The Hornet Shuttle

A Transcontinental Refueling Experiment

CAPTAIN IRA C. EAKER and LIEUTENANT BERNARD S. THOMPSON, Pilots

FRIEND Daniel B. Potochniak, of Hanover Park, Illinois, sent us the following article on the "Hornet Shuttle." Mr. Potochniak discovered the article in a three-ringed binder he purchased through the mail from a book dealer several years ago. We have been unable to determine whether this article is an original draft or a copy of a published article. If published, we have been unable to determine the periodical in which it appeared. We did find, however, that the flight was a cooperative venture between the Army Air Corps, the Post Office Department, and Boeing Air Transport, Inc. (BAT). The goal of the flight was to make two round-trip, cross-country flights using aerial refueling, and then to "hover" over the Cleveland Airport in connection with the National Air Races of 1929. If any FRIEND can furnish further details about the "Hornet Shuttle" flight and the following article, we would be most happy to publish them in a future issue.

Refueling operations between Oakland and Cheyenne were conducted using modified BAT Boeing Model 40Bs, while Air Corps Douglas C-1s were used between Cheyenne and Mitchel Field.

THE PLANE

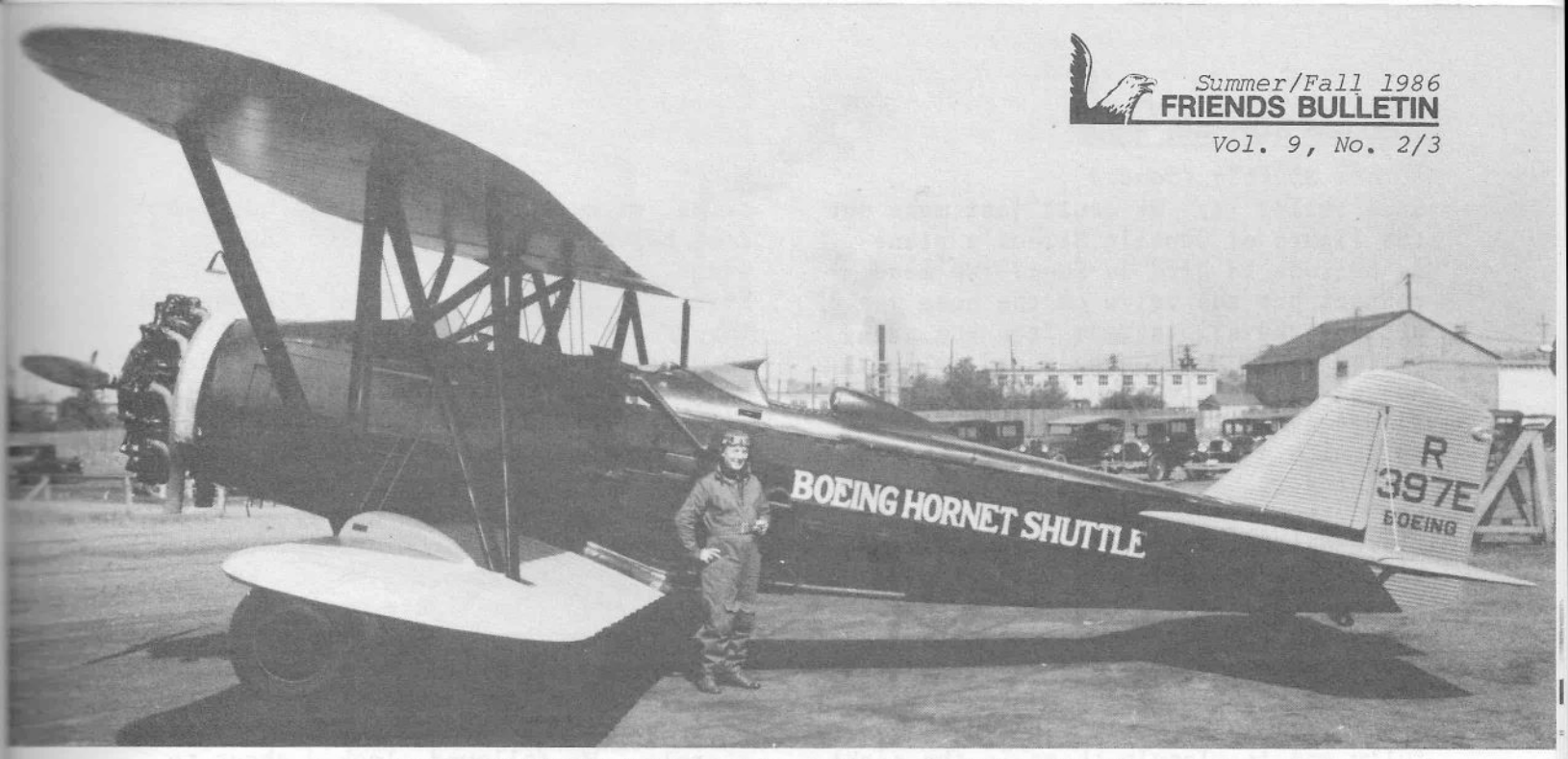
The Boeing Hornet Shuttle was the latest design of Boeing Mail Plane, known as the "95". It is a biplane with single controls, with the pilot seated in an open cockpit. We made few changes and these merely to allow for additional gas capacity and to admit of receiving fuel while in flight. In each of the three mail compartments we located gasoline tanks. We took the top off the mail compartments to give more room to the co-pilot and to allow for passing mail, oil and freight from a plane above into the compartments of the Shuttle below.

