

Back in the early 1930's stainless steel sheet had come on the market in quantity and at a price which seemed within the realm of practical aircraft use. It had qualities that might appear to give it everlasting life. The advent of the all-aluminum airplane (other than experimentals) had been within the past few years, so the all-steel airplane looked like a definite possibility. Indeed, from the fact that two of the original six Fleetwings Sea Birds built are still flying, barring crackups they could live on forever.

The author, Edward B. "Bud" Oliver, acquired the only production model Sea Bird in existence in 1952, restored and modernized some of its control features, and has kept it as a personal and show airplane ever

since. His interest in the background of this unique attempt at an all-steel airplane caused him to initiate this Research Project 6805, and he has determined the usage and disposition of each one of the six, presented here as the story of:

The Itinerant Sea Bird

By EDWARD B. OLIVER

The Sea Bird was the brain child of Carl deGanahl, President of Fleetwings, Inc., which had moved from Long Island to Bristol, Penn., in the early 1930's. DeGanahl began experiments in joining stainless steel components with a shotwelding process utilizing a new timer and special hydraulic pressure devices. He hired a young engineer, James C. Reddig, to design an amphibian which could be constructed entirely of stainless steel, and joined by the new process. DeGanahl insisted that the proposed airplane must out-perform all other airplanes in its class — landplane or seaplane. The Sea Bird amphibian was to become an excellent performer with the characteristics of both.

The result was the Fleetwings F-4 Sea Bird prototype, designated Model F-401. The only parts not made of stainless steel were to be the chrome molybdenum landing gear assemblies, the engine mount and nacelle assembly, and the fabric covering on the wings and empennage. The main landing gear and tail wheel were retracted separately and split flaps were activated by the same hydraulic pump. The ailerons were drooped and acted as simple flaps also as the control yoke was drawn back while landing.

Great pains were taken to "fair in" the hull lines. The wheels were covered by stainless steel streamlined spats so

that when the main gear was retracted, nothing projected outside the fuselage but two little "wings." The hull was cross-braced in the cabin and baggage compartment by stainless steel tubing. Entrance to the cabin was through a hatch in the roof, under the engine nacelle.

The prototype F-401 was flight-tested in Summer, 1936. The tests were quite successful; however, the drooping ailerons did not work out well and the feature was abandoned. Also, a section was added to the hull to provide a planing step. The top speed was 150 mph, the landing speed about 55. Its empty weight was 2382 pounds, and gross weight was 3450, including 52 gallons of fuel in the wing.

Prototype F-401 was certificated in August 1937, and sold to Northern Ventures, Ltd., a mining company owned by deGanahl's father, to be used to transport mining machinery, supplies and equipment to and from the gold mine in Canada. It was registered as CF-BGZ, but more of this airplane later.

Based upon the success of the prototype airplane, the Sea Bird design was modified and refined for production. The hull was changed to semi-monocoque construction through-

The prototype Sea Bird, F-401, as registered CF-BGZ in 1938, still airworthy in 1971 as NC16793.

(Photo — Peter M. Bowers)



out, eliminating the tube-bracing. It was lengthened and re-contoured for better streamlining. The entrance hatch was moved behind the cabin so it was unnecessary to climb on the wing to enter. An engine-driven hydraulic pump was added, and the handpump retained for emergencies. The hydraulic brakes were supplied from the same one-gallon supply tank as for the rest of the system.

The windshield was now a large rounded Plexiglas shield, no longer flat safety glass. The Jacobs L-5 engine, re-rated at higher rpm to 330 hp, was fitted with a Curtiss-Reed propeller, though a Hamilton Standard two-position prop became optional equipment. Wing fuel tank capacity went up to 70 gallons, and gross weight increased to 3800 pounds, or 3850 with a Hamilton propeller. A manually retractible water rudder was added, and as optional need, a jump-seat increased the passenger capacity to five. To further increase the safety of the occupants the cabin windows were redesigned, becoming large "tri-oval" Plexiglas windows which could be pushed out with firm pressure by hand or foot. The resultant opening could be used for escape from the cabin.

The landing gear was equipped with a spring-loaded up-and-down latch, automatically disengaged by hydraulic pressure. A fail-safe feature was incorporated so that, if complete hydraulic system failure occurred, the pilot could release the up-locks by pulling on two handles mounted on the cabin wall. Then he merely had to reach out through the cockpit windows and push each main gear down to the locked position by hand!

