 122.9

SEATTLE

5-12

Original Issue

CONDITIONS:

Flaps 10°

Full Throttle Prior to Brake Release

Paved, Level, Dry Runway

Zero Wind

NOTES:

1. Short field technique as specified in Section 4.

2. Prior to takeoff from fields above 3000 feet elevation, the mixture should be leaned to give maximum RPM in a full throttle, static runup.

3. Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.

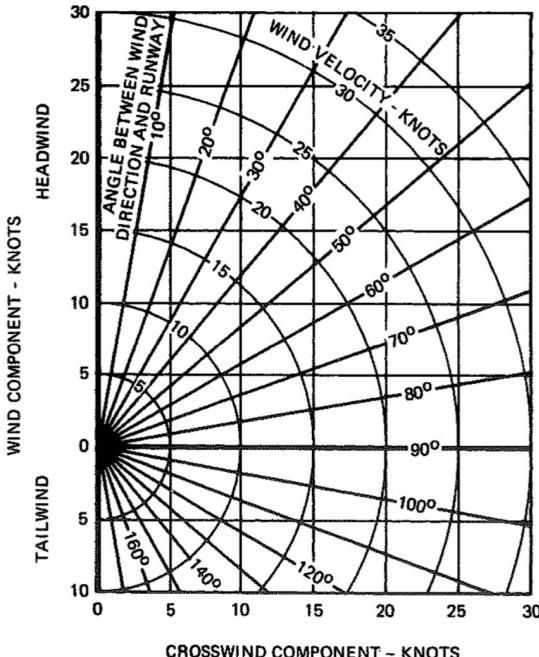
4. For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure.

WEIGHT LBS	TAKEOFF SPEED KIAS		PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	LIFT OFF	AT 50 FT		GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
				S.L.									
1670	50	54	1000	640	1190	695	1290	755	1390	810	1495	875	1605
			1000	705	1310	765	1420	825	1530	890	1645	960	1770
			2000	775	1445	840	1565	910	1690	980	1820	1055	1960
			3000	855	1600	925	1730	1000	1870	1080	2020	1165	2185
			4000	940	1775	1020	1920	1100	2080	1190	2250	1285	2440
			5000	1040	1970	1125	2140	1215	2320	1315	2525	1420	2750
			6000	1145	2200	1245	2395	1345	2610	1455	2855	1570	3125
			7000	1270	2470	1375	2705	1490	2960	1615	3255	1745	3590
			8000	1405	2800	1525	3080	1655	3395	1795	3765	1940	4195

Figure 5-5. Takeoff Distance

SECTION 5
PERFORMANCE

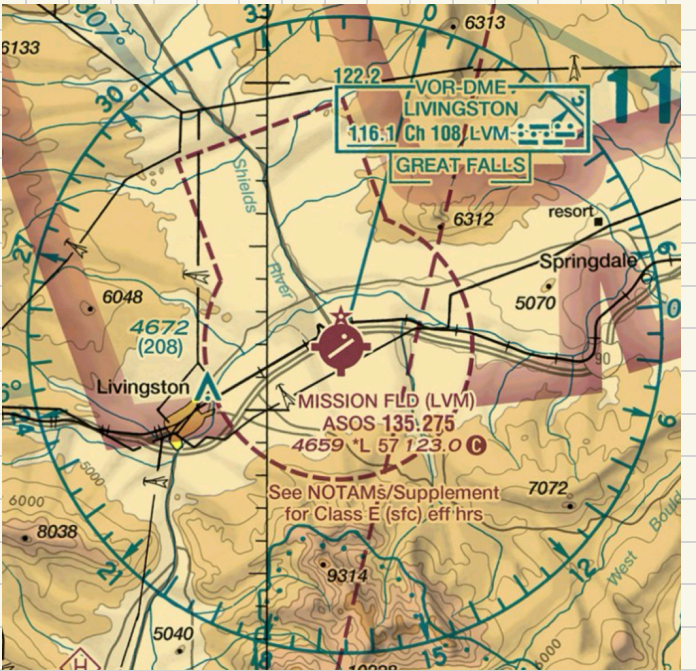
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MODEL 152



SCENARIO 5, Livingston Takeoff

METAR KLVM 160158Z 13009KT 10SM OVC063 35/1 A2980

Magnetic Variation = 11° E



LIVINGSTON

MISSION FLD (LVM)(KLVM) 5 E UTC-7(-6DT) N45°41.97' W110°26.88'

4659 B NOTAM FILE LVM

RWY 04-22: H5701X75 (ASPH) S-75, D-99.9 PCN 24 F/A/Y/U MRL

RWY 22: REIL PAPI(P4L)—GA 3.0° TCH 44'.

RWY 08-26: 3762X125 (TURF)

RWY 13-31: 2724X120 (TURF) 0.3% up NW

SERVICE: FUEL 100LL, JET A LGT ACTVT MRL Rwy 04-22-123.0.

PAPI Rwy 22 opr consly. PAPI unusbl byd 5 degs right of cntrln.

AIRPORT REMARKS: Attended 1500-0000Z. Parachute Jumping. Wildlife

on and invof rwy. Airfield sfc cond unmonitored 0000-1500Z. AG

ops Apr through Sep. Fuel wkends and aft hrs call 406-222-6504.