The engine was a standard Pratt-Whitney Hornet engine of 525 horsepower. We made no changes in it, but did arrange a single copper lead from the forward mail compartment to each rocker-arm so that an alemite gun could be employed to grease these rocker-arms while in flight. We also installed two extra oil tanks in the forward mail compartment and worked a system of plumbing so that we could drain the engine oil tank and refill it with fresh oil while in flight.

We did not install dual controls in the plane, but merely changed the instrument board from its normal position between the pilot and the mail compartments to a location on the side of the pilot's cockpit. Thus the co-pilot in the center mail compartment could come aft and relieve the pilot at the controls, who could then go forward and secure some rest.

THE FLIGHT

On the morning of August 27th at 8:35 A.M. we climbed off Oakland Airport, circled San Francisco and headed for New York, 2600 miles away. The Shuttle climbed easily up over the Sierras to an altitude of over 10,000



Boeing 95 Mail Plane...The Hornet Shuttle (Credit: Peter M. Bowers)

feet. Down into the valley at Reno, Nevada, dropped a message for the refueling crew at Elko, thence over the Alkati deserts and dry Humboldt Lake to the first refueling rendezvous. Here 200 gallons of gasoline were skillfully passed to us by Clair Vance, one of the oldest and keenest of the Boeing Air Mail pilots, and youthful but able assistant, Edward Blom. This fuel was transferred in less than two minutes as we proceeded directly on our course Eastward over Salt Lake City toward Cheyenne, over 600 miles away. After passing Mormonland near the Great Salt Lake, we began our climb up Immigration Canyon into the heart of the Rockey Mountains. As we passed Salt Lake City they flashed the doubtful weather signal. As we approached Rock Springs, Wyoming it began to rain. The clouds were low over the mountains. A dark cloud hung ahead. There was much lightning and the air was rough and gusty. Before we reached Loraine darkness fell. We could just make out the little flashers and larger beacons of the lighted airway as they sputtered through the rain. When we reached Cheyenne our second refueling came. 'Slim' Lewis, the Chief of the Air Mail pilots, took off a field 6600 feet high with 250 gallons of gas for us. It was raining, the air was rough as we came in under his plane. The hose was let down on top of the pilot, Capt. Eaker, instead of into the receiving compartment. The plane above began to settle onto the Shuttle below. Lewis perceived this and pulled away. Down he went. We thought he had given up and was going to land. It was midnight--moonless, starless and black as the inside of a black cat. Lewis had not left us. He fired a red flare. We followed. He knew where the air was smoother. We again made contact, this time only five hundred feet above the sage brush desert below. We got 200 gallons of gas, fired our green flare--meaning "all well"--and headed for North Platte. The rain came harder. Nothing could be seen. We flew by instruments alone. It was a lonesome two hours before the lights of North Platte flashed below and many times had we occasion to be thankful that our plane flew so stable and true.

