History of N-754

History of N-754, tape narration by Jerry Lawhorn relaying the time, place and how it all evolved. At the time of the evolution of N-754, Jerry was employed with the U.S. Fish and Wildlife Service, Aircraft Division. His employment began in the mid-50's and continued through the life of the Aircraft Division.

This airplane, N-754, is still in existence today and is based primarily in Juneau, Alaska. It is a highly prized survey tool. It goes from its annual use in Alaska - deep into Mexico, clear over into Western Russia. It is flown by Fish and Wildlife Service pilots. The following narration explains how the conversion of a standard airplane into a modern-day tool, specifically designed for migratory bird surveys, took place.

In July, 1964, Refuges came up with enough dollars to go direct to De Havilland and buy a brand new Beaver and Theron Smith (Aircraft Supervisor) and I went down to Toronto, I guess it was, and picked up N-715 right from the factory. The De Havilland factory had stopped the production line, but they would still make them on a "special order" basis so the assembly line was a five-man thing. These five old guys would start off in one bay of the building and just truck right along and assemble a whole Beaver and when it came out the other end of the building, it was all done, kinda hand made -–kept those guys busy. It was a brand new one. Later on that year, in 1964, the military decided it was going to surplus a bunch of Beavers, down in Davis Monthan Air Force Base in Tucson, so the Fish and Wildlife decided that sounded pretty neat – we could get some of those big round motored jobs and we had a lot of engines for them. We could get parts surplus so that sounded like a pretty cheap operation.

We proceeded to cabbage on to nine of those dudes down there – all they had at that time. Five of them would come to Alaska and four would stay in the States somewhere. A couple would remain on the East Coast, one in Louisiana, and one in Portland. The rest would come to Anchorage and we would convert the things and get the show on the road.

There were very few Beavers up here at the time. They were pretty nice and roomy airplanes. In October, we went down to Tucson and commissioned all those aircraft. We took them out of storage and unpickled them and checked all the pilots out in their airplane and sent them on their way. Some of the troops from up here that went down with us to fly some of the airplanes back and that was good.

We were in the middle – well just completed the conversion of N-780, turbine powered Goose – and the thinking was, at the time, that it worked so well and the engines were so reliable, we figured we would probably convert two more Goose's, which would make a total of three up here. Five of the Beavers that were up here – we would convert those to turbine power as well as possibly three of them down in the States – the flyway Beavers. We decided to use the Volpar nacelle and retain all of the turbine Goose accessories, i.e., the propeller, nacelle, exhaust, everything so that the Service would only have to have one spare power package to be able to outfit all of these airplanes.

The nacelle is made in such a way that it will allow the exhaust to go out either side. It would be either a right-hand or a left-hand engine for any of the Goose's or it would fit any of the Beaver's. This made sense because at the time we were able to get those turbine engines for a brother-in-law price out of Garrett Air Research at about $42,000 each. If we had one spare engine we could outfit all these airplanes, no matter where they were. It would be easy to send this 400-pound package to whoever needed it and it would be cheaper for the Government and it would bring Fish and Wildlife up to almost industry standards.

As you well know, Fish and Wildlife has always been real reserved – just downright cheap and we have always had to make do with all the discards

and the military airplanes, and confiscated airplanes. It was a rare occasion when we could buy an airplane new from any of the factories! This left us 8-10 years behind industry and all the violators. They had Super Cubs and we had J-3's and J-5's and J-4's and whatever we could put our hands on. This was a chance to modernize the whole fleet, we struggled with this thought for quite a while. We went to back to De Havilland to see if they had kits to convert the standard Beaver to the PT-6, the Pratt and Whitney engines. They didn't have anymore kits. They made some for just a little bit and then they quit that and got into the Twin Otter business.

Our next approach then, was, we heard the Australians were making a duster conversion – duster and sprayer – quite a nice looking airplane in Australia. We got a hold of those folks and they sent us a lot of data and some movies and pictures and this looked like it could be a useable thing although they were using a 665 horsepower engine, Garrett, with the air scoop down and this didn't work out too well with our plans. We wanted to still have the air scoop up so there would be less foreign object ingestion and less water intake.

We went through the FAA and they came to the conclusion that a Third Nation conversion, in other words the airplane was built in Canada, converted in Australia, but couldn't be licensed in the United States. There were just too many nations involved and that kinda threw their paper mill into a cocked hat. The U.S. had direct licensing capabilities with De Havilland or with Australia but not with the third party in the picture.