Rwy 08 and Rwy 26 thlds and first 200' mkd with w cones. Rwy 13

and Rwy 31 thlds and first 200' marked with w cones. Rwy 08-26

mowing ireg. Rwy 13-31 mowing ireg. Cold temperature airport.

Altitude correction required at or below -28C. Lndg Fee: Ldg fee for

actv ovr 12500 lbs.

AIRPORT MANAGER: 406-451-1944

WEATHER DATA SOURCES: ASOS 135.275 (406) 222-2338.

COMMUNICATIONS: CTAF/UNICOM 123.0

LIVINGSTON RCD 122.2 (GREAT FALLS RADIO)

Ⓡ BIG SKY APP/DEP CON 119.550 (Unavailable 0715-1300Z, other times

ctc)

Ⓡ SALT LAKE CENTER APP/DEP CON 119.550

CLEARANCE DELIVERY PHONE: For CD if una to ctc on FSS freq, ctc Salt Lake ARTCC at 801-320-2568.

AIRSPACE: CLASS E svc 1500-0100Z; other times CLASS G.

RADIO AIDS TO NAVIGATION: NOTAM FILE LVM.

LIVINGSTON (VL) (DH) VOR/DME 116.1 LVM Chan 108 N45°42.15' W110°26.55' at fld. 4653/15E.

VOR unusable:

042°-062° byd 40 NM

071°-099° byd 40 NM

100°-190° byd 15 NM

191°-254° byd 40 NM

255°-280° byd 20 NM

281°-301° byd 40 NM

302°-312° byd 40 NM blo 10,000'

302°-312° byd 49 NM

322°-344° byd 40 NM

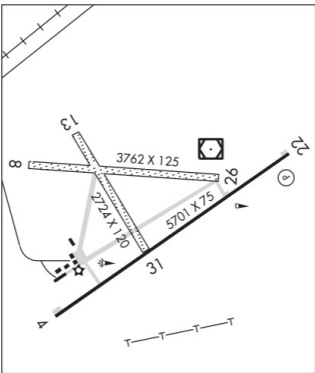
345°-041° byd 15 NM

DME unusable:

100°-190° byd 15 NM

255°-280° byd 20 NM

345°-041° byd 15 NM



5-12

TAKEOFF DISTANCE

SHORT FIELD

CONDITIONS:

Flaps 10°

Full Throttle Prior to Brake Release

Paved, Level, Dry Runway

Zero Wind

NOTES:

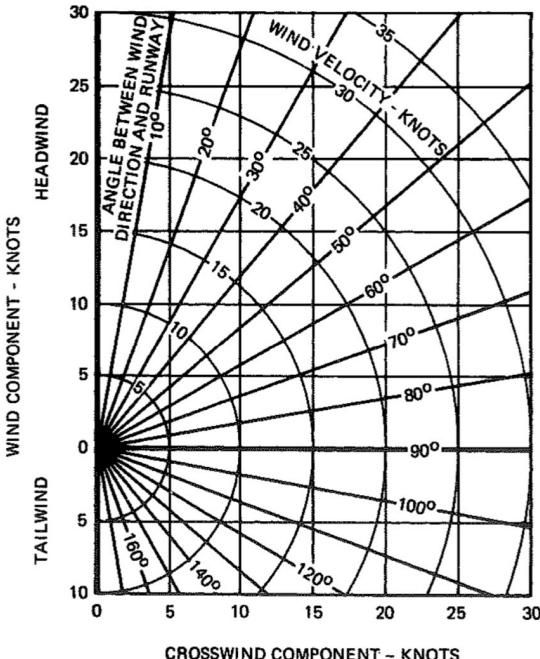
- Short field technique as specified in Section 4.
- Prior to takeoff from fields above 3000 feet elevation, the mixture should be leaned to give maximum RPM in a full throttle, static runup.
- Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
- For operation on a dry, grass runway, increase distances by 15% of the "ground roll" figure.

WEIGHT LBS	TAKEOFF SPEED KIAS		PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
	LIFT OFF	AT 50 FT		GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
1670	50	54	S.L.	640	1190	695	1290	755	1390	810	1495	875	1605
			1000	705	1310	765	1420	825	1530	890	1645	960	1770
			2000	775	1445	840	1565	910	1690	980	1820	1055	1960
			3000	855	1600	925	1730	1000	1870	1080	2020	1165	2185
			4000	940	1775	1020	1920	1100	2080	1190	2250	1285	2440
			5000	1040	1970	1125	2140	1215	2320	1315	2525	1420	2750
			6000	1145	2200	1245	2395	1345	2610	1455	2855	1570	3125
			7000	1270	2470	1375	2705	1490	2960	1615	3255	1745	3590
			8000	1405	2800	1525	3080	1655	3395	1795	3765	1940	4195

Figure 5-5. Takeoff Distance

SECTION 5
PERFORMANCE

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Original Issue

Chapter 2: Landings

For EACH Scenario (just like in the real world) you must determine: **Is it safe to land?**

In order to determine if its safe, you must

- 1.) determine runway to use
- 2.) choose landing technique
- 3.) calculate landing distance
- 4.) compare landing ditance to runway length
- 5.) consider margin-of-error & personal minimums.

