

# *TIGHAR TRACKS*

THE JOURNAL OF THE INTERNATIONAL GROUP FOR HISTORIC AIRCRAFT RECOVERY





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## ABOUT TIGHAR

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TIGHAR (pronounced "tiger") is an acronym for The International Group for Historic Aircraft Recovery, a 501(c)(3) non-profit educational foundation.

TIGHAR's activities include:

- Investigating aviation and aerospace historical questions and mysteries through archival research, forensic data analysis, and archeological expeditions.
- Producing papers, publications, and videos to further the foundation's educational mission.
- Providing expert historical and archaeological research to government agencies for evaluation of cultural resources related to aviation/aerospace.
- Advocating for accuracy, integrity and professionalism in the field of aviation historical investigation and the preservation of the material culture of flight.

TIGHAR's activities are conducted primarily by member volunteers under the direction of a small full-time professional staff. The organization's research is publicly available via the TIGHAR website.

## ON THE COVER

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Segalo Samuela, the Nikumaroro carpenter's daughter. As Emily Sikuli, she was interviewed by TIGHAR in Fiji in 1999. A recent re-examination of her recollections has led to new insights about "What Happened To The Plane" (p. 3) and "What Happened To Fred?" (p. 15).

## ON THE WEB

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# WHAT HAPPENED TO THE PLANE?



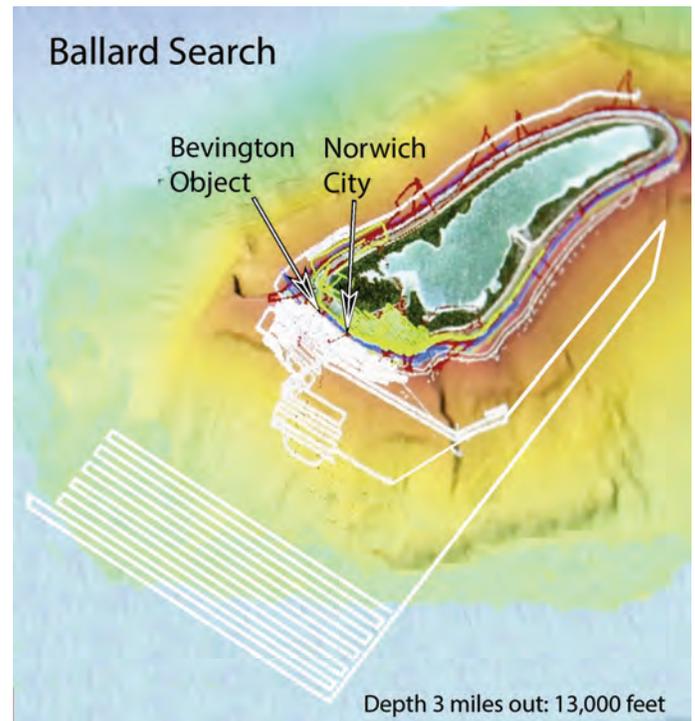
*A Lockheed 10E that ditched off Cape Cod in 1967 floated for seven minutes.*

**THE EARHART ELECTRA** was washed off Nikumaroro’s northwest reef flat some time between the last credible post-loss radio transmission and the arrival of the U.S. Navy search planes on the morning of July 9<sup>th</sup>. The question is, did the aircraft float away to sink in deep water or did it break up in the surf and sink close to the reef edge to be torn apart and scattered by later storms?

The floated-away scenario is supported by a reasonable expectation the Electra would float longer than seven minutes, and perhaps much longer, if its empty fuselage fuel tanks remained watertight. Currents off the northwest end of Nikumaroro run north and south, but an offshore easterly wind is not uncommon, and could push a floating aircraft westward many miles to eventually sink in very deep ocean where it might remain undisturbed and undamaged. There is an undeniable allure to the prospect of a largely intact Electra awaiting discovery on the ocean bottom, best expressed by Dr. Robert Ballard. “It’s not the Loch Ness monster, it’s not Bigfoot, that plane exists which means I’m going to find it.”

But he didn’t find it, and that plane may not exist. The landing gear wreckage seen in the

1937 Bevington Photo establishes roughly where the aircraft went into the ocean, but multiple hi-tech underwater searches by TIGHAR, and most recently by Ballard, have failed to find any trace of NR16020.



*In August 2019, Robert Ballard, sponsored by Disney’s National Geographic Partners, conducted an exhaustive search with a variety of sophisticated technologies.*

The second hypothesis is less palatable but better supported. Our first indication the plane broke up came as early as our first expedition to Nikumaroro in 1989 from scraps of re-purposed aluminum aircraft components found in the abandoned village. Structures that looked like they might be from Earhart's Electra clearly came from the inside of an aircraft. The discovery in 1991 of a torn section of aluminum aircraft skin, washed ashore by a recent storm, further pointed to an aircraft that had been severely damaged.



*Interior aircraft component found in 1989, believed to have been an insulated heat shield to protect the fuselage fuel tanks and lines from cabin heater ducts in NR16020.*



*Section of torn aircraft skin found in 1991.*

In 1995, Dr. John Mims, a retired physician who had been a U.S. Navy PBY flying boat pilot in WWII, told us of being shown a large fish caught by the Gilbertese settlers on Nikumaroro in 1944. The hook in the fish's mouth was fashioned from aircraft aluminum and the leader was an aircraft control cable. When he asked,

through an interpreter, where the fishermen got their unusual tackle, they said it was from an aircraft wreck that had been there when the first laborers got to the island. When asked where the plane was now, they just shrugged.

The first Gilbertese work party arrived at Nikumaroro in December 1938. If there was an airplane wreck there it could only be NR16020. The ailerons on an Electra are operated by cables in the wings. The rudders and elevator are controlled with cables that run from the cockpit along the length of the starboard cabin wall to the tail. For control cables to be salvageable, they would have to be exposed and accessible.

