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Wolf Pitts Britt Lincoln EAA Recap LIFT Aviation Engine Cooling



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TRUE BRITT

Meet Britt Lincoln

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Fly Like a Girl!

The upside-down
life of Britt Lincoln

BY JIM BUSH



Born to Fly

IT IS DIFFICULT TO describe Britt Lincoln, EAA 1283752/IAC 440740, in a single sentence.

If it were simply based on outward appearance, some would compare her to a golden sunset. Once she makes eye contact with you, and flashes that mischievous, infectious smile, you become entranced. From her curly coiled sandy blonde hair to her dark piercing eyes, Britt could easily be mistaken for a New York fashion runway model. But the only runway this former Montana farm girl relies on is the one she rockets from in her Extra 330SCX.

But do not let those looks fool you. Once you dissect her life story, you quickly realize Britt Lincoln is more like a “once in a lifetime comet” — all the beauty and splendor lie within this shining aviation star.

Born and raised on a farm in North Central Montana, 12 miles south of the Canadian border, Britt grew up surrounded by wide open spaces, endless skies, and airplanes.

“The closest neighbors were 2 miles away,” Britt said. “My school was over 20 miles away, and there were 18 people in my graduating class. Because we lived in such a remote location, my grandfather would sometimes fly us to school in his Cessna 180 and land on the two-lane highway north of town. He would taxi into the parking lot right behind the school and drop us off. This was my ‘normal’ growing up.”

Aviation has been in Britt’s family for generations.

“I am a fourth-generation pilot on my father’s side, and my great-grandfather was the first person in our family to learn to fly,” she said. “After he got his pilot certificate,



The seed was planted early.



Britt’s grandpa taking her and her two sisters, Ashlee and Shelby, for a flight in the 180 from their Montana grass strip.



Britt and her grandfather harvesting wheat on their farm together. Britt is driving the combine, and he is driving the grain truck. “So many times I have seen the correlation with respect to hand-eye coordination and depth perception in flying and driving combine,” she said.



Britt learning to fly the Super Cub on their grass strip, 12MT.

he began crop dusting in a J-3 Cub and taught his son, Roger, my grandfather, how to fly. Roger had his own airplane before he had a car. At one point in their lives, the two of them dusted together, primarily wheat and barley. The aviation DNA was passed on to me.”

Britt was 5 days old the first time she was in an airplane — a Cessna 180 that her grandfather had bought new from the factory. Britt is the current caretaker of it.

“During the summer, I was woken at 4 a.m. most mornings by the sound of the filling of spray plane hoppers and the roar of them taking off right in front of the house,” Britt said. “By age 12, my job was driving a tractor and becoming the designated combine driver during harvest. That tradition continued into adulthood even after I graduated from college and had a career.”

The work ethic infused in Britt by her grandparents, Mable and Roger, set her foundation in stone. Their family creed: “If you start something, you finish it. You don’t quit, ever.”

“Looking back, I realize how empowering that was,” Britt said. “It was always positive, confidence-building. Believing and supporting that I can do anything. I never heard, ‘Girls can’t do that,’ ‘You’re too young,’ or ‘You are not strong enough.’ None of that was ever spoken. It was only encouragement.”

Learning to fly did not come until later in life for Britt. She began learning to fly, taught informally by her grandfather, in the Cub in high school. But because she was so involved with extracurricular activities like sports and working on the farm, flying was never the priority. Despite the aviation-rich environment, she did not initially see flying as her future. Instead, she pursued degrees in accounting and German and spent more than 15 years in the finance world, including time overseas.

Late Departure With a Rapid Climb

Britt repatriated to the United States in 2010, moving to the San Francisco Bay Area. She continued her work in accounting and finance and, of course, went home more frequently. It was not until 2017, after returning home, that she realized something was missing.

