Nonetheless, if these conditions are not too excessive, the takeoff often can be accomplished using the following technique.

After the nose rises to the highest point in the plowing position with full back elevator pressure, decrease back pressure somewhat. The nose will drop if the seaplane has attained enough speed to be on the verge of attaining the step position. After a few seconds, the nose will rise again. At the instant it starts to rise, reinforce the rise by again applying firm back pressure. As soon as the nose reaches its maximum height, repeat the entire routine. After several repetitions, the nose attains greater height and speed increases. If the elevator control is then pushed well forward and held there, the seaplane will slowly flatten out on the step and the controls may then be eased back to the neutral position. Once on the step, the remainder of the takeoff run follows the usual glassy water procedure.

ROUGH WATER TAKEOFFS

The objective in a rough water takeoff is similar to that of a rough or soft field takeoff in a landplane: to transfer the weight of the airplane to the wings as soon as possible, get airborne at a minimum airspeed, accelerate in ground effect to a safe climb speed, and climb out.

In most cases an experienced seaplane pilot can safely take off in rough water, but a beginner should not attempt to take off if the waves are too high. Using the proper procedure during rough water operation lessens the abuse of the floats, as well as the entire seaplane.

During rough water takeoffs, open the throttle to takeoff power just as the floats begin rising on a wave. This prevents the float bows from digging into the water and helps keep the spray away from the propeller. Apply a little more back elevator pressure than on a smooth water takeoff. This raises the nose to a higher angle and helps keep the float bows clear of the water.

Once on the step, the seaplane can begin to bounce from one wave crest to the next, raising its nose higher with each bounce, so each successive wave is struck with increasing severity. To correct this situation and to prevent a stall, smooth elevator pressures should be used to set up a fairly constant pitch attitude that allows the seaplane to skim across each successive wave as speed increases. Maintain control pressure to prevent the float bows from being pushed under the water surface, and to keep the seaplane from being thrown into the air at a high pitch angle and low airspeed. Fortunately, a takeoff in rough water is generally accomplished within a short time because if there is sufficient wind to make water rough, the wind is also strong enough to produce aerodynamic lift earlier and enable the seaplane to become airborne quickly.

The relationship of the spacing of the waves to the length of the floats is very important. If the wavelength is less than half the length of the floats, the seaplane is always supported by at least two waves at a time. If the wavelength is longer than the floats, only one wave at a time supports the seaplane. This creates dangerous pitching motions, and takeoff should not be attempted in this situation.

With respect to water roughness, consider the effect of a strong water current flowing against the wind. If the current is moving at 10 knots and the wind is blowing the opposite direction at 15 knots, the relative velocity between the water and the wind is 25 knots, and the waves will be as high as those produced in still water by a wind of 25 knots.

The advisability of canceling a proposed flight because of rough water depends on the size of the seaplane, wing loading, power loading, and, most importantly, the pilot's ability. As a general rule, if the height of the waves from trough to crest is more than half the height of the floats from keel to deck, takeoffs should not be attempted except by expert seaplane pilots. Chapter 8, Emergency Open Sea Operations, contains more information on rough water operations.

CONFINED AREA TAKEOFFS

If operating from a small body of water, an acceptable technique may be to begin the takeoff run while headed downwind, and then turning to complete the takeoff into the wind. This may be done by putting the seaplane on the step while on a downwind heading, then making a step turn into the wind to complete the takeoff. Exercise caution when using this technique since wind and centrifugal force are acting in the same direction and could result in the seaplane tipping over. The water area must be large enough to permit a wide step turn, and winds should be light.

In some cases, the water area may be adequate but surrounding high terrain creates a confined area. The terrain may also block winds, resulting in a glassy water situation as well. Such conditions may lead to a dangerous situation, especially when combined with a high density altitude. Even though landing was not difficult, careful planning is necessary for the takeoff. If the departure path leads over high terrain, consider circling back over the water after takeoff to gain altitude. If air temperatures have increased since landing, make the proper allowance for reduced takeoff performance due to the change in density altitude. Think about spending the night to take advantage of cooler temperatures the next morning. Although the decision may be difficult, consider leaving some cargo or passengers behind if takeoff safety is in question. It is far better to make a second trip to pick them up than to end your takeoff in the trees along the shore.