VFR CROSS-COUNTRY PLANNING GUIDE

Day Before Flight:

1. Gather current VFR Sectional Chart, Chart Supplement, Navigation Log, POH, Flight Computer (E6B), Plotter.

2. Eyeball approximate route of flight considering the following:
    a. ***Route:*** Try to choose the most direct route but consider terrain during the climb, enroute, and descent. Use roads, Victor Airways, obvious landmarks, and navigation aids if available. Make sure checkpoints are easily identifiable along the route. Avoid: power lines, private airports, and train tracks – not easily identified.

    b. ***Airspace:*** Avoid restricted airspace and special use airspace. Plan for appropriate clearances, weather minima, and equipment requirements for Class B, Class C, Class D, including ADS-B requirements.

    c. ***Terrain:*** Make sure you don't have terrain along your proposed route that is high than the aircraft's service ceiling. For safety, make sure you have at least 2,000-foot obstacle/terrain clearance.

    d. ***Airports:*** Appropriate runway lengths and services (fuel, bathroom etc.) at airports for needed, planned and unplanned stops.

    e. ***Fuel:*** Do you need a fuel stop? At what fuel indication would you divert for fuel? How much fuel are you landing with? What is fuel reserve requirement? Does my destination have fuel services available 24 hours?

    f. ***Emergencies:*** In case of emergency, make sure there are suitable landing sites (on and off airport). Don't fly long distances over lakes or open water.

    g. ***Navigation Aids:*** What navigation aids do I have available for the flight?

3. Use plotter and pencil to draw intended route of flight from the **center** of departure airport to the **center** of the destination airport.

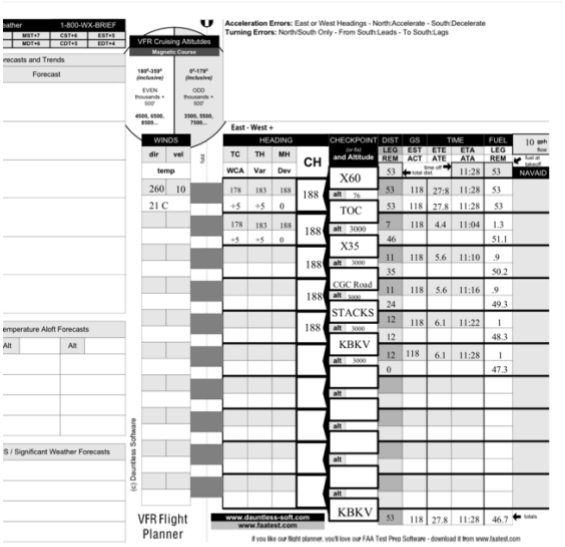
4. **Navigation Log:** Begin to enter the structure of the flight plan. Some of the details will be added later with current weather. For now, start with the departure and arrival airports.

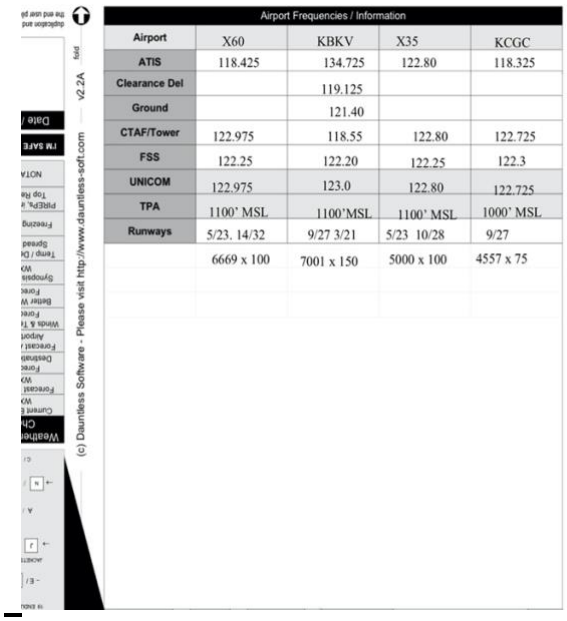
5. **Top-Of-Climb:** Use the POH Performance Data to compute. This is the point at which the airplane reached its initial cruising altitude. Determined when you get the weather and winds aloft for the flight.

