

# TIGHAR TRACKS

A PUBLICATION OF THE INTERNATIONAL GROUP FOR HISTORIC AIRCRAFT RECOVERY



Photo by NASA.

## NICE SAVE

In an air museum world that too often values appearance over authenticity, it's encouraging to see a genuine historic airplane saved from "the teeth of time and the hands of mistaken zeal." Ol' 816 (pictured above) seems to have survived both and is now slated for permanent preservation in the new Virginia Air & Space Center under construction in Hampton, Virginia. Congratulations are in order for the museum's Director Ralph T. Johnston (TIGHAR #0407), and his staff, for saving an airplane of significant individual distinction from being blown to smithereens.

The sleek delta-winged interceptor pictured above might easily be mistaken for a state-of-the-art French Mirage 2000, but 816 is from another world. It was 1958 when Convair F-106B Delta Dart, #57-2516 (the 9th of 63 production aircraft), first went to work for the USAF Air Defense Command. Dave Garroway was host of The TODAY Show and American Bandstand made its debut with Pat Boone's hit song *April Love*. There was a new star in the sky called Sputnik, and the Cold War was getting warmer as the new F-106s were scrambled to intercept formations of Soviet TU-20 Bears probing U.S. defenses. Should the anticipated atomic attack come, the Darts would launch their nuclear Genie missiles into the bomber formation, triggering a heavenly holocaust.

But the nightmare she was built for never came true and, after her Air Force career, 816 followed a time-honored tradition more typical of people than airplanes: she retired and went to work for the government. As N816NA she joined NASA in the mid-'60s testing propulsion systems for the American SST. Then in 1979 the airplane was chosen for a program called Storm Hazards Research. The idea was to fly into severe thunderstorms to collect data on the frequency and effect of lightning strikes. Over the next seven years 816 penetrated more than 1400 storms and took more

than 700 direct lightning strikes, with her nose boom recording electrical shocks approaching 100 billion amperes per second. From the data collected by 816, NASA was able to correct many misconceptions about storm penetration and solve the special problems encountered when new composite structures suffer lightning strikes. Today we all travel more safely because 816 took the heat.

The Storm Hazards program concluded in 1986 but NASA wasn't through with the old Dart. Outfitted with huge, drooping leading-edge devices known as Vortex Flaps, she tested how such wing modifications might improve the maneuverability of swept-wing fighters. The program is now completed and NASA looks for up to 20% increases in fighter agility from future applications.

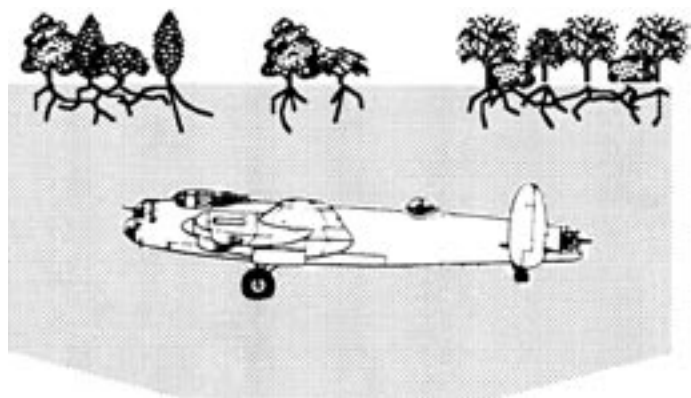
Having survived all that, you might think the old girl would be automatically accorded a place of honor in the new museum soon to open just down the road from Langley, but in fact the USAF had other plans for 816. Another F-106B (a hangar queen used for parts) was to go to the museum in masquerade ("after all, it looks the same") and the still-airworthy 816 was to become a QF-106. The "Q" was a death sentence, designating the aircraft as a target drone to be flown by remote control and blasted out of the sky, usually in a missile test. Ralph Johnston said no. The museum wanted the real thing, not a representative example. And what's more, he didn't want 816 restored or fixed-up for exhibition.

On March 18, 1991, TIGHAR's Executive Committee inspected 816 at the Langley hangar where she is now undergoing decommissioning. She looks like the working girl she is, and she's beautiful without make-up. When the Virginia Air & Space Center opens in 1992 she'll go on display as an example of what aviation historic preservation should be and can be: the real thing, presented as it really is. Stop by and see her.