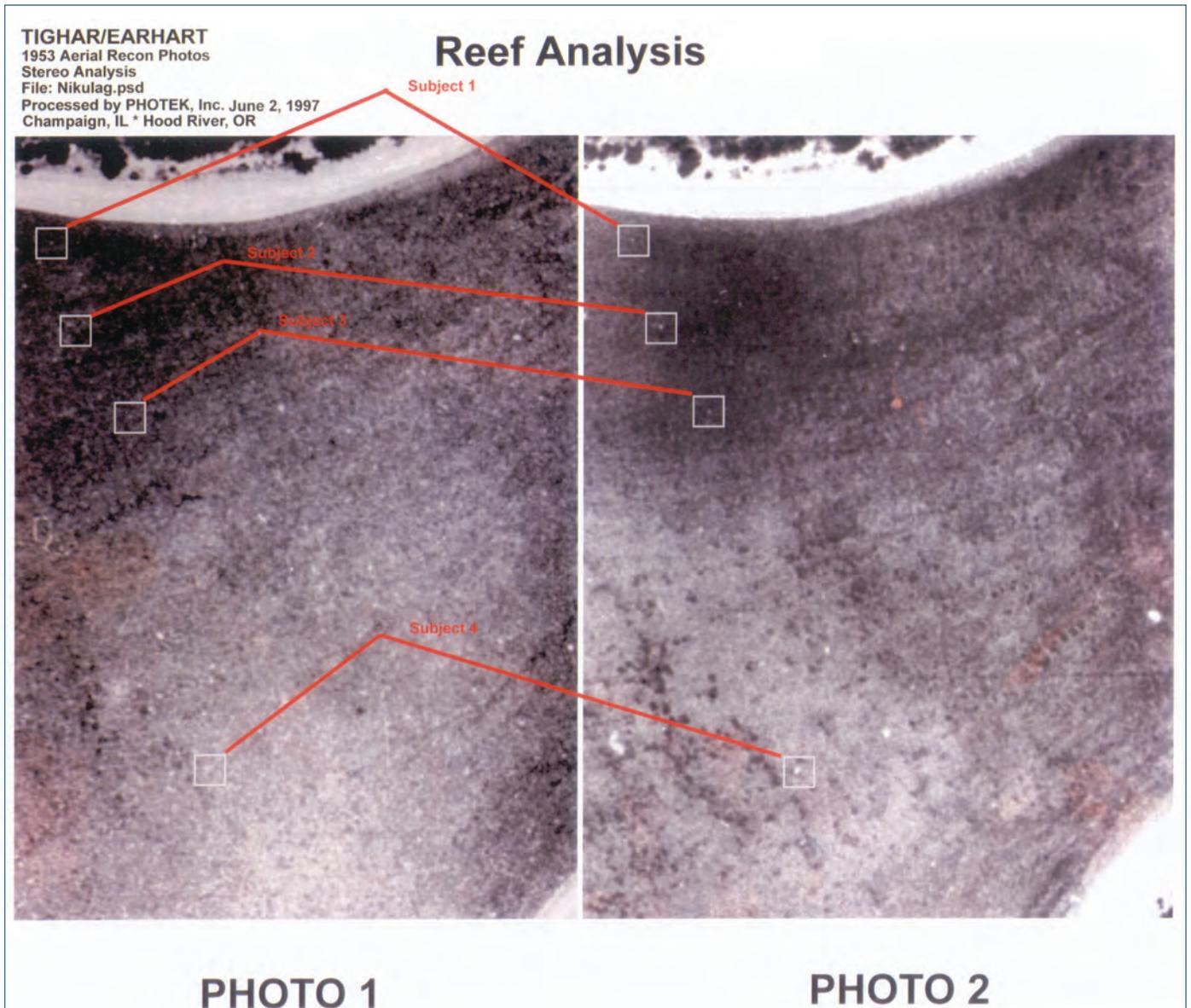


*Control cables in an Electra under restoration.*

The first reports we had of scattered aircraft wreckage came in 1997 from former Nikumaroro residents living in Funafuti, Tuvalu. Pulekai Songivalu, who had been the village school teacher in the 1950s, told of seeing pieces of an airplane on the lagoon shore opposite the main passage. His daughter, Tapania Taeke, remembered seeing "part of a wing" on the reef flat near the passage. When asked what color it was, she pointed to the gray aluminum roof over her head.

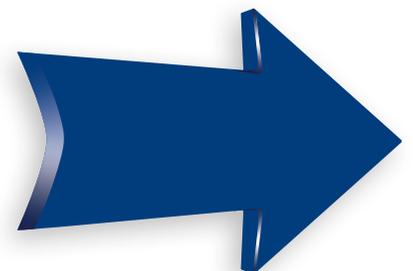


*Ric Gillespie and Tapania Taeke in Funafuti, Tuvalu, 1997.*



*Four large pieces of light-colored metal are visible in shallow water on the reef flat near the mouth of the main lagoon passage in aerial mapping photos taken in 1953. Their presence in two separate photos confirms they are not dust specks or flaws in the film. The shiny reflective quality of the objects indicates they are metal. Debris from the shipwreck is not reflective.*

Later that year, Tapania's recollections were corroborated with photographic evidence when forensic analysis of aerial mapping photos taken in 1953 showed what appeared to be light-colored metal debris in the area she described.



Emily Sikuli

In 1999 we stumbled upon the earliest of the reported sightings of aircraft debris on the reef flat. TIGHAR researchers were interviewing Emily Sikuli, then living near Suva, Fiji, about the bones found on Nikumaroro. She had come to the island from Funafuti as a teenager in January 1940, when



her father was assigned to be the carpenter for the new settlement. Later that year, he made the box in which the bones, suspected by Colonial Service Officer Gerald Gallagher to be the remains of Amelia Earhart, were transported to Fiji for examination. Emily remembered the incident but said she never saw the bones. She thought they had been found near the wreckage of an airplane on the reef.

In a videotaped interview a few days later she told of seeing what her father told her was airplane wreckage on the reef edge north of the shipwreck near "where the waves break." On a map, she marked a spot north of the shipwreck.



Emily marks the spot where she saw aircraft wreckage on the reef.

We published a detailed analysis of Emily and her story in the December 1999 issue of *TIGHAR Tracks* ([https://www.tighar.org/Publications/TTracks/15\\_1/carpentersdaugh.html](https://www.tighar.org/Publications/TTracks/15_1/carpentersdaugh.html)). The elements of her account that can be fact-checked against historical sources (who she is, who her father was, when she arrived on Nikumaroro, and when she left) all check out.

## NEW INSIGHTS: WHAT EMILY SAW

In 2010, TIGHAR forensic imaging specialist Jeff Glickman discovered apparent Electra landing gear wreckage in a photograph taken by Colonial Service Officer Eric Bevington three months after Earhart disappeared. It was near the spot Emily had marked eleven years earlier.

A close re-examination of the video and notes of the original Emily interviews further reinforces the accuracy of her recollections and appears to identify what part of the aircraft she saw.

