TIGHAR TRACKS

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So Many Projects, So Much to Report

Never before in TIGHAR's twenty-three years have we had so much going on and so much to tell you about. In this *TIGHAR Tracks* we'll hit some of the high points and follow up with details in upcoming issues and on the TIGHAR website.

The generous support of TIGHAR members and sponsors, including Berwind of Philadelphia, has made it possible for us to begin the process of finding out what we found during last summer's Niku V Expedition. Analysis of artifacts collected from the abandoned village has not, so far, revealed anything that seems to be Earhart-related, but research continues. By contrast, a number of the artifacts recovered from the Seven Site at the opposite end of the island are proving to be more revealing and potentially more important than we had any idea they would be when we dug them out of the ground or picked them out of the sifting screens.

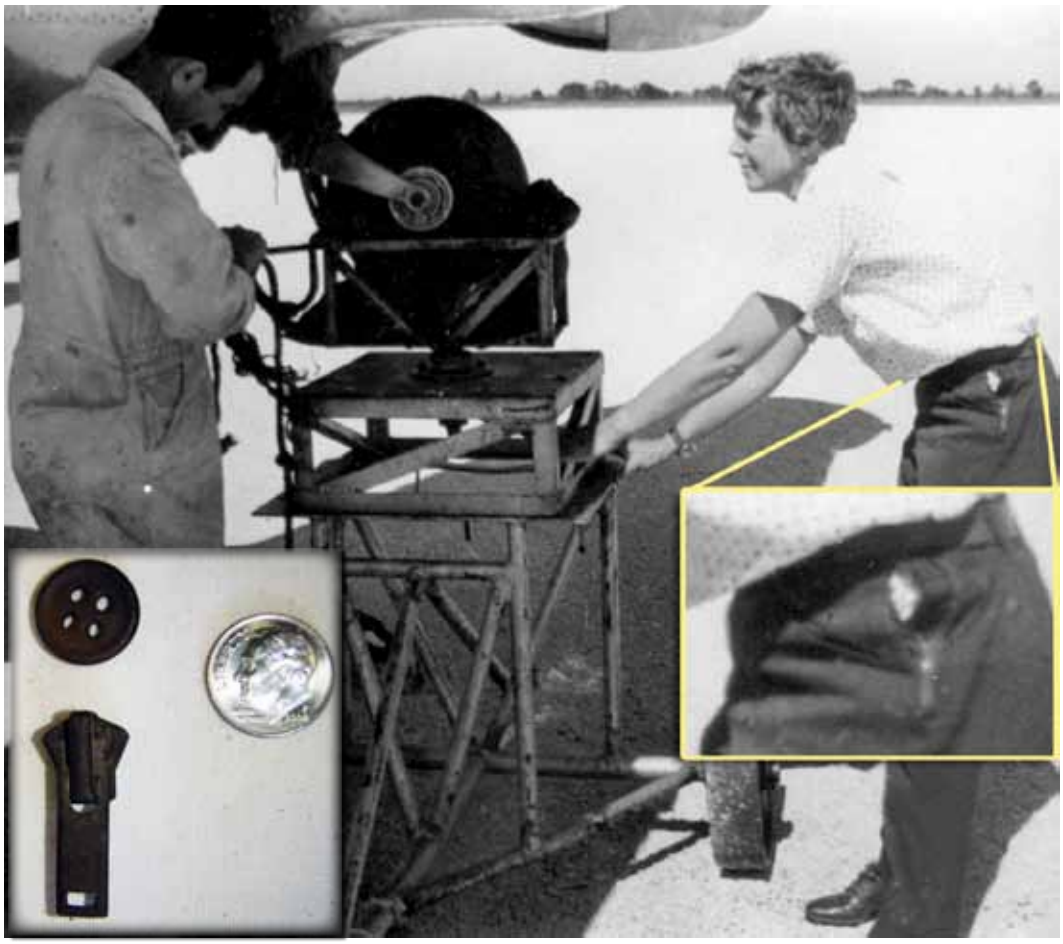
The Compact

As reported in the August 2007 *TIGHAR Tracks*, a piece of thin plate glass that matches a similar piece we found in 2001 made us suspect that we had the broken mirror from a woman's compact. Now, chemical analysis of small wafer-like pieces of red material sifted from the same location show them to be "consistent with an early twentieth-century cosmetic." (Winterthur Analytical Lab Report 12/9/07). Pending analysis of rusted metal fragments may confirm that we also have pieces of the compact itself. Is the cosmetic we found at the Seven Site on Nikumaroro like the cosmetic in a compact once owned by Amelia Earhart and now in the Purdue University Earhart Collection? We don't know and, unfortunately, it looks like we won't be able to find out. Purdue won't let us take a pinhead-sized sample for scientific testing. However, thanks to Barbara Norris (TIGHAR #2175EC), we've been able to find a compact of the same vintage made by the same company as the Purdue/Earhart compact and we'll test that cosmetic for similarity to the material found on the island.

TIGHAR Artifact 2-8-S-30, one of three fragments of red material identified as consistent with an early twentieth-century cosmetic.

The Zipper

The Talon zipper, TIGHAR Artifact 2-8-S-3, mentioned in the August 2007 *TIGHAR Tracks* is also proving to be interesting. Laboratory analysis confirmed that it's brass (Winterthur Analytical Lab Report 8/25/07) and research into the history of Talon, Inc., with the help of the Hagley Library and Archive in Wilmington, DE and the Crawford County Historical Society in Meadville, PA, suggests (but