# Rumor Control

## The Buried Bombers of Britain

The news was astounding. Six World War II Avro Lancaster bombers found carefully preserved and buried in the English countryside, their Rolls Royce Merlin engines (let's see, at four each, that's two dozen Merlins) interred nearby. The discovery, announced last fall, was wonderfully hi-tech. It seems that a Dr. Keith Percival-Barker of an organization called The Bomber Airfield Society, with the help of Geospace Consultancy Service of Edinburgh, Scotland, had, using ground-penetrating radar, "traced the unmistakable outline of one of the Lancasters down to a tolerance of one millimeter." Why the bevy of bombers should be so entombed was a mystery, but funds were being solicited from investors



in the hope that the languishing Lancs could soon be exhumed and at least one made airworthy right away (music up, fade to black).

There's an old saying, "If it seems too good to be true it probably is." Around Christmas time Dr. Percival-Barker and company convened on the site to take some more radar imagery and test drill down to the aircraft. Exclusive press rights were sold and, to the accompanying throb of a TV news 'copter, the tests began. Unfortunately, the radar pictures this time didn't look much like an airplane and the core samples produced only dirt. The good doctor has now decided that the site's chalky soil has corroded all the aluminum away leaving only a Lancaster-shaped cavity in the ground (don't you hate it when that happens?). A more extensive dig is planned for this spring.

## Souvenir Shop, 26 Flights Down; Bring Sweater.

Last summer the for-profit Greenland Expedition Society, after locating the fabled "Lost Squadron" (two B-17s and six P-38s) under 260 feet of icecap, succeeded in digging down to one aircraft only to find that they had uncovered a Flying Flatress. Predictably, the several tons of ice above the bomber had pushed the aircraft's ceiling to the floor and the salvagers had to

content themselves with retrieving a couple of .50 cal's and part of the mangled top turret. These went to the investor who had purchased the airplane for a reported \$250,000, sight unseen, as-is-where-is. An option on one of the P-38s had also been sold but attempts to dig down to a Lightning were flooded out by glacial melt-water. Capital investment for further excavation has not been forthcoming and plans now call for a return in August to retrieve equipment left there last year. Nothing daunted, investors are being sought for a return in 1992.

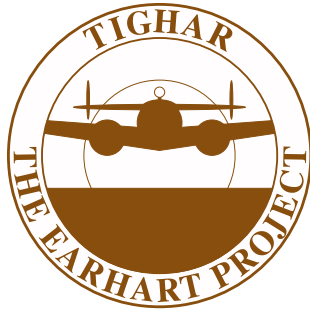
## How To Find Old Airplanes Without Leaving Your Workstation

The TBM Avenger with which Lt. (j.g.) George Bush parted company somewhere over the Pacific on Sept. 2, 1944, has been "found" according to Jim Egan (a.k.a. Warbird Salvors, a.k.a. Ferrumar Resources Corp.), of Alexandria, Virginia. He's looking for "wealthy Americans or cash-rich corporations" to provide the "few million dollars" it will take to actually go out and get the airplane. You see, everything so far has been done by computer. Back in the mid-80s Robert Lillestrand, at Control Data Corp. of Minneapolis, wrote a software program he called the Columbus Research Tool. By plugging in all the data he could find from about 500 years ago he felt he could accurately determine the spot where Chris Columbus first set foot in the New World. Without footprints in the sand or initials carved in a tree there was really no way to verify the location, but *National Geographic* wrote it up so it must be okay (right?). Now, with data provided by Egan, Lillestrand has done for the Lt. (j.g.) what he did for the Admiral of The Ocean Sea. Egan is eager to go out and get the Avenger, but there are just a couple of details to clear up: permission from the U.S. Navy and from Japan. After that all he needs is a few million dollars.



# The Return To Nikumaroro

## September 29 — November 2, 1991



**“Preparation, I have often said, is rightly two-thirds of any venture.”**

—Amelia Earhart, *Last Flight*, p. 51.

