

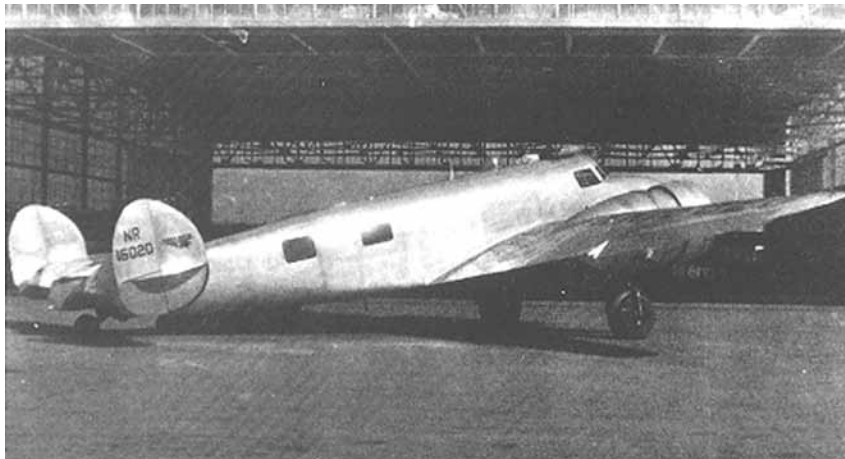
The Earhart Electra Part Two:



Around the World

Part One of TIGHAR's documentation of the evolution of the Earhart Electra ("A Star is Born," TIGHAR Tracks Vol. 11 No. 2) traced the airplane's development from its construction in the spring of 1936 through a Bureau of Air Commerce inspection performed in November of that year. This second installment chronicles the modifications made in preparation for the first world flight attempt which ended with an accident in Hawaii on March 20, 1937. Part Two also details the changes made during and after the extensive repairs which preceded Earhart's second attempt to circle the globe, and describes the newly confirmed unintended alteration to the Lockheed's configuration in New Guinea which precipitated its loss. Like Part One, Part Two deals only with the aircraft's external features. Part Three, to appear in TIGHAR Tracks Vol. 11 No. 4, will address the more difficult question of the cockpit and cabin layout as well as the radio equipment at the time of the airplane's disappearance.

Courtesy Wm. F. Harney



JUST WHEN WORK WAS BEGUN TO MODIFY THE Electra specifically for the world flight is not clear, but by the time the photo above was taken at Burbank in February, 1937, a larger-than-standard window had been installed in the starboard side of the fuselage just aft of Station 293 and the aircraft's registration number had been amended to reflect the international NR designation (approved the previous September). Other

photos from this time show that the cabin door had also acquired a window. The airplane still carried the original trailing wire antenna installation (visible as a white protrusion from the tip of the empennage) and the faired housing of the Hooven/Bendix radio compass loop antenna (evident just forward of the dorsal antenna mast). At this time only one of the two belly antennas previously on the airplane is in evidence.

Courtesy Wm. F. Harney



BY EARLY MARCH, THE SECOND BELLY ANTENNA had returned and the trailing wire had been removed from the tail and relocated. The new installation deployed the wire through a mast extending from the belly at a point just forward of the cabin door. The ball-shaped object at the end of the mast is the weight at the end of the wire. More apparent was the replacement of the Hooven/Bendix radio compass antenna with a more conventional open loop mounted over the cockpit. This also appears to be a Bendix product, possibly a Type MN-5, which was manually rotated and considerably lighter in weight (although higher in drag) than the more advanced automated unit it replaced. A further modification to the fuel system has caused a fifth filler port to be added to the side of the fuselage forward of the

other four, and the third (and now middle) filler port has been sealed off. It is at about this time that orange paint with a black border is added to the leading edge of the wings and on the top of the horizontal stabilizer.

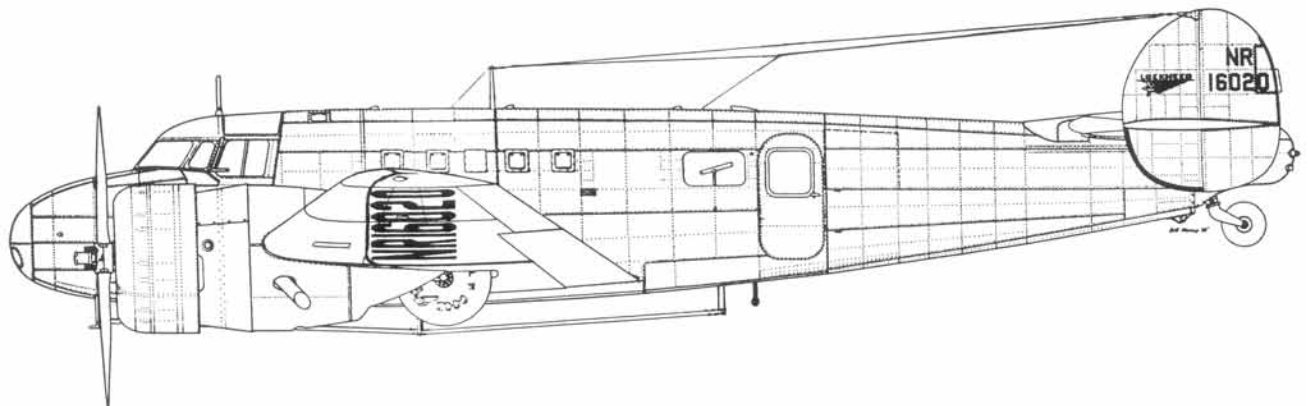
AFTER A SUCCESSFUL INITIAL LEG FROM Oakland to Honolulu on March 17, Earhart's first attempt to fly around the world came to an abrupt end when she lost control of the aircraft on takeoff from the U.S. Army's Luke Field on Ford

Island at Pearl Harbor, March 20, 1937. Although no one was hurt, damage to the Electra was severe and the airplane was shipped back to Lockheed at Burbank for extensive repairs.



