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# AIR



## SOLE SURVIVOR

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Cunningham-Hall PT-6F biplane



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# SOLE SURVIVOR

The Cunningham-Hall Aircraft Corporation traces its heritage all the way back to 1838 when the James Cunningham & Son Co. was organized in Rochester, New York. The Cunningham company manufactured fine carriages, coaches and, later, motor cars. The new aircraft company was incorporated in 1928 and headed by F.E. Cunningham, president, and Randolph Hall as vice-president and chief engineer. The company itself was organized by personnel from the Thomas Morse Aircraft Corporation shortly

BY GREG HERRICK

PHOTOGRAPHY BY MICHAEL O'LEARY



before Thomas Morse was acquired by Consolidated Aircraft and by a group from the James Cunningham & Son Co. Mr. Hall had been assistant chief engineer at Thomas Morse and was partially responsible for the Thomas Morse Model 6B and the O-19 observation plane. W.T. Thomas, one of the original Thomas Aeroplane Co. brothers, became a consultant and director of the new Cunningham-Hall Aircraft Corporation.

The formation of the company and the evolution of the PT-6 and PT-6F models is a lesson in the hopes and aspirations typical of the aircraft industry during what was to be a most difficult time.

Before Cunningham-Hall was even formed the soon to be displaced Thomas Morse personnel had actually completed the basic design and analysis of a six-place biplane aircraft, the PT-6 (the "PT" stands for "personal transport"). Joining with the Cunningham people meant comparative financial security as well as access to the facilities of one of America's premier luxury coach builders. The PT-6 would be a luxurious carriage of the air! Indeed it was. The first PT-6 was produced in 1929 and if you want to know what it looked like, just take a look at the 1938 PT-6F.

## **CUNNINGHAM-HALL PT-6F NC-444 IS A MOST REMARKABLE AIRCRAFT WITH A PEDIGREE AND HISTORY TO MATCH**





There was a second seat next to the pilot which could be lowered into the floor to facilitate entry and/or make room for more cargo. The cabin area was heated and there was a generous area for luggage aft of the cabin.

In the first PT-6 the passenger cabin was trimmed in red leather matching the upholstery of the chairs and generally outfitted in a most elegant fashion; the second production PT-6 was outfitted in attractive gray velour and was every bit as plush as the first.

**ALL METAL, ALMOST, BUT VERY COMFORTABLE**

The design called for an "all-metal structure" and the airplane was frequently referred to as an "all-metal biplane" though this was not quite true. While the PT-6 did indeed have an all-metal structure and the cabin was metal-covered, the fuselage aft of the cabin and all other surfaces, except for the leading edge, were fabric-covered.

The PT-6 itself was very comfortable, at least for the passengers. In addition to a plush interior, the cabin walls were insulated and sound-proofed. The pilot's compartment was separate from the four passengers and could be entered directly from the outside or through the passenger cabin.

*"In the course of our research on the PT-6F, we obtained copies of blueprints showing the airplane equipped as an Army bomber"*



A unique survivor, the aircraft was saved by Greg Herrick and will be included in his huge new Golden Wings of Flying Museum which is currently in the planning stage at Anoka Airport.

Having design experience with Army aircraft, Randolph Hall designed the PT-6 to tough Army standards which exceeded those established by the Department of Commerce for regular commercial aircraft. This was one tough bird! The PT-6 went on to demonstrate its remarkable strength and

performance to many pilots. They include Jimmy Doolittle, Amelia Earhart and many others. George Eastman of Kodak took his first flight in a PT-6. Regrettably, the fun was not to last though the PT-6 would be back nearly a decade later — next time as the PT-6F.

### **A PASSENGER LINER. A BOMBER? THEN A FREIGHTER!**

Certificated in July 1929, ATC #177, the Cunningham-Hall company purchased enough materials to build 25 PT-6s. The production line was started but only two or perhaps three of the PT-6 model were produced before the growing Great Depression took its toll. At \$16,000 a copy, the PT-6 was a luxury few could afford. Regrettably the Cunningham-Hall company had to severely reduce its operations focusing primarily on experimental designs such as the remarkable Cunningham-Hall "Model X90(N)," built for the Guggenheim Safe Airplane Contest, and the GA-21, GA-21 M and GA-36. These were entirely different craft which delved primarily into dramatic experimental wing and flap designs.