So our next step then was to go to Volpar and see if they were interested in building more Goose nacelle's for us and attaching the things to a Beaver. At that time they were considerably interested, because they were in the conversion work. It was their livelihood. They knew the military had 300+ of these Beavers still in their inventory and they wanted to either surplus the Beavers or convert them to turbine power. The military wanted no more resips in their fleet. They wanted everything turbine so this would be a cheap way for the military to obtain turbine powered aircraft. About that time, Platius Porter had a bunch of those and they got into this conversion business and converted a bunch of Platius Porters for the military, to turbine

power. Of course, all the military pilots promptly went out and broke those things because they were a little fragile. Then when they were flown on the bottom end of their flight envelope and arrived at an airport, instead of landing, they managed to bend them all. This soured the military on conversions from then on.

While this was going on, Volpar decided this would be a good opportunity to get into the business and see if they couldn't get some dollars from the military. They went on into the paper mill and made all the drawings and all the stuff and they decided they could STC this conversion (supplemental type certificate). They went ahead and stressed all the parts and pieces as they built them; made all the drawings, and put the thing on the FAA shaker and went through the "whole schmere," flight tests, and all. The thing would have an STC and be named "Volpar 4000." It would be an STC to the original airplane design which would retain the original airspeed envelope. There would be a minimum of flight tests and it would bring the gross weight of the airplane up to 5,370 pounds, which is the turbine Beaver's gross weight specification. That way, they would not have to run through all the stress analysis on the original airframe to prove this thing – kinda quick and dirty. Volpar was really willing to go on with this thing and, of course, the bottom fell out of the airplane industry and there were no more military conversions, or very few.

It seemed like no one had money for these conversions, including us. We went ahead and footed the bill for this one. We drew up the primary specs of the thing, laid out drawings and sent these drawings to Volpar. Some of the specifications we wanted was to keep the Volpar nacelle, add an interface to the nacelle that would attach to a tubular structure which would go from station zero on the airframe out and get a hold of the Volpar nacelle. It would also retain the float fittings in their original position so there would no problem putting the aircraft on floats or skis. It ended up with a funny bulbous protrusion in front, there right behind the nacelle but we could live with that. We wanted the instrument panel to be kept as low as possible for maximum visibility. We wanted all the forward window frames to be kept quite narrow so that when you looked out the airplane and saw an object, no matter how small it was, you could follow the object clear around to 120

degrees behind you without losing sight of the thing behind a stupid wide door frame or a window frame.

This tubular structure meant that we would lose the front doors and we thought about that a long time. We decided we would make the front side windows wide enough and long enough to serve as emergency exits and not use them except in an emergency and just use the cabin doors. The front windows had to have quick releases on them so they could be gotten rid of in case the windows were needed to get out of. That's why they have a quick release on them and they are just big enough to meet the requirement of an emergency exit. We also wanted, in that tubular structure, two lower windows up there in the cockpit so that if you were on floats and you were trying to dock on the far side and you were in the left front seat, you could see down through that lower window and see the dock. You could tell where it was in relation to your floats and it also made things a little lighter inside so that when you looked down into the bilge of the airplane, then all was not dark. This could be a grim thing on a bright day if you lost a map or a pencil or something down there and you looked down into this dark bilge. It's difficult to see and find what you were looking for and this just provided more light. We really didn't need the space for anything else so we decided to incorporate the windows.

By putting all the switches in the airplane - all in one spot - this would be quite an improvement over airplanes of any kind. Yet today, seldom do you find an airplane with all the electrical switches in one spot. They are normally scattered everywhere. The switches are all in one row and are sequenced in the proper order for starting and running the aircraft. If you know your right hand from your left, you have it made. You start on the left hand end of the switches. You operate the first switch and wait 'till its function is complete, then go to the next in line, etc., etc. After you have completed actuating all the switches, the engine has been started and the aircraft systems are all on and ready. The reverse is true when shutting the aircraft down. You start at the right hand end of the switches and proceed to the left.

