WEATHER BRIEFING

Call 1-800-WXBRIEF, give aircraft number, route, etc. Request NOTAM’s.

TERMS

Airmet: Issued for moderate icing and turbulence, winds 30+ knots, visibility less than 3 miles, ceilings below 1,000’

Sigmet: Issued for all aircraft for severe/extreme turbulence, icing, obstructions to visibility

Convective Sigmet: Issued for tornadoes, lines of thunderstorms; embedded thunderstorms; hail 3/4”+

Ceilings: Height AGL of lowest reported layer of clouds (broken, obscuration, or overcast)

Cumulonimbus: Clouds with the greatest turbulence—avoid by 20 NM.

Dewpoint: Temperature at which visible moisture forms

Fog:

Advection or upslope fog depends on wind to form.

Radiation fog forms when warm, moist air flows over low, flat land on clear, calm nights.

Front: Boundary between two air masses, indicated by a wind shift.

Warm Front: Temperature inversions (goes up with altitude); poor visibility; smooth/stable air; stratiform clouds; drizzle; fog (from evaporation)

Cold Front: Temperature goes down with altitude; good visibility; turbulence/unstable air; cumuliform clouds

Structural Icing: forms in freezing rain

Thunderstorms: lifting, moist, unstable air and lightning (always); develop/cumulus stage = updrafts; mature stage = rain; dissipation = downdrafts

Squall Line Thunderstorms: narrow band of thunderstorms, most intense hazard to aircraft

Winds: aloft reported true, in knots; on ground reported as magnetic

PILOT

I’M SAFE?

Illness?

Medication?

Stress?

Alcohol?

Fatigue?

Eating?

Alcohol: Do not fly within 8 hours of consumption; while under the influence; with more than 0.04% BAC

To act as PIC: Need pilot, medical certificates, and a flight review within 24 calendar months (WINGS Program can substitute for flight review)

To carry passengers: Preceding 90 days 3 takeoffs and 3 landings in class; and for night (1 hour after/before sunset/sunrise) or tail wheel airplane must be to full stop

AIRPLANE AND FLIGHT

A R O W

Airworthiness certificate

Registration certificate

Operating limitations

Weight and Balance

Airplane inspections

Airplane must have annual inspection, plus 100 hour if used for hire, and AD compliance

Airplane airworthiness

Owner/operator maintains, but PIC (operator) is responsible to determine
Angle of attack (AOA)  
Angle between relative wind and chord. Increase AOA, increase lift & drag. [NOTE: Increasing weight or wing loading will require additional lift]  

Stalls 
Can occur at given angle of attack, at any airspeed, any attitude  
Stall speed increases with weight (higher angle of attack for more lift)  
Turns increase stall speed (higher load factor or effective weight in turn)  

Spins  
Airplane must be stalled to spin (a spin is an aggravated stall)  

Fuel (required for VFR)  
To intended destination with 30 minutes reserve (45 at night) at normal cruise  

Emergencies 
Pilot may deviate from any rule to meet an emergency

PERFORMANCE  

Basic empty weight  
Unusable fuel plus optional equipment, found in airplane documents  

Center of Gravity  
AFT - worse stability, lower stall speed, better performance  
FORE - better stability, higher stall speed, worse performance  

Density altitude (DA)  
Determines performance; goes up with hot temperatures and low air pressure  

Pressure altitude  
Set altimeter to 29.92” or calculate (one inch equals approximately 1,000’)  

OPERATION  

Aircraft position lights  
Right – green; left – red; tail – white; turn lights on sunset to sunrise  

Seatbelts  
Brief occupants on use and notify to fasten before takeoff or landing  

Crosswind taxi  
From front: aileron up into wind  
From rear: aileron and elevator down  

Airspeed Indicator  
White arc shows flap range  
Green arc shows normal range  
Yellow arc shows caution  
Red line shows never exceed speed  

Magnetic compass  
Lag North of E/W; lead South of E/W  
On E/W heading, Accelerate North; Decelerate South (ANDS)  

Ground effect  
Airplane may become airborne before normal take off speed  

P-factor  
High pitch and power causes left yaw (rotation at takeoff’ gives noticeable P-factor)  

V_x Speed for best angle of climb - achieves the most altitude gain over distance  
V_y Speed for best rate of climb - achieves the most altitude gain over time  

High engine speeds/ high pitch attitudes  
Will cause high engine temperatures  

Float Type  
Carburetor  
Prone to induction icing in high humidity at 20°-70°F.  

Carburetor heat  
Enriches mixture.  

Power loss  
Fly the airplane, then establish best glide speed, look for field to land, use emergency checklists  

Severe turbulence  
Maintain level flight attitude and use V_a (maneuvering speed) or lower  

V_a Not shown on airspeed indicator; varies with weight: weight goes down, V_a goes down  

ENVIRONMENT  

Airspace  
Class A: (18,000’ MSL and above) set altimeter to 29.92”, and requires IFR flight plan  
Class B: (blue line) clearance required to enter, need Mode C within 30NM  
Class C: (magenta line) 2-way communication and Mode C required  
Class D: (dashed blue line) has operating control tower, 2-way communication required  
Class E: starts 1,200’ AGL, but within magenta tint line starts at 700’ AGL and within dashed magenta line (surface area Class E) starts at surface  
Class G: is not depicted on charts (uncontrolled airspace)  

Operating control tower  
In Class E or G (blue) 4 NM, 2500’ AGL; must communicate  

MOA  
Use caution.  