It proved the best plane for blind flying either of us had ever sat in. Tommy said later, "I used to think these mail pilots performed miracles flying in fog and snow. Now I know how they do it. When in trouble just give this old plane her head and she'll bore right through, straight and true as a die."

As we approached Omaha fog and

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haze rolled in. We could just make out the lights of Captain Street's plane as he rose to give us fuel. We made contact but the valve on the hose was so long the slip stream from the propeller would turn it over and pull it out of our receiving unit. Both Thompson and I were saturated to the skin with gas. We broke away; Street, thinking we had finished, landed. We had gotten little gas. We fired a red flare--signal for fuel. Up he came again through the low hanging fog. Again we tied on. This time we took the whole top off our receiving unit, laid the valve down in it and got 200 gallons. For nearly thirty minutes, Captain Street and Lt Woodring labored skillfully and fearlessly there in the night with our plane hanging 25 feet below, tied to them with a gas hose in order to keep us going. Daylight came as we neared the Mississippi, the sun dissipated the fog and haze, and we found ourselves but little off the course.

At Cleveland Lt Longfellow and his crew were up to meet us and gave us 200 gallons of fuel as we hurried on toward New York.

On we rushed across Ohio and Pennsylvania for the end of our first lap. We circled Mithchel Field, Long Island, at 1:00 P.M., Eastern Standard time, just 28 hours and 25 minutes after leaving San Francisco. We dropped our fifty pounds of mail; Lt Quesada came up in an Army plane and passed more mail to us and back we headed toward the West.

On the journey East we had eaten an apple and drunk two cups of black coffee, nothing more. The lack of exercise and intentness on our project had removed all desire to eat.

As we passed New York Lt Thompson took over the controls and Capt Eaker went to sleep for two hours. After passing Bellefonte, Pa., the clouds closed down on the trees in the mountains. We tried to get through to the North, failed--then tried to run around to the South. Night came on. We got through but since no lights were visible had no idea where we were except that we were somewhere over the Pennsylvania mountains, with the tree tops five hundred feet below and the clouds lapping our wings. We flew North to strike Lake Erie. In an hour we sighted beacons and turned onto the line of them; but our compass course was wrong. We soon decided we were on the Cleveland-Buffalo Airway and turned back. At 9:00 P.M. we came to Cleveland and disaster. As we pulled over the Airport a plane passed close by. We pulled in under, but it was not our refueling plane for it had no lights on the landing gear. We fired a red flare. The lights on the Airport below flashed on. We saw Lt Longfellow taxi out to take off. We waited above. He came up and we were just pulling into position when Longfellow suddenly turned sharply. We followed, looked about to see the trouble, and there in front lay a long, lighted cigar. It was the Graf Zeppelin directly ahead.

Again we made contact. Longfellow's crew began to pass down oil. We pulled away and signaled we wanted gas, not oil. It was very dark. They clearly did not understand but passed down oil again. We saw the only way to get gas was to take the oil first, so took two five gallon cans. Then as they were making fast to the third to let it down, a fourth became dislodged and fell from the hole in the bottom of their plane, hitting the center section of our plane. The whole plane shuddered as though struck by a bomb. A deluge of oil came rushing back, covering Lt Thompson and I. He came back to my cockpit and yelled, "Let's jump. The front spar is gone. The wing will collapse." I tried the throttle, the engine still ran smoothly. It was clear neither it or the propeller had been hit. I maneuvered the plane. The wing remained firm. Lt Thompson flashed on a light and exposed the fact that the front of our center section was gone, the wing covering was peeling back, whistling in the propeller wash.

