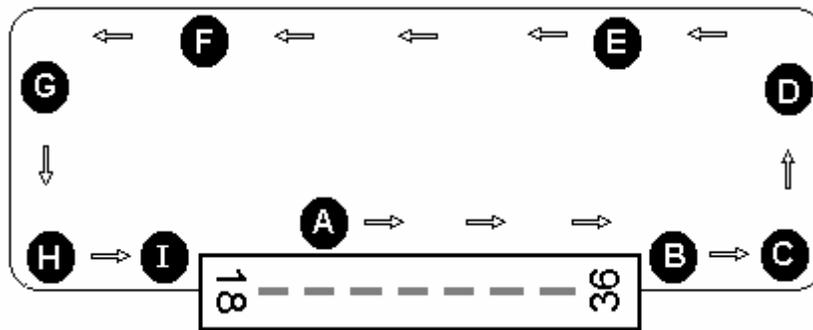


THE "A-B-C'S" OF A TAKEOFF & LANDING IN A MAULE MX-7-160

As Recommended by R.K. Maule



Takeoff (A):

- Line up on centerline
- Flaps 24°, Elevator trim SET
- Mixture RICH, Carb heat COLD
- Engine gauges IN GREEN

- Ailerons into wind
- Smoothly apply full power
- Steadily increase forward pressure to bring tail up (anticipate need for right rudder)
- Keep straight along centerline w/rudder pedals, aileron as necessary to control drift
- Smooth back pressure on yoke for liftoff
- When off ground: Level wings & crab to maintain track over runway centerline
- Use sufficient right rudder to stay coordinated
- Set proper climb attitude with nose

When clear of obstacles & established positive climb (B):

- Smoothly retract flaps
- Re-trim as necessary
- Nose attitude set to maintain V_y climb, 94 MPH

At 500' AGL (C):

- Clear under left wing and make turn to crosswind leg
- Maintain airspeed and coordination throughout turn

At 800' AGL and/or pattern altitude (D):

- Lower nose to level flight attitude
- Power back to 2100 RPM
- Turn downwind no more than 1/2 mile from runway
- Retrim as necessary

On downwind (E):

- Check condition of runway and confirm wind direction
- Fuel selector on best tank or BOTH
- Mixture RICH
- Pull carb heat ON; if no icing indication then OFF

When abeam touchdown point (F):

- Reduce power 1700 RPM (maintain back pressure to keep nose level)
- Trim to remove back pressure
- 1st positive notch of flaps - 24°
- Airspeed will stabilize at approx. 80 MPH

Base leg (G):

- 2nd positive notch of flaps - 40°
- Trim as necessary
- Airspeed 70-75 MPH

Final approach (H):

- Line up on and maintain centerline
- Airspeed 65 MPH - set and maintain nose attitude to maintain airspeed
- Trim as necessary to remove back pressure
- Gradual reduction of power to maintain glide path to landing spot

Landing (I):

- Maintain nose attitude and airspeed until round-out
- Gradual round-out to slow descent, and then flare to 3-point attitude just above runway
- Aileron into wind as necessary to control drift, rudder as necessary to keep airplane pointed straight; at touchdown there must be zero drift and zero crab
- Hold 3-point attitude until touchdown
- At touchdown, continue to smoothly bring yoke all the way back and fully into wind
- Throttle fully closed
- Rudder and then brake as necessary to keep airplane straight
- Retract flaps, without looking down - keep eyes looking out in front down runway centerline
- After roll-out, turn off runway to the left

Excerpt from letter to Mexican Navy after training mission - 5-17-93 Ray Maule & Ken Hertz

Our recommendations for continued success are the following:

Practice. The instructors should fly for at least one hour per day, and continue to put into effect the principles that were emphasized during the training.

Rudder. We can't over-emphasize the importance of using the feet when flying the Maule airplane. This is especially true when rolling into and out of turns, where it is necessary to lead with rudder, and follow with aileron. When on final approach, minor variations in directional control need to be accomplished with rudder; the ailerons are used to prevent drift from the centerline.