SCENARIO 6, Bishop Landing

METAR KBIH 180255Z 12011G19KT 10SM SKC 11/1 A3012

Magnetic Variation = 12° E



BISHOP (BIH)(KBIH) 2 E UTC-8(-7DT) N37°22.39' W118°21.82'

4124 B Class I, ARFF Index B NOTAM FILE BIH

RWY 12-30: H7498X100 (ASPH-PFC) S-120, D-235, 2S-139, 2D-400, C5-685 PCR 590 F/B/X/T MIRL 0.3% up NW

RWY 12: REIL. PAPI(P4L)—GA 3.0° TCH 48'.

RWY 30: REIL. PAPI(P4L)—GA 3.52° TCH 52'. P-line.

RWY 17-35: H5600X100 (ASPH-PFC) S-100, D-140, 2S-175, 2D-240 PCN 49 F/B/W/T MIRL

RWY 17: REIL. PAPI(P4L)—GA 3.5° TCH 50'.

RWY 35: REIL. PAPI(P4L)—GA 3.0° TCH 50'. Trees.

RWY 08-26: H5567X100 (ASPH) S-40, D-56, 2D-98 PCN 25 F/A/W/T MIRL 0.4% up W

RWY 08: PAPI(P2L)—GA 3.5° TCH 30'. Trees.

RWY 26: PAPI(P2L)—GA 3.0° TCH 25'.

RUNWAY DECLARED DISTANCE INFORMATION

RWY 12: TORA-7498 TODA-7498 ASDA-7098 LDA-7098

RWY 30: TORA-7498 TODA-7498 ASDA-6743 LDA-6743

SERVICE: FUEL 100LL, JET A LGT ACTVT REIL Rwy 12, 30, 17 and 35; PAPI Rwy 08, 26, 12, 30, 17 and 35; MIRL Rwy 08-26, 12-30 and 17-35—CTAF. Rwy 08 PAPI unusable byd 5 NM. Rwy 26 PAPI unusable byd 2 NM. Rwy 30 PAPI unusable byd 4 NM. Rwy 17 PAPI unusable byd 5 NM. Rwy 35 PAPI unusable byd 5 NM.

AIRPORT REMARKS: Attended 1600-0100Z. Conds not mnt bwn 0100-1600Z. Admin ofc at arpt 760-872-2971. After hrs emerg: 760-937-4017. No intersection departures, helicopter t/c apch arpt from the W boundary. Ramp fees for comm acft, may be offset with fuel purchase. Overnight tie-down fee, one night may be offset with min fuel purchase. Fuel discounts for volume purchases. No local taxi svc, dial-a-ride avbl, but ltd on Sun. Main ramp is rstrd to Part 121; otrs use tsnt ramp by fuel farm.

AIRPORT MANAGER: (760) 872-2971

WEATHER DATA SOURCES: ASOS 119.025 (760) 227-6035.

COMMUNICATIONS: CTAF/UNICOM 123.0

RCO 122.6 (RIVERSIDE RADIO)

OKLAND CENTER APP/DEP CON 125.75

CLEARANCE DELIVERY PHONE: For CD if una to ctc on FSS freq, ctc Oakland ARTCC at 510-745-3380.

AIRSPACE: CLASS E.

RADIO AIDS TO NAVIGATION: NOTAM FILE BIH.

(V) (L) VOR/DME 113.35 BIH Chan 80(Y) N37°22.62' W118°21.99' at fld. 4117/15E.

VOR unusable:

- 136°-143° byd 40 NM
- 157°-164° byd 40 NM
- 165°-285° byd 12 NM
- 286°-304° byd 40 NM
- 305°-315° byd 35 NM
- 316°-342° byd 40 NM
- 340°-135° byd 12 NM

DME unusable:

- 165°-285° byd 12 NM
- 305°-315° byd 35 NM
- 340°-135° byd 12 NM

LDA/DME 109.1 I-BIH Chan 28 Rwy 17. LOC/DME unusable byd 14.5 NM blo 8,600'.

HELIPAD H1: H40X40 (ASPH)

HELIPAD H2: H100X100 (ASPH)

SAN FRANCISCO
H-3C, L-9A
IAP, AD

LANDING DISTANCE

SHORT FIELD

CONDITIONS:
Flaps 30°
Power Off
Maximum Braking
Paved, Level, Dry Runway
Zero Wind

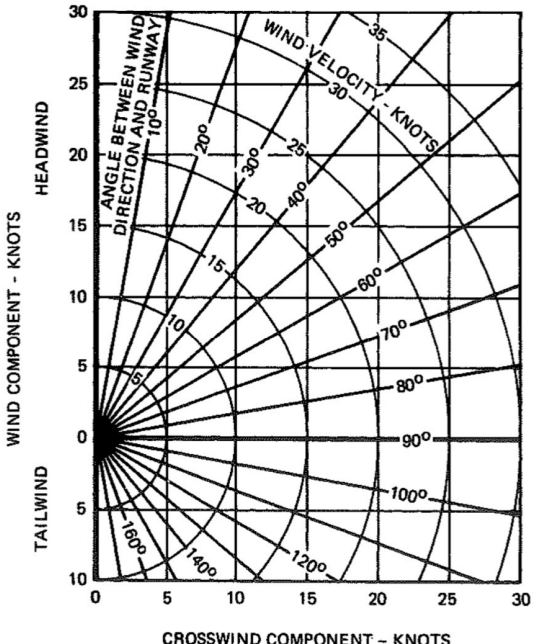
- NOTES:
- Short field technique as specified in Section 4.
 - Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
 - For operation on a dry, grass runway, increase distances by 45% of the "ground roll" figure.
 - If a landing with flaps up is necessary, increase the approach speed by 7 KIAS and allow for 35% longer distances.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
1670	54	S.L.	450	1160	465	1185	485	1215	500	1240	515	1265
1000			465	1185	485	1215	500	1240	520	1270	535	1295
2000			485	1215	500	1240	520	1270	535	1300	555	1330
3000			500	1240	520	1275	540	1305	560	1335	575	1360
4000			520	1275	540	1305	560	1335	580	1370	600	1400
5000			540	1305	560	1335	580	1370	600	1400	620	1435
6000			560	1340	580	1370	605	1410	625	1440	645	1475
7000			585	1375	605	1410	625	1440	650	1480	670	1515
8000			605	1410	630	1450	650	1480	675	1520	695	1555

