TIGHAR TRACKS

September 2014

BAD NEWS/GREAT NEWS

First the Bad News

We were not able to raise the money to do the Niku VIII expedition this year. You, the TIGHAR membership, did a great job funding the fund raising through the 1937 Fund, but the $1.5 million needed to put the University of Hawai'i subs on site proved to be an unattainable goal. The money we did raise will go towards next year's expedition.

Several factors were working against us. We had originally wanted to do the expedition in 2015, but funding cuts for the Hawai'i Undersea Research Laboratory (HURL) program made it doubtful that the subs would still be around next year. We had to try for this year, in a slow economy, and under the cloud of a lawsuit that sapped time and money. The lawsuit was ultimately thrown out of court as utterly groundless, but not before saddling TIGHAR with enormous legal debt. Now the plaintiff has announced his intention to appeal the court's ruling. The appeal stands virtually no chance of success but it will mean more legal bills.

Now For the Great News

(and there's lots of it.)

Clearing the Decks for Action

A donor who wishes to remain anonymous has stepped forward to pay off TIGHAR's legal debt, including any new costs generated by the appeal. This incredibly generous gift clears the decks for action and let's us move forward unburdened. The TIGHAR Legal Defense Fund, to which so many of you have graciously donated, is officially retired. Hallelujah!

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The New Niku VIII

The Expedition 2015

The Niku VIII expedition has been rescheduled for June of 2015. New research results have altered the picture of what may have happened to the Electra after it was washed over the reef edge into the ocean (see "A Smoking Gun?" below).

Dates:	Twenty-four day expedition, June 8 – July 3, 2015.
Vessel:	M/S *Nai'a*, 120 foot research motor sailer out of Fiji.
Search Technology:	Small ROV for deep underwater search; scuba for shallow underwater search; metal detection and Mark I human eyeball for on-shore search.
Underwater Search Operations:	Focus on ROV investigation of known sonar targets, and scuba search downslope from landing gear location.
Onshore Search Operations:	Detailed survey of the beachfront and forest area in search of evidence of an initial Earhart/Noonan campsite.
Budget:	Approximately $500,000.