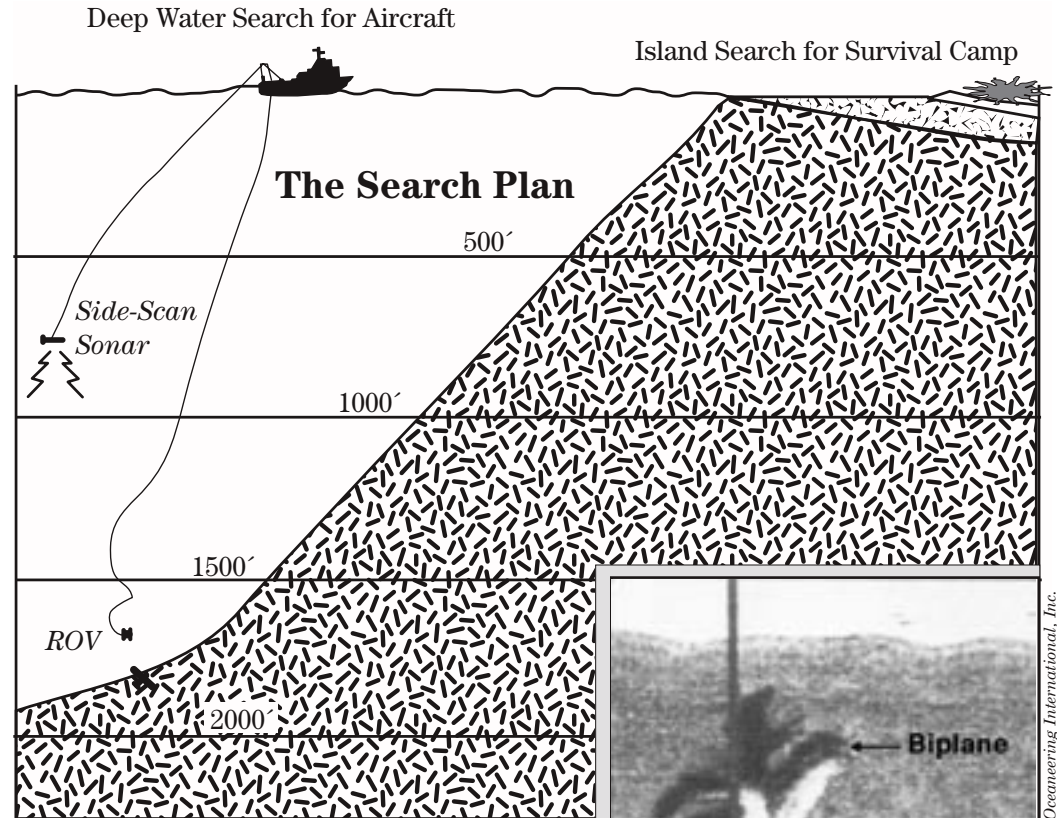
On March 2 & 3, 1991, the Earhart Project expedition team primaries and alternates assembled in Washington, DC for two days of intensive training and planning in preparation for next fall's return to the island. They also received briefings from some special guests.

- Keith Zorger, representing White's Electronics (whose metal detectors have become standard equipment on TIGHAR expeditions), demonstrated a variety of new products TIGHAR is now testing for use on the island.
- Mike Kutzleb of Oceaneering International familiarized the team with the technology that will permit a conclusive search of the deep water surrounding Nikumaroro. A towed-array Side-Scan Sonar has been selected as the principle underwater search tool. Using this system, Oceaneering has built an impressive record of discoveries. Once a target has been located by the sonar "fish," a special Remote Operated Vehicle (ROV) known as the "Phantom" will dive down to verify and photograph the find. No attempt to recover the aircraft will be made this trip.
- Bill Hillier of NBC News Productions explained plans for a two-hour, prime-time television documentary on The Earhart Project to air upon the expedition's return. The film will explore the public's enduring fascination with Amelia Earhart, examine who she really was, and document the detective story of how TIGHAR has unlocked the mystery of her disappearance. An NBC crew will accompany the expedition.