Figure 5-11. Landing Distance

SECTION 5
PERFORMANCE

CESNA
MODEL 182



SCENARIO 7, Tahoe Landing

METAR KTVL 131854Z 36009KT 10SM OVC072 13/7 A3000

Magnetic Variation = 12°30' E



SOUTH LAKE TAHOE

LAKE TAHOE (TVL)(KTVL) 3 SW UTC-8(-7DT) N38°53.63' W119°59.72'
 6268 B TPA—See Remarks NOTAM FILE TVL
RWY 18-36: H8541X100 (ASPH-GRVD) S-70, D-125, 2S-159, 2D-210 MIRL
RWY 18: MALSF. PAPI(P4L)—GA 3.0° TCH 48'. Thld displcd 800'.
 Brush.
RWY 36: REIL. Thld displcd 2033'. Trees. Rgt tfc.

RUNWAY DECLARED DISTANCE INFORMATION
RWY 18: TORA-8541 TODA-8541 ASDA-7817 LDA-7017
RWY 36: TORA-8541 TODA-8541 ASDA-7741 LDA-5708

SERVICE: S2 FUEL 100LL, JET A QX 1, 3 LGT ACTIVATE MALSF Rwy 18; PAPI Rwy 18, MRL Rwy 18-36—CTAF. Rwy 18 PAPI unusbl byd 2 deg left of rwy cntrn and byd 3 NM.

NOISE: Access noise restrictions: max 80 DBA departure, 84 DBA arrival (Transport—85 DBA), maximum 77.1 DBA night limit. Noise abatement, DEP Rwy 36 HDG 1 mile, left 320 DEG to shoreline. For noise abatement info call 530-542-6182.

AIRPORT REMARKS: Attended 1500-0000Z. Arpt conditions not monitored 0000-1500Z. Arpt conds not mnt Sat-Sun. Birds and waterfowl invof arpt. After winter storms Rwy 18-36 opens before all taxiways are clear. Arpt surrounded on east, south and west by rapidly rising terrain. Tfc advisories and sequencing in the tfc pattern are based on position reports received from pilots in these areas. Adverse weather effects magnified by mountains. Avoid Desolation Wilderness west of arpt. Preferred arrival Rwy 18. Preferred departure Rwy 36. For large and high performance acft dep Rwy 18, right downwind dep is recommended. Recreational airborne activity along southern lakeshore. Paragliders and motorized prchts opr from rwy sfc. Cold temperature airport. Altitude correction required at or below -12C. TPA 7500(1232) small acft, 8000(1732) transport/high performance aircraft. Twy H clsd perm.

AIRPORT MANAGER: 530-542-6182

WEATHER DATA SOURCES: ASOS 124.725 (530) 541-5739. Unrelbl wind spd and dir info. LAWRS.

COMMUNICATIONS: CTAF/UNICOM 122.85
 SQUAW VALLEY RCO 122.5 (RENO RADIO)
 OAKLAND CENTER APP/DEP CON 127.95 316.1
 CLNC DEL 134.3

AIRSPACE: CLASS E.

RADIO AIDS TO NAVIGATION: NOTAM FILE TVL.
 PALISADES (VL)(DH) VOR/DME 113.2 SWR Chan 79 N39°10.82' W120°16.18' 127° 21.4 NM to fld. 8850/16E.
 VOR unusable:
 036°-048° byd 40 NM
 112°-124° byd 40 NM blo 14,000'
 112°-124° byd 53 NM

LDA/DME 108.9 I-TVL Chan 26 Rwy 18. LDA/DME Rwy 18 unmonitored. LOC front unusable byd 15° left and 15° right of course. LOC front unusable within 4.0 DME.

A diagram showing the layout of the airport runways. Runway 18-36 is the main runway, oriented north-south. Runway 8-17 is a shorter runway, oriented east-west. The diagram also shows the taxiway and the location of the airport buildings.