As a survey airplane, one of the requirements that we wanted, was to keep all the switches in one location and all the circuit breakers in one location. We figured that most of the people that flew this airplane were pilots incidental to their job. This would be a big plus if everything was in one spot. That way when you had a problem or needed a light or needed something else turned on or off, you knew there was one place to go for those switches. We wanted all the flight controls located in the center console. It turned out that it made quite a nice control quadrant up there. Your right hand could rest on the quadrant, be able to get at the tabs, flaps, landing gear, power levers, condition levers, fuel shutoff – everything was right there under your hand. It made a real nice arrangement as far as simplicity goes.

Another requirement was that we have the idiot lights located in a very slim, flat location just above the glare shield on the instrument panel. They wouldn't be obtrusive and they would have a hood over them so that direct sunlight wouldn't get at them. They would be quite visible for any of the systems that might be going array such as oil pressure, fuel pressure, etc. They would be right there visible in your line of sight. There again, all in one spot. These indicator lights would not have a lot of the normal stuff on them. The writing would tell you what to do or what was happening or what you needed to do if one of them came on. There again, it made the flying of the thing more simple; knowing full well that the turbine Beaver would be new for most of our pilots, but if we could make life easier for them, so much the better.

Another thing that we wanted was a long-range fuel system and as simple a system that could be designed – that took the minimum amount of time and very little housekeeping to keep the system going. Initially, when we first got the airplane this wasn't the case, so we modified the system to where it was pretty simple, really. We turned the wing selector valves off, filled up all the airplane tanks full of fuel. Once you got in the airplane, there were two wing fuel tank valves to turn on. We turned those on, turned on the fuel transfer pump switch and then didn't have to worry about the fuel system anymore. At about 3-1/2 hours into the flight, one of the idiot lights would come on up on the panel that would say "turn off the fuel transfer pump."

At which time, the pilot just reaches over and turns the switch off. No more fiddling with the fuel system at all until another light came on the panel which said, "you have 45 minutes of fuel." This system turned out to be so simple that the FAA could not fathom how an airplane with that many fuel tanks could have such a simple system.

This is how the fuel system worked

The fuel would drain out of the wing tanks and go to the front main. The only way to shut it off from the engine was through the fire wall shutoff. All fuel from the entire airplane goes into that tank before it is used by the engine. The front tank, the main, has an auto fill valve and if it is kept dry with no moisture, which is real hard to do – kinda like a toilet valve – with a small float, only allowing so much fuel to come in and keeps the fuel level almost full but not quite. Once the wing tanks are burned down to about half-full on each tank; there is a switch in each liquidometer that turns on the fuel transfer pump. The wing tanks have to be half-full or less. These two liquidometer switches in series will lock a solenoid on and it turns the fuel transfer pump on. The pump is located back in the camera hatch area. It transfers the fuel from the two rear tanks up into both wing tanks. In the plumbing, there is a flow switch and once the fuel flow stops, the two rear tanks are empty, and the pump is pumping air. This flow switch turns on the idiot light that says, "turn off the fuel transfer pump." That's how that system works. The fuel that was in those two rear and fuselage tanks is now up in the wing tanks, which feed down into the main tank by gravity. As long as gravity doesn't fail us, the system is pretty fool proof.

Another requirement was that the exhaust not interfere with the camera hatch or the side views. When counting waterfowl, one of the drawbacks of the PT-6 engine that we were considering was the fact that they have two exhausts, one on each side of the engine. The exhaust is just in the wrong place for viewing through to count ducks. That was a major factor in not pursuing the PT-6 conversion. We also wanted the exhaust stack to be long enough and far enough to one side to where it didn't interfere with the

camera hatch, knowing that someone would want a camera back there in the hole and we didn't want the exhaust impinging upon the camera or person.

We also wanted the floor of the cabin to remain as clean as possible, no garbage on the floor like the old flap selector and stuff that was always on the floor. Knowing that people would have to be checked out in the aircraft that had never flown turbines before, we wanted the dual flight controls so those are in place. There are no brakes on the right side. We would have to put sequence valves in the system to be able to put brakes on the right side, priority valves, shuttle valves, and all this foolishness, which gets quite complicated. Two more fluid reservoirs and two more things to go to pot. We figured the person on the right side would have a handle on enough stuff without necessarily bothering with brakes. The steering wheel was hooked up on the right side and all the engine instruments were quite visible from the right side.

