Elling Halvorson is one of the great pioneers of the helicopter industry. Born in St. Paul, Minn., on Jan. 2, 1932, he moved from state to state and went to many different schools in his early years as the family followed his father, who was in the construction business. He attended a coeducational, parochial high school, Hillcrest Academy, in Fergus Falls, Minn. There, he served as student body president in his senior year and was appointed assistant dean in charge of the men’s dormitory.

After high school, he first went to Waldorf College in Forest City, Iowa. He was interested in music and knew the choral director there. He also was interested in engineering, and for his second year of college Halvorson went to the University of Idaho, enrolling in its engineering department. On the last day of school that year, during the Calculus final, he got a phone call that his father was passing away. He left the test, but his father died before Halvorson got to see him. His siblings decided he would finish school in Salem, Ore., where his parents had built a new home in which his mother now lived alone. He agreed. He transferred to Willamette University. In 1953, his junior year of college, he married Barbara Tweed, whom he had met when they were students back at Hillcrest Academy. At Willamette, he ended up earning a degree in economics, with “what you might call a minor in civil engineering,” he says.

His and Barbara’s 57-year marriage brought five children, two of whom are in the helicopter industry. Brenda is CEO of Papillon Helicopters and Grand Canyon Scenic Airlines; she has offices at the companies’ Grand Canyon and Las Vegas locations, but makes her home in the Phoenix area (and in Seattle, where her daughter and son live with their children). Sons Kent and Lon both live in Seattle. Lon works with his father in Papillon Helicopters and is CEO of Rainier Heli-Lift International and several other entities doing heavy-lift work, as well as helicopter and airplane leasing in Mexico, South America, and other parts of the world. Kent is a general contractor who builds throughout the western U.S. Sons Randal and Rodney live with their parents. Each is afflicted with Duchenne muscular dystrophy. To the Halvorsons’ knowledge, the boys are the oldest living Duchenne patients in the world.

In November 2010, Martin J. Pociask, vice president and curator for Helicopter Foundation International (HFI), interviewed Halvorson at his Kirkland, Wash. office as part of HFI’s Heritage Series of profiles of vertical-lift pioneers. This is the first of two parts based on that interview.
**HFI:** What got you interested in aviation?

**Halvorson:** As a young boy, I would read *Popular Mechanics*. I saw these little airplanes, and I always dreamed of being behind the wheel of a little airplane scooting around. So I started building model airplanes. I first started getting gas-engine model airplanes. I couldn’t afford a very big engine, but I got an Olson 23, which is a small gas-fired engine. I built mostly free-flight airplanes.

**HFI:** “Papillon” is French for butterfly. Why did you choose a butterfly to symbolize your company?

**Halvorson:** The butterfly is beautiful. It’s light. It flits around here and there like a helicopter is able to do. “Papillon” is also a very interesting word. It’s got intrigue. It’s a word that people remember. We didn’t coin that as the name for our business to begin with. We purchased a company in Hawaii that had the name Papillon. Once we started using that name, we made the decision that Papillon was the name we should use for all of our operations. It’s been a very good name, and I’m very pleased that we made that decision.

**HFI:** Elling, the company’s success story begins with you, its creator and twice Helicopter Association International’s chairman. As a businessman and entrepreneur, what is the secret of your success?

**Halvorson:** You know, I don’t think there’s any one secret. It is being in the right place at the right time. It is being able to see an opportunity and having the courage to act on that opportunity. Quality of the product is very important, and also how the customer is served. Of greatest importance is honesty in business. That is a fundamental requirement to long-term success. Of course, there are many other factors that enter into the equation—how you market, how you conduct your financing, safety programs, etc. There’s some good logic associated with it and there’s some luck. We seem to have had a little bit of each through all of the different enterprises that we’ve been involved in throughout my lifetime.

**HFI:** What got you interested in aviation?

**Halvorson:** Before getting into the helicopter business, I was in the construction business. I followed in my family footsteps. My father built buildings and later in life did heavy construction, roads and that type of thing. My oldest brother, Carl, was a heavy construction contractor, and did work like highways and dams. He was one of the primary joint ventures on almost all of the dams on the Columbia River [in Washington and Oregon] and several others. My other brother, Halvor, was in the general construction business and worked all over the United States. So, as I graduated from school, I was kind of fulfilling my dream to be a civil engineer, which led to the construction industry.

