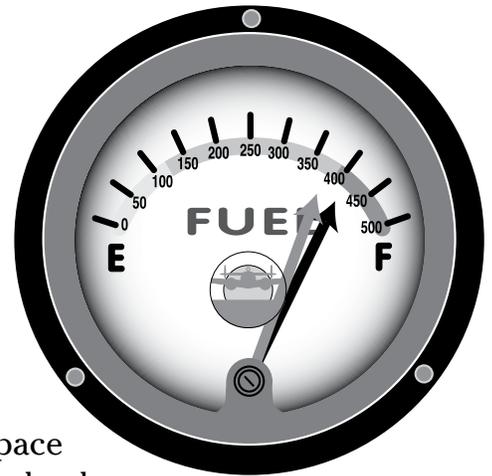


TIGHAR TRACKS



November 2000

Fueling Up



Total Pledges, November 15, 2000

\$350,000

Total Cash In Hand, November 15, 2000

\$80,760

Fund raising for next year's expedition continues at a good pace as shown by our fuel gauge above. You, the members of TIGHAR, clearly approve of these monthly newsletters and are showing your support with increased renewals and contributions. We only regret that we didn't do this sooner.

We still have a good ways to go to meet our goal but it's well within reach if we all keep pushing. Meanwhile, research results continue to bring pleasant surprises.



The Girl Who Heard Amelia

Here's an update on our ongoing investigation of a notebook purported to be a real-time record of distress calls from Amelia Earhart heard by "Betty," a fifteen year old girl in St. Petersburg, Florida (first reported in the October 2000 issue of *TIGHAR Tracks*).

On November 5, 2000 we interviewed Betty on videotape at her home in the Midwest. (We're not disclosing Betty's full name and location at this time because she has a heart condition and we don't want her to be assailed by the press.) She was able to provide us with much more detail about her own history and her recollections about the entries she made in her notebook. One of her neighbors was also able to provide us with correspondence dating from 1970 which documents that he attempted unsuccessfully to interest Earhart author Fred Goerner in Betty's story at that time.

The same neighbor also had notes of a conversation he had with Betty's mother, then still living. Although differing in some minor details, the notes generally agree with Betty's version of the story. While we were there we

also collected handwriting examples from Betty which will be used in an evaluation of her notebook by a recognized expert in document authentication.

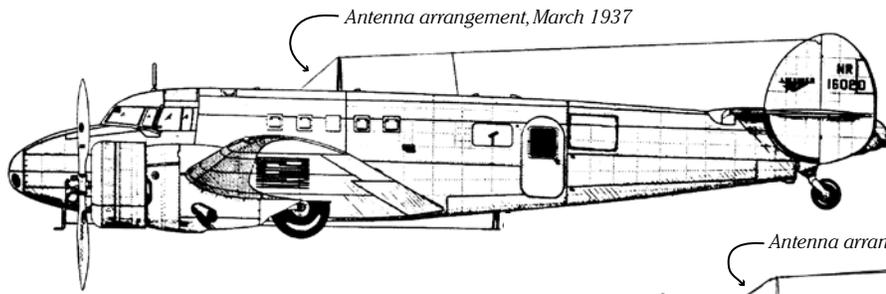
Propagation Analysis

WHILE WE'RE COLLECTING INFORMATION ABOUT what Betty heard we're also investigating how she could have heard it. Bob Brandenburg, TIGHAR #2286, had previously done sophisticated computer modeling of the Electra's radio and antenna system for the 8th Edition of the Earhart Project Book and is now evaluating the radio propagation aspects of this problem using that model, plus information about the radio and antenna on the receiving end provided by Betty and verified by Harry Poole, TIGHAR #2300, in on-site visits to the property where she lived in 1937. Although Bob's analysis is not yet completed, his assessment of the likelihood that signals transmitted from the Earhart aircraft (assuming that it was intact and on the reef at Nikumaroro) could be heard as sporadically intelligible voice messages in St. Petersburg, Florida has, so far, evolved from one chance in a thousand to one chance in five as better information has become available.