SAN FRANCISCO
 H-38, L-9A
 IAP, AD

LANDING DISTANCE

SHORT FIELD

CONDITIONS:
Flaps 30°
Power Off
Maximum Braking
Paved, Level, Dry Runway
Zero Wind

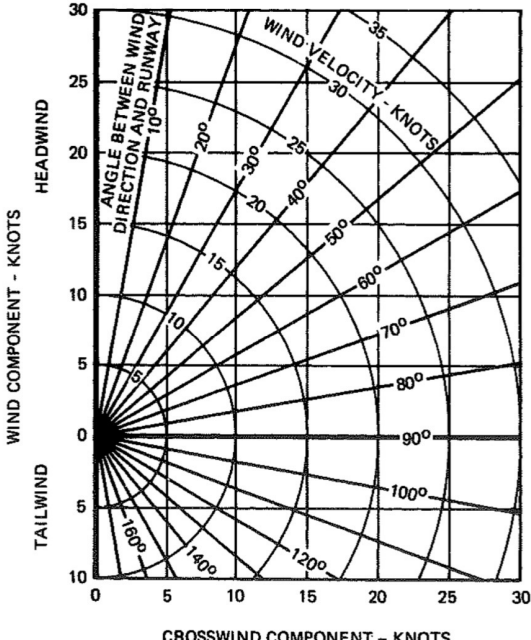
- NOTES:
- Short field technique as specified in Section 4.
 - Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
 - For operation on a dry, grass runway, increase distances by 45% of the "ground roll" figure.
 - If a landing with flaps up is necessary, increase the approach speed by 7 KIAS and allow for 35% longer distances.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
1670	54	S.L.	450	1160	465	1185	485	1215	500	1240	515	1265
1000			465	1185	485	1215	500	1240	520	1270	535	1295
2000			485	1215	500	1240	520	1270	535	1300	555	1330
3000			500	1240	520	1275	540	1305	560	1335	575	1360
4000			520	1275	540	1305	560	1335	580	1370	600	1400
5000			540	1305	560	1335	580	1370	600	1400	620	1435
6000			560	1340	580	1370	605	1410	625	1440	645	1475
7000			585	1375	605	1410	625	1440	650	1480	670	1515
8000			605	1410	630	1450	650	1480	675	1520	695	1555

Figure 5-11. Landing Distance

SECTION 5
PERFORMANCE

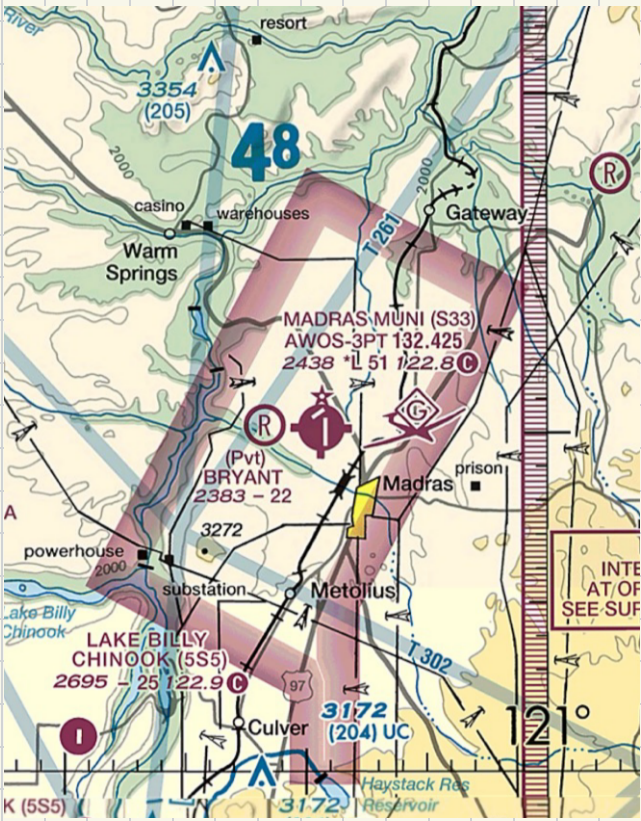
CESNA
MODEL 182



SCENARIO 8, Madras Landing

METAR S33 10658Z 05006KT 10SM SKC 36/15 A2968

Magnetic Variation = 14° E



MADRAS MUNI (S33) 3 NW UTC-8(-7DT) N44°40.21' W121°09.31'

2438 B NOTAM FILE MMV

RWY 16-34: H5091X75 (ASPH) S-75, D-120, 2D-180 MIRL

RWY 34: REIL. VASI(V4L)—GA 3.0° TCH 50'.

RWY 04-22: H2701X50 (ASPH) S-16 0.3% up NE

RWY 22: Road.

SERVICE: S4 FUEL 100LL, JET A OX 3, 4 LGT ACTVT REIL Rwy 34; VASI Rwy 34; MIRL Rwy 16-34—CTAF.

AIRPORT REMARKS: Attended Mon-Fri 1600-0100Z, Sat-Sun 1700-2200Z. Deer, coyote and cougar on and in/ov arpt. Rwy 04-22 marked with white reflectors. Cold temperature airport. Altitude correction required at or below -20C. See Special Notices — Intensive Flight Training Advisory.

AIRPORT MANAGER: 541-777-4935

WEATHER DATA SOURCES: AWOS-3PT 132.425 (541) 475-0494.

COMMUNICATIONS: CTAF/UNICOM 122.8

SEATTLE CENTER APP/DEP CON 126.15

CLEARANCE DELIVERY PHONE: For CD etc Seattle ARTCC at 253-351-3694.

RADIO AIDS TO NAVIGATION: NOTAM FILE RDM.

DESCHUTES (VH) (H) VORTACW 117.6 DSD Chan 123 N44°15.17' W121°18.21' 356° 25.8 NM to fld. 4103/18E.

