Greater performance without increased power is gained by extending the wings of this rugged amphibian.

FLYING CHECK PILOT REPORT ON THE

MILLER MODIFICATION SEABEE

By TED DUROSKO

WHEN I FIRST LEARNED of Russ Miller's intention to improve the performance of the Republic Seabee by increasing the wing surface rather than going to a larger engine, my interest became genuinely stimulated.

Until the appearance of the Skimmer, the Seabee was the only light amphibian available to the private pilot. And unless you fly an amphibian, it is difficult to realize the full utility and pleasure that such a craft can offer. Apparently through loose talk over the years, the reputation of the Seabee has suffered; however, pilots who have flown the airplane and understand it, usually take the opposite view, though most do admit that its performance could be improved.

Personally, I enjoy the Seabee and each time that I fly a standard model, I can't help noticing the similarity in its handling characteristics with the DC-3. Perhaps too many lightplane pilots, when they first fly the Seabee, fail to realize that it is a different "class" of aircraft and therefore except typical lightplane performance. When this is not experienced, they are disappointed.

Russ Miller, whose Flying Service is located at North Benton, Ohio (about five miles north-east of Alliance), is a man experienced with the Seabee. He first became interested in Republic's Seabee while still with the Air Force and had an opportunity to ride in the early prototype. Upon release from the service, he became a distributor for the Seabee and held the franchise until Republic discontinued the model. Since then he has continued to operate one or two of the amphibians. Miller has always thought of the Seabee as a "basically good, sound airplane."

The approach to better performance by increasing the wing some four feet rather than the horsepower of the engine offered two advantages in my opinion. Dollar-wise, to the average Seabee owner, the wing modification would cost far less. Performance-wise, especially power off, the flight characteristics would approximate a typical lightplane and make the transition into the amphibian easier for the private pilot.

Upon receiving CAA approval of the "CB Wing Modification" (supplemental type certificate No. SA3-30), Miller immediately received orders from several local Seabee owners. Among the first to be modified was an airplane owned by a friend of (Continued on page 70)

Right: The modified Seabee which was checked out by the author. Above: He points out the wing extension which Russ Miller (left) devised.

Miller Modification Seabee

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mine, Bob Reed, which was used to run performance and comparison checks.

For the take-off checks, we flew the Seabee to Lost Nation Airport where we measured and marked off distances along the runway. With the airplane loaded to a gross of 3,150 pounds, we made our take-offs into the east with a calm to five mph south-southeast wind; temperature was 76 degrees F., and runway elevation, 626 feet.

From a dead stop, the throttle was advanced rapidly and the Seabee was flown off in a normal manner. On our first try, we broke ground at 700 feet; the second try took a little longer, some 750 feet; the third one was the best, we were airborne in 620 feet. Time to get airborne on the third try was 16 seconds.

In a standard Seabee, under similar conditions the next day, (airplane also loaded to 3,150 pounds gross) the three take-off distances were 850, 850 and 800 feet.

It appeared to me that the modified Seabee was more positively airborne when she came off the ground—I did not detect any settling or sinking as in the standard model. I also found that flaps can be retracted in the climb-out with the Miller Seabee and consequently increase the rate of climb, while, with the standard model, it was best to wait until a reasonable altitude was reached before retracting the flaps slowly.

Next I compared rates of climb with flaps retracted. The modified Seabee climbed at 580 fpm at 75 mph during the first minute, while the standard model's rate was 450 fpm at the recommended climbing speed of 80 mph. This indicated a gain of 130 fpm during the first minute of climb.

On the check for cruising speed, I fully expected to find the modified model slower in cruise due to the drag of the additional four feet of wing. Wingspan of the standard Seabee is 37 feet, eight inches as compared to the modified model which has 41 feet, eight inches. However, this was not so. At a power setting of 23 inches manifold pressure and 2,300 rpm at 2,000 feet (outside air plus 13 degrees C.) the standard trued out at 105 mph. Under the same conditions the Miller model trued out at 106 mph. The explanation might lie in the fact that the wing extension is responsible for approximately 320 pounds of additional lift and, as a result, the angle of attack of the wing can be less—thus with one thing balancing the other, the cruising speed remains approximately the same.

Stalling speed, though, has been lowered by the wing extension. I found the difference to be about eight mph. With flaps and wheels down the modified Seabee stalled at 50 mph; the standard model at 58 mph. Stall characteristics of both airplanes were quite similar—a noticeable buffeting of the control column as the stall occurs, moderate pitch and very little tendency to roll.

