



Plagued by headwinds, weather, mechanical problems, the author was driven by grit and determination to successfully complete

Amelia Earhart route on globe-circling solo flight

[EDITOR'S NOTE: Among the distinguished aviation figures taking part in the ninth annual AOPA Air Fair and Plantation Party at Hollywood, Fla., last month was Joan Merriam, who established several new round-the-world solo flight records last year in a Piper Apache. A long-time AOPA member, she was asked to prepare an article for *The PILOT* concerning flight and technical problems she experienced on her globe-girdling journey. Here is that story in her own words.]

The Irish rolled out the carpet on March 17, 1964, as I taxied my twin-engine Rajay turbocharged Apache toward Runway 27R at Oakland International Airport just a few minutes before 1 p.m. In a few minutes I would be off on the first leg eastward to Tucson on a flight far from routine. Behind me lay 10 years of dreaming and planning and two years of hard work on a goal I had set for myself many years ago—to fly around the world at the Equator, just as Amelia Earhart had planned in 1937. Mine was also the first solo attempt at the Equator by a man or woman. Amelia had hoped to be the first woman to circle the globe at the earth's Equator and also to establish a new long distance

record of 27,000 miles. Her dreams were now mine as I set out on Runway 27R awaiting takeoff clearance.

The idea to fly the A.E. route (as Amelia's course is fondly called) started in 1953 when I soloed at age 16. A.E.'s dedication to aviation, the fact that she deliberately chose the most difficult route to circle the globe and her reasons for choosing it interested me. The route was 27,000 miles long, crossed the equator four times and involved flying in a great deal of weather and over the most remote spots of the world. Even today the untracked wilds in some areas along that route remain unchanged.

With over 20,000 miles of her trip completed, Amelia and her navigator, Fred Noonan, in their sleek twin-engine Lockheed, tragically disappeared after departure from Lae, New Guinea, on July 2, 1937. In tribute to this great aviatrix, I knew that someday I had to try the same flight. The two prerequisites would be a twin-engine aircraft and financial backers. Little did I know that this combination would take 10 years to achieve.

After learning to fly in Miami and working as an instructor and as a charter and corporation pilot in that area until 1960, I earned all my ratings

including the ATR at the age of 23, and then moved to California, where I married Jack Smith, a career Naval officer and also a pilot. He shared the frustrating ordeal of finally putting together my world flight project.

With the help of 24 sponsors, my life savings, a six-year-old Apache with low-time engines and 2,900-hour airframe, and two hard years of steady work, I was on my way.

On a flight of this nature, there are many things that cannot be done too far in advance—final route checking, obtaining current WAC and Jeppesen charts, visas for countries visited, etc.

I contacted AOPA to obtain all WAC charts, landing and overflight permits for all stops, and clearances and notification where needed. This was a most important and time-saving method of flight planning. Sixteen visas had to be obtained. That took time, even through a visa agency in Chicago. Many hours were spent over 105 WAC charts, checking Jeppesen charts covering the 27,000-mile course and brushing up on celestial navigation.

Coordination was maddening! Radios, new antennas and turbochargers had to be installed. A double engine change was ordered prior to the turbo installation because the left engine failed at 200



The above map reflects roughly the course followed by Joan Merriam on her 27,750-mile global flight last spring

THE LONGEST FLIGHT

by JOAN MERRIAM • AOPA 103228

hours due to a center main bearing freeze-up. Props had to be overhauled, as well as all instruments, autopilot and all accessories.

After takeoff, I realized that I was really on my way. It was ironic that takeoff should be March 17. It was 27 years to the day after A.E. departed on

her world flight.

A couple of hours out, I began to minutely inspect the cockpit that would be home for the next two months and knew I had done everything possible to insure a safe flight. I even had advice from famous aviator Paul Mantz, who was Miss Earhart's advisor.

In addition to new engines and turbochargers to increase range, safety and performance, N3251P was equipped with an ARC-318A ADF with a BFO switch which would pick up weak radio stations along the "off the beaten track" route, a 10-channel Brelox HF transceiver for long-range communications in the 5-13.5 m.c. band. I equipped a trailing antenna as a backup to the fixed antenna the Brelox uses but only had to reel out the trailing wire five times.