A rubber-shocked skid was mounted at the rear of the hull in the event the tailwheel failed to extend. An eye was located on the engine nacelle at the center of gravity for possible use in lifting aboard a yacht or dock. A stainless steel anchor, line, and miscellaneous tools were kept in a nose compartment, and just behind this a large hatch opened from the front, thus protecting a person standing in the hull from the propeller. This also acted as a large air scoop for welcome cabin ventilation while anchored and weather-cocked into the wind.

Fleetwings, Inc. made plans to build a group of five production-model Sea Birds. They were designated the F-5 model, denoting five-place airplanes (with the optional jump-seat). Numbers assigned were F-501 through F-505, and registrations were obtained as, respectively, NC16918 and NC19191 through NC19194.

The first one off the line, F-501, was immediately put to use as a factory demonstrator. Test pilot Bill Engle flew it to Florida and the Bahamas, and later to California. In the Bahamas he was reported to have demonstrated it to Howard Hughes, with an eye for use as a yacht tender. Although Hughes was favorably impressed, he wanted a Pratt & Whitney Wasp Junior installed. Though the structure was stressed already for a 450 hp engine, deGanahl refused to consider the engine change; the larger engine and heavier propeller would have been detrimental to the weight engineering without compensating increase of performance. The transaction progressed no further.

In California, Wallace Beery, an enthusiast sportsman-pilot, became interested in the Sea Bird. He planned to keep it at his Santa Monica beach home, expecting to fly off the ocean in front of his home. He envisioned flying out to deeper water, and trolling for game fish from the rear hatch as the airplane taxied on the water. Bill Engle demonstrated the amphibious Sea Bird to the actor by taxiing from the beach and taking off through the heavy surf, but he said it was a traumatic experience and he offered no encouragement to Beery on the plan. Beery subsequently dropped the idea.

F-501 was sold to James B. Taylor, Jr., of New York City,

and later it went to Howard Cooper of Kalamazoo, Michigan. Cooper intended using the airplane for a personal sportplane on fishing trips into Canada. During takeoff one day in 1942, from a sod field at Houghton, Michigan, he failed to put the two-position Hamilton propeller in the high-rpm position. With this setting the Sea Bird had enough power to leave the ground but not enough to clear a thicket of birch trees. The Sea Bird came to rest on its right side, severely damaging the right wing and stabilizer. Cooper was shaken up though not seriously injured. With the chances of repair very slim during the War, he presented most of the remains to Western Michigan University, and parts from it were traded about, for the author came in possession of the fin and rudder at a later date.

Upon later analysis, the mistake in the propeller pitch could well have been caused by the fact that the position control was purposely rigged to operate in reverse, compared to practically all other airplanes. The high-rpm position could only be obtained by pulling *back* on the control knob. The Sea Bird was deliberately rigged in this manner so that all controls could be moved by positive pull on the wires. The long, tortuous route of the cables from the cockpit to the nacelle, by way of the nacelle support strut cuffs, would permit operation by tension loads but wire or cable would buckle under compression.

Sea Bird F-502 was not sold immediately but was kept as a "factory airplane", until 1948. During the War it saw partial use by the Civil Air Patrol. Two accidents subsequently occasioned repair at the factory; in one, water froze in the brakes in flight in sub-freezing weather, and the airplane, with wheels locked, skidded sharply on its nose at touchdown, damaging the keel. In another, a windstorm damaged the rudder structure.

Test pilot Bill Engle left Fleetwings in 1948. It was no longer Fleetwings, Inc. but a Division of Kaiser Cargo Company. Engle purchased the F-502 and opened up a fixed-base operation at Bristol's 3M Airport. A year later he sold it to L.J. Perry of Kalamazoo who in turn kept it only a year and sold it to Raymond Drysdale, an M.D. of Rochester, New York. Though the airplane had received some repairs and maintenance since leaving the factory, it had depreciated to a condition of marginal airworthiness. This author bought it in 1952.

Now registered to Volusia Aviation Service of Daytona Beach, Florida, a fixed-base operation, the Sea Bird is kept as a show piece and personal hobby airplane. Once received at Daytona Beach, F-502 was given a complete overhaul and modification, and was intended for use on charter trips for tourists going to Cypress Gardens. The trips worked out well but the operation was not profitable. It is the only remaining production-model Sea Bird, now equipped with a Jacobs L-6MB engine of 330 hp and with a Hamilton constant-speed propeller. The brakes were divorced from the main hydraulic system, and the other hydraulic units were modernized.