Restricted Area  
Contact controlling agency.  

Prohibited Area  
NO, NO!  

Gray line  
Military training routes with aircraft at 250+ knots; 4 digits, at and below 1,500’ AGL; 3 digits, 0’ and up; VR=VFR; IR = IFR  

Federal Airway  
4 NM either side of blue (Victor airway) line, from 1,200’ AGL to FL180  

Traffic pattern indicators  
Depicts direction of turns in traffic pattern  

VASI  
“All red, you’re dead; red over white, you’re all right.”  

Airport lights  
Taxiways are outlined with blue lights. Runways are outlined with white lights.  

Transponder  
7700 = emergency  
7600 = no radio
7500 = hijack
1200 = VFR

Mode C
Over 10,000’ MSL; A,B, & C airspace; above C; and in mode C veil (30 NM of B)

Oxygen
Crew 12,500’ to 14,000’ over 30 min; crew all time above 14,000’; all occupants over 15,000’

ELT
Test during first 5 minutes after hour and replace battery after one hour cumulative use or 50% of shelf life

Emergency
Broadcast on 121.5 MHz or 243 MHz, FSS EFAS on 122.0 MHz.

Right of Way (ROW)
Aircraft in distress over all other aircraft
Balloons over other aircraft
Giders over airplanes, rotorcraft, and airships
Aircraft towing or refueling over other powered aircraft.
When head-on, go right.
Overtake to right.
Landing aircraft has ROW.
Lower aircraft on final has ROW.

No aerobatics
Over congested area or open air assembly of persons; on Federal Airways, below 1,500’ AGL; with less than 3 miles visibility.

Light signals
On GROUND:  Green – takeoff
Flashing Green – taxi
Red – stop
Flashing Red - clear runway
Flashng White - return to starting point;

In FLIGHT:  Flashing green - return for landing
Red - give way/circle
Green – land
Flashing Red - airport unsafe
Red/Green - use caution.

Minimum safe altitudes
Anywhere: If power unit fails, emergency landing without undue hazard.
Sparately populated areas: 500’ AGL. No hazard to and 500’ from persons/property.
Congested areas: 1,000’ above highest obstacle within 2,000’ radius.

Altimeter setting
Use barometric pressure; if none, use field elevation. Over 18,000’ set to 29.92”.

VFR cruising altitudes
Above 3,000’ AGL
Magnetic course 0° - 179° odd 1,000’s plus 500’

Magnetic course 180° - 359° even 1,000’s plus 500’

MEDICAL
Carbon monoxide
Exhaust fumes. Headaches, drowsiness, dizziness. Open air vents.

Hyper-ventilation
Caused by rapid breathing (often from stress). Hold breath or use O2.

Hypoxia
Oxygen deficiency. Go lower or use O2.

Scanning
Scan in segments of 10° for at least one second to allow eye to focus.

Spatial disorientation
Temporary confusion; rely on instrument indications, not body signals.

Vision at night
Scan slowly to permit off center viewing.

WAKE TURBULENCE
Vortices
Be alert for the trailing wing tip vortices of large aircraft.
Landing behind: Stay at or above its flight path and land beyond its touch down point. When it is taking off, land before its rotation point.
Departing behind: Rotate before its rotation point and stay above its flight path until turning clear of its wake.
Low approaches: When large aircraft is making low approaches or touch and goes, wait at least two minutes.
Wind drift: Make adjustment for. Vortices will drift with wind. Vortices settle and move laterally near the ground. Wait at least two minutes.
When in doubt, wait at least two minutes before taking off or landing.
While en route: Avoid flight below and behind its flight path.

ACCIDENTS/INCIDENTS
NTSB
Report immediately in-flight fire, overdue aircraft, flight control system malfunction or failure, incapacity of a crewmember to perform duty due to injury or sickness, damage to property (other than aircraft) exceeding $25,000 (estimated).
Accidents: Report within 10 days.
Incidents: Report on request.
VFR MINIMUMS IN AIRSPACE CLASSES

<table>
<thead>
<tr>
<th>Class</th>
<th>Visibility</th>
<th>A</th>
<th>B</th>
<th>C and D</th>
<th>E (over 10,000’ MSL)</th>
<th>G (over 10,000’ MSL and under 2,500’ AGL)</th>
<th>G (day time under 1,200’ AGL)</th>
<th>G (day time over 1,200’ under 10,000’)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No*</td>
<td>No*</td>
<td>3 statute miles</td>
<td>3 statute miles</td>
<td>5 statute miles</td>
<td>1 statute mile</td>
<td>1 statute mile</td>
<td></td>
</tr>
<tr>
<td>Clouds</td>
<td>No*</td>
<td>Clear of clouds</td>
<td>1,000’ above 2,000’ from 500’ below</td>
<td>1,000’ above 1 statute mile from 1,000’ below</td>
<td>Clear of clouds</td>
<td>1,000’ above 2,000’ from 500’ below</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*No VFR in Class A Airspace unless authorized by Air Traffic Control facility with jurisdiction.

Have a safe flight! Don’t forget to fill tanks at night to prevent water from forming.

Frank Phillips, Jr., is an FAA Aviation Safety Inspector in the Operations and Safety Program Support Branch, General Aviation and Commercial Division, Flight Standards Service.

HELP PREVENT RUNWAY INCURSIONS

IF IN DOUBT, ASK

KNOW YOUR DIRECTION...