I had always intended to go into the construction business, and I started doing projects that were very difficult and remote. My theory was that if I could be creative enough to tackle projects that few others would have an interest in because of the risks involved, if I could mitigate those risks by being creative, and attack these difficult projects with new ideas, I could be successful and be very profitable. So, as an example, I had a project, the Echo Summit Microwave Project, on a mountain peak 9,400 feet high in the Sierra Nevada, near Lake Tahoe. It was during the Cold War, and the project was the primary link in AT&T Long Lines’ microwave system between New York and Los Angeles. It was the most difficult link in that system. It was a facility that had to withstand some atomic bomb pressure, so it required lots of concrete on a mountain peak where there was no road to it.

We had to devise a way to build up there. The first thing I did was build a 1.5-mile long tramway. The first span of the tramway was one mile long to the breakover tower. We operated it 24 hours a day, seven days a week, 365 days a year, and we carried up all of our cement, aggregate, water, steel, different heavy things.

I realized that I needed something that could move back and forth quickly to bring lighter things and people in and out. In 1960–61, I bought my first helicopter. Bell had just come out with the 47G3-B1, which was the first turbocharged, three-passenger helicopter. There weren’t any available except the one Bell certified on. So I purchased their aircraft and used it to bring men, light materials and repair parts, etc. up and down the mountain. That was
my first exposure into helicopters. My entire life I have tackled the unusual jobs in construction that necessitate innovative techniques to complete, such as mountain peak microwave projects, pipelines through the Grand Canyon, and many other difficult projects in the Arctic and the Aleutian Islands.

We were innovative from the beginning. With the challenges of each project being in a different geographical area, we grew more capable as time went on.

If we build something up on the Arctic Ocean, for instance, we have a few weeks in the summer during break-up of ice to get materials in. Everything is loaded into containers—machinery and equipment, Caterpillar tractors, generators, everything you need for the job—and put onto container barges six to eight stories high. The containers are all loaded in reverse order, so when you start taking the materials out you take them out in the order that they’re needed. You have to figure every bolt, all the nails, every little thing that you need for a project, then you have to organize the loading, the shipping, the unloading, get it off the beach and get the barge out of the Arctic before it starts to freeze again. We always worked all winter long. There are high logistics required for doing that type of work. We built housing developments, military developments, projects for the oil companies and for the pipeline company. We built a primary power turbine facility that provides all the electricity for the Prudhoe Bay area. So, we’ve had a lot of experience in the Arctic during the bitter cold of the winter where you never turn your engine off.

Halvorson: A few years after doing the Echo Summit, we got a contract to bury a water pipeline across the Grand Canyon from rim to rim from 1964 to 1967. It was 13.5 miles long, and it had a right-of-way of 4-6 feet. But because of the turns, the tightness, the rock and the vertical cliffs, I determined that we couldn’t have any bedding material for the pipeline, we had to make our own. After the ditch was filled again, we came through with a backhoe and dug the ditch out again and put the materials on the sides of the ditch for the pipe bedding and fill.

This was a design-build project, so we had to figure out what type of pipe material we were going to use. We had three choices—ductile iron, steel, or aluminum. We chose aluminum because we calculated that we could fly two 40-foot lengths of pipe in using a light helicopter. We had to design the aluminum alloy and wall thickness because the pressures we had in the bottom were up to 2,500 PSI, very high.

We were carrying close to a mile head of water. We first brought the pipe to an interim location called Plateau Point, where we had built a bending machine. Every day the bending crew would make their measurements for the next day, then they would then go up to Plateau Point and bend the pipe. The pipe had a bend either vertical or horizontal about every 12 feet. Then the helicopters would transport the pipe from the bending machine into the pipeline ditch, where the welding crew would work on adapting the butt joints together.

HFI: Did you have butterflies, pun intended, taking on this daunting project?