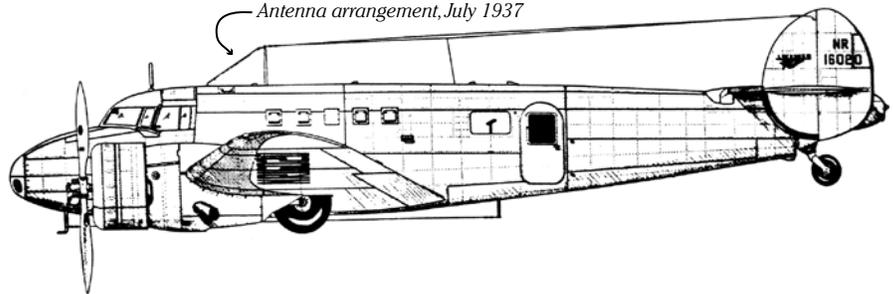
How could Betty (and others) have heard understandable messages on a home short-wave set when ships and government stations in the Central Pacific were hearing only faint "carrier wave" (background) signals or, at best, unintelligible voice? We don't yet know for sure, but we have a hunch. Like most aircraft radio transmitters of the time, Amelia's Western Electric 13C put out not only transmissions on the intended frequencies – 3105 Kilocycles, 6210 Kilocycles, and 500 Kilocycles – but it also put out simultaneous, although unintended, signals on "harmonics" of those frequencies – much higher frequencies that are multiples of the primary frequencies. This

was a well known phenomenon but it was of no consequence so long as the accidental transmissions on the harmonic frequencies did not interfere with a commercial station or other user.

The other part of the equation seems to be the changes that were made to Earhart's transmitting antenna prior to her second World Flight attempt. Originally, Western Electric had set up the vee antenna that ran from a mast on top of the fuselage to each vertical fin on the tail to be an appropriate length for Earhart's two primary communications frequencies, 3105 and 6210 Kcs. The much lower 500 Kcs frequency required a much longer antenna which was provided by a "trailing wire" that was played out into the slipstream after the aircraft was in flight and reeled back in before landing. The wreck in Hawaii that ended the first World Flight attempt also wiped out the mast on the belly from which the trailing wire was deployed. During repairs back in California the decision was made to eliminate the trailing wire and lengthen the vee antenna on top of the fuselage to accommodate all three frequencies on the one antenna. The mast that supported the point of the vee was moved forward several feet. It was a terrible compromise that provided no meaningful capability to transmit on 500 Kcs while greatly complicating the problem of putting out a decent signal on 3105 and 6210. There appears to have been, however, another consequence to lengthening the vee. The new length made an excellent antenna for the unintended harmonic frequencies. The graphics on the facing page clearly show the differences in lengths.



Antenna arrangement, March 1937



Antenna arrangement, July 1937

It may be that this explains why government stations in the Central Pacific, listening for Earhart on the primary frequencies (3105 and 6210) heard very poor signals while, at the same moment, thousands of miles

away, amateur radio enthusiasts and ordinary citizens with shortwave receivers were hearing intelligible distress calls when they accidentally stumbled across a harmonic of those frequencies.

Disqualifying References?

HOW IT COULD HAVE HAPPENED IS ONE QUESTION. Whether it **did** happen is another and can only be answered by an examination of the content of the transmissions. The first question is whether Betty's notes contain any disqualifying references – that is, described circumstances that are known to be incorrect.

For example, Charles McGill of Oakland, California reported on July 6, 1937 that he had heard:

NRUI KHAQQ KHAQQ SOS SOS SOS
 KHAQQ 281 NORTH HOWLAND CANNOT
 HOLD OUT MUCH LONGER DRIFTING
 SLOWLY NORTHWEST WE ABOVE
 WATER MOTOR SINKING IN WATER
 VERY WET

Not only is the message suspiciously similar to a more fragmentary message heard earlier by the US Navy and widely reported in the press, but the apparent description of an airplane afloat and still transmitting is contrary to our understanding of the reasonable possibilities. McGill, by the way, was subsequently investigated by the Coast Guard and found to be a hoaxer.

Similarly, a note in a bottle recently touted as the “Noonan Document” said that the plane was sinking because “the starboard gas tank ruptured” (there were three fuel tanks in each wing and the rupturing of any or all of them would not cause the plane to sink). The letter, supposedly written by Noonan, also makes reference to Amelia wearing her good luck elephant hair bracelet (which she is said to have left behind in New Guinea).

Betty's notebook contains many references that don't seem to make sense, such as “N.Y N.Y.,” “Hello Bud,” and “Take it away Howland” – but there are no apparent disqualifying references.