It is clear that the company tried very hard to market its PT-6 aircraft in a number of interesting configurations. As an example, in the course of our research on the PT-6F, we obtained copies of blueprints showing the airplane equipped as an Army bomber. The prints show bomb racks and machine guns, with one machine gun to be mounted in a turret on the roof of the passenger cabin!

**The PT-6F was restored by HO Aircraft at Anoka County Airport who has returned the vintage craft to pristine condition.**

Interestingly, we also discovered factory prints showing a mechanism designed to de-ice the leading edges of the wings. It essentially consisted of a lever in the cockpit connected to a cable which ran to an actuator mechanism behind what were to be the hinged leading edges of the wings. When the lever was pulled the leading edges would pop out slightly from the bottom, presumably causing any ice accumulation to blow away — very much like today's inflating deicing boots.

### **THE PHILIPPINE CONNECTION. WAS NC-444 EVER NPC-44?**

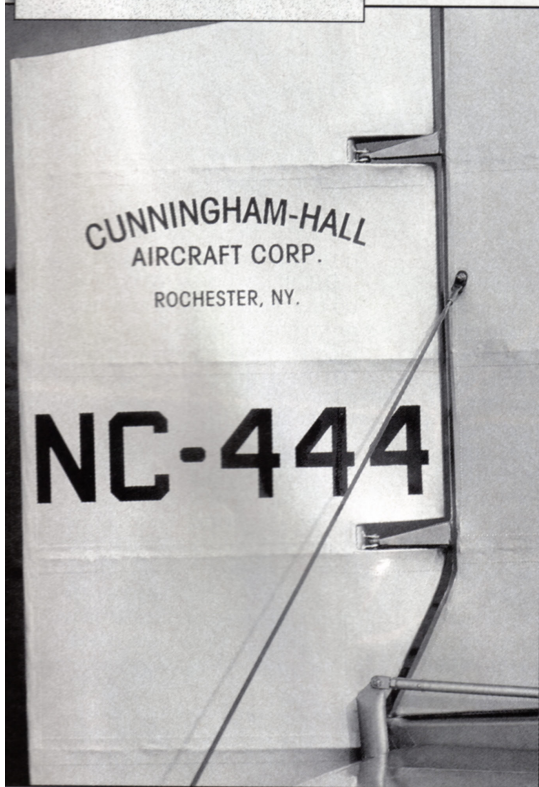
While the records are not crystal clear, we believe that a total of only five or six PT-6 and PT-6F aircraft were built. These include two Model PT-6s, one built in 1929 and the other in 1930, and three Model PT-6Fs. The three model PT-6Fs were built in 1938 for a mining company in the Philippines. It is thought that mining company took delivery of one of the aircraft and then either went out of business or, at best, was unable to pay their bill. In any event the Cunningham-Hall folks found themselves with two brand-new PT 6Fs and no customers. NC-444 may very well carry a memento of that failed Philippine order with her today found in a modified form of an old Philippine "N" number.

Original factory photos show one of the PT-6Fs with a slightly different "N" number on the tail: "NPC-44." Notice the subtle difference? Before World War Two, the prefix "NPC" was used by the Philippines Commonwealth for their internal Civil Aircraft Register. In order to accommodate the Philippine aircraft order an "NPC" number was obtained and NPC-44 was painted on the tail of one of the airplanes. Although we are not certain it could be that after the deal fell through the company, perhaps to save a larger repainting job, simply changed the lettering to read NC-444, a number which was apparently available in the US at the time. This idea is supported in NC-444s subsequent US Application for registration which states NC-444 "is now displayed on the aircraft" and notes that "NPC-44 was previously issued from Philippines."

Prior to either of the above registrations, NC-444 carried the experimental registration "NX-16967"

### **FACTORY SPECIFICATIONS FOR THE CUNNINGHAM-HALL PT-6F EQUIPPED WITH THE WRIGHT 975 ENGINE OF 330-365 HP**

Maximum speed: 150 mph  
Cruise speed: 130 mph  
Landing speed: 55 mph  
Climb: 1100 ft first minute  
Service ceiling: 20,000 ft.  
Gas capacity: 90 gal.  
Range @ 15 gph: 700 miles  
Length: 29 ft 8 in  
Height: 9 ft 7 in  
Upper wingspan: 41 ft 8 in  
Upper wing cord: 78 in  
Upper/lower wing area: 239 and 131 sq ft  
Lower wingspan: 33 ft 8 in  
Lower wing cord: 54 in



issued 4 March 1938. It would appear that NX-16967 was the prototype for the PT-6F, the freighter model, as it remained in the experimental category for only a few months while various applications for the changes from the PT-6 model were filed with the Bureau of Air Commerce.