The copilot seat had been removed, and extra equipment and power supplies were mounted to the floor because of lack of nose compartment space. Behind me were two large aluminum tanks for extra fuel on the longer flights. Other equipment included a Mitchell 3-axis autopilot and a Zep-Aero large oxygen console so important for high-altitude flying in the Rajay Apache.

Survival equipment included a Pan



Home again after six-week, 27,750-mile global flight, Miss Merriam received royal greeting from Long Beach Mayor Edwin Wade (left) and hundreds of onlookers

Avion two-man life raft equipped with rations, a Mae West, and a Granger water-activated VHF radio beacon. Backup items included a standby ADF, two magnetic compasses plus the DG, fire extinguisher, bubble sextant with appropriate tables for celestial navigation in case of electrical failure, two flashlights, extra parts and tools for minor maintenance, two microphones and headsets.

A.C. Iridium sparkplugs were used to minimize plug fouling. They are painted blue and provided a continuing conversation item. Goodyear tires, an Alcor gauge and large manila envelopes to mail home used charts were added, not to mention the many lightweight odds and ends carried—thermos bottle, candy, Metrecal cookies, a small suitcase with a three-day supply of clothes.

The *Apache*, named "The City of Long Beach" after my hometown and in honor of the many local backers interested in the flight, left with an array of sponsors' names painted on both sides. En route, it would pick up thousands of autographs from foreign countries.

I arrived at Tucson International Airport at dark and within a few hours was on my way to New Orleans, just ahead of a low-pressure area that was spreading rain and snow eastward rapidly. Twelve hours later I landed at Moisant Airport. The last five hours had been flown on instruments along the Gulf region. Early the next morning, I flew on to Miami where I spent two days preparing for the overseas hop and visiting with my mother and friends who reside there.

Shortly after dawn on March 21, I took off and skirted rain showers half way to San Juan, Puerto Rico. This hop brought back fond memories of my Miami flying days when I flew to the Caribbean islands.

En route to San Juan, I first tested the special diet I would stay on throughout the flight—a high-protein diet which prohibited indulging in new or exotic foods around the world. Par-taking of unusual and spicy dishes could prove dangerous to a pilot, espe-



Joan Merriam was one of the stellar attractions at the Ninth Annual AOPA Air Fair and Plantation Party at Hollywood-by-the-Sea, Fla., Oct. 4-10. Here, she is shown receiving a special award—a broken golf-tee marker struck by her famous *Apache*—from Max Karant, AOPA vice president. She had made a landing on the 502-yard No. 2 fairway at the Diplomat Hotel and Country Club course a few moments before. It was a good landing—the tee marker happened to get in the way. Joan has appeared before numerous pilot groups since her spectacular round-the-world flight last spring.

cially a solo one! So from now on it was well-done beef, canned vegetables, vitamins, black coffee and packaged snacks.

At San Juan, pilots advised me of the shortage of mechanics in South America, but an experienced repairman would be on hand should I need work at Paramaribo, Surinam, my next stop.

Nine hours later I landed at Zandery Airport, some 30 miles downriver from colorful Paramaribo. The flight was uneventful, but for the first time I saw the wilds and jungles of South America, an unpleasant sight from any altitude.

On March 24, major trouble first plagued me. The welded seam of a cabin fuel tank broke during refueling, and both tanks had to be removed and fixed. It took seven days with the help of the competent mechanic based at Zandery. The tanks had been pressure-tested and test-flown for 20 hours before my flight, and an additional 50 hours was now on them.

I always watched the fueling crew to be sure they refueled the tanks slowly from a small nozzle hose. This slowed down the process, but I could afford no trouble such as that at Paramaribo.

By the time the tanks were repaired, I was impatient to take off for Natal, for I would now be flying through the rainy season which had set in on Brazil. Natal was 1,500 miles southeast. I would have to fly through the ITC (intertropical convergence zone, or Equatorial frontal zone), but the weather authorities said activity would be light.

My first encounter with the ITC was

about an hour out from Zandery. It started with jungle fog, grew into small lower cumulus and then became a more abrupt buildup with visible weather extending east and west along a line north of Belem. I could not get over the weather, so at 800 feet obtained radio clearance into Belem and landed just minutes before a downpour that closed the field, proving that torrential rains are common in this area. Belem is located one-half degree off the equator, and the closeness of the humidity was almost unbearable.