Asked to describe what was there, Emily said:

*(From 7/15/99 interview by Tom King, Kristin Tague, and Barbara Norris)*

- “The struts were there.” [Holds up hands in circle, apparently indicating that the struts were round in cross-section, about 20 cm. in diameter.]
- “When we got there only the steel frames were left, only the long pieces were there. We were frightened to go close to the plane. Where the shipwreck was – the remainder of the plane was not very far from there. The waves were washing it in low tide.”

*(From 7/27/99 interview by Ric Gillespie)*

- “Only the frame, a piece of steel. ... On the rocky part. ... It was not very far from the ocean where the waves break. That’s why the parts of the plane got carried away quickly. That frame was also very rusty.”

• Drawing a sketch of what she saw, “It was a long steel. *(draws a vertical line)* There was a round part of it. *(adds a small solid circle at the end of the line)* I do not know what part of the plane it was.” Asked how big it was, she said, “About four arm spans.” *(holds her arms out)*

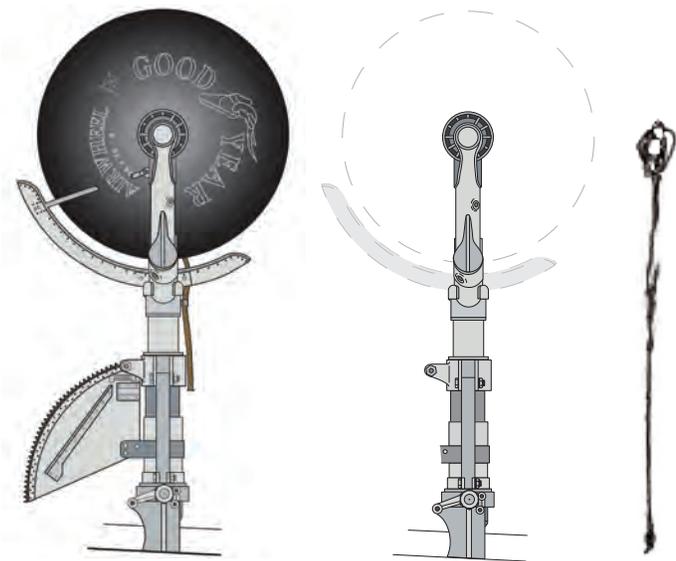
*Emily's sketch of what she saw.*



- Asked how she knew it was part of an airplane, she said, “I heard it from those who were there before us that it was part of an airplane.”

- “It was very rusty. Very red. When it is seen at low tide. Not observable at high tide. At low tide it could be seen. Very rusty, bad, useless.”
- Asked if there was other wreckage, any aluminum or shiny parts. “No, all gone. Nothing.”

There is a component of a Lockheed Model 10 that fits Emily’s description. Landing Gear Assembly 40650, minus the tire, worm gear, and lightweight aluminum fender, viewed from the side, bears a resemblance to Emily’s crude sketch.



Lockheed Assembly 40650 is the main landing gear for the Model 10 Electra.

The landing gear strut and fork, minus the tire and aluminum fender, resemble Emily’s sketch.

Photos of the wreck of an Electra that flipped inverted and burned during a forced landing in northern Canada, illustrate what Emily might have seen. Emily sketched the object she saw as a vertical line. For the strut and fork of an Electra on the reef edge to be visible to an observer some distance away, it would have to be sticking up. For that to be true, the aircraft must be on its back and the gear still attached to the aircraft’s massive Main Beam, as it is in the photo of the Canadian wreck. The “frame” Emily referred to may be the Main Beam.

The Main Beam was the core structure of the Lockheed Model 10 and ran from engine to engine. The landing gear was attached to the heavy nacelle ribs that were part of the Main Beam.



Lockheed 10A c/n 1005 flipped and burned during a forced landing in the 1970s. These photos were taken shortly afterward.

The tire of the starboard landing gear burned in the fire. The landing gear strut and fork, seen edge-on in this photo, minus the aluminum fender, bear a striking resemblance to Emily’s sketch.



The Electra landing gear struts and forks were made of SAE 4130 Chrome Molybdenum steel. In the photo of the Canadian wreck, the steel is still shiny but the forks of an Electra that crashed in Idaho in 1936 (right) are red with rust. There is no sign of the wheel and tire.



# THE VIEW FROM THE BEACH

According to Emily, the wreckage was “not very far from the ocean where the waves break. The waves were washing it in low tide.” “Not observable at high tide. At low tide it could be seen.”



*Emily places the wreckage she saw somewhere in the area indicated in this aerial photo taken at low tide in 2007.*

Emily estimated the length of the “long steel” to be about four arm spans, or roughly twelve feet, but an Electra strut and fork assembly are only four and a half feet long. The photos below show what the reef edge looks like from the beach. Without anything to provide scale, it would be difficult for Emily to judge the size of what she saw.

*The Norwich City wreckage seen from the beach at low tide on a calm day in 2010.*



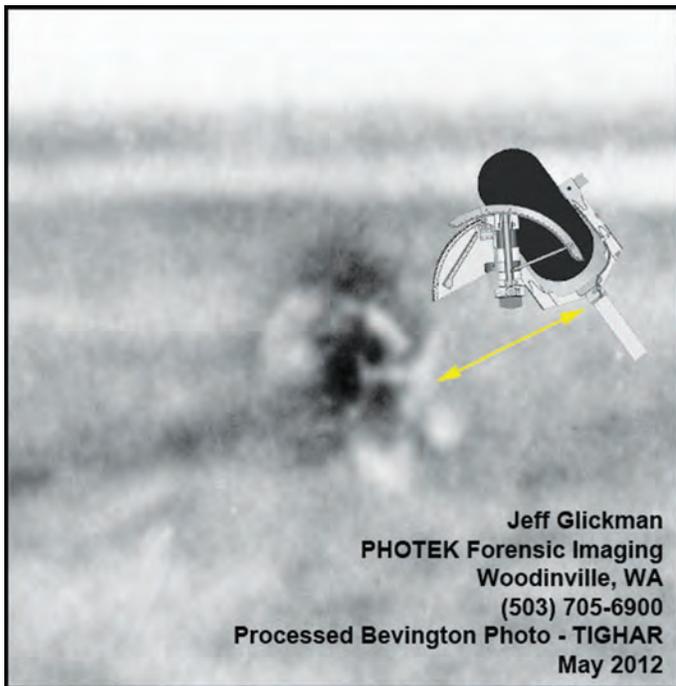
*The Norwich City wreckage seen from the beach at high tide in 1997.*





*The reef seen from beach in the area Emily described.*

In the landing gear wreckage seen in the Bevington Photo the fork has separated from the shaft of the oleo strut, as it did in the Luke Field accident.



