TIGHAR TRACKS

June 2012

Niku VII Expedition Overview

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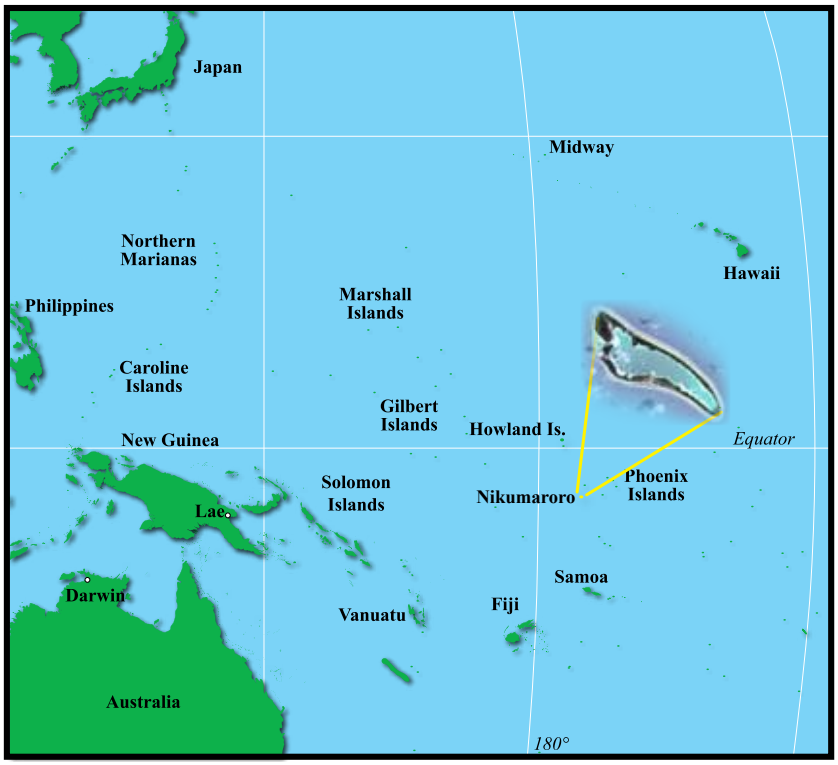
Expedition Purpose & Objective

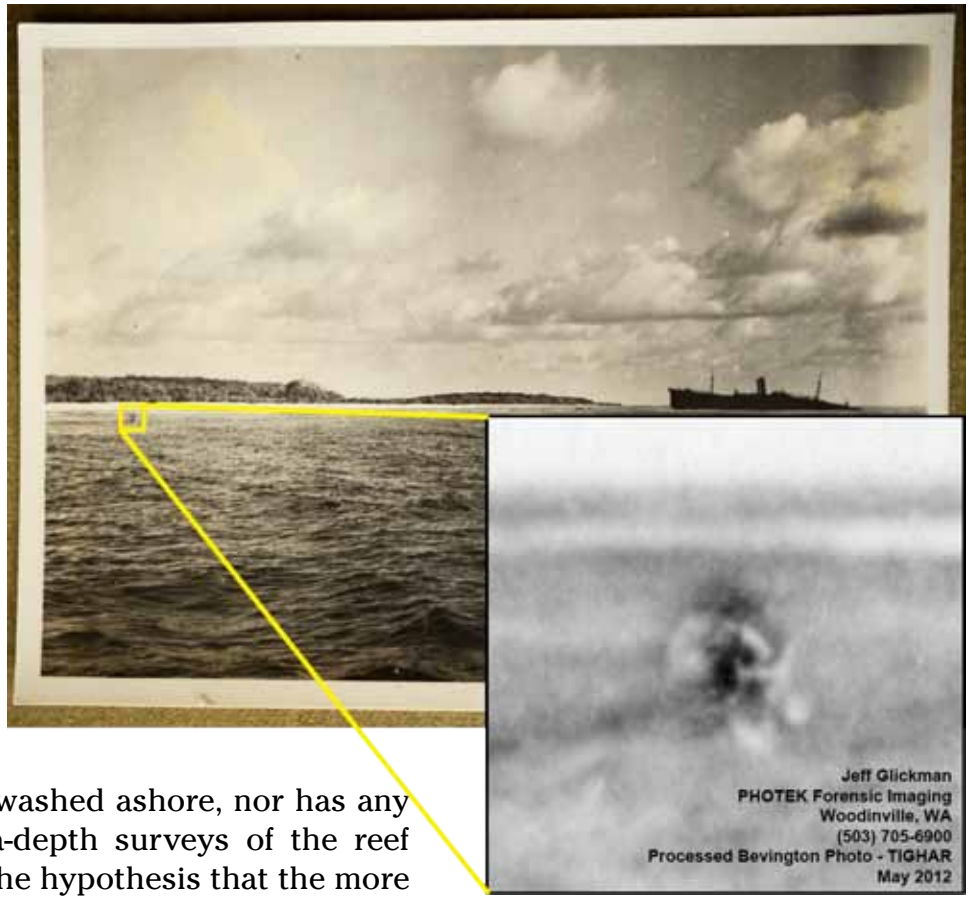
The purpose of the Niku VII expedition is to conduct a thorough search of the underwater reef slope off the west end of Nikumaroro for surviving wreckage from Amelia Earhart's Lockheed Electra. Nikumaroro, formerly Gardner Island, is an uninhabited coral atoll in the remote Phoenix Group, part of the Republic of Kiribati. The search area has been defined through interpretation of the available evidence. The search methodology and technology has been selected through consultation with the best available sources.