Of the other airplanes, F-503 went first to Martin Johnson's Biological Explorations of New York. It appeared in some of Johnson's explorer films, but during the War it went to Sigmund Florsheim (the shoe manufacturer), and then to Sam Sober, a veteran fixed base operator who operated the Long Island Seaplane Base near New York City. It was put into use flying commuters to the heart of New York, with a terminus at a dock in the East River. Extreme difficulty was experienced in docking and the idea had to be abandoned after a few months.

It is believed that F-503 went to Art Seiler, during which period it was involved in a bizarre accident. During takeoff from Lake Wampopak, in the Pocono Mountains north of Allentown, a wing float struck a log and broke off. The

pilot completed his takeoff, and saw the float on the surface of the lake as he circled overhead. He landed, with the intent to taxi to the float and retrieve it, but as soon as the airplane leaned toward the floatless wing, the wingtip went under and the airplane slowly rolled over and sank!

To compound this, the F-503 was extensively damaged in the recovery procedure. It was trucked to the Fleetwings Division plant for repair. When an estimate was made of the repairs, the owner evidently felt these were too expensive, and had it removed to a garage where he and some friends repaired it themselves.

About 1950 F-503 was sold to Ernest Roe of Washington (state). On its way across country, it was determined that the hydraulic fluid placed in the system had effectively ruined all seals in the system; the pilot hired to ferry it skidded the nose three times due to defective brakes.

Roe and a friend, Gene Chavis, who did most of the flying, planned to use F-503 in Alaska. Chavis took off in May 1951, making a precautionary stop at Tazlina Lake to check the weather. Unknown to Chavis, the tail wheel was extended into the water and beyond that point at which he could abort the takeoff he found he was unable to fly the airplane off the water when he applied back pressure on the elevators. The left float hit a stump; the left wing root and fuselage were severely damaged, and the Sea Bird was left on the lakeshore. Several persons attempted to arrange for repairs, finding them too expensive. Chavis renewed his interest in F-503 in 1968, and trucked it to his FBO site, called Sky Craft, in Anchorage, planning to make it air-worthy again. The task will be difficult as the main structural parts were damaged and the past 17 years on the lakeshore brought much mutilation by vandals.

Fleetwings sold F-504 to the Civil Aviation Administration who promptly re-registered it as NC5. It was ferried to Alaska for use as a search and rescue airplane. Steven Davis, a CAA Inspector, took off from Anchorage on a mission to Valdez in the Winter of 1940, flying up Campbell Creek Pass which was partially fogged in. When he did not arrive at his destination a search party was sent out and they found him the next day, crashed at the summit of the pass. Davis, with both legs broken, was taken to a hospital and recovered, but the airplane was left at the crash site — until the middle of the War. The stainless steel remained bright, and the crash appeared to be fresh, so that it became a

nuisance because of continued reports of sightings. Finally a bulldozer was sent up the mountain to bury it. Recently, Gene Chavis' operation, only a short distance away, has picked up parts of F-504 for possible use in repair of F-503.