There are some strange parallels between Earhart's 1937 World Flight and TIGHAR's 1991 expedition to discover her fate. Both endeavors are second attempts to accomplish something unprecedented in history; both are long and arduous journeys requiring elaborate logistical and diplomatic arrangements; both employ the best technological support available; and both are non-government ventures funded by public contributions (AE's Electra was purchased with money donated through Purdue University). And both have as their primary purpose the setting of an example. In 1937 Earhart was out to show the world that

□ come of age. If we can do that by solving the riddle of the Earhart/Noonan disappearance, we will have performed a great service to aviation and to their memory. But in aviation archeology, as in many things, money is the difference between doing and dreaming. The budget for The Return to Nikumaroro is \$400,000, of which \$150,000 has been pledged so far. TIGHAR members

□ money has come as major donations and for those we are, of course, grateful. Other funds have come as \$5,000 Project Sponsorships. If you're able to bat in those leagues, we urge you to call Project Director Richard Gillespie to learn more about the benefits of sponsorship. But a very significant amount of the funding for The Earhart Project has come from purchases of publications and merchandise by ordinary TIGHAR members who want to help. It is no exaggeration to say that those who buy a project book, a poster, or a patch participate in the solving of the Earhart mystery just as much as those who hack through the jungle on Nikumaroro.



At right, Side-Scan Sonar imagery of Grumman F3F-2 biplane found at 1800' depth off San Diego, California by Oceaneering International in 1975. In this "sound picture" the airplanes wings and tail are easily discernable. This is the same aircraft recovered by the U.S. Navy last year and now under re-build at the San Diego Aerospace Museum (see *Hope for Drowned Airplanes*, page 6).

Photo courtesy Oceaneering International, Inc.



# The Earhart

## Summary of

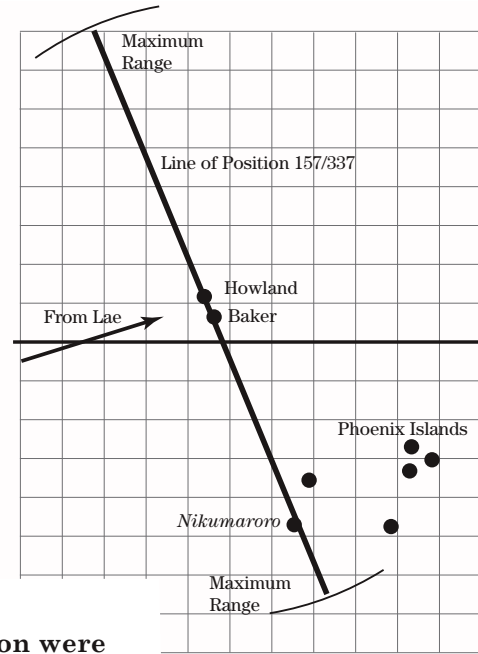
*Six distinct and independent points of evidence a Noonan landed on the reef-flat at Nikumaroro. I forces pulled the aircraft over the edge of the fring a matter of days, weeks or perhaps months.*

1

**“We are on line 157-337 ... We are running on line”**

*Source: Amelia Earhart via Itasca Log #2, July 2, 1937, 08:44.*

Earhart’s famous last transmission, often misquoted and thought to be somehow cryptic, in fact describes the standard navigational procedure for finding an island destination when only one celestial body (in this case, the sun) is observable. The Line of Position described runs not only through Howland Island but also through an alternate, emergency destination, Gardner Island (now Nikumaroro). We know she didn’t reach Howland or its sister island, Baker. Her last transmission confirms that she was “running on [the] line [of position].” Nikumaroro is the only other island on that line within her fuel range.



2

**“Here signs of recent habitation were clearly visible but repeated circling and zooming failed to elicit any answering wave from possible inhabitants and it was finally taken for granted that none were there.”**

*Source: Lt. John O. Lambrecht, USN, Senior Aviator, U.S.S. Colorado, report of July 9, 1937 flight over Gardner Island during the Earhart search.*