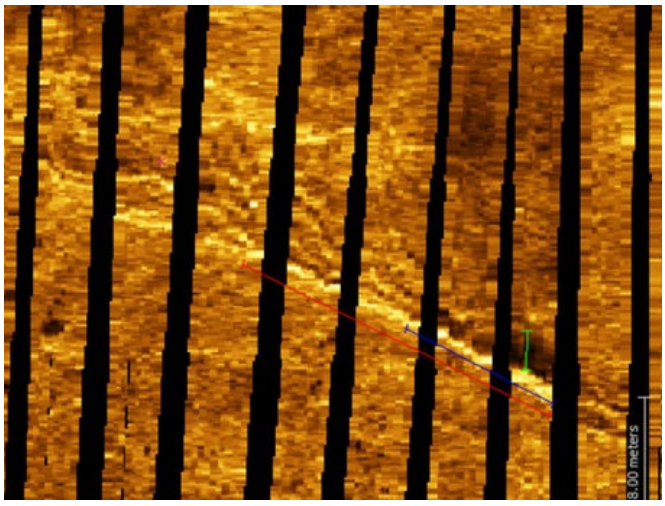
The Hypothesis

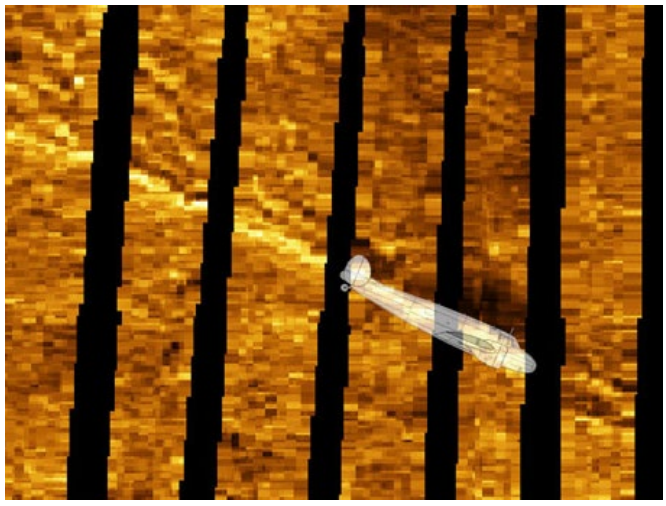
A broad and complex body of physical, photographic, analytical, and anecdotal evidence supports the hypothesis that Amelia Earhart landed her Lockheed Electra safely on the reef surface at the western end of Gardner Island (now Nikumaroro). She and her navigator Fred Noonan sent radio distress calls from the aircraft for the next five nights before the Electra was washed over the reef edge by rising tides and surf. Whatever remains of the aircraft is now somewhere on the steep craggy underwater mountainside off the west end of Nikumaroro. The remains of an initial survival camp survive somewhere on shore nearby.

Where To Search?

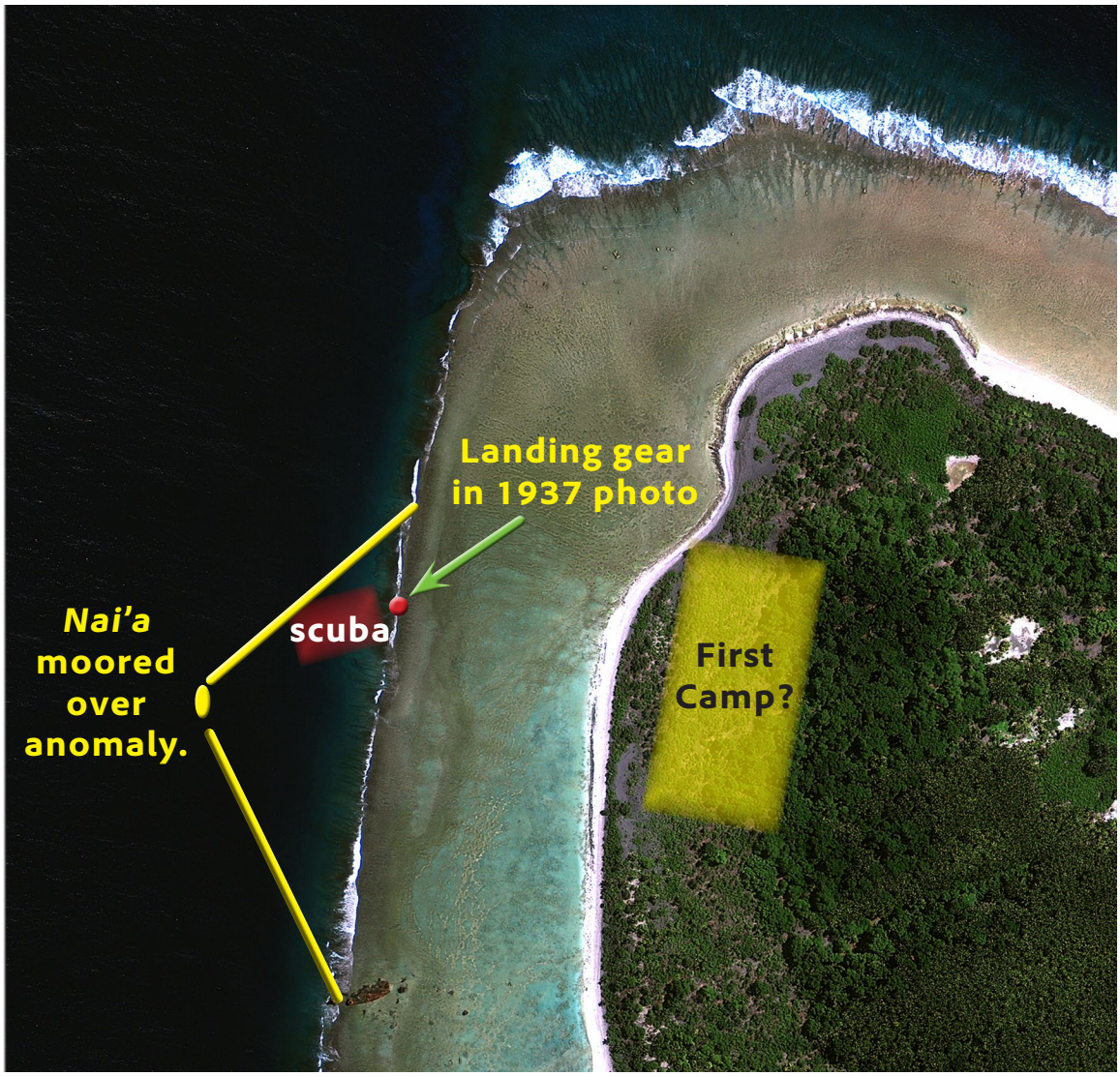
Under water. New discoveries about Artifact 2-2-V-1, the section of aircraft aluminum we found on Nikumaroro in 1991, have raised questions that alter the priorities of the underwater search. We have long suspected that 2-2-V-1 is a shard of aluminum torn from the Electra as it was battered apart in the surf, but if 2-2-V-1 is the Miami Patch (see "A Smoking Gun?") we need to ask why it is that we have only that unique piece of the plane. Why have we not found other torn shards of aluminum, either onshore or underwater? The artifact shows signs of human action. Could it be that the patch was removed from the aircraft while it was still on the reef and the plane was largely intact when it went over the edge? Did it then float away and sink where we'll never find it, or is there now a greater chance that the sonar anomaly in the 2012 data is a largely intact Electra? The anomaly is the right size and in the right place to be the fuselage of the Earhart Electra.