We tried to get by with only one big main battery and one small battery for the ignition but we found that wasn't enough power, especially in cooler weather for a decent start. So we put a second big battery in the back with the series parallel solenoid. Knowing that the airplane would be off out in the "bush" a lot and there would be no APU available, we depended upon those batteries to work good in order for the airplane to get from point to point. When you go to series on your starts, the little battery is no longer in the start circuit at all. It supplies power to the ignition, to the strobe lights and nav lights and that's all. Once you come out of series and go back to parallel, then that battery could be used for starting. All the batteries are then on line for all the needs.

We wanted the thing to be capable of IFR flying if we had to, so we retained all the IFR flight instruments. We wanted quite a good radio system in it so we had at that time, at least, the finest that we could put in. Collins ADF was the top of the line, airline quality, ADF – one of the best HF's that we could put in and the VOR's , good VHF comm. We wanted it reliable, more than anything. We put the power outlets in for the four-place intercom, tracking recorders; tracking antennas, audios, tape recorder power plugs, and mounting brackets.

We had an over abundance of power so we decided to use the bleed-air for cabin heat and windshield defrost. This was a little noisy but with the David-Clark headsets and intercom system, it turned out not to be too bad. It took a lot of tinkering to be able to get the volume of air and to be able to temper the air by using outside air along with the bleed-air heat to keep it to where it wasn't too hot.

The plane was equipped with Tannis electric heaters on the engine. These little electric units were glued right to the case and power section of the engine and the oil tank. This allowed the system to be plugged into a 110 volt. Otherwise, the engine exhaust plug could be used and one of the 3,000 BTU catalytic heaters that uses white gas. A person could light one of these up and stick it in the exhaust pipe and put the plug in behind it. There is enough heat where it runs through the whole engine and it keeps it plenty warm for starting.

We wanted a simple hydraulic system. This is a demand system. It retains X-number of pounds – about 1,000 pounds. It has a self-contained pump and an accumulator. Whenever the pressure gets down to X-number of pounds (about 800) it kicks back on and pumps the system back up to 1,000 pounds. You can then use the float landing gear or the flaps; put the skis down or up with it. The motor only works when there is a need for that pressure.

We got the wing fuel tanks made - Volpar did - through Tank Services in Burbank, California. They made a form block off the leading edge of the De Havilland wing. They proceeded to build the tank that retained the same airfoil as the original wing. It runs from the wing butt out beyond the lift-strut fitting and it is a separate, structural, fuel tank in that it is strong enough to hold its own fuel. It attaches right to the spar which transmits all its load to the spar through quite a span of the wing which is actually stress relieving for the wing in turbulence. Rather than concentrating heavier loads in the fuselage which a standard turbine Beaver does, by adding another fuel tank or two in the belly, this makes the flight loads on the wing considerably higher. If you put some of the added weight out into the wing leading edge,

this relieves a lot of the bending moment and is stress relieving. This is one of the neat features.

The Beaver is a bugger to fuel because you have to get out there on the wings, pretty high up on amphib-floats and it is inconvenient that way. That gave us about 260 gallons of fuel and on wheels, running at 26 gallons an hour at 140 miles per hour, gives about 10 hours of fuel. The airplane with the propeller that far away, goes quite cleanly through the air. On wheels, indicating 140 miles per hour, full of fuel, and one person aboard, I flew the plane and pulled 290 hp out of the engine and set the air speed right at the bottom of the caution line, maximum level flight, miles per hour at 290 hp. The plane apparently runs through the air quite clean. At cruise power, on wheels, trimmed for level flight, to go beneath a cloud, duck down a little and push the nose over, that plane would go right up to the red line – quite clean, at least on wheels.

We elected not to put the wing tip tanks on. We really didn't need two more hours of fuel. In operating a standard Beaver with the wing tip tanks full and operating on a river or trying to make step turns on a lake, the centrificial force of that fuel clear out at those wing tips, sometimes, made it feel awful bad. The wings are the strong ones; they have had the service bulletin complied with. The rivets are 5/8 of an inch apart on the bottom side. That is one of the requirements for the tip tanks that the rivets on the spar be 5/8 of an inch maximum spacing for compression loads landing. The top is all right; that is tension, and no problem there.

I flew the first 170+ hours of its life, got most of the bugs out of it at Van Nuys, California. Before I left down there, I even took some of the Chilean Government officials up for a ride – still zinc chromate on the outside – some military paint; pretty rag-tag inside with the old green upholstery. One of the flight test guys from Garrett Air Research in Los Angeles (a test pilot on the SR-71) went up with me and drove around awhile. He wrote up quite a thing about the stability.