*apparently
 Amelia
 take it away Howland
 N.Y. N.Y. N.Y.
 Marie Marie*

Occult References

WHILE DISQUALIFYING REFERENCES ARE USEFUL IN exposing a hoax, the only way to confirm the authenticity of a communication is by “occult references.” This has nothing to do with the supernatural, it’s just a term for information

that is not accessible to the vast majority of contemporaries. It’s a classic and highly reliable method of assessing credibility, almost akin to the message containing a secret authentication code.

N.Y. N.Y.

So are there any occult references in Betty’s notebook? Certainly such notations as “KGMB” and “31.05” and references to “Howland” do not qualify. That information was widely available via the news media. However, if when Betty wrote “N.Y. N.Y.” she meant “New York City” (she thinks that’s a possibility but she can’t be sure), then it’s a very small step to “Norwich City” and a convincing occult reference – but there is just too much specula-

damn
30
N.Y. or something that sounded
N.Y. like New York

tion involved to hold that possibility up as proof of anything. Remember, this is how psychics work – they provide general information that the subject then modifies to fit the desired message. In this case there is no reason to think that there is any intention to defraud or mislead but the wishful thinking process is still just as powerful and dangerous.

The Suitcase In the Closet

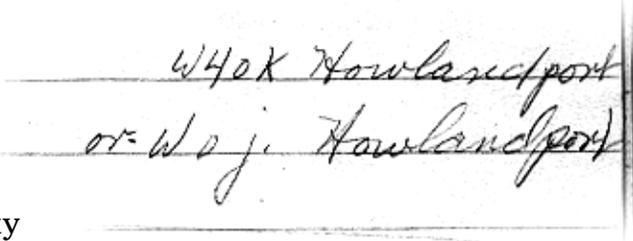
The passage, “George–get the suitcase in my closet–California” has possibilities as a genuine occult reference. Without yet knowing whether the idea of something important being found in suitcase in a closet rings any bells in Earhart or Putnam family folklore (we’re checking), the very fact that the quote specifies “California” means that the speaker was aware that the Putnams at that time had more than one house and that one of the

hear from me
George
get the suitcase in my closet
Calf.
are you
Madie Heu!

houses was not in California. (They had homes in North Hollywood, CA and in Rye, NY.) That information was certainly not secret but neither was it widely publicized. The unlikelihood of the directive in the context of the rest of the message increases the probability that it is genuine occult information, but before or until we know whether there was anything in the suitcase in the closet we can’t say that it really means anything.

W4OK

7/7/37



Near the top of the first page of notes is the entry “W4OK Howland port or WOJ Howland port.” The similarity of these letter/number combinations to radio call signs prompted research that revealed that WOJ does not seem to have been in use in 1937, although by 1947 it was assigned to a commercial station in Hialeah, Florida. W4OK, on the other hand, turns out to have been the call sign of Francis G. Carroll, an amateur radio operator who was active in 1937 and who lived at that time in Palm Beach, Florida. Palm Beach just happens to be on the same great circle (radio propagation path) as Betty’s home in St. Pete and Gardner Island. Unfortunately both Mr. Carroll and his wife passed away earlier this year, but their daughter’s housemate recalls that several years ago – probably 1992 – while watching

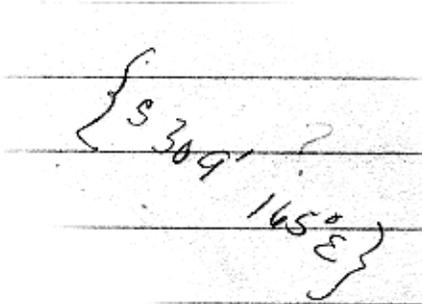
a documentary about Amelia Earhart, Mr. Carroll remarked, “I talked to her; I always wondered what happened.”

Terry Linley, TIGHAR #

2297, is now working with the family to try to locate any surviving logbook or documentation that would shed further light on this fascinating development. An occult reference? It sure looks that way. Just a coincidence? Perhaps, but the coincidence of Betty jotting down Carroll’s call sign as a random, misunderstood sequence of letters and numbers is no less remarkable than the possibility that Earhart said them. We’re presently investigating the possibility that Carroll had somehow managed some kind of two-way exchange with Earhart, however brief, and that Betty heard Amelia’s attempt to re-establish contact with him.