On the left is the sonar image of the anomaly. The sonar coverage was sporadic and the black strips are areas for which we have no information. On the right is the same sonar image with a Lockheed Electra overlaid to scale.





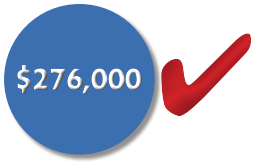
By tying off to the *Norwich City* and the reef, *Nai'a* will be able to moor directly over the anomaly allowing us to inspect it with an ROV (remote operated vehicle). Scuba divers will do a detailed inspection downslope from the point where the aircraft is believed to have gone over the edge.



On land. During the five day period (July 2 – 7, 1937) when distress calls were being sent from the plane on the reef at night, Earhart and Noonan may have established a camp on shore to escape the heat during the day. Objects may have been brought ashore that were left behind when they moved on after the plane was lost to the sea. We have abundant evidence of a final castaway campsite (the Seven Site) at the other end of the atoll. The beachfront and forest area immediately opposite where the plane is believed to have been parked on the reef before being washed into the ocean is the logical location for a possible initial camp. The area was never cleared or developed during the island's later period of habitation (1939 – 1963).

Dollar$ & Deadline$

The level of funding needed for the 2015 Niku VIII expedition is a fraction of the 2014 expedition budget, but we still have payment deadlines that must be met.



Nai'a Charter Fee

The *Nai'a* charter will cost $264,0000 plus an estimated $12,000 in fuel.

- **An initial deposit of $41,300 must be paid by the end of October, otherwise the boat will be released for other charters. At this writing we have contributions and pledges totaling $24,600, with $16,700 left to go. Needless to say, it is essential that we meet this goal if there is to be an expedition in 2015.**

- **A payment of $111,350 is due December 10, 2014. Our plan is to raise this amount primarily through the sale of Sponsor Team Member berths. We have three available for $50,000 each. Sponsor Team Members have been a successful way to fund expeditions in the past.**

- **A final payment of $111,350 is due March 10, 2015. The fuel estimate must be paid before departure. We have a pledge from a major foundation to cover the last $100,000 so if we can make the December payment we're in good shape to complete the budget.**