NC-444 carries a manufacturing date of 1 March 1938. Although we cannot confirm it, the PT-6Fs were probably built using much of the material originally purchased to build 25 airplanes back in 1929. This should not be surprising as the differences are actually few between the original PT-6 and the PT-6F. The modifications to the "F," or "freighter" model, include interior corrugated siding, a large two-part 56-inch loading door, a large hatch in the ceiling and low pressure tires. The power was also increased from 300 hp to 330-365 hp which included a new variable pitch propeller. A speed ring was also added though it was removed from service on NC-444 in October 1944 to improve engine cooling. In the 1950s, NC-444 was equipped with the Wright R975 30 engine of 440 hp which is the engine that is on the aircraft today.

As you will see later, the PT-6F was a remarkable airplane as a freighter. With the seats removed the cabin measured 156 cubic feet. In addition to the wide side loading door and "top loading" through the large roof hatch, you could also load 20-foot lengths of pipe, boards, etc., through the removable cowl under the pilots compartment. The airplane could lift about just about anything you could load into it.

### **MORE ABOUT NC-444 — FROM THE PEOPLE WHO FLEW HER!**

While NC-444 was originally to have gone to the Philippines, when that deal fell apart she was placed in storage until sold in 1941 and then went straight to Alaska. It was Bob Byers, now of Kent, Washington, who went to the factory in June 1941 to pick up NC-444 for his stepfather, Lon Brennan of Fairbanks, Alaska. During the restoration we were fortunate to receive two letters from Bob Byers who had learned through a friend that we had acquired and were restoring the airplane. These letters contain firsthand accounts that make such fascinating

reading we are reproducing excerpts here below.

From Bob Byers:

"The old girl looks a little different than when I had her. The fuselage was black and the wings and tail feathers red with an orange cast to it. It used to have an oil cooler hanging just under and behind the engine. There was no relief by-pass arrangement in the system, if you landed in below about minus 10 degrees Fahrenheit you'd better get the engine cover on and a fire pot going because if you sat for ten

**"The first PT-6 was produced in 1929"**

minutes or more the radiator would congeal and blow an oil line when you cranked her up and then you had a job of draining and saving the oil while you made repairs.

"We used it for bush work in Alaska and found it to be one hell of a flying machine. Kind of a crude noisy old beast but no matter what the load or conditions it always gave me a pleasant surprise with the way it would get off the ground and then proceed to cruise at a respectable 110 or 115 mph. I've always had a soft spot in my heart for it. In fact, I have a model of it on my deck which I built myself and every time it winds up real good it brings back some pleasant memories.

"The engine that came with it was a Wright J6-9 360 hp and it had a two-position Hamilton Standard propeller. It had a speed cowl on it. When we had to pull the original engine for overhaul we would install a 330 hp Wright with no speed cowl and a fixed pitch prop, surprisingly

she would perform almost as good with that setup as with the original. In some ways it was better because with the original engine and prop it was nose-heavy and landing empty you had to blast the tail down just



The spartan cockpit of the Cunningham-Hall PT-6F.

before landing to make a three-point. I've always wondered what a 450 Pratt & Whitney, Wasp Jr. would do to it (Note: NC-444 now has a 440 hp Wright). It wouldn't weigh too much more and with another almost 100 horses she'd be a great big Super Cub. One time we took her off on dry grass with dust blowing, on skis. We had to put some rollers under the skis to get her moving but after that, away she went.

"Another thing, it had an inertia starter in it and someone had to stand outside on the left side and wind up the inertia and then climb aboard in the prop blast if he was going along. If you were alone it could get real interesting, winding up the inertia and climbing aboard in time to engage it before it ran down. We installed an electric starter but had to build a box in the fire

*(continued on page 68)*



Test pilot Harry Thibault (left) and Greg Herrick with the freshly restored PT-6F.