*Landing gear wreckage in the October 1937 Bevington Photo.*



*Landing gear wreckage in the March 1937 Luke Field accident*

If Emily saw an intact landing gear strut and fork sticking up where it could be seen from shore, it was the other main gear assembly still attached to the inverted Main Beam of a sunken and largely destroyed Electra.

To accept that the Earhart Electra floated away to sink in deep water, we must dismiss all of the witness accounts and photographic corroboration suggesting the aircraft broke up close to shore. ❖

# PLAUSIBLE AND TESTABLE

A reasonable hypothesis must be plausible and testable. The hypothesis that NR16020 floated away and sank in deep water is plausible only if the evidence that it didn't float away is dismissed. The hypothesis is testable by searching the deep water.

The hypothesis that the airplane was destroyed close to shore is plausible only if it is possible to construct a sequence of events for its progressive destruction over time that explains how the aircraft could be there, be seen, and yet never connected with the disappearance of Amelia Earhart. The hypothesis can be tested by analyzing artifacts that might be from the Electra.

The photos and stories, balanced against known historical events, suggest a plausible sequence:

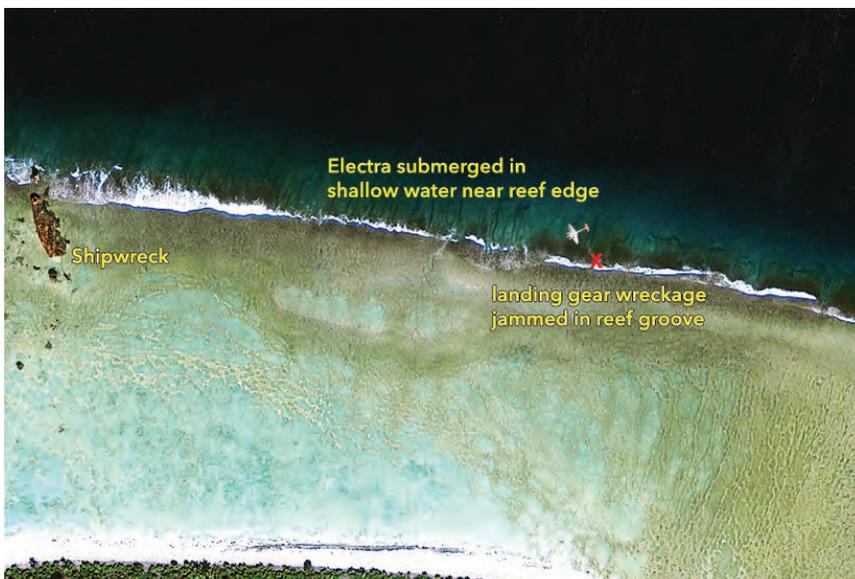
## July 2-7, 1937

NR16020 is intact and on its wheels near the reef edge.



## July 7-8, 1937

The aircraft is washed into the ocean, is battered against the reef edge and sinks, coming to rest inverted, and leaving behind the wreckage of a landing gear assembly jammed in a groove.



**July 9, 1937**

The tide is high and the surf is rough when search planes from USS *Colorado* arrive. The crews do not recognize the reef flat as a possible landing area, and the landing gear wreckage is hidden by the surf as is the sunken *Electra* in the shallow water just past the reef edge.



**October 13, 1937**

The situation is unchanged when the British Maude/Bevington expedition departs Nikumaroro after three days of evaluating the island for future settlement. The sea is calm and the tide is low. The landing gear wreckage is visible, but unnoticed, in a photograph of the island's northwest shoreline taken by Bevington.

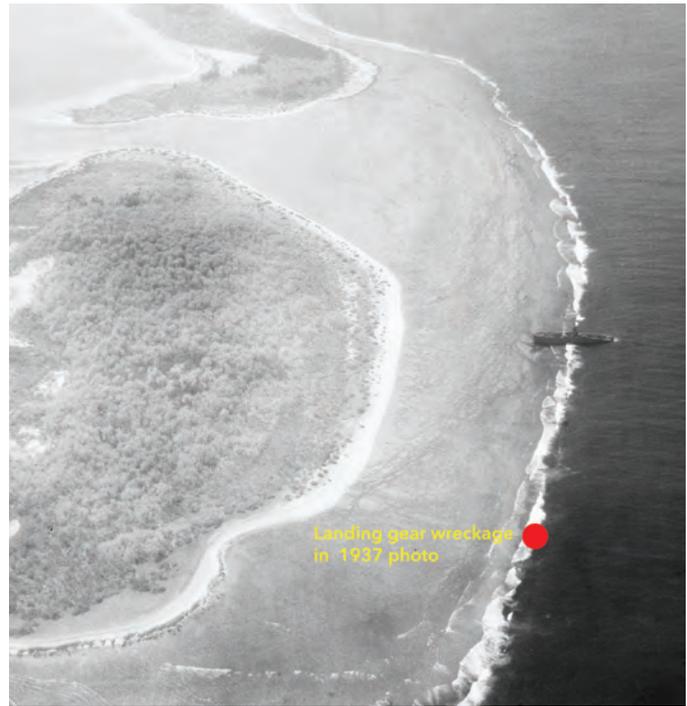


## December 1, 1938 - February 2, 1939

The landing gear wreckage has been dislodged and washed away but the aircraft is still in the shallow water near the reef edge. It is not visible due to high tide and surf on December 1 when a plane from the British cruiser HMS *Leander* takes aerial photos of the island for the New Zealand Pacific Islands Survey. Over the next few weeks, surveyors map the land and lagoon but not the reef.

In a severe storm the first week of January 1939, the stern half of the *Norwich City* wreck breaks off and tumbles down the reef slope. The storm probably also does severe damage to the undiscovered *Electra*.

*This photo was taken on December 1, 1938 from a Supermarine Walrus amphibian launched from the cruiser HMS Leander.*



## December 20, 1938

Eight Gilbertese laborers arrive to begin clearing land for a village.



## April 30, 1939

An aircraft from the seaplane tender USS *Pelican* takes high altitude mapping photos of Nikumaroro for a U.S. Navy survey. That same day, families of the Gilbertese laborers arrive, bringing the island population to twenty.

*This photo was taken from a Grumman J2F Duck amphibian on April 30, 1939 as part of a U.S. Navy mapping survey. All photos were taken from high altitude.*

## November, 1939

Surveyors from USS *Bushnell* survey the island and lagoon but not the reef.