Halvorson: After we were the low bidder and were awarded the project, I had great concerns for our abilities to be successful on the job because it was a lump-sum project, primarily contractor-designed. We had to deliver 600 gallons a minute to Indian Gardens below the South Rim of the Grand Canyon. I had many sleepless nights thinking of how to accomplish this pipeline and how to design the
special equipment it would require within the budgets we had established.

The other highly variable contention was the cost of operating our helicopters on this project. There were so many hours involved that management of the flight hours was a critical component. In fact, I was so concerned about it that I moved my entire family to the Grand Canyon to watch this project personally for a two-year period. I managed our other jobs from the Grand Canyon. With my airplane, I could visit the other work swiftly.

We used helicopters to deliver and lower pipe, cement, steel, bridge materials, welding gas, fuel, manpower, and other materials and supplies into the canyon, logging 25,000 hours of helicopter time.

**HFI:** What type of helicopter did you use?

**Halvorson:** We used almost every type of helicopter that was available. Whatever was available, which wasn’t much. To keep the cost down as much as we could, we used our light helicopters. We leased large helicopters. We had an S-61, a Bell 204B and the S–55. We used all of those machines and a fleet of 47G3-B1s and Hiller SL-4s.

Although the Vietnam War had gotten started, we had our own war going on down in the Grand Canyon.

When I had to get parts out of Bell to keep our show going, I told them this is the Grand Canyon war, not the Vietnam War. That helicopter project continues today, I think, to be the largest helicopter-supported job in the United States.

**HFI:** What other challenges did you face on that Grand Canyon job?
Halvorson: Nature and location did not seem to want to cooperate. There was the terrain itself. Then a freak, 1,500-year flood took out nearly nine miles of recently installed pipeline and nearly bankrupted my young company. The government stopped payment and laid financial responsibility for loss and replacement on the contractor.

HFI: Tell us about the flood.

Halvorson: As I mentioned, the pipeline was a bidder design job, except for one thing. The federal government had flagged the location that they wanted the pipeline to go. So we built it in that location.

Well, on Dec. 5, 1965, water was in the pipeline. We were just dressing the final trails. We were almost ready to turn the whole pipeline over to the federal government and hopefully get our retainer released and last draw out and be done with this project. Then it began to rain.

In 36 hours it dumped 18 inches of rain on the North Rim, into a drainage basin that all went down through Bright Angel Canyon [“the canyon in the Canyon”], where we had built the pipeline. The river ran through the box canyon 20-30 feet high. It pushed boulders the size of automobiles. The cliffs had fallen down in many cases. Every piece of equipment we had in the canyon disappeared. Caterpillar crawler tractors, concrete batch facilities, trucks—everything was gone. The flood literally tore out about 8.5 miles of our pipeline. It took the site away.

On Dec. 12, I went down and spent a few days appraising the damage. There’s a dude ranch, Phantom Ranch, at the bottom at the Bright Angel Creek. There was an old little Civilian Conservation Corps hut down there and someone had tied a piece of high-tensile steel wire as a radio antenna. It was surplus wire of the kind used to span the Colorado River to bring telephone service to Phantom Ranch. It was tied to the eave of that building and high up onto the cliff. We had flown through that area hundreds and hundreds of times—maybe a thousand times. But before the flood this wire went through a huge tree, probably 100 feet high, so we had never seen it.

On Dec. 12, we flew where the tree had been and we picked up the wire. Well, helicopters don’t fly real well with wire on the rotors. It started winding around the mast, and the pilot immediately started a descent to a landing spot we had used hundreds of times. As the aircraft pitched over, the wire tangled in the tail rotor; tore the gear box and blades off. The CG went forward, and we just augured in. I was critically hurt in that accident.

HFI: As a result of the flood, the government stopped payment?

Halvorson: Months later, the federal government gave us a one-year, stop-work order. Because the contract was on what’s called Standard Form 23(a), the government’s standard construction contract, which states the contractor is responsible for acts of God, they stopped payment to me. Of course, I lost all my equipment in the flood. I had no insurance on it because the equipment was spread out. We always took it out of the 100-year flood plain every night. So, I had canceled the insurance on the equipment.