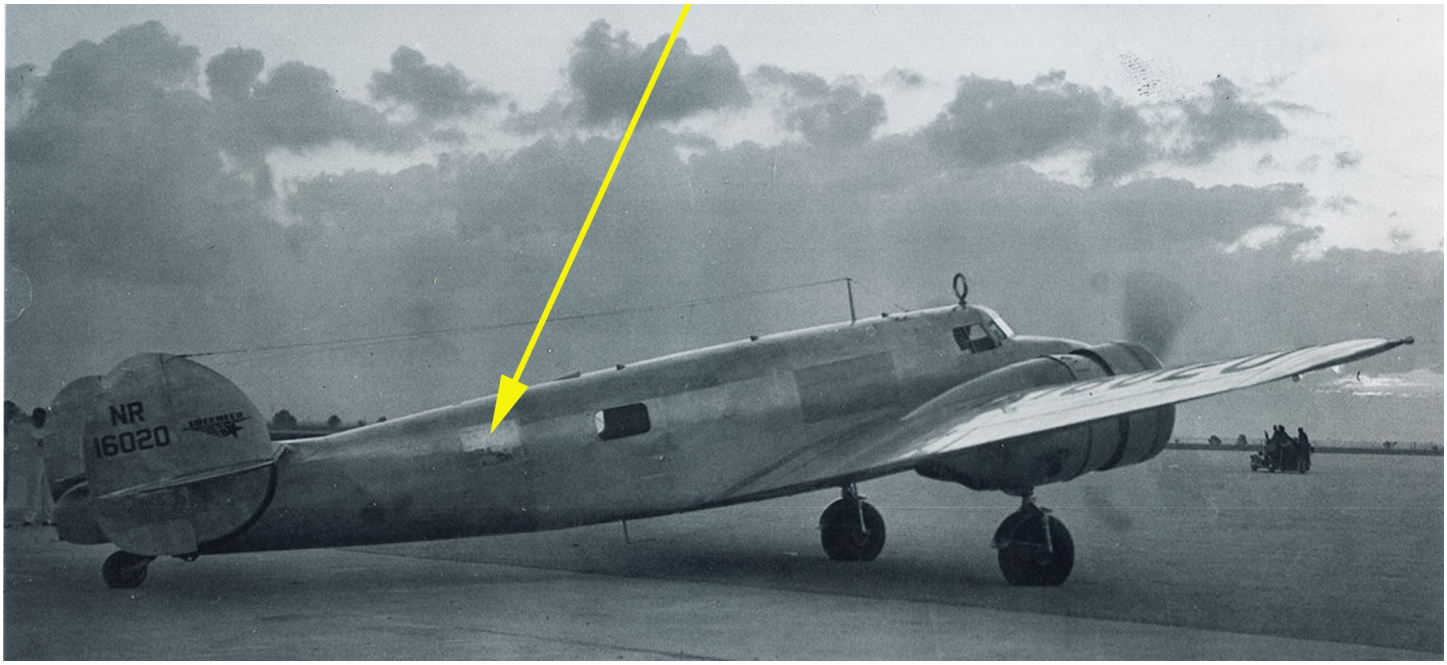
This is all manageable, but it will take all of us doing our part. Go to www.tighar.org and click on any "donate" link to make your contribution via PayPal, or send your check payable to TIGHAR to:

TIGHAR
2366 Hickory Hill Road
Oxford, PA 19363

You can also call us at 610-467- 1937 during normal business hours with your credit card info.

Thank You.

A Smoking Gun?