VOR unusable:

- 013°-023° byd 40 NM
- 034°-039° byd 40 NM
- 108°-119° byd 40 NM
- 125°-135° byd 40 NM
- 150°-163° byd 40 NM
- 188°-201° byd 40 NM blo 10,500'
- 188°-201° byd 69 NM
- 202°-219° byd 40 NM
- 220°-240° byd 30 NM
- 241°-252° byd 40 NM blo 13,000'
- 241°-252° byd 47 NM
- 253°-257° byd 40 NM
- 258°-268° byd 40 NM blo 10,000'
- 258°-268° byd 48 NM
- 280°-286° byd 40 NM
- 289°-305° byd 40 NM blo 12,500'
- 289°-305° byd 48 NM
- 326°-338° byd 40 NM

TACAN AZIMUTH unusable:

- 220°-240° byd 30 NM

DME unusable:

- 220°-240° byd 30 NM

SEATTLE
H-1B, L-13A
IAP

LANDING DISTANCE

SHORT FIELD

CONDITIONS:
Flaps 30°
Power Off
Maximum Braking
Paved, Level, Dry Runway
Zero Wind

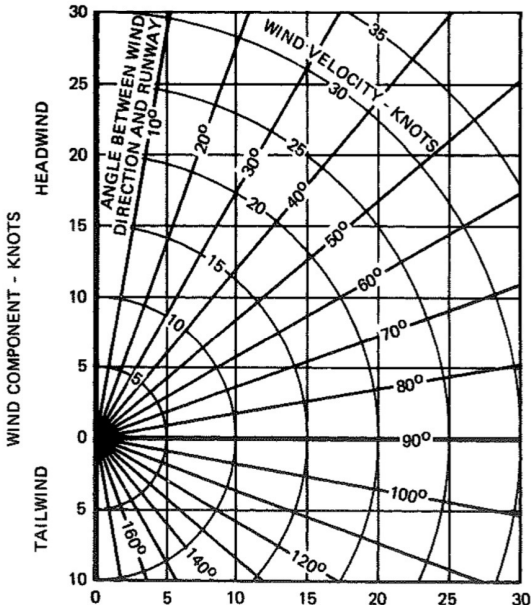
- NOTES:
- Short field technique as specified in Section 4.
 - Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
 - For operation on a dry, grass runway, increase distances by 45% of the "ground roll" figure.
 - If a landing with flaps up is necessary, increase the approach speed by 7 KIAS and allow for 35% longer distances.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
1670	54	S.L.	450	1160	465	1185	485	1215	500	1240	515	1265
1000			465	1185	485	1215	500	1240	520	1270	535	1295
2000			485	1215	500	1240	520	1270	535	1300	555	1330
3000			500	1240	520	1275	540	1305	560	1335	575	1360
4000			520	1275	540	1305	560	1335	580	1370	600	1400
5000			540	1305	560	1335	580	1370	600	1400	620	1435
6000			560	1340	580	1370	605	1410	625	1440	645	1475
7000			585	1375	605	1410	625	1440	650	1480	670	1515
8000			605	1410	630	1450	650	1480	675	1520	695	1555

Figure 5-11. Landing Distance

SECTION 5
PERFORMANCE

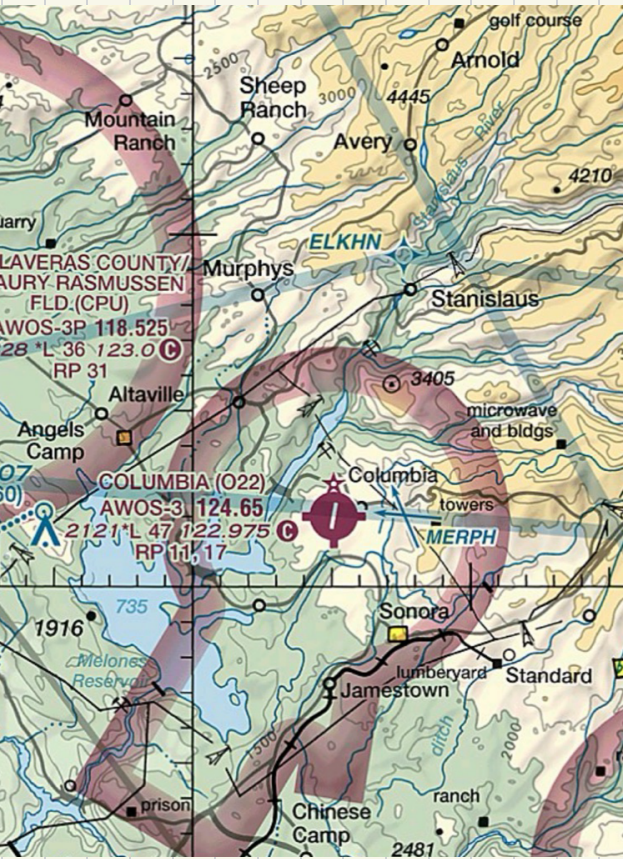
CESNA
MODEL 182



SCENARIO 9, Columbia Landing

METAR O22 31956Z 26015KT 10SM OVC044 15/10 A3002

Magnetic Variation = 12°30' E



COLUMBIA (O22) 1 SW UTC-8(-7DT) N38°01.83' W120°24.87' 2121 B TPA—See Remarks NOTAM FILE RIU

RWY 17-35: H4673X75 (ASPH) S-30 MRL 1.0% up N

RWY 17: REIL VASI(V2L)—GA 4.55° TCH 56'. Thld dsplcd 598'. Ground. Rgt tfc.