After the accident, I was in casts. I had a full-leg cast on my right leg for six months, so it was hard to get around. But I started going to San Francisco to meet with National Park Service people. They’d bring their fleet of attorneys in from Denver. I told them it was a design error, and they said it was an act of God. I had my attorney with me and they had a half a room full of attorneys. The government has no shortage of attorneys. They were convinced that it was an act of God and that I should replace the loss at my cost. I was a bonded contractor, so they knew the bonding company could finish the job. But the bonding company would only do it if I agreed to it. I never did agree to it, and we argued about this all summer.

One thing they didn’t know was that I had bought a builder’s all-risk policy on that project through Lloyd’s of London. I never told a soul that I had purchased this. Well, about April of 1966, I was just devastated. I had no money. This was going to put me out of business. I mean, I was going to be gone. However, because I had notified Lloyds about the loss, an adjuster came to my house. He said, “Elling, you don’t know me, but I know you. I know a lot about you. I know a lot of people that know you and I have been to London and I have convinced underwriters that they should support you as you deal with the Park Service on this issue.”

He gave me a check for $100,000 and said, “Elling, sign this note. If you’re successful with the Park Service and are able to pay it back, you can pay it back. If you’re unsuccessful,
we’ll tear the note up,” because underwriters want you to go forward in strength and not be beat.

So I took the money. I bought one of these new calculators like those we use now. It would do chain calculations of multiplications and divisions and nobody had seen anything like this before, so I was pretty cocky in the room. Everyone else had big Marchant rotary calculators that you could hardly carry. Well, anyway, we went to the meeting in San Francisco with all the attorneys again, and I said, “I have something to tell you gentlemen that I have not told you before.”

HFI: What did you tell them?

Halvorson: I told them, “I have to agree with you. It’s the contractor’s responsibility to put the pipeline back, and we’re going to put it back. To prove that we have the ability to put it back, we not only have our bond that guarantees it, but we have an insurance policy with Lloyd’s of London. They have assured me that they will step up and put that pipeline back in place.”

There was jubilation in the room. I mean, these guys, they were clapping each other’s hands, and they were really happy. “Elling,” they said, “we knew you’d come around to our way of thinking. We really appreciate it. We didn’t know how long it would take, but we knew you’d finally see it our way.”

I thanked them and the meeting continued and as we were about to break up, I said, “By the way, there’s one favor I’d like from you folks.”

They said, “Elling, sure, we’ll do anything to help you that we can.”

I said, “Fine, just put the Grand Canyon back the way it was when I bid the job.”

Their faces just went to the floor. I had them right where I wanted them. It ended up that we signed a very large change order that Congress had to do a special appropriation for. The day the president signed it, the secretary of the Interior called my house, talked to my wife, and said, “The president signed the bill.”

HFI: It was during that Grand Canyon project that you decided to get into the tour business. Tell us about that.

Halvorson: When we were building the pipeline, we flew guests in who were engineers and material suppliers, etc. They were enthralled by the experience of flying into the canyon, and many of them just felt it was almost a religious experience. I recognized that there was the potential for a business based on flying tourists into the canyon. So as the job was ending, I began to fly tourists, and I actually formed a new company to do that. We originally called it Grand Canyon Helicopters.

When I started the tourist helicopter business, I recognized that we could not at that point be dedicated to both utility work and tourist work. In order to have dependability for our customers, we had to devote our total effort to that cause. I believe we were the first operator in the world to promote helicopter touring as a major business and dedicate the support to make it successful. Ever since aircraft flew, there were people that would fly around on a tour occasionally, but we started a business that was absolutely dedicated to the tourist industry in a significant way.

HFI: They say that every cloud has a silver lining. A need presented itself and, seeing an opportunity, you filled the demand. I guess this provided enough income to maintain cash flow...
and to keep the wolf from the door. Is that correct?

Halvorson: Actually, for the first few years, the business was slow and I had to underwrite the helicopter operation with the construction company for several years. We started small, with three or four small helicopters, because the business wasn’t taking off. In fact, my accountant told me on more than one occasion, “Why don’t you get rid of that silly helicopter company and just focus on the construction business.” I always told him, “No, there’s real value there. It hasn’t hit yet.”