It has a standard **turbine** Beaver tail on it, except that a standard turbine rudder has got all the counter balance, static balance weight in the overhang

up at the top and Volpar found that when they put the thing on the shaker, vibration resinence, etc. – that the standard turbine Beaver tail is pretty borderline. There are frequencies that can be induced into the airframe in certain parts of the flight regime on a standard turbine Beaver that might make the rudder go away so I took half the weight out of the overhang up on top and distributed it then to the two lower dynamic balances – one on each side, down below. That's why those little static balances are where they are. They put this thing back on the shaker and found out that cured any problems that might arise during flight tests due to a vibration frequency.

We put on the strobe system - made it as visible as possible. It originally had 102-inch diameter propeller for the first "umpteen" hours of its life and it was quite long. It made the power lever real sensitive because of all this disc area out in front. The pilot had to be quite careful on how the power lever was moved. It would flat get with the program, going up hill or coming down, there was enough disc area at flight idle, coming downhill that it made the tail feathers vibrate somewhat. It was quite satisfactory, I thought, but if I owned the thing, it would still have the long propeller on it.

Somewhere along the line, "Brother" Herman, (Herman Ruess – Pilot Engineer) got in the airplane, filled it completely full of fuel, and a bunch of people and stuff, taxied off the ramp, got into Lake Hood with about a 25 mph south wind blowing. There were white caps on the lake. Herman taxied downwind to the far end of the lake and in turning around, he put it in flight idle, ground idle, and let the thing weather cock and of course, the propeller got into the float bow wave and sprayed a lot of water around. During the turn around, with small floats, naturally, with approximately 5,600 pounds gross, Herman scared himself. Instead of making the airplane do what he wanted it to do, like honking the thing in reverse and getting the nose with the floats up and making it turn around and keeping the nose up, he let it dip in the creek and scared himself to death.

Herman then proceeded to tell anyone that would listen that the thing was dangerous – it was just going to flat sink and kill people. Theron Smith got tired of hearing this noise and had the propeller cut down to 96 inches which is still ample steam but it was so much better before.

On wheels with just myself in it and not too much fuel, I made a stop and go landing on the north/south runway at International. I stopped in the middle of the runway, took off and before I got to the north shore of Cook Inlet, I was going through 5-6,000 feet – with a rate of climb of about 4,200 feet a minute. It would flat go uphill, Agnes! At 80 mph, it was shaking, but it was really getting it on!!

We had a lot of capability before with the long prop. It would clear these big nose wheels on the amphib floats with a couple inches to spare even if you came off the beach at 90-degree angle and left the nose wheels cocked as they retracted. Their closest proximity to the propeller, still had a 2-3 inch space, it wasn't all that close and the wheels go right on by. It was plenty safe. It needs a bigger set of floats. It needs a set of about 6,000's on it. If handled correctly, it works all right.

During part of its flight test when it was put on floats the first time, I flew the thing in a descending left hand turn at 80 mph air speed. In making my approach, I ended up with quite a lot of right aileron and a little bit of right rudder to keep it from increasing into the left-hand turn. From that, we decided that we had better put the ventral fin on and that's why and how the ventral fin got put on. The standard turbine Beaver has a little different arrangement back there but it still has one or two smaller ventral fins on it. The airplane is lacking a little in directional stability when making a slow left hand turn on approach, and that tells you why the ventral fin is on. Otherwise, we would have left it off, as it is sort of a hazard back there.

A little more on the fuel system: Initially, we had two electric fuel pumps underneath the pilot's feet to supply fuel pressure to the fuel control. One is the primary and the second is the back up. The engine actually does not need any fuel pump. It will draw fuel 90 inches below the engine with the fuel pump that's in the fuel control but it is a little hard on that fuel pump. We used the two electric pumps initially but they were not long-lived things. About every 400 hours, they would die. We kept one of them in the system as a backup and used an engine-driven pump, (a PT-6 engine pump) that is mounted on the accessory section of the engine as a primary. If it died, then

the electric backup was available, and if it died, you could still get from "A to B." The fuel pressure warning light would be on but it would still play. All in all, it was pretty redundant.