RWY 35: REIL VASI(V2L)—GA 4.0° TCH 54'. Thld dsplcd 384'. Trees.

RWY 11-29: 2607X50 (TURF) 0.9% up W

RWY 11: Trees. Rgt tfc.

RWY 29: Trees.

SERVICE: S4 FUEL 100LL, JET A OX 2, 4 LGT Rwy 35 VASI unusable byd 5° left and 5° right of rwy centerline. ACTIVATE MRL Rwy 17-35 and REIL Rwy 17 and Rwy 35—CTAF. VASI Rwy 17 and Rwy 35 opr continuously.

AIRPORT REMARKS: Attended 1600-0100Z. CAUTION: Rwy 11 departures prohibited due to conflict with main rwy. Varying wind direction and velocity may be encountered at mid point of Rwy 17-35 due to terrain features and wind flow patterns. Rwy 29 not recommended for use during winter months Nov through Mar. Turf twy north side of Rwy 11-29 not recommended for use Nov-Mar. All jet acft are requested to land Rwy 35 and depart Rwy 17 wind and weather permitting. Arpt has two rotating beacons, one on the arpt and one 6500' SE threshold Rwy 35. Calfire Air Tanker ops from arpt during fire season. Ldg fee for all commercial operators regardless of size and corporate acft over 12,500 pounds gross ldg weight. Avoid flights over Columbia State Park NE of arpt, and Highway 49 bridge 5 NM southwest of arpt and vicinity. Helicopter parking area 300' by 120' (4 positions). TPA Rwy 11-29 2921(800).

AIRPORT MANAGER: (209) 533-6684

WEATHER DATA SOURCES: AWOS-3 124.65 (209) 536-9384.

COMMUNICATIONS: CTAF/UNICOM 122.975

® NORCAL APP/DEP CON 125.1 (West-North)

® OAKLAND CENTER APP/DEP CON 121.25 (East-South)

CLEARANCE DELIVERY PHONE: For CD ctc NorCal Apch at 916-361-0516.

RADIO AIDS TO NAVIGATION: NOTAM FILE RIU.

LINDEN (VH) (DH) VORW/DME 114.8 LIN Chan 95 N38°04.47' W121°00.23' 078° 28.1 NM to fld. 266/17E.

DME unusable:
191°-235°

VOR unusable:
228°-232° byd 40 NM
236°-240° byd 40 NM

SAN FRANCISCO L-3B IAP

LANDING DISTANCE

SHORT FIELD

CONDITIONS:
Flaps 30°
Power Off
Maximum Braking
Paved, Level, Dry Runway
Zero Wind

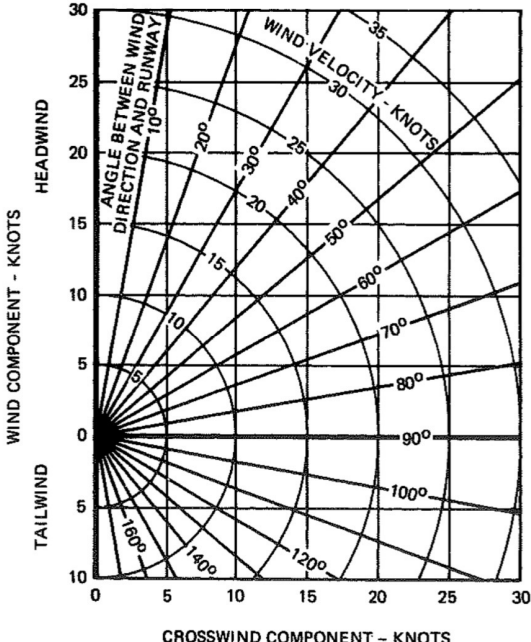
- NOTES:
- Short field technique as specified in Section 4.
 - Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
 - For operation on a dry, grass runway, increase distances by 45% of the "ground roll" figure.
 - If a landing with flaps up is necessary, increase the approach speed by 7 KIAS and allow for 35% longer distances.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
1670	54	S.L.	450	1160	465	1185	485	1215	500	1240	515	1265
1000			465	1185	485	1215	500	1240	520	1270	535	1295
2000			485	1215	500	1240	520	1270	535	1300	555	1330
3000			500	1240	520	1275	540	1305	560	1335	575	1360
4000			520	1275	540	1305	560	1335	580	1370	600	1400
5000			540	1305	560	1335	580	1370	600	1400	620	1435
6000			560	1340	580	1370	605	1410	625	1440	645	1475
7000			585	1375	605	1410	625	1440	650	1480	670	1515
8000			605	1410	630	1450	650	1480	675	1520	695	1555