“My grandfather was getting older and decided to hang up his headsets and retire from crop dusting,” Britt said. “I knew that unless I got my pilot certificate, the time was approaching that I wouldn’t be able to fly with him anymore — a pastime that was so special to me and had created so many wonderful memories. I didn’t want creating new aviation memories together to come to an abrupt halt.”



Taken right before a flight in the Super D.

That realization sparked a journey that would transform her life — and the world of aerobatics. Although Britt had flown all of her life, she never officially earned a pilot certificate. She began formal training in Concord, California, in a Cessna 172.

“It was the first time I had ever flown a nose-wheel,” Britt said. “My instructor had never flown a tailwheel. He would get irritated with me and say, ‘What are you doing with your feet? Stop moving your feet so much! You don’t have to move the rudder pedals that much.’ I did not know any better. I was taxiing a nose-wheel like a Cub.”

Britt earned her private pilot certificate in November 2017. What began as a practical decision quickly evolved into a passion. Within a year, she had earned five certificates/ratings: instrument, commercial, multiengine, seaplane, and commercial seaplane. She had found her calling.

Her introduction to aerobatics was serendipitous. One day, she passed a hangar with its doors open and spotted a Super Decathlon and a Pitts S-2B. Curious, she wandered inside. The owner offered her a ride in the Pitts. By the end of the flight — after loops, rolls, rolling turns, and lomcováks — he told her, “You need to



At the awards ceremony from the 2023 World Advanced Aerobatic Championships in Las Vegas, Nevada.



Duluth, Minnesota air show. Photography by Pat Donaghy



Britt's rise in the aerobatic world was meteoric. Since 2019, she has competed in over 20 competitions and won 17. In 2023, she made history by becoming the first woman in 30 years to win the U.S. Advanced National Aerobatic Championships.

She performs high-energy routines that leave audiences breathless — tumbles, torque rolls, and knife-edge passes, all choreographed to music and smoke.

The Extra Edge

“My airplane is an Extra 330SCX, a high-performance aerobatic monoplane built in Germany. I often describe it as ‘a lion on a leash,’” Britt said. “It feels like I’m strapping myself onto a rocket ship.”

Because it is not certified in the United States, it is registered as experimental exhibition. Britt’s Extra is a single-seat, low-wing aerobatic monoplane with carbon fiber wings, tail, control surfaces, pushrods, and empennage structure, along with a steel-tube, carbon, and fabric-covered fuselage.

“We have ‘tuned’ the ailerons a bit and have my airplane at a roll rate of a blistering 420 degrees per second in aileron rolls and over 500 degrees per second in snap rolls,” she said. “The airplane is rated to +10/-10g’s. After a competition flight, my g-meter typically reads around +10/-8g’s.”

The Extra is powered by a six-cylinder Lycoming AEIO-580 producing roughly 330 hp. It has inverted fuel and oil systems that allow the aircraft to maintain indefinite inverted flight — at least until the fuel runs dry. There are two “acro” fuel tanks between the pilot and firewall holding just under 27 gallons. Each wing also contains a fuel tank holding about 16 gallons, though you cannot fly aerobatics with fuel in the wings. Britt’s airplane also has a smoke tank beneath the two acro tanks that holds 5 gallons of smoke oil.

“During aerobatics, I run the airplane full rich, burning about 34 gph,” Britt said. “In cruise, she burns approximately 17 gph at 23 squared. I’m currently running a three-bladed MTV-9-B-C 198 propeller. The instrumentation in my airplane is basic. I have a mechanical airspeed indicator, altimeter, fuel gauges, a JPI engine monitor, and an old Garmin 255XL, although some exciting upgrades are currently in the works.”

When Britt flies, she wears a Softie Wedge 180 parachute with an aerobatic harness specifically designed with a crossover style that keeps connecting hardware away from her hips and legs, which would otherwise pinch during high-g maneuvers.

Because Britt is on the petite side (5 feet, 5 inches and 120 pounds), she has struggled to fit properly in standard aerobatic seats. Even though the Extra has an adjustable seat and rudder pedals, she needs additional “filler” behind her back.

