

# OPERATIONAL GUIDELINES

## 1917

*Many old-time "rules of the air" may now appear whimsical but some are still valid*

BY CAPT. SAMUEL W. TERRY

*These are actual notes, dated 1917, that were found in the files of Captain Samuel W. Terry and sent to us by Robert A. Tucknott (AOPA 567656). Terry was a pilot with the Signal Division of the Army Air Corps. He built an airplane in 1914, but unfortunately crashed it in 1915. He had secured the engine for this aircraft from France and had put a lot of effort into it with very little advice.*

*As the 21-year-old head trainer for pilots at Fort Sill, Okla., Terry developed these notes for use in his training operations. Right after World War I, he spent most of his time going around the country promoting aviation. He made many speeches attempting to gain interest and support, and recruiting new pilot trainees.*

1. Unless absolutely alone a pilot should not attempt to start a motor without assistance.

2. Before starting to crank the motor be sure the ground wire is in place and that the switch is closed. Be sure that the switch is closed before starting to take in the compression charge.

3. If you start your machine alone, dig a place for the wheels and point the machine into the wind. If possible, tie the tail to something convenient. Blocks may be used in front of the wheels. If there is any wind greater than 25 miles an hour, the machine must be headed into the wind, as otherwise it is liable to turn on its nose and break the propellor.

4. To get off the ground with the

wind you must have flying speed plus the speed of the wind. This is one of the biggest causes for misjudgment in flying, as pilots overestimate their airspeed because their groundspeed is so great. Bad stalls often result from too little airspeed.

5. In getting off the ground in a side wind, be sure and allow the machine to have flying speed before attempting to arise. Then turn slightly into the wind, gain a safe altitude and level out before attempting to turn and go with the wind.

6. In coming into the field in the direction of the hangars, if the distance is not properly estimated and you find it necessary to put on power and continue the flight, do not climb too steep, but fly at obstacle and clear by several feet. To climb too steep will cause the machine to stall and settle into the obstacle.

7. Only practice can teach the proper amount of bank and rudder. The blast of air should come squarely from the front during the turn and the turn should be made without gain or loss of altitude, except in special cases where it is necessary to climb during a turn.

8. If machine slides in, use more rudder, or take off some of your bank or combine both.

9. Blast of air on side of face is an indication of a partial stall or that you are sliding out or in.

10. Machine diving during a right turn is generally due to using too much

rudder or not enough elevator. To correct this, take off proper amount of rudder and pull back on elevator slightly.

11. If flying against the wind and wish to turn and fly with the wind, do not make too sharp a turn close to the ground.

12. To get out of a spiral dive, push elevator forward in all cases. Rudder against it.

13. Do not trust any altitude instrument. Learn to judge altitude, especially in landings. Barometric conditions may change in a cross-country flight so that even a barometer that is functioning properly may read an incorrect altitude. The altitude of the landing place may be different from that of the starting place.

14. It is advisable to carry a good pair of cutting pliers in a position where both passenger and pilot can reach them in case of an accident.

15. No loose articles should be allowed in the machine as the controls may become jammed, especially from pieces of cloth and waste.

16. Always fly around outer edge of field so as to be able to glide to field in case of trouble, unless field be an especially large one.

17. Always take into consideration the load carried in the machine before a flight is made. Take into consideration the amount of gas, oil, tools and the weight of the passenger. This weight runs up to 550 pounds. The extra

weight requires a longer initial run in getting off, a faster landing, a faster gradual climb and stronger glide. This weight is to be taken into consideration especially if you desire to climb out of a strange field and over obstacles.

18. To taxi, apply power gradually, and have machine move slowly. Taxiing fast in a strange field may be the cause of breaking a wheel in a hole. It is good principle in all cases to apply power gradually, especially on starting a flight. Fast taxiing always strains and racks fuselage.

19. Carry handkerchief or cheesecloth in outer pocket of coat to wipe off goggles in flight if they become fogged with oil or moisture. Fasten cloth to coat so as not to be blown away.

20. Never use glass goggles. No flights will be made without goggles.

21. Speed as a rule means control. Loss of speed means loss of control.

22. A leak in the honeycomb of the radiator may often be temporarily repaired by stuffing the cells in the vicinity of the leak with waste or cheesecloth soaked in shellac.