6. **Identify Checkpoints:** Identify and mark an **"X"** at each checkpoint along the route. They should be evenly spaced along the route and have clear visible references (roads, airports, tall towers, cities, etc.). Checkpoints should be about **every 10 – 13 nm.**

X60 – KBKV

7. **Navigation Log:**
    a. Checkpoints – fill in each check point
        i. If Navigation aid – Name, frequency, and "To" or "From"
        ii. Altitude – based on winds aloft, airspace, duration, terrain, flight rules
        iii. True Course
        iv. Leg Distance
        v. Magnetic Variation
        vi. Complete Airport Information (frequencies, runways, etc.)
        vii. If communications are required, write down who you will need to contact.





Airport Frequencies / Information				
Airport	X60	KBKV	X35	KCGC
ATIS	118.425	134.725	122.80	118.325
Clearance Del		119.125		
Ground		121.40		
CTAF/Tower	122.975	118.55	122.80	122.725
FSS	122.25	122.20	122.25	122.3
UNICOM	122.975	123.0	122.80	122.725
TPA	1100' MSL	1100'MSL	1100' MSL	1000' MSL
Runways	5/23, 14/32	9/27 3/21	5/23 10/28	9/27
	6669 x 100	7001 x 150	5000 x 100	4557 x 75

(c) Dauntless Software - Please visit http://www.dauntless-soft.com v2.2A

Day of Flight

1. View weather information: www.aviationweather.gov.

2. Get a **standard weather briefing. 800-992-7433**

3. Use METARS, TAFs, and Winds Aloft to calculate takeoff, climb, en route and decent performance, Wind Correction Angles (WCA) and Ground Speed (GS). Remember, winds aloft are given in True Course (TC) and in knots.

4. Refer to NOTAMS, TFRs, Area Forecast, Prog Charts, AIRMETs, SIGMETs, Convective SIGMETs, PIREPs, and TAFs, en route to determine if flight can be accomplished under VFR.

5. Calculate TOC. Determine fuel burn, time, mileage, ground speed and fill in Navigation Log Boxes. **Remember .1 = 6 minutes.**

6. Calculate TAS, TC, GS, WCA, TH, VAR, MH, Deviation, CH, Leg Time (ETE), ETA, Fuel, for each checkpoint. Complete Navigation Log.

7. Complete VFR Flight Plan.

8. Calculate Weight & Balance.

9. Review NOTAMS, TFRs, Navigation Log, and all other pertinent data. Runway length and landing performance data.

10. If you are a student pilot, get endorsement(s) from your authorized CFI.

11. Ask questions if you are not sure about anything.

Terminology:

TOC – Top of climb
POH – Pilot's Operating Handbook
TC – True Course
TH – True Heading
WCA – Wind Correction Angle
MH – Magnetic Heading - True heading adjusted for magnetic variation.
CH – Compass Heading – True course adjusted for compass deviation.
VAR – Variation
DEV – Deviation (compass)

Formulas:

TC° ± WCA° = TH°

TH° ± VAR° = MH°

MH° ± DEV° = CH°

MC° = TC° ± VAR°

Wind adjustments converts course to heading.
Variation adjustments converts true to magnetic.
Deviation adjusts for errors in the compass caused by airplane systems.

WEIGHT & BALANCE

Aircraft: N3544Z **Cessna 172SP**

Weight x Arm = Moment

	Weight	Arm	Moment
Basic Empty	1701.50	40.41	68,758
Front Seat 1 (34 – 46)	185.00	42.00	7,770
Front Seat 2 (34 -46)	190.00	42.00	7,980
Rear Passenger #1	0.00	73.00	0
Rear Passenger # 2	0.00	73.00	0
Fuel (6 lbs./gallon)	318.00	48.00	15,264
Baggage Area A	0	95.00	0
Baggage Area B	0	123.00	0

Total Moment: 99,772 / Total Weight 2,394.50 = 41.66 CG

Aircraft Loading: _X__ Within Limits___ Outside Limits

Maximum Useful Load: 856.50 lbs.
Maximum Take-Off Weight: 2550 lbs.