“I could not reach full forward-left stick, the left-forward corner, which is required for a positive snap roll,” Britt said. “My arm reach simply isn’t long enough. For about the first year, I flew the airplane with layers of cut-up yoga mats duct-taped together behind me. But even the firmest yoga mat compresses under a 10g maneuver, and during hard negative-g pushes, both the parachute and the yoga mat would shift or ride up. That can be distracting when you’re pointed straight at the ground at 200 knots and 800 feet, pushing out to inverted level flight.”

With help from coach Craig Gifford, mentor Rob Holland, and friends at Full Stop Aviation in Union City, Tennessee, Britt had a custom-molded foam seat poured like those used by professional race car drivers.

“It’s molded to my body and parachute and fits inside a standard Extra seat,” Britt said. We also built a lip at the top of the seat to keep my parachute in place during hard negative-g pushes.”

Aerobatic Elegance

Everything about Britt’s aerobatic flying is carefully and meticulously planned.

“There is never a flight that is unprepared or a time when I simply take off and perform stunts,” Britt said. “I strongly dislike the term ‘stunt pilot.’ To me, it diminishes the incredible amount of work, effort, and discipline that goes into aerobatic flying, and it carries a negative connotation — one of recklessness and lack of safety. While competition and air show flying differ in many ways, they also share parallels. Both are extremely disciplined. Competition is about flying with absolute precision while making it look beautiful. Air show flying focuses more on entertainment and incorporates maneuvers that may look ‘out of control’ to an untrained eye but are fully controlled by the pilot.”

When Britt prepares to fly a sequence, one of the first things she does is analyze it for any “underwater stones,” or elements that may catch an inexperienced or unprepared pilot off guard. That might include altitude-losing figures, energy-draining figures, or elements where precise speed control is essential, such as a P-loop with a snap roll on the vertical downline.



SPECIFICATIONS

AIRCRAFT MAKE & MODEL: Extra 330SCX
CERTIFICATION: Experimental exhibition
LENGTH: 22 feet, 1 inch
WINGSPAN: 24 feet, 7 inches
HEIGHT: 8 feet, 5 inches
MAXIMUM GROSS WEIGHT: 1,918 pounds (normal), 1,720 pounds (acro)
EMPTY WEIGHT: 1,291 pounds
FUEL CAPACITY: 59.2 gallons
SEATS: 1
POWERPLANT MAKE & MODEL: Lycoming AEIO-580
HORSEPOWER: 340
PROPELLER: MT MTV-9-B-C 198
LOAD FACTOR: +/-10g
POWER LOADING (ACRO): 5.1 pounds/hp
WING LOADING (ACRO): 16.3 pounds/square foot
V_{NE}: 220 knots
V₅₀: 61 knots
V_A: 154 knots



“I identify where the lowest altitude will occur in the sequence and determine what altitude I want at that point — typically at the bottom of the aerobatic box,” Britt said. “I then work backward, figure by figure, calculating altitude gain or loss, and keep a running total to determine the safe starting altitude. I then set altitude gates, floors, and speed targets for key figures and write them on my sequence card.”

Britt then studies the forecast winds at various altitudes, ideally in 500-foot increments. Dramatic shifts — calm on the surface, 15 knots at 2,000 feet, and 35 knots at 3,000 feet — can drastically alter her plan and presentation.

“That information, combined with my planned altitude profile, significantly affects how I plan to fly the sequence,” Britt said. “I then determine where I want to place each figure within the aerobatic box. This varies greatly with atmospheric conditions. I can fly the same sequence under different weather and have two completely different plans.”

A standard competition aerobatic box is approximately 3,300 feet by 3,300 feet. Air show boxes vary widely depending on the location and crowd size. For Britt, a perfect competition flight stays within a width of 2,500 feet (not using the last 400 feet on either side) and is between 850 and 1,800 feet away from the judges. Britt aims to use only about one-third of the box.