## SOLE SURVIVOR

(continued from page 18)

wall, extending back into the pilots compartment to accommodate it. Is that still there? (Yes, it is!)

"I was flying for my stepfather, Lon Brennan, who taught me to fly, when he found the plane in *Trade-A-Plane* and made a deal for it. If or get what he paid but \$7000 sticks in my mind. It had been sitting in a hangar two or three years since it was built and had zero time on the airframe and ten hours on the engine, all of which consisted of being cranked up once or twice a month to circulate the oil. This was in 1941 and planes weren't too plentiful.

"We used to fly anything that would fit into it. Lon picked up a load of steel runway mats one time, at Nenana to go to Galena, they were building an emergency strip until they got the permanent field built for the Northwest Staging Command. They were building fields every 50 or 100 miles from Great Falls, Montana, to Siberia for the Russians ferrying war planes to Russia. Anyway, Lon told the CAA he could handle 1200 pounds and for them to weigh out the load. He took off from Nenana, no problem, but he could hardly gain enough altitude to clear the trees. He followed every bend of the Tanana River to Manley Hot Springs where we were based and landed. We pulled the load out and weighed it up and he had 2000

pounds! We put an 800-pound load in the Stinson Jr. and flew the two planes on down to Galena.

"Another time, on the Yukon River, about 30 miles downstream from Tanana, I was in about three or four feet of loose snow with a 1400-pound gas-electric generator aboard. I thought 'boy here's one she can't handle.' I planned to taxi up and down the takeoff area two or three times to pack the snow down a bit. As I headed back down all of a sudden I was in the air, no sweat! She climbed up out of that snow like she was on a hard surface runway. That thing just loved to fly. The low wing with the ground effect was her secret, I'm pretty sure.

"She was not my idea of a fun airplane to fly. I always carried a grease rag in the cockpit so I could slide back the little window alongside the windshield and reach out and wipe the oil off the windshield. We called it the 'Wright Oil Slinger.' Also, the aileron control system had a steel tube that ran almost the length of both wings. This slid back and forth in bronze guides to operate a rocker arm ahead of each aileron and in cold weather it would get pretty stiff to operate. I'd brace the stick between my knees to get enough pressure to operate them and it tended to upset coordination, so I flew it mostly with

just the rudder which moved very freely. She responded to this system very nicely and with her terrific performance I developed a lot of respect for her and we got along quite well. There was one old miner at American Creek, which we flew in and out of, and it had a pretty short gravel strip. Anytime that miner wanted anything done he would specify we bring the Cunningham-Hall. He was no dummy.

"She had a great landing gear. Soft and rugged with no bad habits like wanting to ground loop. And she had no heat-treated parts so if you had to make a repair all you needed were a hacksaw and a welding torch. She was a strange airplane. As I said, I didn't really enjoy flying it but I developed more respect for it than any airplane I ever flew.

"Another interesting little story. In the early 1950s, the CAB published a study on the different types of aircraft owned by each airline in the USA. It was quite an extensive document and at the very end of it they had 'PS: One Cunningham-Hall, Byers Airways, Fairbanks, Alaska.'

"Lon sold the business in Alaska to me in January 1947, and I operated it until 1957 when I sold out to Wien Air Alaska. In 1950, I sold the Cunningham-Hall to Earl Wyman to use for aerial photography in his photo-mapping business."



The freshly completed Cunningham-Hall PT-6F basks in the late evening light at Anoka Airport during July 1997.



## THANKS FOR YOUR HELP!

In any restoration, particularly restorations of historic old birds like the Cunningham-Hall PT-6F, there are many people involved who make it all happen. We would like to thank just a few of them who have contributed to this project. We couldn't have done it without you!

In the physical restoration work, done by HO Aircraft at Anoka County Airport in Minnesota, Curt Storby worked tirelessly bending and shaping PT-6Fs metal in a way that hadn't been done for over sixty years. Tom Oostdik did the same. It was Amy Green who did the excellent fabric work while Dan White, HO Aircraft's manager, wrestled with the huge structure in the paint booth.