CRUISE PERFORMANCE

CONDITIONS:
2550 Pounds
Recommended Lean Mixture At All Altitudes (Refer to Section 4, Cruise)

PRESS ALT FT	RPM	20°C BELOW STANDARD TEMP			STANDARD TEMPERATURE			20°C ABOVE STANDARD TEMP		
		% BHP	KTAS	GPH	% BHP	KTAS	GPH	% BHP	KTAS	GPH
2000	2550	83	117	11.1	77	118	10.5	72	117	9.9
	2500	78	115	10.6	73	115	9.9	68	115	9.4
	2400	69	111	9.6	64	110	9.0	60	109	8.5
	2300	61	105	8.6	57	104	8.1	53	102	7.7
	2200	53	99	7.7	50	97	7.3	47	95	6.9
	2100	47	92	6.9	44	90	6.6	42	89	6.3
4000	2600	83	120	11.1	77	120	10.4	72	119	9.8
	2550	79	118	10.6	73	117	9.9	68	117	9.4
	2500	74	115	10.1	69	115	9.5	64	114	8.9
	2400	65	110	9.1	61	109	8.5	57	107	8.1
	2300	58	104	8.2	54	102	7.7	51	101	7.3
	2200	51	98	7.4	48	96	7.0	45	94	6.7
	2100	45	91	6.6	42	89	6.4	40	87	6.1
6000	2650	83	122	11.1	77	122	10.4	72	121	9.8
	2600	78	120	10.6	73	119	9.9	68	118	9.4
	2500	70	115	9.6	65	114	9.0	60	112	8.5
	2400	62	109	8.6	57	108	8.2	54	106	7.7
	2300	54	103	7.8	51	101	7.4	48	99	7.0
	2200	48	96	7.1	45	94	6.7	43	92	6.4

Figure 5-8. Cruise Performance (Sheet 1 of 2)

TIME, FUEL AND DISTANCE TO CLIMB AT 2550 POUNDS

CONDITIONS:

Flaps Up
Full Throttle
Standard Temperature

PRESS ALT FT	CLIMB SPEED KIAS	RATE OF CLIMB FPM	FROM SEA LEVEL		
			TIME IN MIN	FUEL USED GAL	DIST NM
S.L.	74	730	0	0.0	0
1000	73	695	1	0.4	2
2000	73	655	3	0.8	4
3000	73	620	4	1.2	6
4000	73	600	6	1.5	8
5000	73	550	8	1.9	10
6000	73	505	10	2.2	13
7000	73	455	12	2.6	16
8000	72	410	14	3.0	19
9000	72	360	17	3.4	22
10,000	72	315	20	3.9	27
11,000	72	265	24	4.4	32
12,000	72	220	28	5.0	38

NOTES:

1. Add 1.4 gallons of fuel for engine start, taxi and takeoff allowance.
2. Mixture leaned above 3,000 feet for maximum RPM.
3. Increase time, fuel and distance by 10% for each 10°C above standard temperature.
4. Distances shown are based on zero wind.

