FIRST FLIGHT OF BKB-1 FLYING WING

by F. A. Geraldsen

BACKGROUND

The pilot had approximately five hundred hours of flying time but only twenty-seven hours in gliders including the ASK-7, ASK-13 and the Schweizer 2-22 and 1-26 sailplanes.

The BKB-1 gliding wing has been much discussed by the local "glider guiders", with the bulk of this discussion being of the negative nature; consequently, this pilot made it a point to gain as much of both sides of the argument as possible. All facts in and weighed, he decided there was more mass scare psychology than was perhaps warranted. With this decision, the next move was to gain all possible knowledge of the BKB flight characteristics.

It soon became apparent that the primary problem would be that of mentally deactivating the ailerons and be prepared for very sensitive controls.

After deciding to fly the BKB gliding wing and obtaining an offer to do so, approximately nine months elapsed before weather and other circumstances permitted the flight.

On the morning of May 10, 1969 everything was ready for this first flight except the weather. By noon the clouds began to break and the ceiling became unlimited. With the encouraging words from bystanders to the effect " Don't fly it, its a deadly machine", the first flight was launched.

FIRST FLIGHT

Completing the usual preliminaries and giving the request"to take-off", the take-off roll began toward the north with a cross wind from the west north west of approximately 5 miles per hour. Either the release of the left wing included an up moment or the wind induced a left wing high movement which was noticed just before the right wing tip skid touched the ground. A slight over correction with left rudder induced roll beyond wings level which counter-acted again by right rudder to wings level. After this, roll was minimal. Lift off was intentionally induced early in the take-off roll by back pressure on the stick. The sailplane moved readily to about 5 or 6 feet altitude before climb was terminated by forward stick. The sailplane was then permitted to settle gently until the wheel contacted the ground. After this point, climb out was quite steady for a first flight in any standard sailplane.

Tow continued to 3,000 feet before release. After release all normal get acquainted manuevers were accomplished with these observations:

1. Stall straight ahead- very stable with no tendency to drop off on a wing.

2. Stall in a left turn- very stable with no tendency to drop off on a wing - responded immediately to right rudder and forward stick to full level flight recovery.

3. Stall in a right turn - very stable with no tendency to drop off on a wing - responded immediately to right or left rudder and/or forward stick. Recovery was very comfortable.

4. Ninety degree turns were practiced to prepare for the first landing approach. It was very easy to make precise turns and roll out on a heading aligned with a road below.

5. Aileron only rolls - the ailerons rolled the sailplane; however, an adverse yaw was induce. This yaw effect was quite noticeable but not at all alarming.

6. Coordinated roll- as a result of the yaw observed by the aileron only roll, a coordinated roll attempt was made. It was found that a smooth coordinated roll can be accomplished with the sailplane

maintained on centerline. The control movement required is very much the same as that for any other airplane. The only difference is a very slight difference in timing the rudder action to maintain the sailplane centerline on a given point.

7. Gliding straight and level - was a new experience in speed control. The BKB-1 always returned to 53 ± 1 miles per hour after being deflected to a greater or smaller angle of attack by the pilot or by a gust of air then allowed to fly hands off.

8. Gliding in a thermal - was again a new experience. Once an angle of bank was established then hands and feet removed FROM the controls, the BKB-1 would continue to orbit in the same attitude until again changed to a new attitude.

9. Glide angle - quite flat. The flight pattern was considerably lower for the BKB-1 than for the ASK-13. Approach altitude control was adequate using both rudders for drag.

10. Approach and landing - quite easy. The BKB-1 controls easily in the pattern and during landing. An approach of 60 MPH and both rudders for drag were adequate for a touch-down and landing roll in about half the distance that being used by ASK-13 that day.

In summary, the first flight was a pleasant experience. There are a few recommendations regarding first flights in the BKB-1 and they are as follows:

1. The pilot should become quite familiar with the peculiarities of airplane response to control movement. In particular, the pilot should understand the desirability to : (a) exclude aileron movement from control action during initial flight; (b) use minimal control action to avoid over-control during initial flight and (c) understand the response that can be expected from rudder control. None of these control functions are drastically different; rather, it is more a matter degree of differences. The degree of differences can be compared or to transition from a Schweizer 2-22 to a Schweizer 1-26 sailpalne.

2. The pilot should have practiced and be able to consistantly ~~be able to~~ negotiate landings in the ASK-13 or equivalent using no

or minimal spoilers (not over 1/4 deployed).

3. The pilot should be relaxed, not tense or scared prior to take-off. This is true for any airplane or sailplane; consequently, it should not restrict an abnormal number of pilots.

4. The pilot who makes a practice of overworking the controls, using excessive or unnecessary control movement should not fly the BKB-1 solo the first time. An extremely tense or scared pilot who tends to over control in every day flying certainly should not fly the BKB-1 solo the first time.

All pilots who qualify under items 1, 2 and 3 above are certainly missing a pleasant experience.