23. Students must report to Officer in Charge of Training prior to a flight to receive instructions and after the

flight to get the benefit of criticisms.

24. Controls should always be worked on the ground prior to a flight to see that they function properly.

25. In case of landing requiring a glide over the hangars or buildings, have sufficient speed as there may be bad air in the vicinity of the buildings.

26. In gliding for a landing, if gliding flat at high altitude, increase the angle of the glide and store up speed when approaching the ground. If gliding flat and you wish to make a turn, increase the angle of glide and allow the machine to pick up speed, then make the turn. Glide steep rather than flat. Increase glide for a turn.

27. Motors have been known to stop during a long glide on account of running throttled down too long. If pilot wants use of motor for landing, open throttle at intervals during glide.

28. If making a landing at too steep an angle and you get too close to the ground before leveling out, the machine is liable to settle down and strike the ground even after you pull back on the steering post.

29. In coming in for a landing on a half turn get the machine straightened out about 300 feet from the ground. If

continuing the turn when close to the ground, there is always danger of not getting the low wing up, more so with a dead motor. One will sometimes feel sure that he can straighten out and is somewhat surprised when the low wing hits the ground.

30. In landing, hold the machine off as long as possible, especially with two-wheel landing gear. To land at high speed in strong side wind may wipe off your landing gear.

31. In coming down with excess speed, level out and allow machine to skim along close to ground; do not attempt to force machine on the ground. If you put the machine on the ground with more than flying speed, the result is bouncing or ricocheting.

32. Riding on the steps of a machine is forbidden. Passengers will ride inside the fuselage.

33. A fire extinguisher will be carried in each machine.

34. Smoking in machine or in the vicinity of machines is prohibited.

### Cross Country Notes Fort Sill, Oklahoma

1. Before starting cross-country be

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sure that the gas you carry in tanks can get to the motor. Make tests and become acquainted with the system of getting gas to the gravity tank.

2. On long trips temporary repairs to gas and air leads may be made with mullage or adhesive tape; this will often prevent landing to repair broken leads.

3. All machines going on cross-country flights will take the emergency kit of tools.

4. In starting from a strange field, always walk over the field to see that no obstacles are going to be in the path of your getaway. If in doubt about getting out of the field, ship machine back to school or wheel it to another field of suitable size. Look field over from different positions and see which presents the fewest difficulties for your getaway.

5. If motor trouble develops on cross-country flights, select your field to land in and do not change unless a much better field presents itself. Vacillation on this point may cause an accident. A field you have passed you should know more about than one you are approaching. Experience has shown that it is better to glide to a field that you have passed over than to go for-

ward to one that you know nothing about.

6. Before making a landing in a strange field fly around it a couple of times about 200 or 300 feet high to see if any obstacles are present and to pick out the best place for landing. Be sure to touch your throttle occasionally on your glide down to the field and when about 300 feet above the field begin to use your throttle slowly so as to make sure of having your motor to help you in the landing if necessary.

7. Before going cross-country be sure that the radiator is full of water, tanks contain enough gas for flight, no leaks in the manifold or connections, gravity gas tank is full, sufficient oil for flight, motor tests out properly for speed and smoothness, leads to spark plugs are secure, barometer is set at zero, emergency kit of tools is in machine, you have blank telegrams, you have proper map, compass is functioning properly, you understand gasoline feed system.

8. If landing is made on cross-country flight and delay encountered, telephone all particulars to Officer in Charge of Training.

9. There are times when it is better to trust motor for a minute or two in-

stead of making sharp turns near the ground at low speed. This applies particularly in getting out of a restricted field. It may be safer to fly over obstacles than to make sharp turns in bad air.

10. If you become lost, do not fly about aimlessly but land if possible and get your bearings. If no landing place is available, it may be possible to fly low enough to see the sign on a station or some other sign that will give you the name of the place. If clouds interfere with seeing the ground, it is better to trust your motor and fly under them than to get far out over the sea or far inland off your course.

11. Be sure to make your start on a cross-country flight early enough to avoid a landing at your destination in the dark.

12. In landing in a strange field it is always a good quality to land fast as you can; never account for air conditions. Serious bumps may be encountered. Always use all of your field, decide where you are to land, and get your wheels on the ground so that none of the field will be wasted. This is a common mistake of many pilots and is inexcusable. □