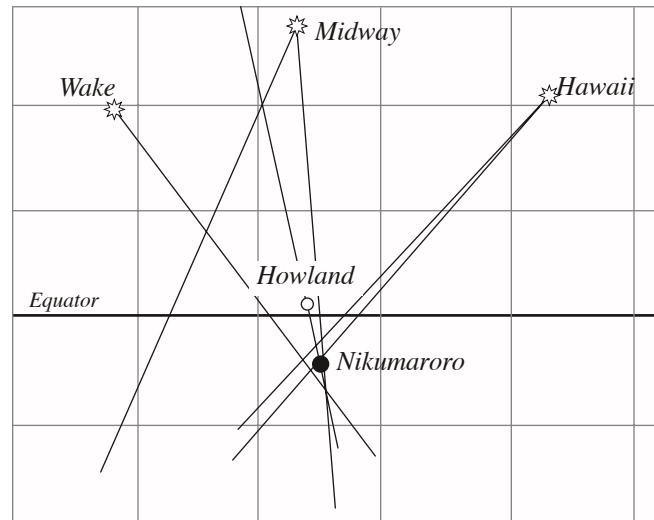
What Lt. Lambrecht couldn’t know was that there should have been no “signs of recent habitation” there. At that time, the island had been uninhabited for at least one hundred years, and even brief visits by seafaring Pacific peoples were prohibited by the British-enforced “Native Laws of 1930” which forbade inter-island canoe travel. However, because no airplane was seen, the island was crossed off and no one ever searched for signs of Earhart there again until the 1989 TIGHAR expedition.



3

**“Bearing from Wake Island places plane near line of position and intersection of radio bearings from Wake and Honolulu give indication of position [in] Phoenix Group, which further substantiated by Lockheed engineers who feel plane’s radio could function only on shore.”** *Source: U.S. Coast Guard, Official Dispatch, July 6, 1937.*

For three days following the Earhart disappearance numerous distress calls were received on her frequencies (3105 KHz and 6210 KHz), in her voice and using her call sign (KHAQQ). Five out of six Radio Direction Finder bearings taken on the signals by Pan American Airways at Wake, Midway and Honolulu, cross in the vicinity of Gardner Island.



# Part Project

## of Evidence

*All support the same hypothesis: that Earhart and For three days they sent distress calls until tidal reef. Marooned on the island, they survived for*



4



*The colonists of Nikumaroro, Christmas, 1944*

Photo courtesy Richard Evans

5

**“[I]f you found things on the east side of the island you can be pretty certain it had nothing to do with the [Coast Guard] base. To my knowledge there were only three occasions when anyone went over there. With one exception we found nothing .... The exception was a small structure we found designed to collect rain water. We assumed the natives had built it and we ignored it. But when we mentioned it to them a few months later they didn’t know anything about it.”** *Source: Richard K. Evans, formerly of USCG Unit 92, Gardner Island.*

The structure Evans describes seeing in 1944 matches the dimensions of one of the 149 gallon fuel tanks mounted in the fuselage of Earhart’s aircraft. The water-collecting cloth which he says was rigged above the tank matches the engine covers Earhart had made especially for her airplane. Herb Moffitt, who was with Evans that day, corroborates the story and adds his recollection of a very old campfire site, a rusty five gallon can, and a pile of bird bones. Both agree that the camp site was along a particular stretch of the island’s eastern shoreline.

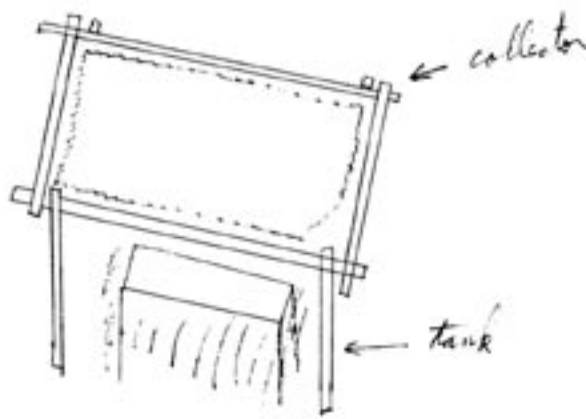


*Part No. 28F-4023, Navigator’s Bookcase.*

Photo courtesy National Archives.

**“...[T]he native was walking along one end of the island. There in the brush about five feet from the shoreline he saw a skeleton. What attracted him to it were the shoes. Women’s shoes, American kind ... size nine narrow. Farther down the beach he found a man’s skull but nothing else.”** *Source: Chief Carpenter’s Mate Floyd Kilts, USCG (Ret.) via the San Diego Tribune, July 21, 1960.*

Gardner Island became Nikumaroro in December, 1938, when a small group of settlers from the Gilbert Islands came ashore to clear land for coconut planting. The story about bones being found by these first colonists was told to Kilts when he was there in 1946 to dismantle a U.S. Coast Guard Loran navigation station that had been set up there in 1944. Amelia’s shoe size was nine narrow.