## January, 1940

Colonial Service Officer Gerald Gallagher makes his first visit to Nikumaroro bringing skilled carpenter Temou Samuela and his family, including teenage daughter Segalo (later Emily Sikuli).

## May, 1940

Gallagher makes a brief visit to Nikumaroro to check on the progress of coconut planting and construction of the Government Station.

## June - August, 1940

The summer of 1940 appears to be the most probable time for the airplane wreckage to be found. During this time, Gallagher was absent from the island but Koata and Emily were present. Periodic storm activity has moved the wreckage southward. According to Emily, Native Magistrate Koata knew about the airplane and prohibited people from going near it because bones had been found under the wreck (more about that in “What Happened to Fred?” p. 15). The Government Station in the village was being completed and Emily’s father, the island carpenter, might logically be looking for trees to cut, accompanied by his daughter – placing Emily in a position to see the wreckage from shore.

## September, 1940

Gallagher returns to take up residence on Nikumaroro. Koata departs to get medical attention in Tarawa on the same ship that brought Gallagher and does not return. There is no reason to think Koata or anyone else on the island knew that a famous American flyer had disappeared in an airplane in the region three years earlier. Koata had declared the site off limits and Gallagher’s communication with the Gilbertese laborers was through his clerk and translator Bauro Tikana. According to Tikana, “The laborers told me that they found bones near the ship. I do not know if Mr. Gallagher knew about the bones as I didn’t tell him about it.”

## November - December, 1940

Northwesterly gales did significant damage to the village and probably removed the wreckage Emily had seen if it had not been washed away already.

## June - September, 1941

Gallagher is called to Fiji for administrative duties. On the return voyage he becomes desperately ill and dies within two days of his arrival at Nikumaroro. No replacement resident British administrator is assigned.

## November, 1941

Emily leaves Nikumaroro to attend nursing school and never returns.

## December 1941 - September 1944

The outbreak of war in the Pacific effectively cuts off British administration and support for the settlement on Nikumaroro. Coconut planting comes to a halt and food supplies run so low that provisions must be air-dropped by U.S. Army aircraft from Canton Island. During this time, the wreckage of the Earhart Electra remains in the relative shallow water near the reef edge, hidden by the surf and progressively destroyed by periodic storms. *[photo next page]*



*January 27, 1942,  
USAAF airdrop of  
supplies. The stern  
half of SS Norwich  
City has broken off.  
The colonial village is  
the cleared area across  
the passage into the  
lagoon.*

## September 1944 - May 1946

A U.S. Coast Guard Loran navigation station is built at the southeast tip of the island and operates until disassembled in 1946. None of the American personnel report seeing aircraft wreckage but U.S. Navy PBY pilot John Mims sees the Gilbertese using a large fish hook made from aircraft aluminum and an aircraft control cable used as a leader. Asked where they got the unusual tackle, the fisherman say it came from an airplane wreck that was once on the island but they didn't know where. The material was probably salvaged in 1940 at the same time the bones were found but before Koata declared the wreck off limits.

When Mims returned to the base on Canton Island the British District Officer confirmed that no aircraft had been lost in the area. "I asked him if this could be part of Amelia Earhart's plane and he said it could well be, but he had little interest in a story of a lost pilot. He joked that the woman was American and that the 4<sup>th</sup> of July and Thanksgiving with the Americans was about all the American history he could take."

John Mims is the only person who saw or was told about the wreck who knew anything about Amelia Earhart or her disappearance.

## 1950s

By the 1950s the plane was reduced to bits and pieces. Heavier components such as the engines may have tumbled into deeper water and been buried in coral landslides, a common occurrence on the steep unstable slope. Lighter structures started washing up on the reef flat (as described by Tapania Taeke and corroborated by aerial mapping photos) and through the main passage into the lagoon. As described by Pulekai Songivalu, the debris was salvaged by the Gilbertese and cut up for local use. Some of the artifacts TIGHAR recovered from the abandoned village are scraps from that activity.

## 1990

Artifact 2-2-V-1, if it is the patch from the Electra, was not salvaged but remained on the reef flat and moved gradually southward until it reached the landing channel where it was washed ashore by tropical cyclone Ofa in 1990 to be discovered by TIGHAR in 1991. 



# WHAT HAPPENED TO FRED?

WE HAVE QUITE A BIT OF EVIDENCE suggesting what happened to Amelia. In an early radio distress call, heard by Mable Larremore on the night of July 2nd, she said her navigator was badly injured and she had some injuries but not as serious. On July 5th, Betty Klenck heard her say something she interpreted as “uncle” (ankle?) followed by “Oh, oh” and crying. After the airplane was washed into the ocean, Amelia was stranded on the island, probably with an ankle injury. She survived for a matter of weeks, possibly months, before dying at a makeshift campsite, cause of death unknown. But what about Fred?

The man Betty heard in the background was acting irrationally and sometimes grabbed the mic to shout absurdities (“Take it away Howland!”). Other credible radio distress calls corroborate that he was seriously injured and needed immediate medical assistance, but the only indication that Noonan was present at the campsite with Amelia were the remains of a man’s shoe found with the bones and woman’s shoe in 1940. If Amelia had an ankle injury, she may well have had a swollen foot, causing her to use one of Fred’s shoes – explaining why Gallagher found only parts of one woman’s shoe and one man’s shoe at the site. Noonan’s fate is a mystery, **but there is a possible clue that has been hiding in plain sight.**

In 1999 we interviewed former Nikumaroro resident Emily Sikluli whose father, island

carpenter Temou Samuela, made the box in which the bones Gallagher found were transported to Fiji.

*Ric Gillespie: “What can you tell us about the bones that were found?”*

*Emily Sikuli: “Some Gilbertese went to fish, they saw in the shallows some pools, at the place where the plane crashed, some bones, and they knew these were human bones because of the skull bone. They went and reported to Teng Koata, there were bones. So from that they assumed that these must have been the bones of those who were in the plane when it crashed. These were under the plane, near the plane. This was near the top end of the steel.”*

The box her father made was for the bones Gallagher suspected of possibly being the remains of Amelia Earhart, but he had been ordered to keep their discovery strictly secret. We were asking Emily to tell us about bones she didn’t know about. She assumed the box was for bones she did know about, so she told us about them. Emily’s “bones story” is worth close scrutiny.

“Some Gilbertese went to fish...” Emily is making an ethnic distinction. The colonists on Nikumaroro were Micronesian laborers from the Gilbert Islands (today Kiribati). Emily and her family were among a few skilled Polynesians brought in from the Ellice Islands (now Tuvalu) for jobs like carpenter, police, radio operator, and



*Emily Sikuli describing the bones found under the airplane wreckage.*

school teacher. British authorities were unabashedly racist in assessing their colonial subjects.