N-754 was not one of the original nine Beavers that we picked up in Tucson. This was the one that Ray Wolford (Assistant Regional Director stationed in Portland, Oregon) got from the Army, surplus, in Portland and he flew the plane up to Anchorage and it sat for quite a while. It had a little less total time on it than the rest of the Beavers but they had good engines on them. Rather than decommission one of the other Beavers, the flyable ones that we were using, we elected to take N-754 down to Volpar and have the conversion done down there.

The last time I was down at Volpar, I think they had put all the drawings that they had on the airframe in a trunk and had planned on keeping them. I don't know if they still have the plans or not. They still had the jig to make the tubular forward section of the fuselage. The last I heard they still have that stuff. The requirement is such that if you need another, someone may have to contact Volpar and see what they have.

The Beaver was operated a couple of years in the wintertime on skis and it worked quite well. It had the fairly light tail wheel assembly on it, initially. Herman managed to pull the tail wheel unit off of it once and Don Ross (Division of Refuges) tore it off once in the Arctic NWR. We have since put the stronger bulkhead on the thing. If it is ever put back on wheels or wheel/skis, it does have the stronger fittings in the back. I only flew it once on skis – had very little experience that way; however, it did work quite well.

The thing is torque sensitive on skis and on wheels. The propeller was still long then. You had to feed the power to it slow and easy until it got headed down the runway in the right direction then you could get into it. I found one thing that was surprising and that was its torque in reverse. It wants to go to the left also in reverse. I found this out at Mekoryuk. I landed over there one winter on wheels on the runway. The wind always blows from the north and they put the runway in east-west. A bunch of snowdrifts were

across the runway and I tried to land and stop between these drifts. When I cleared a drift and went to plop it in and jammed it in reverse and get stopped before I ran into the next drift, well, I did, but it also wanted to make a 90 degree left turn and ended up cross ways of the runway.

This upset me somewhat and I thought about this for a long time. After flying it a bit later, I found that if you are really into it in reverse with at least the long propeller, it wants to make a left hand turn. The slower you get and the more reverse you have, the more it wants to go to the left. If you ever have the occasion to get it into reverse and it starts to go to the left, then pull it back out part way so you still have directional control over the thing. The slower you go, the less reverse you can use to keep it straight.

Another thing we had a problem with was the brake master cylinders. There are apparently two different diameters of brake master cylinders for the Beaver. In order to have the best braking that you can obtain you need the smaller diameter brake master cylinders that go along side the brake pedals on the rudder. It gives you a little more PSI on the wheel cylinders. It is also quite borderline in brake fluid capacity with the smaller cylinders. You have to keep the flexible lines in the system to a minimum in length and make sure that all the air is out of the system. Otherwise, there is not quite enough capacity for the small diameter cylinders to handle the whole thing as well as you would like. You know about the front landing gears and shimming and how to adjust those.

When Herman made his rough landing in the wintertime on the snow, he buggered up the left-hand landing gear. We had to replace that. He bent it because he hit the snow so hard. Part of the landing gear fittings on the fuselage were not replaced so now it takes a specific left-hand landing gear for that airplane for alignment. If you ever have the occasion to put the landing gear back on or to change landing gears, the left one takes some special care. I can't remember what the difference is, but there is a difference between the standard and that one that is on there.

In the design, we requested that the front seats be moved forward – forward from the originals, either 7 or 9 inches so that when you turned your head,

you weren't looking right into the wing butt. You're out ahead of it always and it made for a better visibility. So, they are a little further forward than the standard Beaver.

It would be far better if it had bigger floats. They made some big floats and I looked at a set they used to run on the twin Cessna - T-50's - Bamboo Bombers. Northern Consolidated used to run them. We had a set of those available to us. The spreader bars were about 18 inches wider than those on the Beaver and it would have taken a lot of input stress analysis to get them approved. They were 6400 floats – which would have made a floatplane out of that hummer! It would have just sat right up there on step and made a safer thing in big water.

The windshields are Beech 18's. We tried to have the thing made so that they were ambidextrous but that didn't take place. If the windshields need replacing, they are Beech 18's.

This is about all I can remember. I hope this gives you a good idea of the background of the plane, the evolution, the thinking at the time, what we did, why we did it, and how come some things are the way they are. It is an airplane that I would personally just love to have. If you want to duplicate my version of the history of N-754, please be my guest.

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