Once she has planned altitudes, speeds, and positioning, she determines roll directions for all rolls, snap rolls, and spins and marks them on her card.

“Once the card is marked, I walk the sequence several times on the ground,” Britt said. “You might have seen aerobatic pilots doing this. It looks like we are pacing in a small area, waving our arms, spinning, or twirling around. We look like uncoordinated, slightly dizzy ballerina wannabes. I visualize every moment: the taxi, takeoff, time in the hold, the dive into the box, each figure, what I will feel, see, and hear, and how the wind will affect positioning. I plan and visualize the perfectly executed flight.”

Marking a sequence card is a personal thing. Everyone develops a system that works for them. Britt uses a combination of writing and colors. Each color means something specific and helps her read the card quickly during an aerobatic flight.

“G-tolerance is very perishable, especially negative g-tolerance,” Britt said. “Even one week without training noticeably reduces it. I work out daily, which keeps me in shape and improves endurance during flights and long training camps. The better shape I’m in, the quicker I recover between flights and the more productive I am, especially on days when I fly two or three practice flights. The best way to build g-tolerance is to ease into it at the beginning of the season, laying the foundation and starting with around +6/-4g’s and gradually working up from there over the course of several weeks.”



In peak training, Britt typically flies five to six days per week, sometimes twice daily. During world competition years, she attends about five U.S. Aerobatic Team training camps, each lasting five to six days, flying three training flights per day. A typical flight is 20-25 minutes.

“That may not sound like much, but 20 minutes of continuous hard aerobatics at +10/-8g’s, combined with the mental focus required, is extremely demanding — the best workout there is,” Britt said.

Part of the Team

Britt’s journey to the 2025 World Advanced Aerobatic Championships (WAAC) held at the Hévíz-Balaton Airport in Sármellék, Hungary, began at home with the packing.

Through experience, and sometimes a bit of bad luck, she has learned what to be prepared for. This includes things that are most likely to break on her aircraft or things that will absolutely ground her and take her out of the contest completely.

“Craig, my partner and coach, and I rented an Extra 330SC out of Poland, but other than not shipping an airplane, it didn’t reduce the packing list,” Britt said. “We had six suitcases between the two of us packed with the usual items like clothes and toiletries, but also among the items were a spare magneto, spark plugs, spare fuel pump, various wrenches, sockets and tools, tire tubes, our parachutes, and my custom seat.”

The owners of the rented Extra 330SC delivered the aircraft to the practice site the following day. Britt and Craig were met with a few surprises.

“The biggest surprise was that the standard seat in the Extra, the one my custom seat insert is molded around, had been highly modified,” Britt said. “That meant if we didn’t find a solution, I would not have an airplane to fly.”

The safety harnesses also were not standard or ideal for hard, high-level aerobatics.

“I immediately started making phone calls to find solutions,” Britt said. “A good friend in Germany, who also owns a 330SC, took his seat out of his airplane and sent it



Craig and Britt.





Britt getting the bottom of her shoes wiped off after it had rained before a competition flight.

to me as a loaner for several days while a new seat was being fabricated by Extra at the factory.”

For the harness dilemma, friends back home in the United States shipped an extra set of harnesses via FedEx overnight to Hungary. The airplane had also recently been wrapped in vinyl, which changed a lot of how the airplane handled and flew.

“The added weight from the vinyl moved the CG of the airplane, which really affected how it spun and handled snap rolls, and it also changed the feeling of the control surfaces, specifically making the elevator feel much heavier,” Britt said. “We, I mostly mean Craig, spent two days making adjustments to the airplane to get it to fly and feel as similar to ours as we could.”

This meant two days less of practice and to get used to a new airplane.”

Four days before the WAAC began, Team USA transitioned from Szeged to the contest site in Sármező.