6

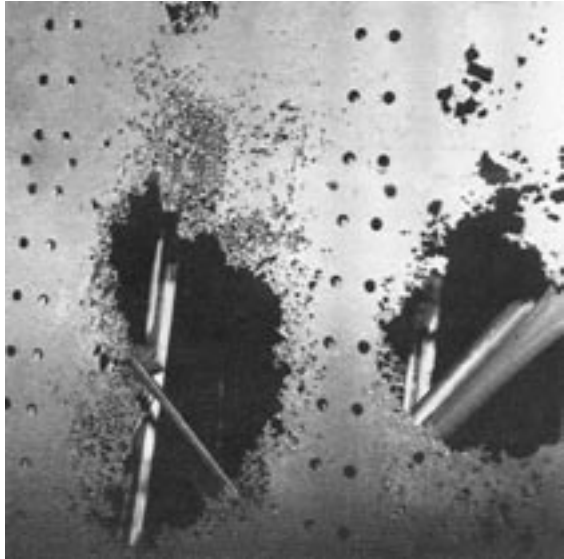
**“Based upon the analysis conducted by the FBI Laboratory with respect to the paint-like deposits on Q1, nothing has been found which would disqualify this artifact as having come from the Earhart aircraft.”** *[emphasis in the original]. Source: James E. Corby, Chief, Materials Analysis Unit, FBI Laboratories, Washington, D.C.*

The artifact known as Q1 to the FBI, and as Accession #2-1 to TIGHAR, has been positively identified as an aircraft navigator’s bookcase from Earhart’s era. It was found on Nikumaroro by TIGHAR’s 1989 survey expedition and is the only physical evidence of Earhart’s fate ever to pass expert analysis.

# Hope For Drowned Airplanes

The phenomenon is as common as it is frustrating: a rare aircraft is recovered from an ocean, lake or swamp only to begin corroding away as soon as it hits the air. Aluminum skins and structures which emerged from the deep apparently strong and sound begin to exhibit tiny pits which, like a cancer, rapidly grow and spread until all that's left is a pock-marked lacework shadow of what was once an airplane. The common remedy is to cut out and discard the diseased metal and replace it with new material. The operation is usually a success but the patient, the original airplane, dies in the process and we're left with museums filled with mostly new stuff that looks like what we think the old stuff would have looked like when it was new.

A still small, but growing, number of professionals in the field of avia-



TIGHAR photo by P. Thrasher

*Fuselage skin from Grumman F3F-2. When recovered off San Diego in April, 1990 the aircraft's aluminum was unblemished and its Marine Corps markings were still bright despite 50 years at 1800 feet beneath the ocean. However, despite rinses, steam blasting and corrosion inhibitors, this panel, like most on the aircraft, quickly deteriorated and has had to be removed and replaced with new material.*

tion historic preservation think it would be better to save the real thing—and they're doing something about it. The problem, of course, is how to arrest the demon corrosion? TIGHAR has joined an international coalition of conservators and preservationists from France and Australia in an attempt to perfect a new technique that promises to be the answer to economical, permanent stabilization of metals recovered from underwater. French scientist Christian Degri-

gnigny has developed an electrolytic process which has successfully stabilized small artifacts. This summer, in a series of experiments at the Australian War Memorial in Canberra, Degri-gny and the museum's Senior Conservator of Metals, David Hallam (TIGHAR #0912C) and his staff, will adapt the procedure to large structures including American and Japanese aircraft components recovered from salt water (see sidebar). Unfortunately, a recent funding cut-back at the Australian War Memorial has left the program about US\$12,000 short, and an appeal has been made for assistance from the aviation historic preservation community. At a meeting on March 22, 1991, TIGHAR's Board of Directors approved a recommendation by the Executive Committee to include up to \$4,000 of funding for this research in the Earhart Project budget, and actively encourage further contributions to the program from members and other organizations. Any recovery of the Earhart Lockheed from the deep water where it certainly now resides would be unconscionable without an effective means of stabilizing and preserving the aircraft. But beyond that, aqueous environments today represent the repositories of most of the world's significant unrecovered aircraft. The ability of museums to effectively and economically stabilize such artifacts, rather than create complex and expensive reconstructions as they do now, would be a major step on the way to an air museum community which genuinely saves aircraft of the past.