*“The manner of the gentler Polynesian, his physical beauty and softer and more liquid language, are in pleasing contrast to the rough, loud-voiced, clamorous excitable Gilbert Islander.”\**

There appears to have been little tension between the two ethnic groups on Nikumaroro, but Emily felt it necessary to make an us-them distinction.

*“...they saw in the shallows some pools, at the place where the plane crashed, some bones, and they knew these were human bones because of the skull bone.”*

There are, indeed, shallow pools in the reef surface in the area where Emily saw airplane wreckage. Note that she refers to a single skull.

“They went and reported to Teng Koata, there were bones.” Teng (Mr.) Koata was Island Magistrate Buakee Koata. He left Nikumaroro in early September 1940 at the same time Gallagher arrived to take up residence, so the incident Emily describes occurred before then.

*“So from that they assumed that these must have been the bones of those who were in the plane when it crashed. These were under the plane, near the plane. This was near the top end of the steel.”*

The steel Emily refers to is probably a landing gear strut and fork attached to the inverted wreck (see “What Happened to the Plane?” page 3). If Noonan’s body was in the plane, the crushed fuselage might have prevented his remains from being washed away.

Emily is specific about the details, so the story was apparently well known among the islanders, but no one ever mentioned it to Gallagher. There is no reason to think they had



*Native Magistrate Buakee Koata.*

ever heard of Amelia Earhart and had no reason to think the wreckage would be of any interest to the Komitina (Commissioner).

Ric: “Did you see the bones?”

Emily: “I didn’t see them. We were forbidden, but my father told us.”

A Tuvaluan teenage girl would probably have little contact with the Gilbertese fishermen, so Emily heard the story about the bones found under the plane from her father.

Ric: “Were the bones found while you were on the island or did this happen before?”

Emily: “These bones were found when we had already arrived on the island. These Gilbertese came and found bones and reported to Teng Koata.”

Emily and her family arrived on Nikumaroro in January 1940 and Koata left in early September 1940, so the plane wreckage and bones were found some time between those dates.



*Gerald B. Gallagher, Officer-in-Charge, Phoenix Islands Settlement Scheme, at home in his residence, Nikumaroro.*

*“Then Teng Koata took them to the European. So it was arranged for a box to be made for the bones and the bones were brought. There were not many bones.”*

The European was Gallagher, but he didn’t arrive until September when Koata left. Emily is conflating the bones she knows about with bones she never knew about.

*\*The Colonial and Postcolonial Roots of Ethnonationalism in Tuvalu 2012. Michael Goldsmith, University of Waikato, NZ.*

Ric: “Were any other bones ever found on Niku?”

Emily: “Only these few bones they found. They do a search around that area but they found no other bones. Only these big bones that they found. I do not know how many. My father knew.”

Emily knew there was a search for more bones but she assumed it was a search at the plane wreck site. Her father knew about the castaway site. Emily didn't.

There were, in fact, other bones seen on Nikumaroro. In June 1937, a month before Earhart disappeared, John William Jones was on his way to Hull Island aboard the Burns Philp Ltd company boat *Makoa*. He stopped by Gardner Island on the way and later reported seeing the skeletons of nine men lost in the wreck of *SS Norwich City* on the beach. He assumed the bodies had been buried but were later dug up by wild pigs. (There are no wild pigs on the island.) Of the 11 men lost in the *Norwich City* disaster, 3 were buried by the survivors and the other 8 were presumed drowned or taken by sharks.



*Earliest known photo of SS Norwich City on the reef at Gardner Island, taken from HMS Wellington in 1935. The British freighter went aground in 1929. Eleven men lost, twenty-four survivors rescued.*

Jones' account is corroborated by Emily Sikuli who spoke of seeing bones on the beach thought to be from the shipwreck.

*“There were not many that we found. Maybe 10 different people whose bones were found along that area. There were some with leather bottles and a pipe. I used to accompany my father to fish. Some people would not go to that area to fish because they were frightened. You would come up on the reef, then the beach comes up where the island shrubs start to grow. That is where the bones were found.”*

Apparently there was no effort to collect the bones on the beach and she clarified that these were different than the bones found near the plane.

*“During the westerlies, heavy swells took the rest of the bones away.”*

Which explains why there were no later reports of bones seen on the beach, but it seems odd that the reports written by earlier visitors – Maude and Bevington in October 1937, the New Zealand Survey party in December 1938 to February 1939, and the *USS Bushnell* survey in November 1939 – made no mention of the beach being littered with human bones.

Nonetheless, Emily's description of bones found under or near the plane wreckage is compelling. The reef flat at Nikumaroro is treacherous to traverse under the best conditions. With a bad foot in running surf it would be impossible for Earhart to extricate an incapacitated Noonan from the aircraft and get him ashore. It seems likely that Fred went into the ocean with the *Electra* – dead or alive. ❖

# NEW MIAMI PHOTOS

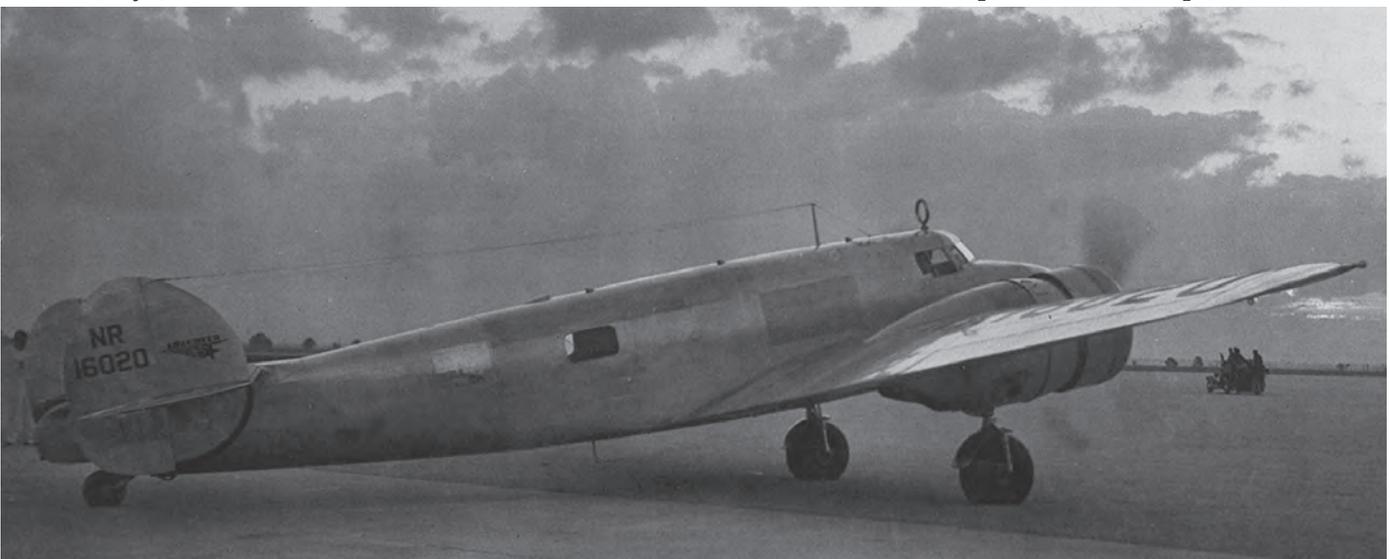
TIGHAR recently became aware of, and has now received low-resolution scans of, a collection of sixteen photographs of NR16020 previously unknown to Earhart researchers. The pictures were taken at Miami Municipal Airport by 18 year-old Lloyd "Bud" Harvey in the days immediately preceding Earhart's departure for Puerto Rico on June 1, 1937.