A fragment flew off, hit Lt Thompson in the face and broke his goggles. The oil still poured back in streams. There was nothing for it but to land. Thompson held an air mattress



(Credit: Peter M. Bowers Collection)

in front of me to block the oil so I could see to land. I released a flare, removed my oil clouded goggles, and sat the plane on the ground without damage.

Next day we repaired the damaged center section, got permission from our backers to try again, then proceeded to New York for the second take-off.

The second crossing of the continent was just a grind. The plane and engine ran smoothly. Our refueling worked like a chorus at every point, the refueling crews showed great skill and the benefit of their previous experience.

The Boeing system functioned with a high degree of efficiency; always, as we approached an air mail field, even in the dead of night, the lights would flash on, and there below the weather panels would clearly show what to expect ahead. We bucked a strong West wind, at times our speed was cut to 60 miles per hour. After leaving Cheyenne at Midnight we hit clouds, lightning and rain again, but as daylight came we crossed the high hump of the Rockies and pulled into Salt Lake.

At Noon time we reached the Oakland Airport, dropped a bag of mail, messages, New York newspapers and headed East again. Fearing our fuel supply would not last to Elko we dropped a message asking Vance to come to Reno with 100 gallons of gas for us. As we reached there up he came. We flew along side until out of the mountains over the desert and took on that 100 gallons. When we reached Elko the weather signal said "Bad ahead". Vance came up with more gas and delivered a note from Cheyenne which said, "Hold the Shuttle until further notice". We circled Elko that night. Here we had difficulty staying awake. I developed a routine to keep continually occupied to prevent falling asleep. I first looked at all the instruments, then moved everything from the map case on my right to the case on my left, then moved it back again. It grew bitter cold. We shook until our feet beat a tattoo on the rudder pedals. About midnight a rainstorm came. After we landed Lt Thompson said--"Now that the whole thing is over I can tell you something you will get a kick out of. I fell asleep at the controls last night for just a minute." I said, "No, that doesn't give me a kick for I knew how sleepy I got and suspected you might have trouble staying awake, so while you flew I stayed awake and watched you every minute."

As daylight began to break we signalled for more gas. Vance came up, filled our tanks and passed us a note saying the weather was not good ahead, but that we might get through. So East we headed and, as we little knew, onto our last lap. Two hours later we were laying broken and dispirited up against the side of Immigration Canyon, down through which Brigham Young came, leading his Mormon Colony into the Great Salt Desert. Everything was running smoothly. We had just passed through a severe storm near Salt Lake City but overhead the clouds were breaking. Ahead the sun was shining and our spirits were rising. It seemed to us at last we had broken through the weather wall which had held us all night hovering over Elko, Nevada. There was no warning of impending fate. That stout-