Flight at minimum controllable airspeed, with left and right turns and different power and flap settings, is a good way of practicing rudder coordination and demonstrating to students the adverse yaw effect of attempting to turn only with aileron. Another good coordination exercise is the practice of dutch rolls.

Landings. With crosswind landings, it is important not to overcorrect with rudder when aligning the airplane with the centerline. This would result in the nose and the resulting thrust vector pointing downwind. At the moment of touchdown, there must be zero drift left or right from the centerline. The more serious case would be if there were drifts toward the downwind side, as this may not be correctable since aileron control is slow to take effect at this airspeed, and full deflection may have already been applied.

If the wind is strong enough, a proper crosswind landing will be made on two points instead of three, with the upwind wing held down with aileron correction. This is fine as long as directional control is maintained with rudder, and when the airplane slows down the downwind wing will come down of its own accord, resulting in all three landing gear contacting the runway at that point. It is important to hold in the aileron correction throughout the landing roll. However, the pilot must be able to recognize a similar-looking but much more serious situation, one where the wind lifts the *upwind* wing during the rollout. This is usually the result of not using enough aileron correction in the first place, and/or landing with drift or crab. In this situation the pilot must correct the problem immediately with power and/or a go-around if unpleasant consequences are to be avoided.

Attitude. The pilot must recognize the various attitude positions “pictures” which, when attained for a given power setting, will produce desired results. This is particularly important in the climb out and final approach phases when controlling airspeed.

Traffic pattern and procedures. Using a rectangular traffic pattern may be easier at first as it provides reference points for distances, power changes, and turns. It is better to keep the pattern in close if traffic allows. Corrections must be made for wind, and a crab established if necessary in order to track a rectangular course over the ground. Also, adjustment in the timing of power changes should be made to accommodate wind strength; i.e., if the wind is strong, the pilot should wait longer before reducing power. The goal is a series of power reductions throughout the approach, without having to add power to maintain the descent path.

Throttle control. The vernier control (fine tune) should not be used except for slight manifold pressure corrections during cruise flight. Instead, the lock/unlock button should be used, with one hand on the throttle at all times while on the ground and in the traffic pattern. The reason for this is that in the event power is needed in a hurry, such as in a botched landing attempt for example, the pilot will add power according to habit. Remember, a student’s first impression is the one that lasts. If he is comfortable with the button control, there will be no problem. If he attempts to add a lot of power in a short time by turning the fine tune vernier, then he will probably still be sitting there turning the knob as they come to cart away what used to be the airplane.

Ground operations. It is important to emphasize an awareness of wind direction at all times. This should be developed until it becomes a “sixth sense,” and the pilot should always use proper control positioning while on the ground. Enforcing this with students should help develop their sense of where the wind is.

Maneuvers. For any maneuvers that differ from those performed during our training, please consult with us first prior to attempting them, especially any maneuver near or close to the ground. High speed taxiing with the tail in the air should *not* be practiced.

Probably the best learning aid that the Navy could have would be to make available a grass strip runway, of at least 1500 feet in length, and 100 to 150 feet in width, for takeoff and landing practice. Optimally, it would be

located away from the airport, away from the control tower and high volume of traffic. However, even if a section of grass could be groomed and made available alongside of the runway at Veracruz airport, this would help immeasurably in expediting the learning process.

I am enclosing a copy of the book *The Complete Tail dragger Pilot*, by Harvey S. Plourde. Please forward to Captain Macedo at the base in Veracruz. We have found this to be a fairly good reference to use in training. However, there is one area where we differ slightly: the book advocates making wheel landings, whereas we don't recommend them in the Maule aircraft.

I hope that these observations and suggestions will be helpful, and that you will please contact us here at Maule Flight, Inc., with any questions or problems that should arise. We would be happy to offer our expertise and assist in any way.