**EVER SINCE 2012** when we first developed the hypothesis that Artifact 2-2-V-1 is the patch installed on Earhart's Electra to cover the hole left by the removal of the special navigator's window, we've struggled to find photos of the patch with sufficient resolution to compare details of the rivet pattern on artifact to the patch on the airplane. Most photos of the Electra were taken of the left side of the airplane because people tended to congregate around the cabin door. The patch was on the seldom-photographed right side of the plane.

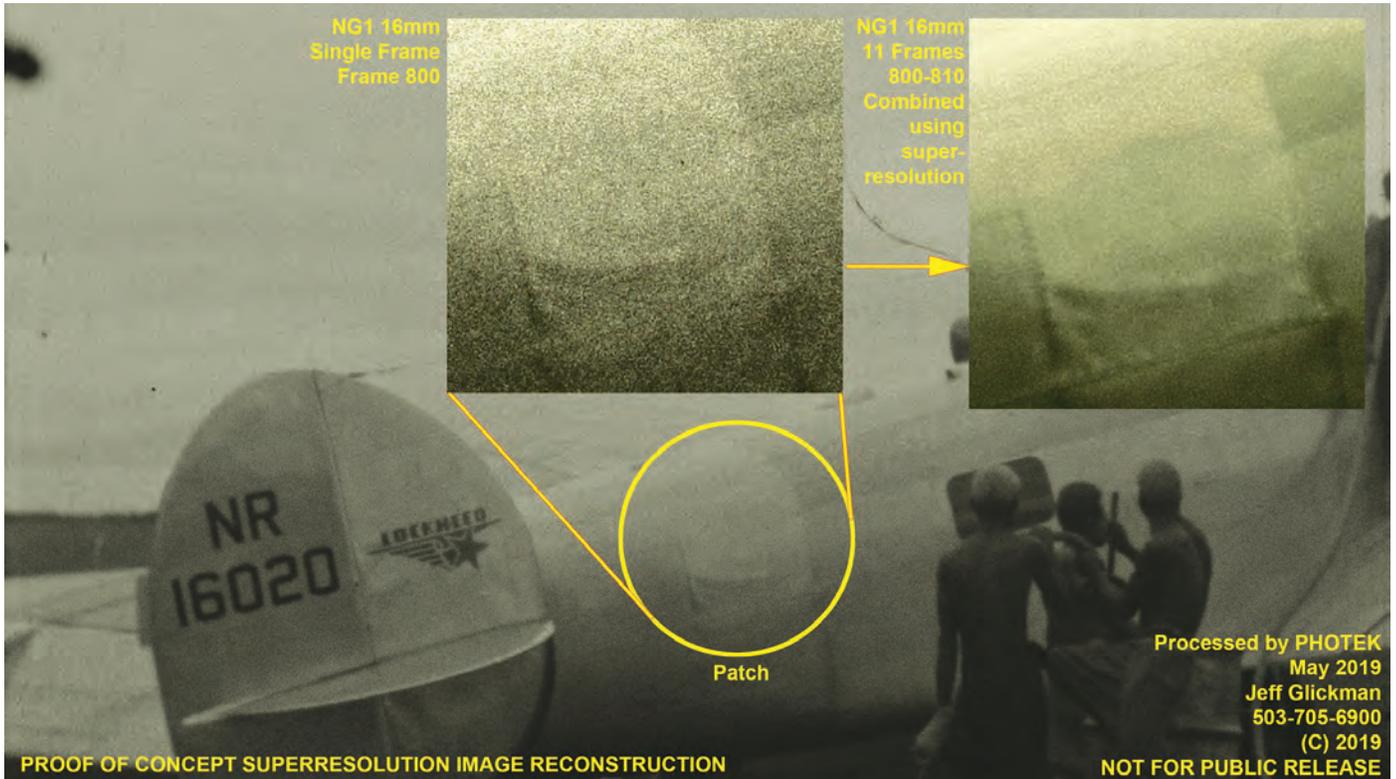
*Earhart arrived in Miami on Sunday, May 23, 1937. The special navigator's window was still present on Saturday, May 29 when George Putnam's son David and his wife Nilla, seen here posing with Amelia, visited the airport.*



*When Earhart and Noonan taxied out to depart for San Juan, Puerto Rico early on the morning of Tuesday, June 1, the window had been removed and the hole covered with a plain aluminum patch.*