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hearted engine which had pounded out 1600 revolutions per minute for over one hundred hours still beat true as an athlete's pulse. The Shuttle had proceeded ten miles up into the Canyon, nose up, climbing steadily. To right and left the rugged mountain sides rose many thousand feet. They were so close it seemed we could almost reach out and touch the stunted pines. Below a swift little stream ran through the narrow gorge. It had just occurred to me that if a cow landed here he would break a leg. Suddenly the engine died down, clearly out of fuel. A hasty glance at the gas pressure guage showed no pressure. I switched to a fuel tank not with standing the fact that the tank we had been running on had at least 50 gallons left. Its capacity was 118 gallons and we had been feeding from it but two and one half hours. The engine did not pick up. Tommy came to life and came back to help. He turned on the gravity or reserve tank overhead, the controls for which were up in his cockpit. I closed the altitude adjustment, retarded the gas lever, worked vigorously at the hand wobble pump, pressed the buzzer--in short, we tried every trick we knew, to get the engine going. In the meantime the heavily loaded plane in that rare atmosphere settled rapidly. We were now less than 500 feet from the rocky bed of the Canyon below. I took one quick survey for any possible clearing--any open spot--there was none. There were three alternatives--hold the nose up and spin in, settle into the gulch below, or land up against the mountain side. The last chance looked best. I turned the plane toward the left side of the Canyon, stuck the nose down to gain a little speed, then pulled up as high as possible just as the wheels struck the steep side of the mountain. We rolled about fifty feet when the left wheel, hitting a sage brush hummock, came off. The plane careened to the left, the left wing dug in, the tail came up and the structure came to a sudden jolting stop. Almost in the same breath Tommy and I exclaimed the question, "Are you hurt?" We had not received a scratch, so sturdily built was that great little plane. We climbed down and examined the plane's position and damage. The left wheel was gone, three wings were bent, one propeller tip was broken, but the fuselage, the tail group and the engine had not been damaged. We examined the gas strainer and gas lines to see where our trouble lay, why our engine could not get fuel. Then we put our parachutes under a wing and began to climb dejectedly down the mountain side toward a road which wound alongside the little stream in the Canyon below. Although we had been in the air continuously for over two days and had flown seven thousand miles with but one short stop, we had felt but little fatigue as long as we remained in the air. Now with hope gone, the plane wrecked, our ambitions and project at an end, we found ourselves exhausted. We staggered as we walked. Our feet had not touched ground for so long and we had not touched anything but controls for so many sleepless hours, that it seemed strange to find our feet on ground.

Where our plane lay was six thousand five hundred feet above sea level and probably a thousand feet above the road below. Wearily we climbed down to a deserted hut beside the little stream. There was no sign of life nor a telephone so we trudged on down the road toward Salt Lake City, which we estimated to be about fifteen miles away. We had to stop often to rest. The thin air of that high altitude, the lack of exercise, lack of food, loss of sleep, but most of all loss of our plane and finish of our plan made progress slow and weary. A downpour came, soon we were soaked to the skin and cold. We climbed under a tree and waited. At last a Ford truck came by. We hailed its driver, an immigration official, who kindly hauled us into Salt Lake City. We acquainted the Boeing authorities at the air mail field of our forced landing and asked that they send a car and help so that we might accompany them to the scene of the disaster to arrange for the salvage of our plane.

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"PURPOSE"

TO FLY AN OPEN COCKPIT MAIL PLANE BETWEEN NEW YORK AND SAN FRANCISCO. SEPARATED BY 2600 MILES OF THE MOST VARIED TOPOGRAPHY AND CLIMATE IN THE WORLD, CARRY A LOAD OF 2000 POUNDS BETWEEN THESE POINTS GIVING THE PLANE FUEL AS IT PASSED ON ITS COURSE AT CRUISING SPEED. INCIDENTALLY WE WOULD ALSO LEARN OF THE EXPECTED LIFE OF A HIGH POWERED ENGINE PULLING A HEAVY LOAD AT UNTHROTTLED SPEED IN ONE LONG CONTINUOUS RUN.

IT IS OUR HOPE THAT OUR EXPERIENCE MAY CONTRIBUTE SOMETHING TO THAT GRAND TOTAL OF EXPERIMENTAL DATA WHICH MUST BE COMPILED TO USHER THAT ERA IN.☆

IRA C. EAKER, CAPTAIN AIR CORPS &
BERNARD S. THOMPSON, 1ST LT., AIR CORPS

References: U. S. AIR SERVICES, September, 1929,
Mansfield, Harold, "VISION: A Saga of the Sky," Duell, Sloan and Pearce, New York, 1956, pp 88-89.

Credit for photographs to Peter Bowers.

Thompson was a pilot of one of the "Pan American Goodwill Flight" Loening amphibians ("New York"). Eaker was also on flight.
Ref. "A Few Great Captains," by Copp.