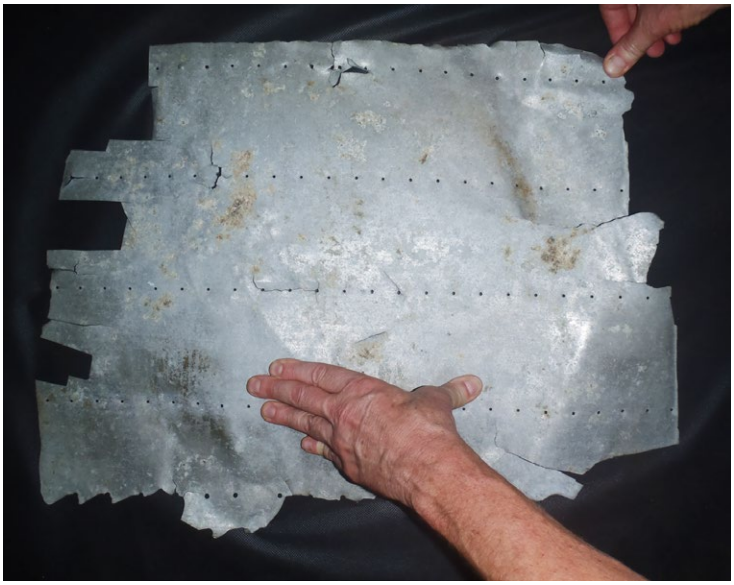
We have more to do before we're ready to say it's a certainty, and we could yet discover some disqualifying feature, but it's looking more and more like Artifact 2-2-V-1 is the patch that was installed on Earhart's Electra during her stay in Miami at the beginning of her second world flight attempt.

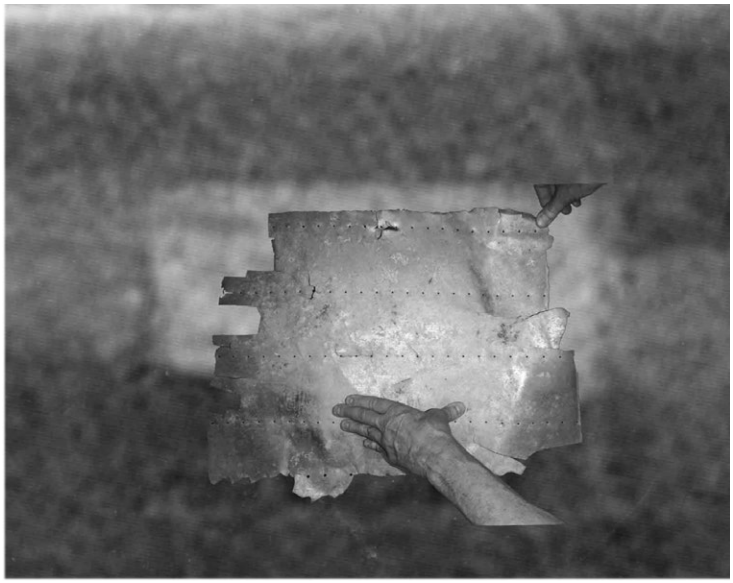
Continuing research has answered important questions:

- **Do the dimensions of the artifact fit within the dimensions of the patch?**

To answer that question required accurate scaling, the removal of camera-induced distortion from the Miami Herald photo, and a photo of 2-2-V-1 pressed down to allow measurement of its full size.