does not yet confirm) that it is a design that was in production in 1937 and is unlike zippers that were supplied to the military. If the zipper found at the Seven Site on Nikumaroro belonged to Earhart it was probably from her slacks and not from her leather jacket which had a heavier zipper with a different shaped pull. Noonan's trousers probably still had a button fly. Zipper fronts were still quite rare on men's pants in 1937. Research continues.



Ooops! It's always a good idea to check your zipper when there are photographers around. Amelia in Miami in late May 1937 during the world flight. TIGHAR Collection.

Broken Bottles

Broken glass associated with four bottles was recovered from the Seven Site.

- Coding embossed on the bottom of a small, broken clear glass bottle (all we have is the bottom) shows that it was made at the Owens-Illinois plant in Bridgeton, NJ in 1933. Chemical analysis of material stuck in one corner of the bottom shows it to be comprised of lanolin and oil. This style of bottle, known as an "Imperial Oblong," came in several sizes and was used for many types of over-the-counter lotions and tonics.
- The broken and, in some cases partially melted, pieces of an amber-colored bottle were found in one of at least five "burn features" (deposits of ash, charcoal, burned fish, turtle and bird bone) at the site. New Mexico State University Alamogordo bottle expert Bill Lockhart has helped us determine that the amber glass appears to be from an American pre-war

TIGHAR Artifact 2-8-S-2a is the bottom of a bottle of the same design, but somewhat smaller than, a vintage bottle acquired for TIGHAR by Rick Jones (TIGHAR 2751).

TIGHAR Artifact 2-8-S-25 is a broken bottle similar to the American pre-war returnable beer bottle pictured. Fragments: TIGHAR photo. Bottle: Courtesy Bill Lockhart.

returnable beer bottle. The lower portions of the bottle are significantly more heat damaged than the upper portions, suggesting that the bottle once stood in the fire.

- In the same burn feature with the amber bottle were the broken and, in some cases partially melted, pieces of a smaller green-colored bottle. Rick Jones (TIGHAR 2751) found that the shape and markings on the bottle match a design patented in 1933. The bottle is of a type that was produced by Owens-Illinois for over-the-counter medications. This bottle also appears to have once stood in the fire.

TIGHAR Artifact 2-8-S-27 is a broken green bottle that matches U.S Design Patent 90023.

- Three fragments of a broken clear glass hexagonal bottle were found some distance from the other bottles. We haven't tackled this one yet.