Another advantage of the added wingspan is realized in the glide. With power off, the Miller modified Seabee has a much

shallower glide angle and a good flare-out characteristic. In my opinion the glide angle is now about the same as of a Cessna 170 loaded with four persons. The standard Seabee has a steep, power-off glide angle without a satisfactory flare-out. It is a usual practice to apply power to shallow out the angle on the base leg and final approach.

Water performance comparisons were made on Lake Erie where conditions were not ideal, however, we wanted to check the Seabee's performance under circumstances which often prevail when flying cross-country. The Lake had long swells cut by wakes of small power boats when we landed just east of Cleveland's lakefront. The wind was light (five-six mph) and variable; temperature 80 degrees F.

Water tests were run at 30 to 40 pounds under the 3,150 pound gross as we had burned off some fuel during the take-off checks at Lost Nation Airport. The Miller Seabee had also an additional modification—larger spray rails which keep the windshield dry, add about 30 per cent more planing area, and serve as walk rails when the airplane is at rest in the water. This spray rail modification is CAA-approved.

We found about a 20 per cent difference in performance between the two Seabees on water take-offs. Best take-off time for the Miller modified Seabee was 28 seconds, for the standard model it was 34 seconds.

While doing this water work, I learned a technique from Bob Reed in handling the Seabee on the water in a crosswind. To offset the weathercocking tendency due to the large tail, the bow door is propped open. The door then tends to act as a front sail and almost eliminates the tendency to weathercock.

Upon completing the water checks, we flew to Miller's field at North Benton and talked to him. He showed us how the wing modification is accomplished. First, the wing tip is removed and the rivets which attach the front, middle and rear spars to the outboard rib, drilled out.

After this is done, the one-quarter-inch by one-inch reinforcements are riveted to the inner side of each spar using 5/32 flush rivets, and the wing extension unit placed into position and clamped to the spar. Edges of skin are cut to fit adjoining section.

Next, with one quarter-inch bolts and elastic stop nuts the wing extension is bolted into place, and the finishing steps such as extending the position light wire, securing skin to ribs with P.K. screws and attaching the original outboard tip completed.

In weight, each wing extension is 17 pounds; arm 118.5 inches. Spray rails weigh ten pounds each. Total weight for both wing extension and larger spray rails is 54 pounds.

At the time of writing, Miller reported that ten Seabees have been modified by him and seven kits have been sold. Price of the CB Wing Modification is $1,158 and it takes approximately two weeks for Miller to do the job. The kit for the modification sells for $889.

In checking with owners of Seabees

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modified by Miller, their comments have been very favorable. One owner reports that Miller's modification "really puts the Seabee in the air." He said that oil temperature is lower, engine wear and vibration are reduced because the Seabee now climbs easily. As a result he found it necessary to use full throttle only for full load takeoffs. END

Polar Bear Hunting

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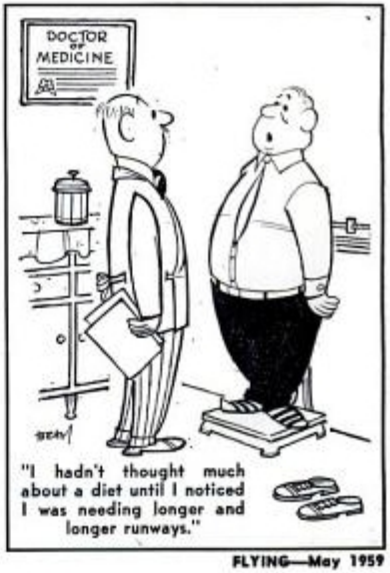
his back to the animal. The bear although slowed by Doc's last shots, was getting closer. Doc still sat rattling the gun. We, in the plane, began a frantic dive at the bear to divert its attention. It hesitated momentarily trying to make up its mind about us, then pushed on toward Doc.

Back at the plane, George turned, saw Doc still on his knees, grabbed a .222 Varmint and raced back. We in the Cub were now trying to decide if we should attempt to shoot or crash into the bear to save Doc. Crashing is illegal but permissible in an emergency. To prove the emergency is the trick. Seconds seemed hours. Doc sat working with the gun. Finally, the bear was no more than 30 feet from him. George stopped and shot. Doc jumped in surprise. The bear went down literally at his feet. It started to get up. George shot again and it slumped in a heap.

In three weeks of hunting, we got 32 gray and black wolves and ten polar bears. It was one of the most rugged experiences of my life. Top-notch airmanship alone makes pursuit of the predators feasible. Without long experience in bush flying and intimate knowledge of weather patterns, one wouldn't have a chance. I came away with impressions of a country that has no mercy on the foolhardy but that rewards the people who respect it with great satisfaction. Certainly the airplane is the greatest single force in its development. END



"I hadn't thought much about a diet until I noticed I was needing longer and longer runways."