We had to run several hundred thousand people through before it really started to grow. It had to be neighbor-to-neighbor type stuff—“You’re going to the Grand Canyon. We did the greatest thing when we were there. It’s something you ought to do.” Word of mouth is more important than any advertising you can buy.

But once it took off, we increased business about 10 percent a year for 35 years. This year, we’ve had the best and biggest year we’ve ever had right in the middle of our current recession. Back then I saw an opportunity that, if I could cross a critical mass of past customers who were ecstatic about the product, they would encourage others to take the flight. The big operators that were flying the heavies looked at us and laughed and thought, “Well, that’s not going to go very far.” They’ve told me this since, when we get together, laugh and tell stories about each other. But, it’s proved itself in a very significant way. Now it’s a pretty big segment for the helicopter industry across the world, and we really were the ones that, in a significant way, started it.

HFI: Tell us about your Hawaiian operation.

Halvorson: In 1984, we purchased a Hawaiian helicopter company that was operating on the island of Kauai and under the trade name of Papillon Helicopters. At that time, we were still operating under the trade name Grand Canyon Helicopters. However, I thought that the name Papillon Helicopters was perfect for a tour company. Thus, we changed our trade name to operate as Papillon Hawaiian Helicopters in Hawaii and Papillon Grand Canyon Helicopters at the Grand Canyon.

We brought some new life to the helicopter businesses in Hawaii by providing brightly colored aircraft, buses, and nice terminal facilities. It was very difficult to have nice terminal facilities in Hawaii because the state Department of Aeronautics had such a grip on the properties where one could operate from. But we were able to accomplish that and provided, in addition to the new look, a film that each passenger previewed before their flight that showed them what they would see on their flight and helped them interpret the sights. It was highly
successful and we had 25 helicopters divided among the islands.

**HFI:** In June 1994, the Hawaiian division, including all 25 helicopters, was sold to another helicopter operator. Can you tell us about that?

**Halvorson:** At that time in my life, I was strung out so far with construction jobs in the Arctic and the Aleutians and helicopter operations in Arizona and all the islands of Hawaii that I wanted to change my lifestyle. I sold the Hawaiian operation to a helicopter operator out of Atlanta. I sold all 25 helicopters and all of our facilities in one fell swoop. The operator that bought us had just had an initial public stock offering and had a fair amount of cash. So we took mostly cash and some stock for the sale.

However, in less than one year after the purchase, the parent company became insolvent and went through Chapter 7 liquidation. In the meanwhile, they had cross-collateralized all of the equipment from Atlanta together with the equipment from Hawaii and it was an unbearable burden for the Hawaii operation to continue operating. It continued for another year before it collapsed under the undue financial burden that had been placed on it.

**HFI:** You have continually encouraged all manufacturers to consider quiet technology in their designs. You were the inspiration and guiding light in the research and development of the S-55QT “Whisper Jet.” Tell us about that work.

**Halvorson:** Anyone that works around helicopters very long recognizes that the noise created is a distraction to many people. Some get extremely sensitive when their privacy has been invaded. Working in the Grand Canyon, which is super-sensitive to unnatural sounds, has certainly driven me to be more conscious than most regarding the sound issue.

For that reason, in an effort to save our segment of the industry and potentially help the entire industry, I took the sound issue on as a personal cause. I've worked to alert the manufacturers of the critical need to have quieter helicopters. The Grand Canyon and other national parks, as you know, are very pristine areas. Sound was a big issue for the National Park Service and for environmental groups in particular, just as it is an issue in most cities throughout the world now.

I felt for years that noise was the Achilles heel of the helicopter. In the mid-80s, I was a keynote speaker at the Bell Helicopter marketing seminar in Dallas. I spoke on the quiet helicopter—what could and should be done, how important it was to us and how noise was a hazard to our industry that we weren’t recognizing enough.