These are but a few of the many artifacts being analyzed and researched. The jigsaw puzzle pieces are starting to form a picture of what happened at the Seven Site but, for the moment, we'll resist the temptation to speculate about what that picture shows.

TIGHARArtifact2-6-S-21b and 2-8-S-41a&b are pieces of a hexagonal clear glass bottle.

Time and Tide

The tidal information we collected during the expedition and the detailed survey we made of the reef surface in the area where it appears the Electra was landed have allowed our tides and radio propagation expert LCDR Bob Brandenburg, USN (Ret.) (TIGHAR 2286) to reconstruct the conditions on July 2, 1937 and subsequent days with greater accuracy. This, in turn, enables us to correlate those data with the post-loss radio signals and the fuel consumption required to recharge the batteries to send them. We can then arrive at a reasonable estimate for the amount of fuel that had to be aboard when the aircraft landed. Because we already have a good handle on when the aircraft should have run out of fuel had Earhart stayed aloft, knowing how much fuel remained when she landed will tell when she landed. Knowing when she had to have landed and knowing what the conditions on the reef were like at that time will tell us how well our hypothesis holds up.

Ric and Josh Gillespie use the Sokkia SRX Robotic Total Station to survey the reef during Niku V. TIGHAR photo by Robin Acker.

Of course, it's silly to think that we can be down-to-the minute precise in our calculations and proving that something could have happened does not prove that it did happen. On the other hand, if something couldn't have happened, we can be pretty sure that it didn't happen.

What we're trying to do is refine our hypothesis about Earhart's disappearance to fit the growing fund of available data.

The more data we can assemble, the tighter and more credible the hypothesis will be.

The better the hypothesis, the better our chances that, in testing it, we'll find the proverbial smoking gun.

Back to the Marshalls

As we go to press, a TIGHAR dive team is in the Marshall Islands to check on the condition of the Devastators in Jaluit lagoon. They'll be paying special attention to the deeper of the two aircraft, TBD-1 Bu.No. 1515, slated for recovery and preservation at the National Museum of Naval Aviation in Pensacola, Forida.

We first surveyed the aircraft in 2004 and examined them again in 2006. The measurements and photos taken on this expedition will give us a third biennial data point in tracking the progress of corrosion which, so far, appears to be encouragingly slow. We're also watching for any sign of looting or souvenir hunting as planning moves forward toward the actual recovery operation.

While the dive team does its work, eight thousand miles away in Manhattan, Al Baycora (TIGHAR #2929), a senior structures engineer with the prestigious engineering firm DMJM Harris, Inc., is constructing an accurate 3D digital model of the TBD for use in planning how best to lift and move the aircraft.

Making Haste Slowly

Were this a "normal" recovery, the plane would have been out of the lagoon and in a restoration shop long ago, but the goal of this project is to preserve as much of the original aircraft as realistically possible. That means not only solving the engineering problems associated with raising the aircraft and transporting it to a distant location, but also having the procedures, infrastructure and expertise in place to deal with the inevitable conservation issues. Right now, the condition of the aircraft appears to be relatively stable. That will change when it comes out of the water.

TIGHAR is working closely with the U.S. Navy, the government of the Republic of the Marshall Islands, and the people of Jaluit, to make sure that this rare opportunity to save a Devastator is a success.

TIGHAR DEVASTATOR PROJECT

We released this photo of the aircraft, taken with the Kite Aerial Photography (KAP) technology used during the Niku V Expedition, as part of a media campaign in the fall of 2007 to publicize the fact that the wreck is not "up for grabs" but is the subject of a professional recovery and conservation effort. The campaign was a success, with the photo and the story of TIGHAR's commitment to the aircraft's preservation appearing in newspapers and magazines around the world.

Maid Of Harlech

As World War Two recedes farther and farther into the past, discoveries of relatively intact and untouched aircraft from that conflict are increasingly rare. When historic wrecks do come to light they are, as a rule, found in dauntingly inaccessible locations like the bottom of Jaluit lagoon (see "Back To The Marshalls," page 5).