The Midpoint Position

The notation in brackets on page 53, according to Betty, was made at the same time as the rest of the notes and is, in fact, the last entry she made before turning the page. She had the definite impression that Earhart had found something written down that she thought might be important information to transmit and was repeating it several times. Betty wrote down a more garbled version earlier on the page but wasn’t sure she had it right. The entry in brackets was the last time she heard it and the one she was surest about, but she was still not entirely certain, hence the question mark. What she wrote down is quite obviously intended to be a latitude/longitude position and seems most logically interpreted as “South 3 degrees 09 minutes, 165 degrees East.” That position turns out to be very close to the midpoint in the flight from Lae to Howland, but that does not make it occult



information. Earhart’s route was well publicized as was the fact that the USS *Ontario* was supposed to be

positioned near the halfway point to provide navigational assistance. For the coordinates in Betty’s notebook to be truly occult they must have a unique connection to the flight that was unknown to the public.

Might they represent the exact midpoint of the flight? No, that point has been calculated to be 3° 2’ South, 165° 10’ East. The position written in Betty’s notebook is about 7 miles south and 10 miles west of there. (We’ve actually had various measurements of the midpoint from a number of equally competent navigators. None

match Betty's note.) In the official search report the captain of the USS *Lexington* described the midpoint where USS *Ontario* was stationed as 3° South, 165° East – a convenient rounding off of the numbers and, in fact, the point where the course to Howland Island crosses the 165th meridian, but the coordinates written in the notebook are more specific than that. Might they represent where the *Ontario* actually was during the flight? No, the ship's logs show that she did not take up a stationary position but during that day of July 2nd she steamed from 3° 9' South, 165° 11' East at 8 a.m. local time to 2° 59' South, 165° 20' East longitude at 8 p.m. local.

But where was *Ontario* really supposed to be? For that we have to go back to the official messages that passed back and forth prior to Earhart's first World Flight attempt. On March 14, 1937 *Ontario* was en route from Samoa to her assigned station for the first attempt when she reported:

```
ONTARIO CROSSED ONE HUNDRED  
EIGHTEITH [sic] MERIDIAN EN ROUTE  
TO PLANE GUARD STATION LATITUDE  
03 05 SOUTH LONGITUDE 165 00  
EAST FOR EARHART FLIGHT
```

This is the only time that *Ontario*'s assigned lat/long appears in any of the message traffic either before or after the disappearance. Earhart cracked up at Luke Field before *Ontario* actually reached her assigned station, but this message tells us specifically where she was headed. *Ontario* apparently had orders to proceed to that specific position and it seems safe to assume that the Earhart flight had also been informed as to exactly where they could expect *Ontario* to be.

When *Ontario* was ordered to do it all again for the second world flight attempt no new coordinates were assigned. She was just told to go to the previously assigned position. If Noonan, in preparing for the second attempt, made a notation of the lat/long where *Ontario* was supposed to be (a reasonable thing to do), that notation can be expected to have been 3 degrees 5 minutes South, 165 degrees East.

The position written in Betty's notebook seems to be 3 degrees 9 minutes South, 165 degrees East, with a question mark indicating that she's not sure she heard it right. The numbers "5" and "9" are the most easily misunderstood of all spoken numerals; that's why we now say "five" and "niner." If the 9 she heard was actually a 5, then it's an exact match to *Ontario*'s assigned plane guard position – a position that would logically be written down somewhere aboard the *Electra*.

The presence of that position in Betty's notebook is all the more remarkable because it does not make sense as something that would be said by a rational Earhart, or a rational hoaxer. Why transmit that position? *Ontario*'s assigned plane guard station is one of the few places everyone could be quite sure that the airplane wasn't. But Betty's notebook does not describe a rational Earhart. It describes a terrified, desperate woman who doesn't know where she is, struggling with an injured and delirious companion, sending out any navigational information she can find in Noonan's notes.

To Be Continued...

Our investigation of Betty's notebook and other alleged post-loss messages from Earhart is not yet finished, but at this time it appears that Betty's notebook contains occult references that suggest that it is a record of genuine, if imperfect, communications from Amelia Earhart. If further investigation continues to bear out this conclusion, Betty's notebook will become "smoking gun" proof that radio transmissions were being made from the Earhart aircraft after it disappeared. While it is hard to imagine how the notebook could ever, by itself, establish for certain that the transmissions came from Gardner Island, it may provide the first contemporaneous written documentation that the flight did not go down at sea.