At the end of that speech, the engineers came up to me and said, “Elling, what you’re talking about is a pipedream. It can’t be done because you’re going to have to sacrifice too much in performance, and it’s going to cost too much to go that way.” The sales people came up to me, patted me on the back, shook my hand, and said, “Elling, you’re exactly on target. That’s what we need is quiet technology.” After that, I met with the executives of all the manufacturers, but I couldn’t get anyone interested in it. I went to Bell. I went to Sikorsky. I went to Hughes, at the time. I went over to France. I talked to everyone and no one would pay any attention to this issue.

**HFI:** And that is when you decided to do something yourself?

**Halvorson:** I finally decided I’m going to prove that a good helicopter can be built that’s quiet. So I began to work on the Whisper Jet. I coined the name Whisper Jet and registered it and selected the S–55. That’s an old-generation helicopter. I put a new powerplant in it, designed a new rotor head, added two rotor blades, and put a silencing plenum on the intake side of the engine.

That engine, the TPE331-10, is an absolute screamer, but I killed that sound. I built a special muffler for the exhaust using passive noise cancellation. We measured the frequency of the sound, then we had a honeycomb built to match it and put a silencing plenum on the intake side of the engine.

**HFI:** What happened next?

**Halvorson:** I finally decided I was going to build a quiet helicopter. I found an old generation S–55 helicopter and put a new TPE331-10 engine in it. I’ve worked to alert the manufacturers of the need for quieter helicopters. The Grand Canyon and other national parks are very pristine areas. Sound was a big issue for the National Park Service and for environmental groups in particular, just as it is an issue in most cities throughout the world now.

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that let the sound through into the honeycomb. The honeycomb, of course, caused the sound to bounce back and self-cancel. So we totally killed the high-frequency sound. High frequency can’t go around a corner or take a curve.

For the low-frequency sound, we did the same thing. We have maybe three-eighths of an inch of material on the intake side of the engine and about two inches of honeycomb on the exhaust muffler. You can actually stand next to that helicopter now and have a conversation with it running.

We did one other thing, which Eurocopter has done now in their EC130. We certified it under two rotor speeds—one for takeoff and maneuvering and one for cruising. We had a silent mode where we slowed the system down. NASA tested this aircraft for a whole day, making dozens and dozens of runs. In the quiet configuration, they determined that it was the quietest helicopter ever built.

**HFI:** How was the lift or speed capability?

**Halvorson:** This helicopter will lift its full gross load to 14,000 feet. As an S-55, it was limited to 100 knots and lost air speed by about three percent for every thousand feet of altitude.

We didn’t change the 100 knots, but we get the 100-knot speed to all altitudes. It will fly a lot faster than that because it always has a rotor blade in the critical quadrant of the rotor plane. So we’re now considering increasing that speed to up around 120 knots.

I had the aircraft on the floor of HELI-EXPO® for about four years. People came by and looked at it. It’s a marvelous looking helicopter. At one HELI-EXPO® in Las Vegas, I hovered a Whisper Jet over the entrance to the exhibit hall for over 30 minutes.

I challenged the manufacturers to begin providing quieter helicopters, to add volume in the cabin space for passenger comfort, and to reduce internal noise. Those are three things that are very important to an operator. I’m glad to see that Eurocopter has taken some steps in the right direction, and I know a number of things they could do to even improve those.

**HFI:** You founded a general contracting company called Elling Halvorson, Inc. in 1957. It’s not often that someone starting off a new business would be willing to stand behind his or her name. You obviously had a lot of self-confidence. Would you say confidence played a part in your business successes?

**Halvorson:** You will recognize my self-confidence if you think back to the tuxedo jackets I wear at the annual banquet at HELI-EXPO®!

Confidence is an important element in being successful. However, together with self-confidence, it is necessary to have a business plan that will work. I see a lot of proposed business opportunities, but as I review them I believe only a small percentage has the chance to survive. We are in a number of businesses that I haven’t told you about, but in each case we evaluate as carefully as we can the economics and the business opportunities. Then we go into it full throttle and stick with it, because even if all the right things are put together, success doesn’t happen at once. Success is a process of working at something and tweaking it and improving it until it does work as long as you have a need that has to be filled.