The ITC weather area can be found at the Equator or within a few degrees north or south of it. Weather can vary from mild to severe, depending on the time of year and the wind velocity, for it is largely the conflicting winds at the Equator that cause this strange frontal system. Cumulus buildups and thunderstorms can climb as high as 50,000 feet, with bases 500 feet. Heavy rain and bands of weather associated with the front can be 500 miles wide.

On March 31, after a long, tedious flight from Belem, I landed at Agostinho Severo Airport, Natal, and was surprised to see the entire fleet of the Brazilian Air Force—B-25's, P-38's, and AT-6's—all over the field. I had landed at Natal the night before the Brazilian Revolution! Communications were cut to any point outside of Natal, and all international and domestic flights were cancelled within Brazil. Weather information was not available to make the Atlantic crossing to Dakar, some 1,900 miles away. Two days later, still with no weather information, I was allowed to leave for Dakar, and I figured I would pick up weather en

WORLD RECORD FLIGHT

Following completion of her round-the-world venture in a Piper Apache, Joan Merriam's name was inscribed as official holder of the following aviation records:

First person to fly solo around the world at the Equator

Longest solo flight in the history of aviation

First woman to fly a twin-engine plane around the world

First woman to fly solo from Africa to Australia

First woman to fly solo from Australia to Guam by way of New Guinea

First woman to fly from Wake Island to Midway Island

route.

I was on instruments minutes after takeoff from Natal, within 200 miles lost the Natal NDB, and was unable to raise anyone on my HF at Natal or Dakar, apparently due to atmospheric conditions. For 16 hours I followed a 55° heading, the first six hours on instruments at altitudes ranging from 11,000 to 500 feet. I was in the ITC once more and at one time climbed to 17,000 feet in an attempt to top severe weather.

No contact was made with any station, plane or ship during the entire crossing, but I could hear other aircraft at times trying to contact Dakar. Finally, about 100 miles out, I picked up the radio aids at Dakar and was delighted to learn that I was only 40 miles north of course.

After a brief layover at Dakar, I was ready for the flight to Mali, Chad and Sudan. Good weather, but headwinds, prevailed across the center of the continent as I passed over Gao, Mali; Ft. Lamy, Chad; and on to El Fasher and Khartoum, Sudan, where Arabic is spoken. Dakar was now 4,000 miles behind, and I was tired of headwinds that had not let up since Oakland.

The terrain across Africa is much like that of Arizona and Nevada except for the great stretches of desolation across Sudan and Ethiopia. Turbulence was moderate, with hot temperatures during the day.

Following the A.E. flight plan, I flew on to Massawa and Assab, Ethiopia, then to Aden for fueling again. Following the coast of Saudi Arabia for over 1,300 miles toward Karachi brought hours of sheer boredom.

At Karachi I was delighted to meet Fred Paris and Pete Fernandez, two Miami pilots ferrying a DC-3 to Bangkok via Calcutta. Calcutta was our next

stop, but we were to land at Ahmadabad, India, en route to clear paperwork and customs. This landing presented the biggest jumble of red tape and frustration I have ever experienced. We sat in the heat awaiting a decision by Indian officials who argued endlessly among themselves. After four hours they let me take off, but kept my friends longer. They did not arrive in Calcutta until midnight. Anxious to keep moving in order to escape more paperwork, we flew to Bangkok where I was presented with a \$160 charge for ATC fees and miscellaneous charges, including customs and immigration fees. This appears to be standard procedure at Bangkok because ATC and radio aids are operated by a private Thailand firm.

Flying "down under" for the third Equatorial crossing into Singapore some 900 miles away again presented the usual weather. IFR clearance into Singapore is worse than New York. Some of the problems are lack of radar, heavy military and civilian traffic and narrow airway corridors.

A day's delay for Indonesian clearances, and I was off for Djakarta and Surabaya, with more rain and the ITC south of Singapore to contend with, and the usual headwinds. From Surabaya I flew direct to Darwin, Australia, via Kupang, Timor, and, although the flight was mostly overwater, I did pass by many South Sea islands, such as Flores and Bali.