A Landing on the Reef

TIGHAR's working hypothesis is that on July 2, 1937 the Earhart aircraft was landed on the reef-flat at Nikumaroro north of the shipwreck; that the landing left the aircraft intact enough to send radio signals for one or more days; and that the aircraft was subsequently destroyed by wave action and the wreckage sufficiently scattered and obscured by the surf that it was not seen by the U.S. Navy's aerial search one week later on July 9, 1937.

There are two major questions to address which are relevant to that hypothesis:

1. Assuming that there has been no great change in the nature of the reef's surface since 1937 (historical photos tend to support that assumption), where on the reef
2. Does the position of suspected wreckage appearing in an October 1937 photo correspond to the "landable" portion of the reef?

could a Lockheed Electra be landed without completely wrecking the airplane?

Question #1

Where on the reef could a Lockheed Electra be landed without completely wrecking the airplane?

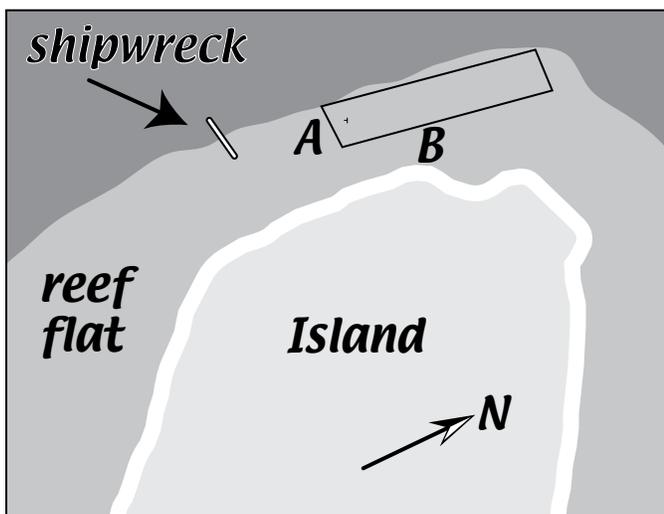
AS WITH MOST AIRCRAFT OF THE 1930s, THE LOCKHEED Model 10's design anticipated operations from rough, unimproved surfaces. The tires were large in proportion to the aircraft – 35 inches in diameter x 15 inches wide – (by comparison, a typical pick-up truck tire is about 26x8) and the massive landing gear legs were welded castings of chrome molybdenum steel. Also, the aircraft's conventional tailwheel landing gear arrangement was less prone to nose-over accidents than today's more prevalent tricycle (nosewheel) configuration.

Perturbations in the landing surface of six inches or eight inches would likely be uncomfortable and,

if sharp, cause a blowout but should not flip the aircraft or cause the gear to fail. A depression a foot deep or more, on the other hand, would be a serious matter.

The smoothness or roughness of the reef-flat north of the shipwreck at Nikumaroro varies considerably due to forces and factors we do not entirely understand. The delineation of the "landable" portion of the reef-flat in the illustration at left is based upon direct observation on the ground in 1999. The tiny dot near the south end of the landable area represents a Lockheed Electra to scale.

In the photo below the camera is at position "A" looking north along the landable area. The breakers in the distance are approximately 2,000 feet away.



The person standing on the point at “B” is roughly 800 feet away. The perturbations in the reef surface in the foreground average about 4 inches.



In the photo above left, the camera is at “B” in the diagram, looking westward across the reef-flat.

The photo above right looks southwestward and shows the deeply pitted surface of the reef-flat near shore. It shows that while the beach may at first seem to be a more attractive place to land an airplane, closer inspection shows it to be rather steeply sloped and covered with loose coral rubble.

Question #2

Does the position of suspected wreckage appearing in an October 1937 photo correspond to the “landable” portion of the reef?

A photo was taken to show the shipwreck and the island coastline but it also happens to show unidentified objects on the reef.

By aligning the relative position of identifiable landmarks in the photo it is possible to determine a line along which the unidentified objects must fall. As shown below, the objects in the 1937 photo are on a line (shown in red) which corresponds with a portion of the “landable” part of the reef. The location means



that the objects in the photo are almost certainly not debris from the shipwreck, the wreckage from which is distributed exclusively in a southeasterly direction. The location does, however, match that marked on a map by Emily Sikuli (“E”) to indicate where she saw airplane wreckage in 1940.