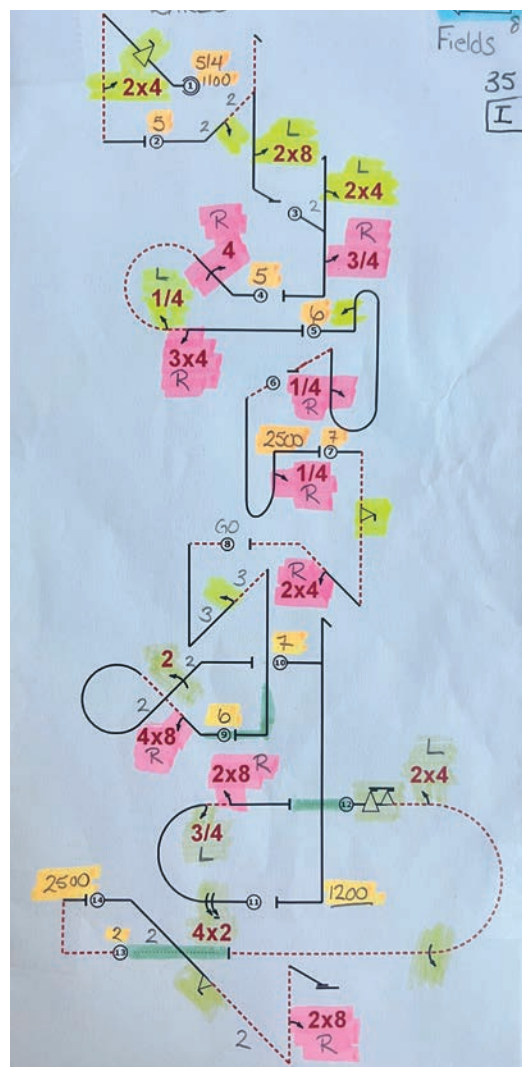
“It is always a strategic decision and a bit of a gamble on when to transition,” Britt said. “The advantage to being in Szeged was we were able to each get three 20-minute practice flights per day — without the eyes of our competition watching to see what figures we may submit for the Unknown flights. However, practice flights in the actual competition aerobatic box are incredibly valuable. There is so much that goes into planning each flight, and it’s essential to learn and rely on visual and horizon references to identify stopping points — especially on vertical lines — and to maintain a clear sense of your position in the box for precise figure placement.”

One big disadvantage is that because each competitor wants time in the competition box, each practice slot was limited to 10 minutes, with each pilot only allowed one slot per day.

Walking sequence.



Britt at closing ceremony with her bronze team medal and silver flight medal.



Britt's sequence card from her third flight at WAAC. How a card is marked up is very personal, and everyone has a different method and different level of detail. The colors all have specific meaning to Britt, and she had target altitudes marked and positioning marks for each figure.

PHOTOGRAPHY COURTESY OF BRITTANEE LINCOLN



“As a team, we also utilized the extra time to physically go to each judge’s position,” Britt said. “There were three positions: the east, west, and south sides of the aerobatic box. The judges move from west to east halfway through each day, so they aren’t looking into the sun. We learned that the position on the east side of the box was about 100 meters closer to the box than the west position, and the judges sat downhill from the box. All these factors affect how the judge perceives the flight and how specific figures should be presented differently.”

There were 38 total pilots representing 14 different countries. Flight order is drawn randomly for each flight. The contest took place over a week with 1.5 days of weather delays.

“It’s difficult to describe the roller coaster of emotions that take place over the course of a world contest,” Britt said. “There is excitement, anxiety, frustration, joy, disappointment, boredom, exhaustion, motivation, and feelings of demotivation. It is definitely a master class in mental strength, resilience, and physical endurance. You must be prepared to fly whenever your flight number comes up; you sit around and wait and wait for your 8-minute flight in the box. Just when you think you know approximately when you will fly, there is a delay. But when your time comes, you need to be physically and mentally prepared. In a typical world contest, each pilot flies four flights: the Free Known flight and then three Free Unknown flights. Unfortunately, this year, due to various delays, we ran out of time, and we only had three flights each.”