Figure 5-7. Time, Fuel and Distance to Climb

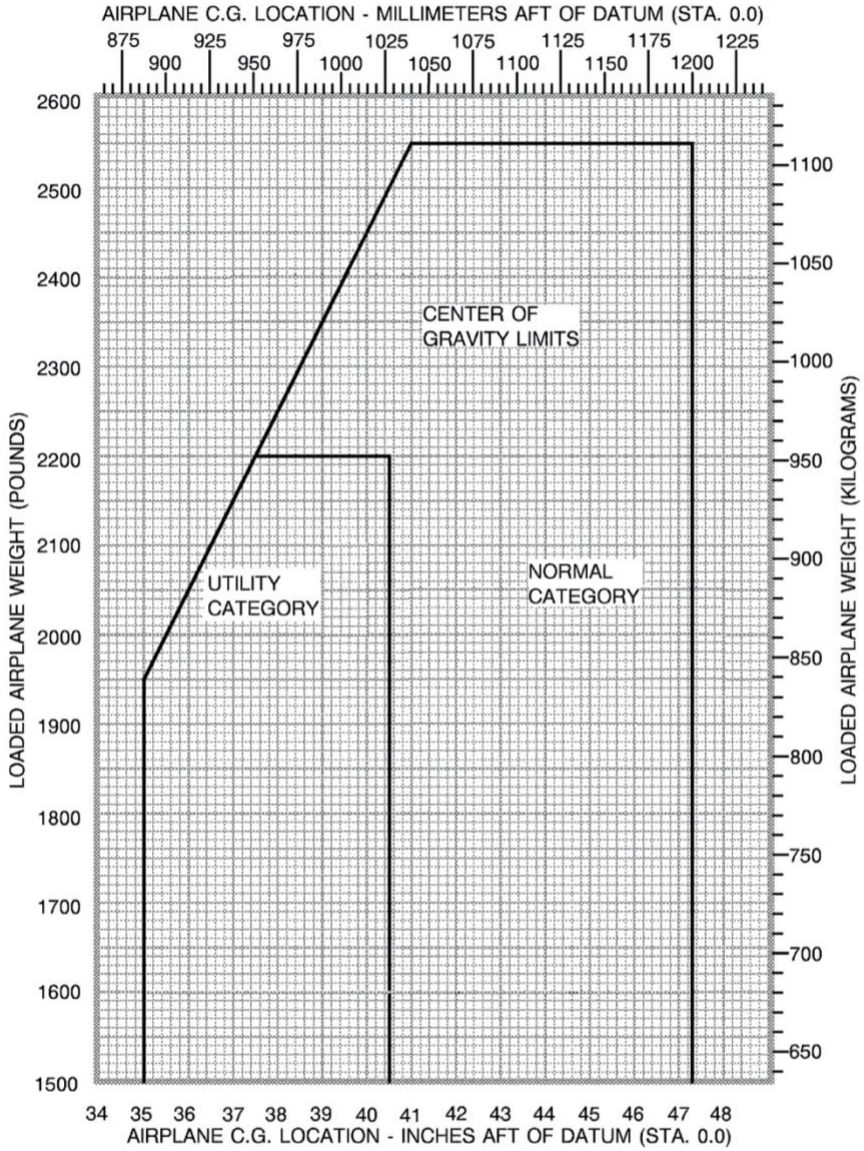


Figure 6-8. Center of Gravity Limits

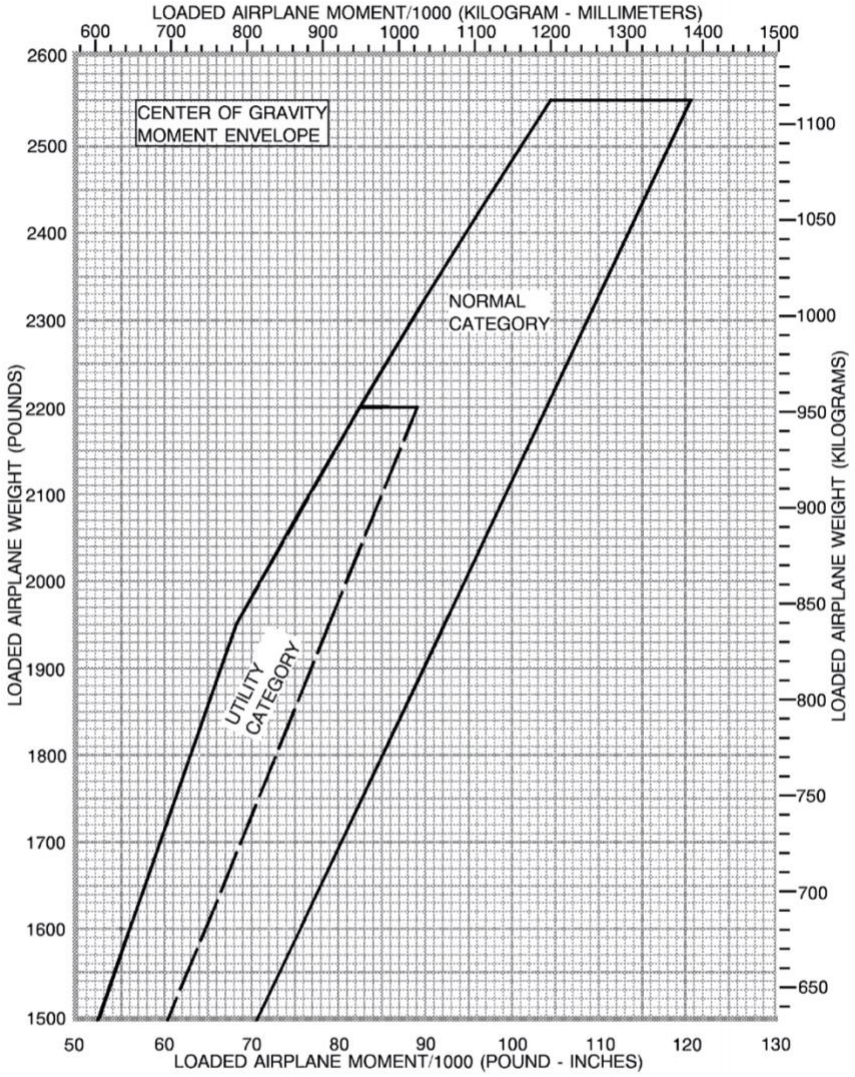


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Figure 6-7. Center of Gravity Moment Envelope

GO/NO-GO DECISION CHECKLIST

Consider all the factors in relation to the equipment flown, your proficiency and experience. Don't be afraid to cancel the flight or delay departure. Remember to constantly re-evaluate and adjust your plan accordingly.

- ☐ **Review of Personal Minimums for VFR/IFR**
  Do I feel comfortable given the currently weather conditions?
  STICK TO SET MINIMUMS

- ☐ **Review of Airspace / NOTAMS / TFRS**
  Do I need Mode C or ADB-S Out?
  Any adjustments to route?

- ☐ **P-A-V-E Checklist Completed**

- ☐ **Fuel with Required Reserves**

- ☐ **Alternate Airports with Fuel and/or Rental Cars / Hotels / Tie Down**

- ☐ **Weight and Balance within Limits**

- ☐ **Performance Charts Reviewed**

- ☐ **Runway Lengths / LAHSO / Hotspots**

- ☐ **Weather Briefing – VFR Recommended**

- ☐ **Weather No-Go Considerations:**
  - Thunderstorms
  - Embedded thunderstorms
  - Lines of thunderstorms
  - Fast-moving fronts or squall lines
  - Icing
  - Turbulence
  - Fog

- ☐ **I-M-S-A-F-E Checklist**

AS PIC YOU ARE ULTIMATELY RESPONSIBLE FOR MAKING THE GO/NO-GO DECISION. IF AT ANY POINT YOUR ARE UNCOMFORTABLE DON'T FLY. SEEK THE ADVICE OF YOUR CFI OR A SEASONED PILOT.

LOST PROCEDURES

1. **Circle** the area and look for the airport.
2. **Confess** to yourself that you are lost.
3. **Climb** to cope and potentially assist with locating airport.
4. **Conserve** fuel.
5. **Communicate** with ATC, Tower, Unicom, etc.
6. **Comply** with instructions, FARs, etc.