But there are exceptions to the rule. As announced in the November 2007 issue of *TIGHAR Tracks*, last summer a Lockheed P-38F Lightning emerged from the sand, not on the coast of Papua New Guinea, but on a popular public beach in Wales. Since 1996, when a fatal crash at Duxford destroyed an airworthy P-38J, there has been no example of the Lockheed Lightning in any museum or collection in the United Kingdom. Major British national museums that could conserve and exhibit the aircraft are only a few hours' drive away from where the P-38F was discovered, but there are also down sides to such a remarkable situation. The airframe is full of sand, which must come out before the aircraft can be moved and the wreck rests in the tidal zone of an environmentally sensitive beach that is a designated Site of Special Scientific Interest (SSI). The aircraft's accessibility also exposes it to the depredations of souvenir hunters.

Recognizing the Lightning's historical significance as the oldest surviving Eighth Air Force combat veteran, and its potential as an object of study in corrosion research, TIGHAR has made a commitment to champion the aircraft's recovery and preservation. Local aviation historian Matt Rimmer (TIGHAR #2916) has been granted a Ministry of Defense license to recover the aircraft. It was Matt who first alerted us to the wreck's discovery and assisted the TIGHAR archaeological

Because the P-38 rests not far from another well preserved historic treasure – 13th century Harlech Castle – we've dubbed this damsel in distress the "Maid of Harlech." Photo by Walt Holm.

team throughout the October survey. Working with Gwynedd County authorities, Matt provided surveillance and security for the site for the next several months as the sands once more shifted and eventually hid the wreck from view.

Earlier this year, TIGHAR executive director Ric Gillespie, structures engineer Al Baycora, and Texas A&M conservator Peter Fix visited the site, collected environmental data, and confirmed that the aircraft is completely buried. That's just what we want. The sand not only hides the wreck from looters and protects it from storm damage, but it returns the aircraft to the relatively anaerobic environment that accounts for its remarkable state of preservation. How long it will remain covered is anybody's guess, so the TIGHAR delegation met with senior national museum officials around the UK to advocate for the aircraft's recovery and conservation.

The result of those meetings was a consensus that the Royal Air Force Museum will move forward with planning to recover the aircraft using military assets. The museum's intention is to conserve the P-38 at the Michael Beetham Conservation Center at RAF Cosford in the English Midlands and eventually exhibit the aircraft in "as found" condition at the main RAF Museum in London.