TIGHAR has a complete copy of the Australian War Memorial Proposal describing in detail the process developed and the experiments contemplated. Individuals and organizations interested in learning more and possibly contributing to the program are urged to contact Richard Gillespie or Patricia Thrasher at TIGHAR Headquarters.

## Detoxing Aluminum

You rinse it with tons of fresh water—and it corrodes. You blast it with a steam hose and with bicarbonate of soda to remove every vestige of contaminants—and it corrodes. You coat it with expensive corrosion inhibitors—and still it corrodes. Why? Why is it seemingly impossible to make an airplane that has spent a long time underwater behave like it did before it went in the drink? The answer lies within the metal itself. When aircraft are submerged for long periods of time, chlorides in the water (whether salt or fresh) combine with and become part of the aluminum components, especially those with large surface areas, such as wing and fuselage skins. These corrosion producing chlorides, known as "aggressive agents," cannot be extracted by washing or blasting, and while the application of corrosion inhibiting coatings may retard the process, the poisons are still there and will eventually do their work.

The process developed by Degri-gny, and to be adapted for aircraft at the AWM, involves immersing the contaminated metal in a series of special chemical solutions in the presence of a mild electrical current. The offending chlorides are thus removed from the aluminum and the metal becomes as stable as it was before the dunking. Simple in principle and already proven in practice, the process still needs some refinement to make it economical and practical for application to large, complex artifacts like aircraft. The experiments to be conducted in Australia this summer, if adequately funded, should make it possible to retire the sheet metal shop as the primary airplane restoration tool.



**Expedition XX April 13 – 29, 1991**

## *The 20th Maine*



In 1863 one of the Civil War's most famous volunteer regiments, the 20th Maine, turned the tide of the battle of Gettysburg on the slopes of a hill called Little Round Top. This spring, TIGHAR's 20th Maine, a volunteer regiment of members comprising the foundation's 20th expedition into the hills of remote Washington County, Maine, will continue the investigation into the fate of l'Oiseau Blanc. The White Bird of French transatlantic aviators Charles Nungesser and François Coli "vanished like a midnight ghost" on May 9, 1927. Had the Paris to New York flight arrived as expected, Lindbergh's solo crossing just ten days later would never have occurred but, as it happened, the mysterious disappearance of the French WWI heroes significantly heightened the effect of the Lone Eagle's success. And now, 64 years later, after more than six years of research and field work, TIGHAR has pieced together most of the strange story of what became of the airplane and its crew.

Still, some major questions remain, such as: Who removed the wreckage from the wilderness crash site *circa* 1974? What was their motivation? And most important: Where is it now? Some 54 artifacts found so far tell a fairly detailed story of the salvage operation, just as six witnesses from 1927 describe the route of flight that ended in the crash on Third Round Lake Hill; while another witness confirms the wreck's presence at that spot in 1951.

This 20th foray into the now familiar, but no less rugged, search area will use new metal detection technology provided by White's Electronics of Sweet Home, Oregon, to try to find more artifacts left behind or missed by the salvagers. At the same time, new investigative efforts in the local community will attempt to discover who took what and where they went with it.

In the chill and damp of the Downeast spring, TIGHAR's 20th Maine will face its own battle on its own hill, and perhaps find its own place in history.

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## New Projects

**Member support (in the form of little colored slips of paper with numbers and signatures on them) has made it possible to pursue two new possibilities for the eventual recovery of some very historic aircraft.**

### ***Doolittle Raider B-25B, Aircraft #40-2267***

Since the Project Proposal went out to all TIGHAR members in January, contributions have been sufficient to permit TIGHAR to undertake the initial steps in the effort to locate, evaluate, and, if possible, recover the only one of the sixteen Mitchells which might realistically still exist. Ditched just off a Chinese coastal island, Lt. Donald Smith's airplane floated for an estimated eight minutes allowing the crew to reach shore unhurt.