Others contributed priceless information and references to help us do as complete a restoration as possible. Just as importantly they help us all to understand more about the airplane and its history. These wonderful people include: Mrs. Louis Hall DeVinney whose father, Randolph Hall, was also father of the PT-6. Louis' first airplane ride was in a Cunningham-Hall PT-6 when she was just three years old. To Cunningham-Hall aficionado and modeler Doug Emmons; Bob Taylor, president of the Antique Airplane Association; and to NC-444's previous owners including Bob Byers who picked her up new at the factory, and Earl Wyman and Jim Larkin, also previous owners, thank you for your stories, we hope we can fly her together again with you! And thanks to Gene Frank for giving us our turn to take care of her. Thanks too for the great resources provided by the American Aviation Historical Society and the Smithsonian Institution, and Joseph Juptner, author of US Civil Aircraft Series, a nine-volume set of the entire ATC series and a "must-have" for any serious aircraft historian. We thank these people and everyone else involved in helping us restore and fly NC-444 once again and to be able to tell her most interesting story. We hope you enjoy it all!

Cunningham-Hall PT-6F, NC-444 is owned by Greg Herrick's Yellowstone Aviation, Inc. of Jackson, Wyoming, and is part of the Golden Wings Flying Museum of Anoka County Airport, Minnesota.

What great history! We really appreciate Bob's firsthand accounts.

Earl Wyman of Wyman Photo Service, Fairbanks, Alaska, kept the plane for several years, using it as his aerial photography platform. Earl, now living in Bothel, Washington, reports that he loved the plane, noting that while it wasn't the fastest, it was very stable. He routinely flew it at 17,000 feet while doing his photography work. The airplane was then sold to Al Letcher of Fairbanks who owned it until 1958.

After Alaska, the Cunningham Hall found its way to Idaho, purchased by Jim Larkin, presently of McCall, Idaho. Jim has a lot of interesting stories about his experiences with the plane which include the following:

"Getting the plane home from Alaska turned out to be a major project, involving changing two cylinders at Watson Lake, Yukon Territory, with a crescent wrench, temperature was about ten below and wind right off the North Pole. The next hair raiser was over the roughest mountains in the North near Muncho Lake. With about five minutes of gas left in the left tank, I reached down to switch to my full tank on the other side and found the fuel valve frozen tight. I put in about five minutes of h—, trying to keep it upright, chop a hole in the aural cockpit floor with a machete, and after accomplishing this, in trying to dribble enough lukewarm coffee down the knife blade and thaw out the selector valve. Feeling the valve finally break loose and flip over to the full tank is a

moment I will never forget. Bad weather and snowstorms all the way to Idaho, but believe me, everything else was anticlimactic.

"In Idaho, I hauled in the material for two nice size cabins and a lodge, all the furnishings, the carpenters, etc., freighting everything into an 800-foot sandbar right in the Salmon River gorge. I may be sticking my neck out a bit but I believe the Cunningham is the only airplane in the United States that is capable of routinely handling the bulky freight that went into this location.

"On another occasion I hauled out four horses that were snow-bound in a primitive area! For ten days, a series of pre-season storms had swept the high country of central Idaho choking the passes beyond the possibility of use. I already had put skis on the Cunningham-Hall.

"In the rock-rimmed valley of Sulfur Creek, four of rancher Ben Morgan's horses were trapped in the deep snow. He knew he had to either let them die of starvation or mercifully put them out of their misery himself. He was about to decide on the latter course when he had an idea — perhaps they could be flown out.

"Sixty miles away I had just completed a hard day of canyon-floor cargo drops and tight back-country takeoffs when I receive the call, 'Would I try flying them out?'

"I had lugged some unbelievable loads in ten years of bush flying. I remember refrigerators hanging half out in space — how I had to hold full rudder to stay in the air, the crates of

window frames lashed on top of the fuselage, the hay baler that hung out so far it almost dragged on the ground; but — horses!

"I took a quick mental look at the oversized door of the Cunningham, thought a while then said, 'Okay, tell Ben I'll give it a try.'

"The next morning Dr. Bill Ewing and I loaded some gear and were on our way to Sulfur Creek. An hour later we were on the ground and had a rope shackle on one of the stocky Arabians. Doc administered the sedative. The horse lay down gently but with a couple of snorts that kept me thinking about the possibility of the gentle beast becoming a veritable monster during her airplane ride. With the block and tackle along with a set of rollers we had borrowed from a brewery, we finally got our dormant cargo eased aboard.

