

Appendix 6

Weather Analysis Checklists – VFR Flight

Ceiling & Visibility

- ✓ How much airspace do I have between the reported/forecast ceilings and the terrain along my route of flight? Does this information suggest any need to change my planned altitude?
- ✓ If I have to fly lower to remain clear of clouds, will terrain be a factor?
- ✓ How much ground clearance will I have?
- ✓ Do I have reliable ceiling information?
- ✓ Will I be over mountainous terrain or near large bodies of water where the weather can change rapidly, or where there may not be a nearby weather reporting station?
- ✓ What visibility can I expect for each phase of flight (departure, enroute, destination)?
- ✓ Given the speed of the aircraft, expected light conditions, terrain, and ceilings, are the reported and forecast visibility conditions sufficient for this trip?
- ✓ Are there conditions that could reduce visibility during the planned flight? (Hint: look for indications such as a small and/or decreasing temperature/dew point spread).
- ✓ Are reported and forecast ceiling & visibility values above my personal minimums?

Aircraft Performance

- ✓ Given temperature, altitude, density altitude, and aircraft loading, what is the expected aircraft performance?
 - Takeoff distance
 - Time & distance to climb
 - Cruise performance
 - Landing distance
- ✓ Are these performance values sufficient for the runways to be used and the terrain to be crossed on this flight?

(Remember that it is always good practice to add a 50% to 100% safety margin to the "book numbers" you derive from the charts in the aircraft's approved flight manual (AFM)).

Turbulence

- ✓ Are the wind conditions at the departure and destination airports within the gust and crosswind capabilities of both the pilot and aircraft? *(Note: For most GA pilots, personal minimums in this category might be for a maximum gust of 5 knots and maximum crosswind component 5 knots below the maximum demonstrated crosswind component.)*
- ✓ What is the maneuvering speed (V_A) for this aircraft at the expected weight?

(Note: Remember that V_A is lower if you are flying at less than maximum gross weight.)

VFR Analysis Worksheet		Turbulence	Ceiling & Visibility			Visibility & Performance	Trends
Place	Time	Wind	Visibility	Weather	Ceiling	Temp/Dewpt	Altimeter

Turbulence Analysis

Nearest Good Weather

Direction: N S E W

Distance: _____ nm

Flying time to nearest good VFR: _____

Personal Minimums: Wind speed = _____ Gust factor = _____ Crosswind = _____ Departure wind = _____ @ _____ Destination wind = _____ @ _____ En route wind = _____ @ _____ Maneuvering speed = _____ * Convective SIGMETS? Yes <input type="checkbox"/> No <input type="checkbox"/>
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* V_A decreases as weight decreases

Ceiling and Visibility Analysis

Personal Minimums: Ceiling = _____ Visibility = _____ Planned altitude = _____ - Lowest en route ceiling = _____ } ground clearance Planned altitude = _____ - Highest en route obstacle = _____ } clearance Planned altitude = _____ - Highest en route terrain = _____ } clearance AIRMETS? Yes <input type="checkbox"/> No <input type="checkbox"/> SIGMETS? Yes <input type="checkbox"/> No <input type="checkbox"/> Reliable ceiling information? Yes <input type="checkbox"/> No <input type="checkbox"/> Over mountainous terrain ? Yes <input type="checkbox"/> No <input type="checkbox"/> Over large bodies of water ? Yes <input type="checkbox"/> No <input type="checkbox"/> Departure visibility = _____ Lowest en route visibility = _____ Destination visibility = _____
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Performance Analysis

Density altitude = _____ Freezing level = _____ Takeoff distance = _____ Runway length = _____ Landing distance = _____ Runway length = _____ Cruise performance = _____ Fuel available = _____ gal _____ hrs Fuel required = _____ gal _____ hrs Fuel reserve = _____ gal _____ hrs <i>Note: It is good practice to add a 50% to 100% safety margin to the "book numbers" you derive from charts in the approved flight manual (AFM).</i>
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Appendix 8

Estimating In-flight Visibility & Cloud Clearance

There are a number of ways to develop your skill in estimating your in-flight visibility and cloud clearance. These techniques will help you establish a continuous weather assessment habit. It will also help you calibrate your perceptions and learn when to trust what you see.

- ✓ Listen to the ATIS or ASOS/AWOS as you pass near an airport. First try to evaluate the basic weather conditions based on what you see. Then listen to the ATIS or ASOS/AWOS and compare the official report to your own evaluation of conditions, as well as with any previous reports you have seen from this location.
- ✓ Use the length of a runway you pass in flight to estimate distances.
 - A runway that is 5,300 feet long is about a mile. Look to see how far ahead you can see, and estimate the number of runways that it would take to cover that distance.
 - A 2,600 foot runway would be about a half mile, and so on. In this case, visibility is less than 3 miles if you cannot see 6 runway lengths ahead.
- ✓ If you know your aircraft's groundspeed, you can estimate distance. Look to the most distant point you can see ahead and then time how long it takes to reach it.
 - If, for example, your ground speed is 105 knots, that's about 120 mph and you'll cover about 2 miles per minute. If you reach the point in less than 90 seconds, the in-flight visibility is less than 3 miles!
 - A simple variation on this technique it to use GPS or DME while flying directly to or from a waypoint or VOR. Just look at the beginning and ending mileage on the GPS or DME to see how far you've flown to reach the farthest point you can see.
- ✓ If you need to know the lateral distance to a cloud, start timing when the cloud is ahead of you and at about a 45° angle (halfway between your 10 and 11 o'clock or between your 1 and 2 o'clock positions). Stop timing when the cloud is off your wingtip. The distance you've traveled forward will now be equal to the distance between you and the cloud. If you were traveling at 120 mph, it will take you about 11 seconds to travel 2000 feet. If the cloud took less than 11 seconds to arrive off your wingtip, you are now less than 2000 feet horizontally from that cloud.

(courtesy of Max Trescott, SJ Flight)