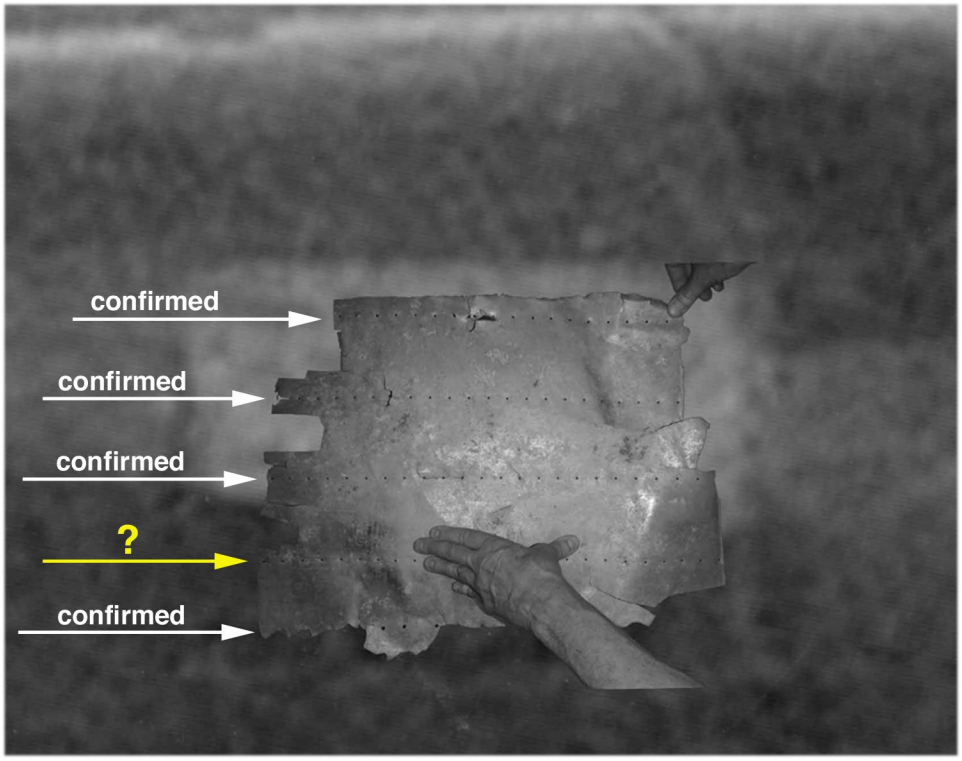
The edges of the patch were straight and riveted, while the borders of the artifact are all failed edges, with one side showing evidence of a line of staggered rivets. If the artifact is a broken-out portion of the patch it must fit within the dimensions of the patch. TIGHAR forensic imaging scientist Jeff Glickman was able to remove the distortion and accurately scale and overlay the photos. The artifact fits nicely within the patch.