Darwin is 1,500 miles from Lae, New Guinea, and much of the terrain is uncharted. The north coast of Australia is shown as "Relief data incomplete" on WAC charts, and no airways are plotted on IFR charts. The route crosses the Gulf of Carpentaria, Coral Sea, and the Gulf of Papua into New Guinea. I had thought that one of my biggest problems on this flight would be

fuel and refueling the plane if facilities were as antiquated as in 1937. I brought along a funnel and three chamois, but even in out-of-the-way places I found Shell Oil Company facilities with modern filtering systems.

The flight from Darwin to Lae was undoubtedly the most harrowing of all. On April 20, with decent weather forecast for the trip, I found myself fighting the most unusual, violent weather I have ever experienced. After nine hours of combating the elements—on instruments most of the time—I managed to get into Horn Island, Australia, after circling for three hours waiting for a storm to move out of the airport area.

Another pilot, flying to Port Moresby, New Guinea, also landed there. He said it was the worst storm he had experienced in 18 years of charter flying in that territory. Later, we learned we had flown partially through the formation of a cyclone.

The next afternoon, with marginal weather, we both took off and skirted around storms into Port Moresby. The Owen-Stanley Mountain range between Lae and Port Moresby extends up to 15,000 feet with heavy storms building up to 50,000 feet daily after 11 a.m., so an afternoon crossing was out. Annual rainfall can exceed 500 inches per year, and New Guinea is undoubtedly the most primitive and remote region of the world.

I was met at Lae by hundreds of people, including the last six to see A.E. and Noonan in 1937. I had followed the 1937 A.E. flight precisely and was now anxious to make the Pacific crossing to Oakland.

Flying the Pacific should have been the easiest part of my trip with accurate weather forecasts, heavy aircraft traffic, powerful radio aids, search and rescue stations, and the

Before leaving Long Beach, Calif., on her round-the-world solo flight, AOPAer Joan Merriam supervised all preparations, including replacement of engines in her Piper Apache



First major trouble came at Paramaribo, Surinam, when this aluminum auxiliary fuel tank ruptured. Repairs took seven days



smooth sailing one finds flying on top of an overcast at 8 to 10,000 feet. I still would have the headwinds as a new high had developed east of Hawaii.

The simplicity of the Pacific crossing was marred, however, by mechanical problems from Guam on, including hydraulic failure out of Guam. After seven days of overhauling the Hydraulic Power-Pak and checking out the entire system, I was off to Wake Island. Now the gear kept slipping down in flight and had to be hand retracted regularly. Headwinds kept me three days at Wake. Later, I had to detour into Midway due to strong headwinds. A good, reliable, strong ADF receiver paid off at this point in my ability to get a cross-bearing out of Midway, 700 miles to the north, which told me I was an hour behind schedule. Without this knowledge and the assistance of sun line shots from the sextant, I would have run short of fuel.

I met 8,000 gooney birds at Midway during my brief landing and then had to sit it out again at Honolulu for better winds. With 20 hours of fuel, I took off on May 11, and, after 18:04 flying time, I landed at Oakland on May 12 at 9:12 a.m.

The total flight took 170 hours of which 47 were on instruments. The equator was crossed four times and headwinds ranging from 10 to 40 knots plagued me for 25,000 miles. I knew the obstacles and problems involved before I started on the trip and feel a sense of achievement for overcoming those obstacles.

Amelia's dream to be the first woman to circle the globe at the Equator and to establish a new long-distance record had been my accomplishment, but I must thank her for the inspiration that obsessed me to try it. ●

THE AUTHOR

If there is such a thing as a "born" pilot, one who would fill requirements for that description is Joan Merriam. A lifelong and ardent supporter of general aviation, she learned to fly at age 15 and soloed before she learned to drive a car. She received all airplane pilot ratings, from private through ATR, at minimum age, and in a little more than 10 years has compiled close to 9,000 flying hours. At age 17, she competed in the International Women's Air Races from Washington, D.C., to Havana, Cuba, and has since participated in almost every major air race for women.

Since 1954, Miss Merriam has been employed as a flight and instrument instructor, charter pilot and corporation executive pilot. She is married to Navy Lt. Comdr. M.G. "Jack" Smith (AOPA 191607), who shares her interest in flying.

Miss Merriam's accomplishment this year in traversing the round-the-world route unsuccessfully attempted by Amelia Earhart in 1937 made her the holder of six official international flight records.