"I taxied slowly to the end of the short field, blasted the tail around and, after one last look at my slumbering passenger, poured the coal to the big Wright. Slowly the old biplane mushed through the clinging snow. I rocked the wings to try to break the drag I was almost ready to chop the power when suddenly, riding on that tremendous ground cushion of the lower wings, we staggered into the air. Free from the clinging snow, we had made it, we were safely on our way back to Cascade!

"The three other horses made the trip uneventfully too and they all slept off their first 'hangover' laying on a bed of straw in the same hangar with the old Cunningham-Hall."

What great stories, and what a great airplane! We consider ourselves very fortunate to be the present owner/custodians of the Cunningham-Hall. We acquired the plane from Gene Frank in Idaho. Gene runs the "Barnstormers Collective" focusing primarily on earlier craft with water-cooled engines. He is well known to aficionados of the Barnstorming Age; his flying see-through Jenny is only one example of his dedication to the educational preservation of aircraft from those wonderful days of the barnstormers. Gene is a remarkable man who has "flown 'em all" and has saved many old aircraft from potential oblivion, the Cunningham-Hall included.

## THE RESTORATION

While the airplane was complete when we picked it up in Idaho, it was obvious that it was a working bush plane. We elected to completely disassemble it and do a total rebuild. During the restoration the plane was completely disassembled. The fuselage framework was plastic media blasted and epoxy primed, the wings were also plastic-blasted, and their unique internal steel girder framework was repaired and epoxy primed.

After all these years the corrugated "aural" aluminum had seen better days. The decision was made to completely replace the corrugation both inside and out. But where do you get corrugated aircraft aluminum these days? The San Diego Aero Space Museum came to the rescue. They had just completed their fantastic restoration of their Ford 5-AT-B Tri-Motor and yes, they did have a little material left from their project (which had been produced using the original Ford dies). A quick comparison showed it to be exactly the same corrugation used by Cunningham-Hall. We acquired the extra material and it was just the right amount to completely re-skin NC-444.

Copies of the original factory prints were obtained from the Smithsonian which confirmed that the remainder of the airplane was virtually factory original. Any of the pieces that were missing, such as the door separating the cockpit from the cabin which had been removed at some point, were faithfully reproduced. Yes, there were a few changes, mostly concerning the engine installation, which we left as

and the metal replaced Cunningham-Hall PT-6F, NC-444 was reassembled and completely recovered. We then had a painful decision to make. What about the paint scheme?

When Bob Byers picked it up at the factory back in 1941 she was painted black with the wings and tail surfaces a reddish orange (probably the same color many Travel Air wings were painted). What to do, what to do?



The PT-6F was advertised as an all-metal aircraft but, as can be seen, the craft was covered in fabric.

we found them. One of them was the starter switch which, somewhere along the line, became a foot starter like something you would find on a tractor. We decided to clean it up and leave it as it was; after all, some of the changes that take place on an old airplane during the course of its life become a part of the history and character of the airplane.

Once all the parts were cleaned

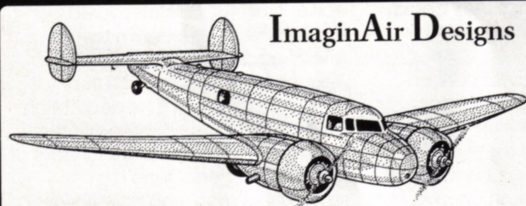
She just looked so good sitting there in her birthday suit. It seemed a crying shame to cover up that beautiful shiny natural corrugated aluminum. And who knows, many corrugated planes were delivered "au naturel" back then. Then too, leaving the aluminum natural really shows off the detail of the construction, including the crimping and forming, done with special tools and a strange elongated annealing furnace. OK, the decision was made! She stays natural for a few years until wear and tear necessitates a paint job — then NC-444 will be painted black and orange.

We hope you like our Cunningham-Hall PT-6F and the story that goes along with her. She's a great plane, as attested to by everyone who ever owned and flew her. Like every old plane, you're not just looking at an aircraft, you're looking at a story, and when the story is told it can be a wonderful and exciting lesson in the history and events of the past.

Old airplanes are indeed beautiful.

AC

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