All five pilots representing the United States flew well, earning a bronze team medal. Individually, Britt delivered her strongest performance during the third flight — the most difficult flight of the contest — and placed second, earning a silver medal for that flight.



“Competition is about absolute precision — perfect vertical lines and brick-wall stops. Air shows are about storytelling, emotion, and connection.”
— Britt Lincoln



A photo that was created as part of the promotion of the Unlimited category at the U.S. National Championships.



“I was finally really getting used to how this airplane flew and handled,” Britt said. “I felt strong and confident in the Unknown flights, so I was disappointed we didn’t get our fourth flight. As with most contests, we all had aspirations of scoring better and placing higher, but I am extremely proud of the team, how we flew and represented the United States, and the friendships and camaraderie we built.”

Fresh off the World Advanced Aerobatic Championships, Britt had a goal to fly Unlimited at the U.S. National Aerobatic Championships, days after returning from Europe. The U.S. Nationals was the qualifier for pilots to earn a place on the 2026 U.S. Unlimited Aerobatic Team. This would be Britt’s first time flying Unlimited at the Nationals and her first attempt at making the U.S. Unlimited Aerobatic Team.

“It is a big step from Advanced to Unlimited,” Britt said. “There are several figures and elements — such as outside snap rolls, multiple snaps on a single figure, and snaps

“I want girls to see that they belong in the cockpit, in the box, on the podium. Aviation needs all kinds of voices, and we’re stronger when we fly together.”
— Britt Lincoln

on vertical uplines — that aren’t allowed in Advanced, and the overall difficulty of the sequences increases significantly. The four days leading up to Nationals, dealing with jet lag and jumping right back into long days and hard-core aerobatic training, were exhausting, but I had a goal in mind.”

Britt’s goal was to fly her best, fly three “clean” flights with no zeros, and earn a spot on the 2026 U.S. Unlimited Aerobatic Team. And she did just that!

“It was absolutely challenging, especially the third and final flight,” Britt said. “There were a few figures in this flight that I had never flown before, but I prepared myself well mentally and relied on my training and the skill base that I have built so far. I finished seventh out of 14 pilots (sixth of the pilots eligible for the team). I had no zeros in any of my flights, and I made the team — an accomplishment I am very proud of, especially considering the timeline leading up to the contest and it was my first Unlimited Nationals.”

Girls Fly!

For Britt, air shows offer something that competitions generally don’t: the chance to share aviation with everyone.

“Competitions are generally not spectator events,” Britt said. “But at air shows, like AirVenture, the crowd is so diverse: military pilots, GA pilots, RC pilots, and aviation enthusiasts. I love hearing stories from people who grew up near airports and would ride their bike to the perimeter fence, sticking their little faces in-between the chain link to watch airplanes take off and land. One of those kids could be a Montana farm girl who never dreamed she could fly. Or a 50-year-old woman who says, ‘I wish I

could have learned to do that.’ And I tell them, ‘You still can. I got my certificate in my mid-30s. Why not you?’ Flying has no age limit, per se.”

Britt is passionate about mentoring young aviators, especially women.

“I want girls to see that they belong in the cockpit, in the box, on the podium,” she said. “Aviation needs all kinds of voices, and we’re stronger when we fly together.”

Britt’s journey is not just about personal achievement; it is about representation. As the only female pilot in her family and one of the few women in competitive aerobatics and air shows, she is blazing a trail for others. “Fly like a girl,” she said proudly, reclaiming a phrase often used to diminish. *EAA*

Jim Busha, EAA Lifetime 119684, is an avid pilot and longtime contributor to EAA publications. He is EAA vice president of publications, membership, safety and security, and retail. He is also the editor of *Warbirds* and *Vintage Airplane* magazines, and the owner of a 1943 Stinson L-5 and a 1943 Fairchild PT-19B.