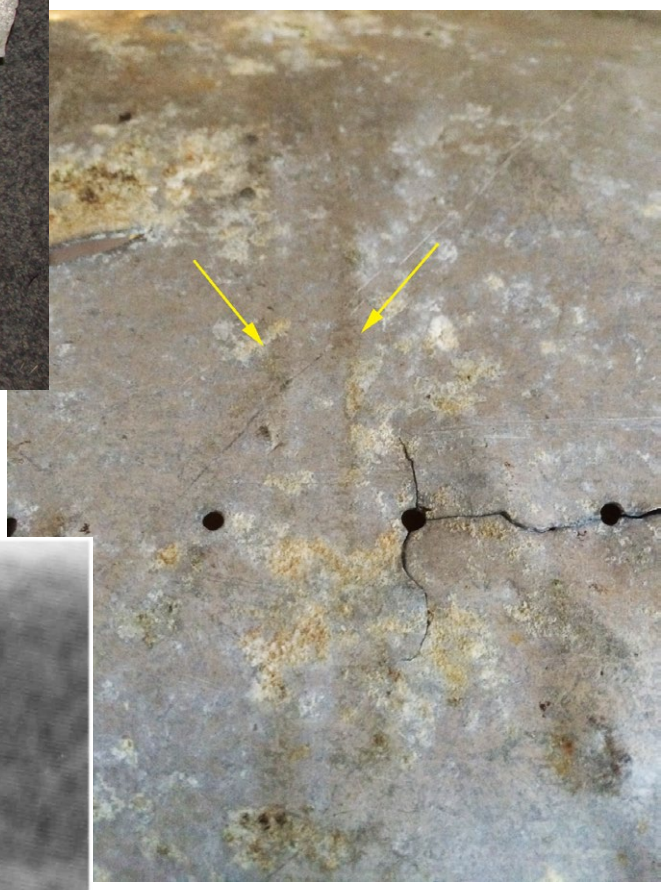
- **Does the rivet pattern match?**

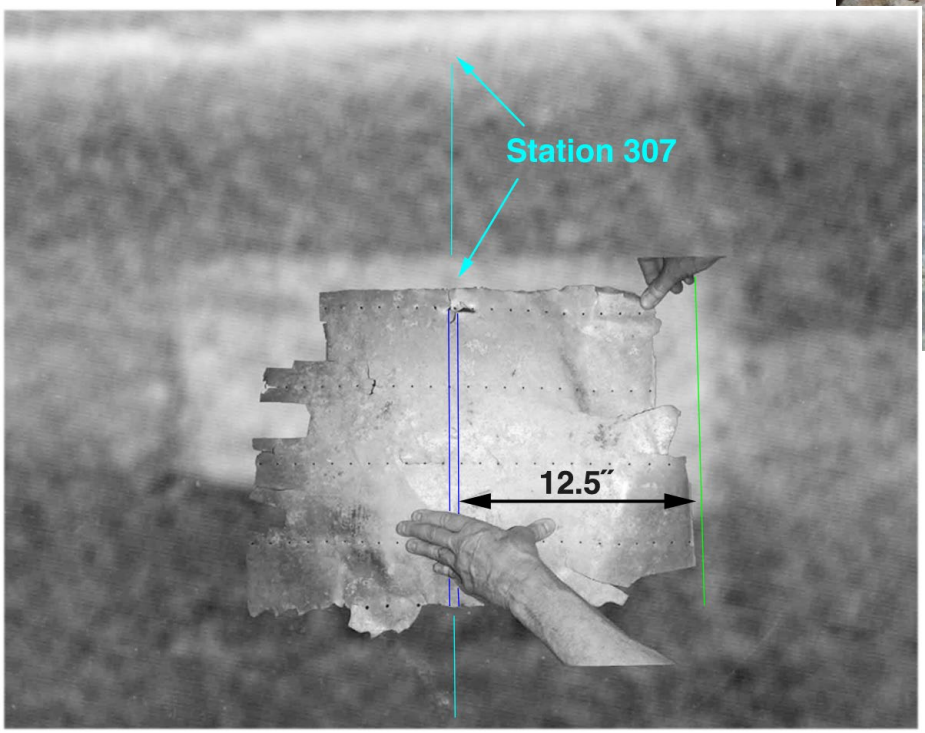
Yes, to the degree it can be determined at this time. So far, Jeff Glickman has been able to confirm that four of the five lines of rivet holes on the artifact match rivet lines that are detectable on the patch. The line of rivets that falls within the dark area on the patch may or may not be possible to find simply due to the lack of contrast. With an accurately scaled fit and a four-out-of-five match on the rivet pattern the probability that 2-2-V-1 is the Miami Patch approaches certainty.



The identification got an unexpected boost when Jeff Glickman noticed an indentation in the artifact that suggests the presence of a stiffener running vertically behind, but not riveted to, the metal sheet.

One edge of the artifact failed from metal fatigue after cycling back and forth against a rigid underlying structure. If the artifact is positioned in the overlay with that edge against the known underlying structure to which the window had been riveted, the implied vertical stiffener corresponds exactly with the standard Electra vertical stiffener at Fuselage Station 307.





On August 28 and 29 Jeff Glickman took hyperspectral images of the artifact using a Surface Optics SOC710-VP camera.

Hyperspectral imaging is an expensive but potentially revealing analytical tool. The human eye and conventional color photography see visible light in three bands – red, blue, and green. Spectral Imaging divides light into many more bands including some beyond the visual range. Hyperspectral imaging covers a broad range of light wavelengths and makes it possible to identify specific materials and substances based on their unique light signature. The Surface Optics SOC710-VP is the only portable hyperspectral camera capable of imaging 128 wavelengths. Surface Optics agreed to rent us a unit at a discounted price and the TIGHAR membership responded with donations that made it possible to do the work .

In two long days Jeff was successful in acquiring hyperspectral data on 2-2-V-1 and dozens of other artifacts collected from Nikumaroro. The data will take time to process and we have no way of knowing what we'll find but we're confident that we'll know much more than we know now.

The likelihood that 2-2-V-1 is a broken-out section of the Miami Patch raises many questions about how it came to be broken out, how it came to end up where we found it, and what clues it may give us about what happened to the rest of the airplane.

This is an exciting time. There is much more to do but with your help the answers are coming.