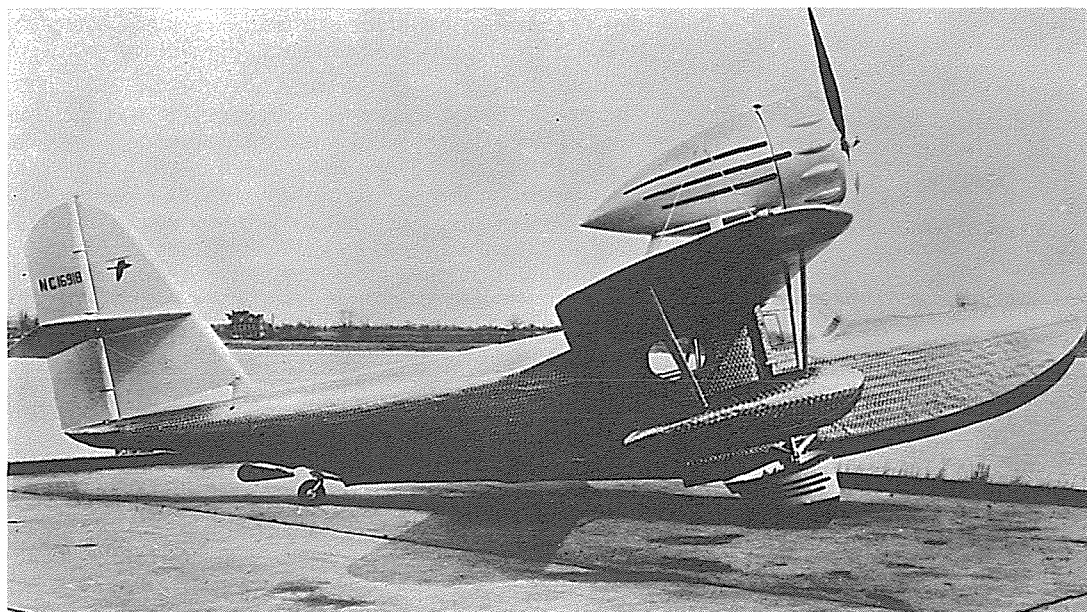
The last production Sea Bird, F-505, went to McDermott & Company of New Orleans, then to Higgins Plastic Company, and to Sam Sober. Sober bought it for use along with F-503 but later sold it to Jack Dowdle of San Diego, then operating an air taxi, the Swift Air Service. Dowdle was flying it to San Diego when he was forced to land almost on the final leg of approach. The L-5 engines had a dual, battery operated ignition system. During his ferry flight from New York, one of the copper-covered condensers failed, a common occurrence, leaving only one system. Dowdle elected to proceed, since he could not obtain another condenser, relying on the remaining system. Over the mountains near San Diego the last system quit. Fortunately he was over a reservoir, on which he landed and drifted to shore.

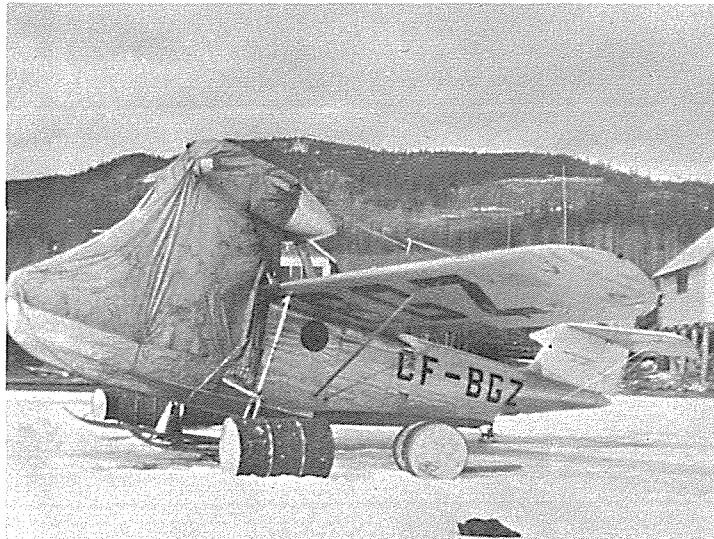
Dowdle replaced the Jacobs L-5 with a 330 hp L-6MB. He did a good seasonal business flying tourists from San Diego to Catalina Island. He found the Sea Bird had very good rough water characteristics, and he found he could use it any day that his much larger Grumman Goose could be flown on the same route. However, disaster was to strike in the worst accident yet to happen to a Sea Bird.

One day in 1955, as he took off from Catalina Island with a friend in the copilot seat the engine nacelle crashed forward. The propeller cut through the cockpit all the way to the floorboards, severing the feet of both men. The boat which had just taken off his passengers returned and took them to shore. Very fortunately, a physician was visiting the Island that same day and he saved their lives through immediate attention.

The nacelle rear strut fitting had pulled away from the cabin roof, allowing the engine to fall forward. Normally the fitting was secured to the bulkhead by eight bolts; at the time of the accident, there was only one holding it, and this had been "working" in the hole until it wore right through. Apparently mechanics who had installed the nacelle either failed to safety the nuts or had left out seven of them. Further, these bolt locations were inaccessible to visual observation during inspections.