Purdue University Library Special Collections, W. Lafayette, Indiana.

World Flight Electra - first Attempt - March 17, 1937



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THE REPAIRS WERE SIGNED off on May 19 and the very next day, with no fanfare, Earhart began her second world flight attempt under the pretext of a cross-country test flight. A young photographer named Dustin Carter happened to be at Burbank that morning and took the only known pictures of the preparations for departure. (A grant from John T. Johnson, TIGHAR #0939C, made it possible for TIGHAR to acquire the original negatives from Carter's widow in 1991.) Bureau of Air Commerce records confirm that the airplane at this time had a new right wing, a mostly new belly, and incorporated a number of specially approved internal structural modifications designed to strengthen the airframe. The Carter photos show that new-style single wingtip lights replace the Electra's original top and bottom nav lights. More significantly, several changes have been made to the airplane's antenna system. The dorsal mast supporting the forward terminus of the vee antenna has been moved forward approximately 48 inches to Station 129, thereby providing for a considerably greater length of wire. On the belly, only the starboard antenna is present. The masts and wire of the port side unit are gone, as is the entire trailing wire assembly. Folklore has long held that the trailing wire antenna



Carter-Johnson Collection



Carter-Johnson Collection.

was removed several days later in Miami but Carter's photos confirm that the device was not present on May 20 and, most probably, had simply not been reinstalled after its unceremonious removal by the runway at Luke Field.

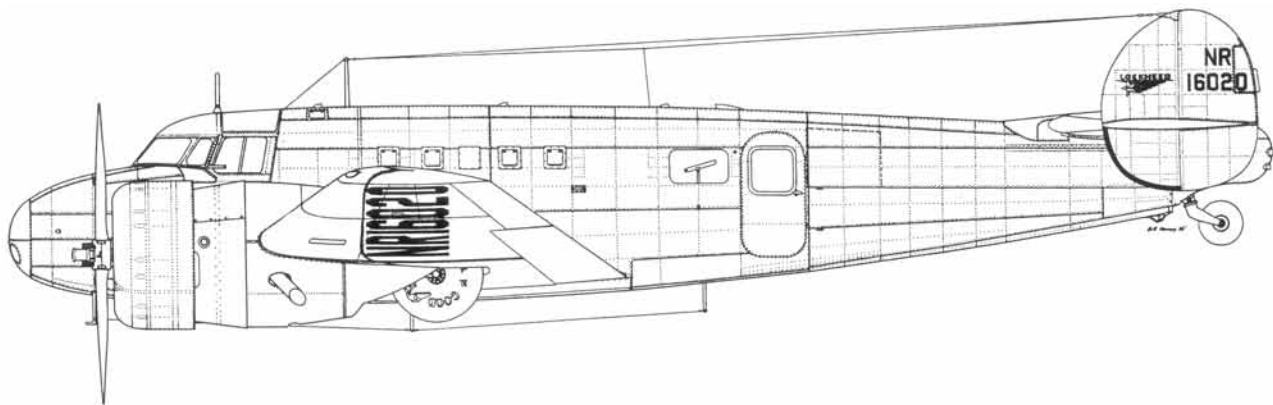
THE PUBLIC COMMENCEMENT OF EARHART'S

second world flight attempt was made from Miami on June 1, 1937. As can be seen in the photo at the bottom of the page, taken as the airplane taxied for takeoff, the most apparent change made to NR16020 during its eight day stay in Florida was the replacement of the starboard rear window with a patch of new aluminum skin. Again, legend has often described this feature as a removable hatch but the photographic record indicates otherwise.

The opening first appears in early 1937 and is present as a window in every known shot of the airplane's starboard side until Miami, when it becomes shiny metal which grows gradually duller in photos taken at progressive stops in the world flight.

TIGHAR Collection





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World Flight Electra - Second Attempt - June 1, 1937

INDEPENDENT ANALYSIS OF MOTION PICTURE FILM showing Earhart's July 2, 1937 takeoff from Lae, New Guinea has recently confirmed that there was one last and accidental modification to NR16020 before it began its final flight. According to Photek, a highly regarded forensic image processing laboratory headquartered in Champaign, Illinois, state-of-the-art digital examination of the film bears out TIGHAR's earlier suspicion (see *TIGHAR Tracks* Vol. 9, No. 4, "For Want of a Nail...") that the airplane suffered damage to its belly antenna while still on the ground at

Rear Antenna Mast

Forward Antenna Mast

Lae. Frame by frame examination revealed both belly masts to be present as the aircraft taxied past the camera, but as it came back by on the actual takeoff, neither mast could be seen although both "roof antennas" (the dorsal mast and the loop) were clearly visible. Because the exact internal radio configuration of NR16020 at the time of its final takeoff is still being researched (and

may never be resolved), we cannot say with certainty what the ramifications of this accident might have been. That what happened on the ground at Lae had a direct bearing on the communications difficulties experienced later in the flight seems highly probable. That it was the root cause of the flight's failure is certainly possible. That, piece by piece, the Earhart puzzle is coming together, is beyond question. 🐾