Figure 5-11. Landing Distance

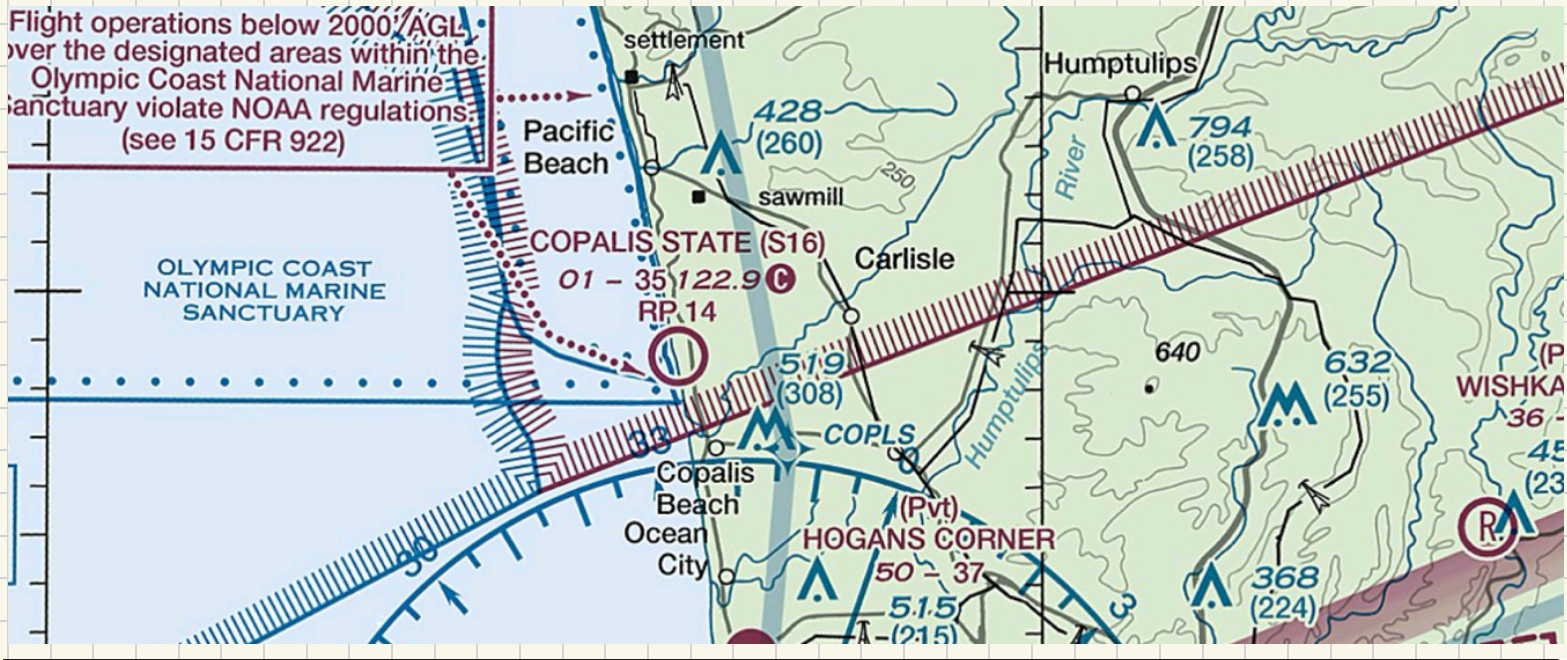
SECTION 5
PERFORMANCE

CESNA
MODEL 182



METAR KHQM 251955Z 16017KT 9SM SCT009 11/9 A3033

Magnetic Variation = 15' E



COPALIS STATE (S16) 2 NW UTC-8(-7DT) N47°08.69' W124°11.36'

SEATTLE

1 NOTAM FILE SEA

RWY 14-32: 3560X150 (SAND)

RWY 14: Rgt t/c.

AIRPORT REMARKS: Unattended. Arpt CLOSED to vehicles Apr 15 thru the day after Labor Day. Vehicles, pedestrians and animals on and invof rwy. Rwy avbl when tide is low.

AIRPORT MANAGER: 360-618-2477

COMMUNICATIONS: CTAF 122.9

LANDING DISTANCE

SHORT FIELD

CONDITIONS:

Flaps 30°
Power Off
Maximum Braking
Paved, Level, Dry Runway
Zero Wind

NOTES:

1. Short field techniques as specified in Section 4.
2. Decrease distances 10% for each 9 knots headwind. For operation with tailwinds up to 10 knots, increase distances by 10% for each 2 knots.
3. For operation on a dry, grass runway, increase distances by 45% of the "ground roll" figure.
4. If a landing with flaps up is necessary, increase the approach speed by 7 KIAS and allow for 35% longer distances.

WEIGHT LBS	SPEED AT 50 FT KIAS	PRESS ALT FT	0°C		10°C		20°C		30°C		40°C	
			GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS	GRND ROLL FT	TOTAL FT TO CLEAR 50 FT OBS
1670	54	S.L.	450	1160	465	1185	485	1215	500	1240	515	1265
		1000	465	1185	485	1215	500	1240	520	1270	535	1295
		2000	485	1215	500	1240	520	1270	535	1300	555	1330
		3000	500	1240	520	1275	540	1305	560	1335	575	1360
		4000	520	1275	540	1305	560	1335	580	1370	600	1400
		5000	540	1305	560	1335	580	1370	600	1400	620	1435
		6000	560	1340	580	1370	605	1410	625	1440	645	1475
		7000	585	1375	605	1410	625	1440	650	1480	670	1515
		8000	605	1410	630	1450	650	1480	675	1520	695	1555

Figure 5-11. Landing Distance

SECTION 5 PERFORMANCE

**CESSNA
MODEL 152**