F-501, the first production-model Sea Bird, on the seaplane ramp at the Fleetwings factory, Bristol, Pennsylvania, in 1938. (Photo — Bill Engle) At right, F-501 crashed in trees on takeoff at Houghton, Michigan due to propeller being in high-pitch position. (John Bright)





F-401, as CF-BGZ, mounted on skis at the mine in St. James Lake area, 1938. (Photo — Peter Craven, courtesy of Channing Clark)

Dowdle did not retrieve the wreckage of F-505. At the time he was in no condition to care about it. He is still operating the same business, Swift Air Service, using Grumman Mallards for the same run.

To return to the other still-flying Sea Bird, F-401, the prototype, after about a year and a half in Canada, it was brought back to the factory for overhaul. This was necessary because of the great abuse it underwent in hauling supplies into the wilderness. Its arrival at the factory was accompanied by coincidental results of its use — a bolt came out of the elevator linkage as it flew over the factory waterfront ramp at Bristol, so that the pilot was no longer able to move the elevator with the yoke. He was only able to bring it in safely by using the trim-tab control.

The Canadian registration was replaced with NC16793, and it was carried under the Fleetwings name until 1940. Then F-401 was successively sold to Chapman Air Service of New Orleans and a number of other hands until, in 1963 it finally came into the possession of Channing Clark of Burbank, California.

F-401 led a charmed life. After its damage and rough usage in Canada it was involved in at least three more incidents, and repaired and flown again. This is remarkable since it was one of the most difficult airplanes to repair — any structural work was a major accomplishment, even for the factory. It was damaged in a hurricane while tied down, and later when the landing gear collapsed. While pilot H.F. Sampson was flying F-401 to California, he smelled fuel and found that he had a large amount of gasoline sloshing around in the bilge. Fearing a catastrophic fire, Sampson landed immediately, and the hull was severely damaged by a fence post. With temporary repairs he proceeded to California.

F-401 remained tied down at Costa Mesa, unlicensed for many years. It was traded for a while to three men who dismantled it and stored it in a chicken coop. Then Clark purchased the parts.

As instructor at an aircraft technical school in Glendale, Clark spent over two years putting the Sea Bird in air-worthy shape again. He journeyed to the Lavelle Aircraft Company in Newtown, Penn., to learn the techniques used in the Fleetwings construction, and of the special tools required. Tom Lavelle and his key men had made up the main force that built the Sea Birds at Fleetwings before WWII.



F-401 at Fullerton, Calif. in Sept. 1963, with Channing Clark in T-shirt. (Ronald Little, courtesy of Clark)

F-401 was restored to near-new condition, in a configuration as alike as possible to the original, including the Curtiss-Reed propeller and the lettering on fuselage and tail. The chief revision was to substitute a more modern Jacobs 300 hp engine of 755 cubic inches, as on the Cessna 195.

In an epic flight, for the Sea Bird prototype, Clark flew F-401 to the northern lake region of Canada. A part of the trip was to revisit the site of the deGanahl mine, and go on to some supreme fishing country. Leaving Seattle with George Gallagher, Clark flew to Abbotsford, Hope, Lake Williams, Prince George, Port St. James and the area of the deGanahl mine where the F-401 had flown so many years before. Then they proceeded to Banff, Calgary, and Lac LaRonge for fishing. In a few days they returned, partly over the course near Banff, but back to Portland.

Clark found, in his operation of the Sea Bird, that because of the several items like engine and tail wheel controls, a check list is most useful at all times. In his words, "It is a procedure airplane."

Fleetwings, Inc. found the market for such an expensive airplane very limited in the pre-War economy. Original plans were to sell the amphibian for \$17,500 with the Jacobs L-5 engine. But the production costs, for the five that were built, were in the neighborhood of \$55,000 each. Within a short while the production jigs and fixtures were dismantled.

The Sea Bird was unique in many ways. It was the first airplane to be designed and constructed entirely of stainless steel, yet the weight engineering was so carefully done that the ratio of empty weight to gross weight is superior to many modern landplanes, and to all other comparable amphibians. The cabin, in the existing airplanes, is as quiet as many of the newest twins. Its performance compares favorably with modern fixed-gear airplanes of the same weight and horsepower. Furthermore, in spite of the fact that the Sea Bird appeared to be accident-prone, there has never been a fatality in one. The classic Fleetwings Sea Bird must surely be listed among the most interesting and useful airplanes manufactured in the United States.

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