Wing Commander Stephen P. ("Stumpy") Longbottom, RAAF (TIGHAR #0870C), Assistant Air Attache at the Australian Embassy in Washington, D.C., recently arranged a meeting between TIGHAR's Executive Committee and Col. Zhang Yongyin, Assistant Air Attache for the Embassy of The People's Republic of China. Col. Zhang responded enthusiastically to the project and is now acting as liaison for discussions between TIGHAR and the Chinese Air Force Museum. The foundation has suggested a cooperative effort in which Chinese permission and equipment, and TIGHAR funding and personnel, would make possible a site survey to determine whether recovery is feasible. If recovered, the aircraft would be the subject of a trade between the CAFM and an appropriate U.S. museum. More later.

### ***Bellanca WB-2 "Columbia"***

Many TIGHAR members have volunteered to participate in an archeological dig for the remains of the finest aircraft of the 1927 transatlantic competition. Burned up in a 1934 barn fire at the old Bellanca Airfield in New Castle, Delaware, the remains were apparently never salvaged. Plans are in process for a harrowing expedition into the wilds of Delaware, probably this June or July. A special mailing will soon go out to all who have expressed an interest.

## FROM TIGHAR HQ

In response to a number of requests, we've looked into using recycled paper for *TIGHAR Tracks*. Then we looked away again, when we found out what it would cost. Now TIGHAR is happy to announce that it is joining the ranks of recyclers. A local trash collection company has started a service of collecting office paper for recycling, so all those envelopes, newspapers, messed-up letters, and the general trash generated by any office will now be recycled into paper for others to use.

Also in response to a number of requests, beginning with this issue all *TIGHAR Tracks* will be offset slightly to allow three-hole punching without losing text. Let us know how it works out.

Directories have been mailed to all those who ordered one. If you would like to have a 1991 Membership Directory, please send \$10.00 to TIGHAR, and we'll send you one. If you ordered and paid for a Directory and have not received it, please let us know.

Speaking of not receiving things – if you order something, or write us a letter, and don't receive anything back, please get in touch with us again; we may not have received your order, or you may not have received something we mailed. Or maybe we just goofed up, in which case we should know about it.

**TIGHAR** (pronounced "tiger") is the acronym for The International Group for Historic Aircraft Recovery, a non-profit foundation dedicated to promoting responsible aviation archeology and historic preservation. TIGHAR's activities include:

- Compiling and verifying reports of rare and historic aircraft surviving in remote areas.
- Conducting investigations and recovery expeditions in co-operation with museums and collections worldwide.
- Serving as a voice for integrity, responsibility, and professionalism in the field of aviation historic preservation.

**TIGHAR** maintains no collection of its own, nor does it engage in the restoration or buying and selling of artifacts. The foundation devotes its resources to the saving of endangered historic aircraft wherever they may be found, and to the education of the international public in the need to preserve the relics of the history of flight.

*TIGHAR Tracks*, published seven times each year, is the official publication of The International Group for Historic Aircraft Recovery. A subscription to *TIGHAR Tracks* is included as part of membership in the foundation (minimum donation \$35.00 per year). The editors welcome contributions of written material and artwork. Materials should be addressed to: Editors, *TIGHAR Tracks*, 1121 Arundel Drive, Wilmington, DE 19808 USA, Telephone 302/994-4410. Photographs and artwork will be returned on request.

## MEMBERSHIP FORM

I would like to join TIGHAR. Enclosed is my donation of

\$35.00 for a one year membership

\$60.00 for a two year membership

\$125.00 for a five year membership

\$1,000 for a life membership

Please send me —

*TIGHAR Tracks* seven times a year, and a membership patch and decals  
Invitations to participate in expeditions, courses, seminars, and Gatherings  
Opportunities to subscribe to special internal TIGHAR project publications  
Opportunities to do research, interviews, and reports for aviation historical projects

Name

Address

Telephone

Please return this form with your membership dues in U.S. funds only, to TIGHAR, 1121 Arundel Drive, Wilmington, DE 19808 USA; Telephone (302) 994-4410, 9 a.m. to 5 p.m. EST/EDT, M-F. ALL DONATIONS TAX-DEDUCTIBLE WITHIN THE LIMITS OF THE LAW.

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