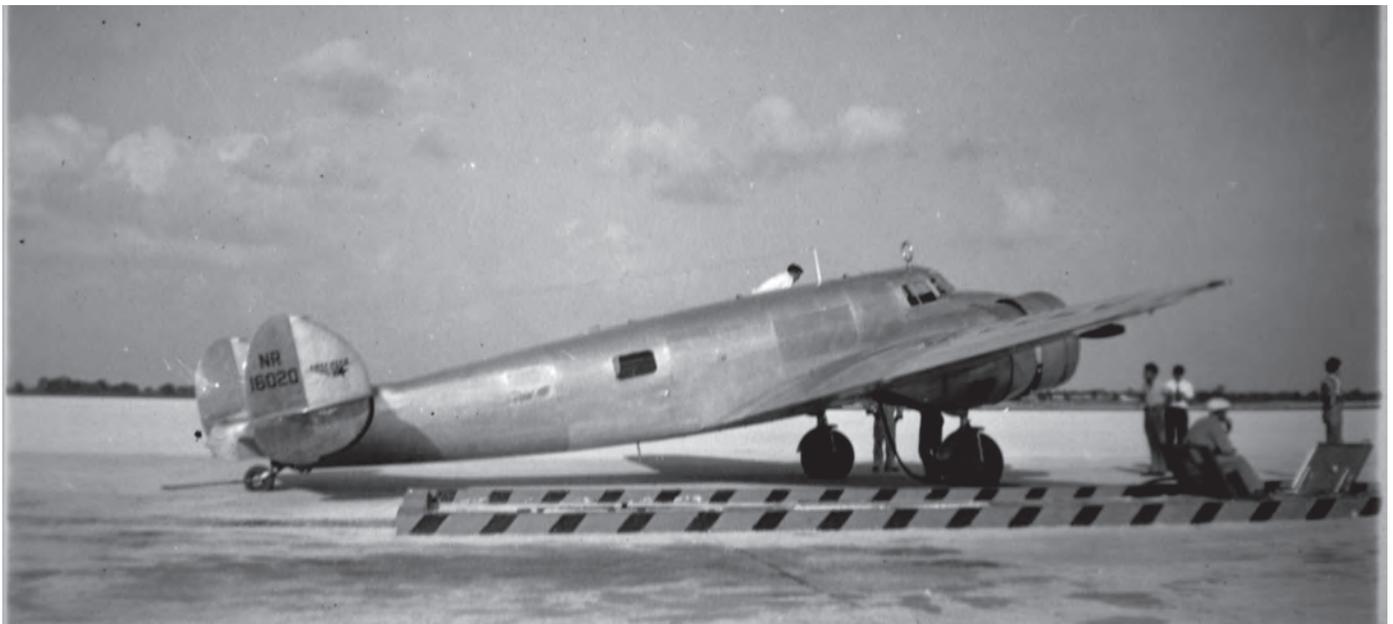
Before these new photos came to light, the best images we had were from digitized frames of a 16mm film shot in Lae on July 1, 1937, obtained by TIGHAR in 2019 at great expense after many years of negotiations. Forensic imaging expert Jeff Glickman has spent three years applying a variety of cutting-edge techniques to the digitized frames and has succeeded in greatly improving the clarity of the images, but sufficient resolution to conclusively compare the rivet lines remains an elusive goal.



*Processed frame from 16mm film shot in Lae on July 1, 1937.*

One, and perhaps more, of the new Miami photos may solve the problem.

*This view of the Electra being fueled is similar to one of the new photos but, in the new image, the photographer is standing at the first striped barrier.*



Bud Harvey and his family were present at the airport's fueling station on the afternoon of Monday, May 31, 1937 (Memorial Day) as NR16020 was being gassed up for the next morning's public start of Earhart's second world flight attempt. He took several pictures similar to one taken by another observer – but Bud Harvey stood much closer to the airplane.

He was also took a photo from just a few feet away when the Electra was parked in the hangar and Earhart's mechanic, Bo McKneeley, was discussing the newly-installed patch with another mechanic.



Courtesy of C. T. "Al" Hansen,  
Former Director of Aviation, City of Miami

*June 1, 1937—Amelia Earhart is wished good luck and happy landings by her husband, George Palmer Putnam, before her departure from Miami, Florida, at 5:50 A.M., on her second attempt to fly around the world.*

Other photos were taken the morning of departure and reveal that the famous photo of George Putnam saying his last goodbye to his wife was staged probably the day before. Putnam's actual farewell was said just before dawn, standing on the wing above the open cockpit hatch when Amelia was at the controls and about to taxi out.

The new photos are terrific but we can't share them with you yet. We must have clearance from the owner and Jeff Glickman needs the original prints or, ideally, the negatives to do his analysis. We're working on that. ❖



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## The Gordon Object

Too late to be included in this issue of *TIGHAR Tracks*, new evidence has come to light supporting the hypothesis that the Earhart aircraft broke up in shallow water close to the reef edge and now exists only as widely scattered, coral encrusted debris.

After reviewing underwater video he shot during the 2017 Niku IX Betchart expedition, New Zealand TIGHAR member Keith Gordon sent screen captures of an object he encountered, but did not collect. The expedition leader on that trip did not require team members to complete field notes of each day's activities, or provide copies of all photos and videos to TIGHAR. This is the first time Keith made his discovery known.

On the northwestern reef face, just north of where the landing gear wreckage is visible in the 1937 Bevington Photo, there is an underwater basin or pocket at a depth of roughly 35 feet, known as the Cookie Jar. It was in that feature that Keith noticed something that caught his eye. He has extensive experience diving on coral reefs and is also an aircraft engineer. The small piece resting between two chunks of coral seemed out of place. When he picked it up it appeared to be coral-encrusted metal, but too light to be iron or steel. He had the impression it resembled a section of aircraft stringer (the longitudinal framing in aluminum semi-monocoque aircraft like the Lockheed Electra).

Comparison of screen captures from the short video he took with a piece of damaged stringer from an Electra that crashed in Idaho, bears out his original impression. It could be piece of stringer or possibly a stiffener.



Other objects seen in underwater imagery that may be debris from NR16020 are:

- **The Embedded Object** – a 23 by 6 inch rectangular metal structure firmly embedded in the reef near the landing gear wreckage location at a depth of about 25 feet. Found and examined by divers in 2015 but not recovered.
- **The Curved Object** – a curved, possibly metal, structure appearing in 2012 ROV video at a depth of 166 feet, also near the landing gear wreckage location.
- **The Cook Object** – a round structure photographed by Craig Cook MD during a New England Aquarium expedition in 2009. Location uncertain but probably near landing gear wreckage location. Estimated depth 60 feet.

The discovery of this fourth suspicious object – what we'll call the Gordon Object – has prompted TIGHAR forensic imaging expert Jeff Glickman to launch an in-depth (no pun intended) review of all of the imagery in the hope we can confirm or deny similarities to Electra components.

Jeff does not charge TIGHAR for his time and expertise but, as with the new photos of the Electra in Miami, acquiring original materials for him to work with can be expensive. Funding is tight right now and to follow up on these new developments we need your help. Please donate what you can via the TIGHAR website (<https://www.tighar.org/donate.html>) or send a check to TIGHAR, 2366 Hickory Hill Rd., Oxford, PA 19363-4417. Thank you.



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