



Figure 10. "Pop" Krohne's "Comet," one of the earliest single-seat "Flat-Tops." This one went far beyond the original modification by using retractable landing gear and plywood covering on top surface of wing.



Figure 11. Original "Flat-Top" conversion of CF-ZBW of Figure 3, retaining two-seat feature through use of double bubbles. Original large wheel replaced by smaller one. Many "Flat-Tops" defeated intended performance gain by poor streamlining of cut-down nose section, actually the most critical area aerodynamically.

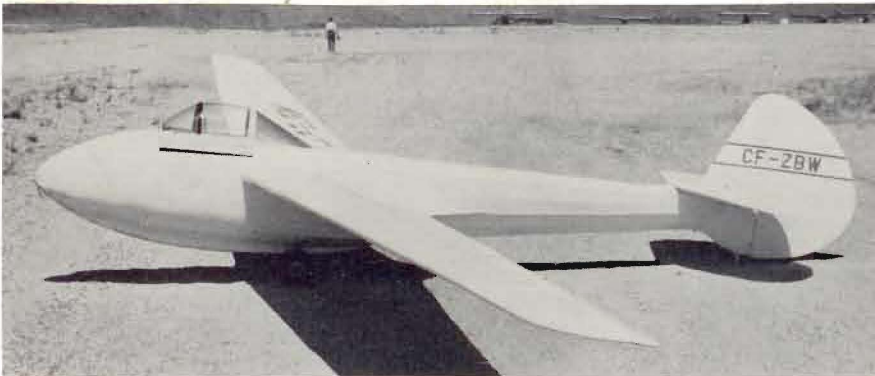


Figure 12. CF-ZBW further modified as a single-seater with smooth contour plywood covered nose section, increased rudder area, and main wheel deleted with dolly used for take-off. Faired skid makes nose look deeper than it is.

Figure 13. CF-ZBW (Now N-2840D) with blown bubble replacing original built-up flat sheet canopy. Dolly-type take-off gear proved to be much more trouble than it was worth and original large wheel was replaced with no noticeable decrease in performance.



Figure 14. A variation on standard "Flat-Top" configuration by TSA, featuring part of a Bell Helicopter canopy and carefully-fitted new nose cone. Much of "Flat-Top's" visibility advantage is lost here by installation of aluminum foil sunshade above pilot.



the tubing that supported the plywood fairing between the wing and the fuselage, a structural deviation that forced the modified design into the experimental category. Another modification resulting from the flat-topping program was deletion of the mass and aerodynamic balances from the tail surfaces. At first, this too was cause for an experimental license, but the University of Illinois ran a test program and was able to secure a Supplemental Type Certificate so that ships so modified could stay in the standard category.

While Dr. August Respet of Mississippi State College, where the original Flat-Top testing was carried out, can show the exact performance gains that were realized in the hands of skilled test pilots, observations in the field indicate that most of the benefits were psychological rather than measurable increases in performance. The subsequent contest record of L-K's has not shown any consistent advantage of Flat-Tops over mere Bunny-Noses. Whatever the performance difference between a standard and a modified model, superior piloting can overcome it. In fact, some of the modifications have resulted in poorer overall performance because of sloppy work or pilot inefficiency induced by restricted headroom and general discomfort. Much of the visibility advantage resulting from a plexiglass bubble has often been thrown away by installing an aluminum foil sunshade in the top half of the bubble, thereby creating a dangerous blind spot that did not exist in the original design.

The "standard" configuration of the L-K 10/TG-4 and the many post-war variations are shown in the accompanying photographs and are described in the captions. All photographs by the author unless otherwise indicated.