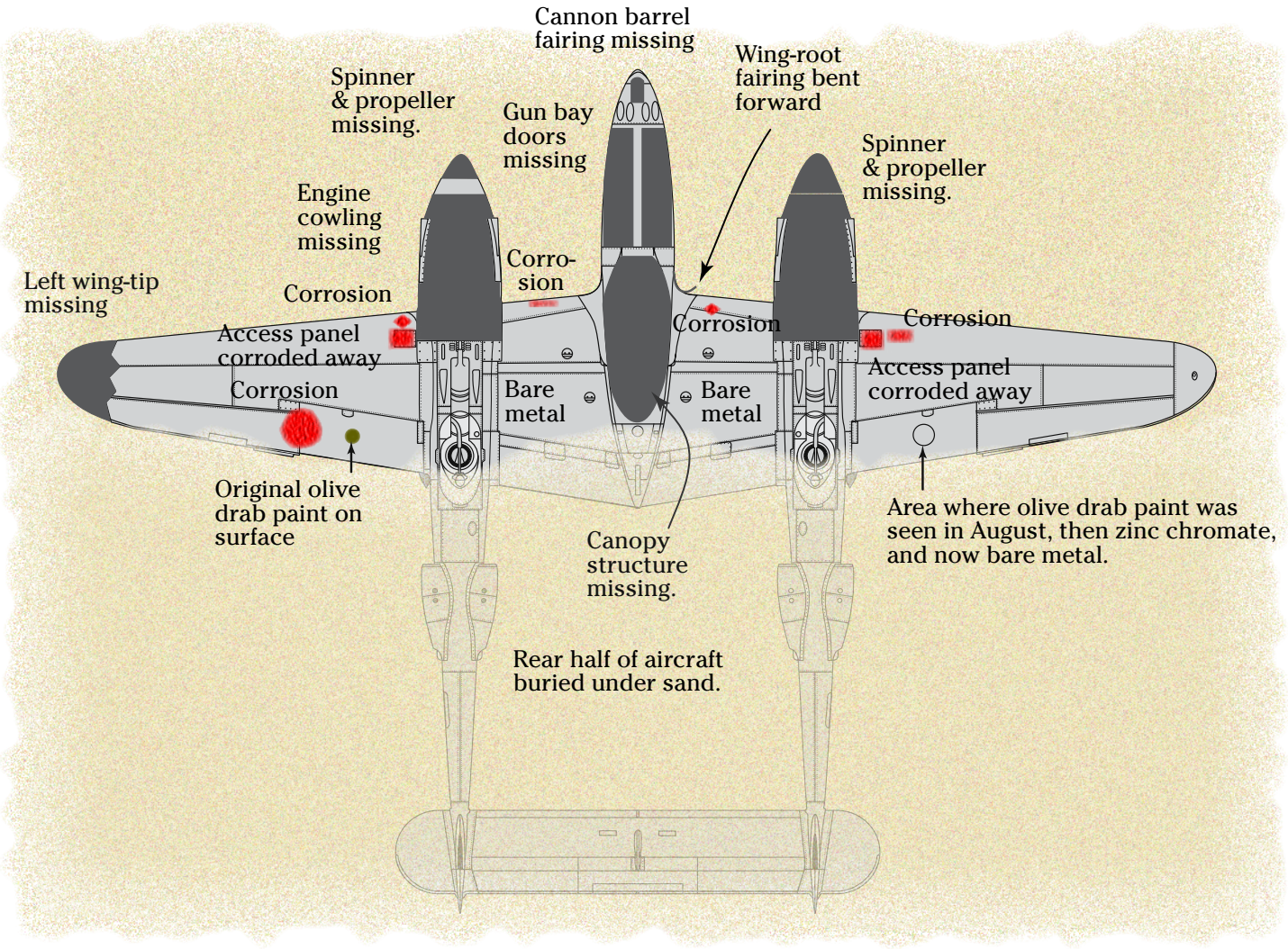
How soon the RAF Museum is able to put the necessary conservation preparations in place and organize the recovery, remains to be seen. TIGHAR will assist in connecting the museum's conservation staff with needed expertise. Meanwhile, Matt Rimmer will continue to monitor the aircraft's situation and if it becomes uncovered before the RAF Museum is ready to begin recovery operations, TIGHAR will help provide security. Should the RAF Museum for any reason decide not to proceed with a recovery, TIGHAR will seek alternative solutions to recovering and preserving the aircraft.

However it plays out, TIGHAR is committed to seeing that this rare opportunity is not lost, but advocating for historic aircraft is expensive. To help cover our costs we've set up the Maid

Airplane? What airplane? Conservator Peter Fix (left) and engineer Al Baycora on a chilly January beach where the Maid of Harlech sleeps safely beneath the sand. TIGHAR photo by Ric Gillespie.

of Harlech Memorial Fund. When the P-38 is recovered, and wherever it goes, a bronze plaque with your name, or the name of a WWII veteran of your choosing, will accompany the aircraft. In the meantime, we'll send you a handsome certificate acknowledging your support. Please use the enclosed form to make your contribution.

For more information or to donate on line, visit the Maid of Harlech section of the TIGHAR website at http://www.tighar.org/Projects/P38/welshlightning.html.



A TIGHAR survey in October 2007 revealed the aircraft to be in remarkably good condition and largely free of corrosion despite having spent 65 years in a shallow saltwater environment.