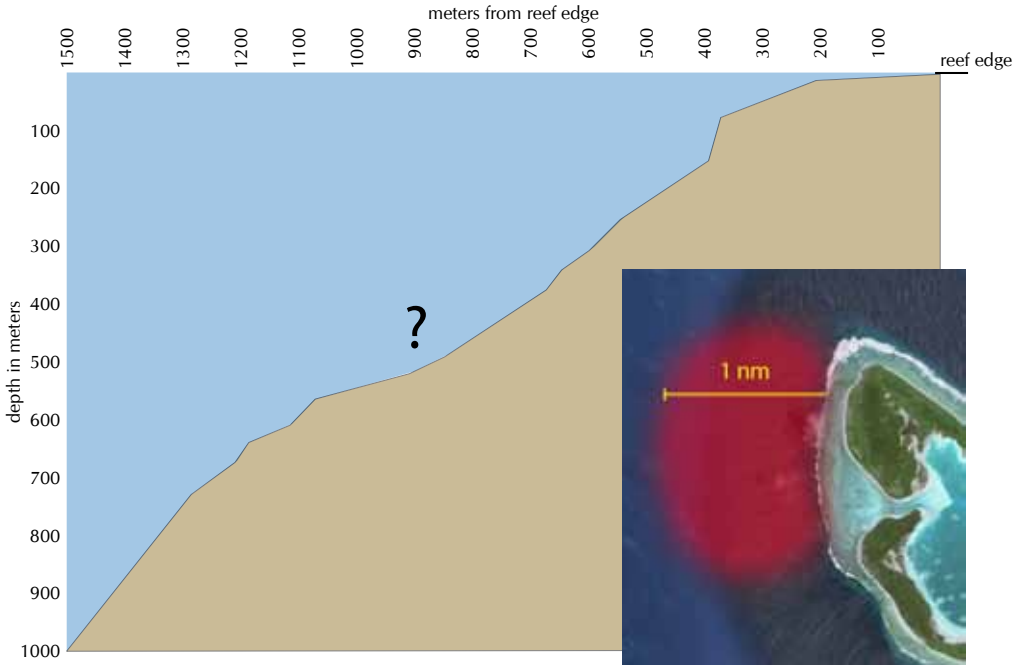
The objective of the expedition is to locate, identify, and photograph any and all surviving aircraft wreckage. No recovery of wreckage is contemplated. If wreckage is found, the imagery acquired on this expedition will be used to mount a subsequent recovery expedition equipped to safely retrieve and properly conserve whatever remains of NR16020.

Search Area

The primary search area is based upon the hypothesis that the aircraft landed safely on the reef and remained there for several days before being washed over the reef edge by rising tides and surf at or near the point where the object on the reef – thought to be a detached landing gear assembly – appears in the 1937 Bevington Photo.



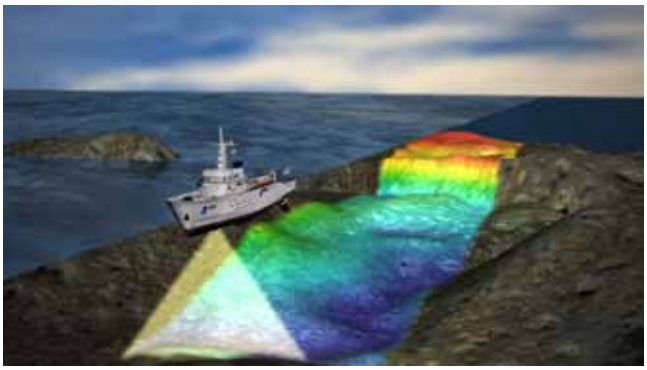
Aircraft debris reportedly found and used by island residents in later years, and aircraft parts found by TIGHAR in the abandoned village strongly suggest that the aircraft broke up in the relatively shallow surf zone. No large components (engines, main beam, etc.) seem to have washed ashore, nor has any debris been seen during scuba-depth surveys of the reef slope. This expedition will test the hypothesis that the more



massive parts of the aircraft traveled down the reef slope and came to rest in, as yet, unexplored depths.

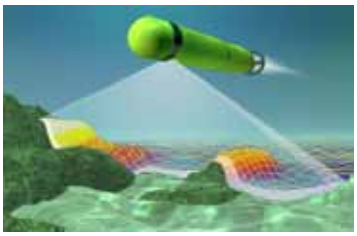
The Niku VII expedition will have the capability to search with high-frequency side-scan sonar and take black & white photos down to a depth of 1,500 meters (4,921 ft). The expedition will be able to do detailed examination of sonar targets using high-definition video down to a depth of 1,000 meters (3,300 ft.). The available bathymetry indicates that the reef slope reaches that depth more than a mile out from the reef edge. If the hypothesis is correct, the wreckage should be well within the proposed search area.

Search Methodology

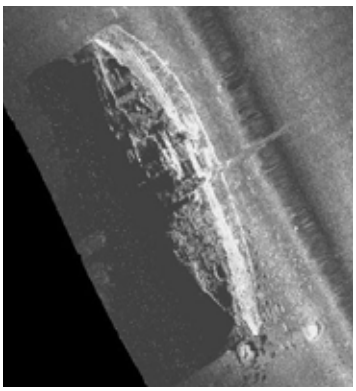


Step 1. Map the search area using multi-beam sonar hull-mounted on the expedition vessel, supplemented in shallower areas by multi-beam sonar mounted on the Autonomous Underwater Vehicle (AUV).

Step 2. Search the mapped area with side-scan sonar mounted on the AUV. The AUV is an unmanned, free-swimming robotic submersible that is programmed



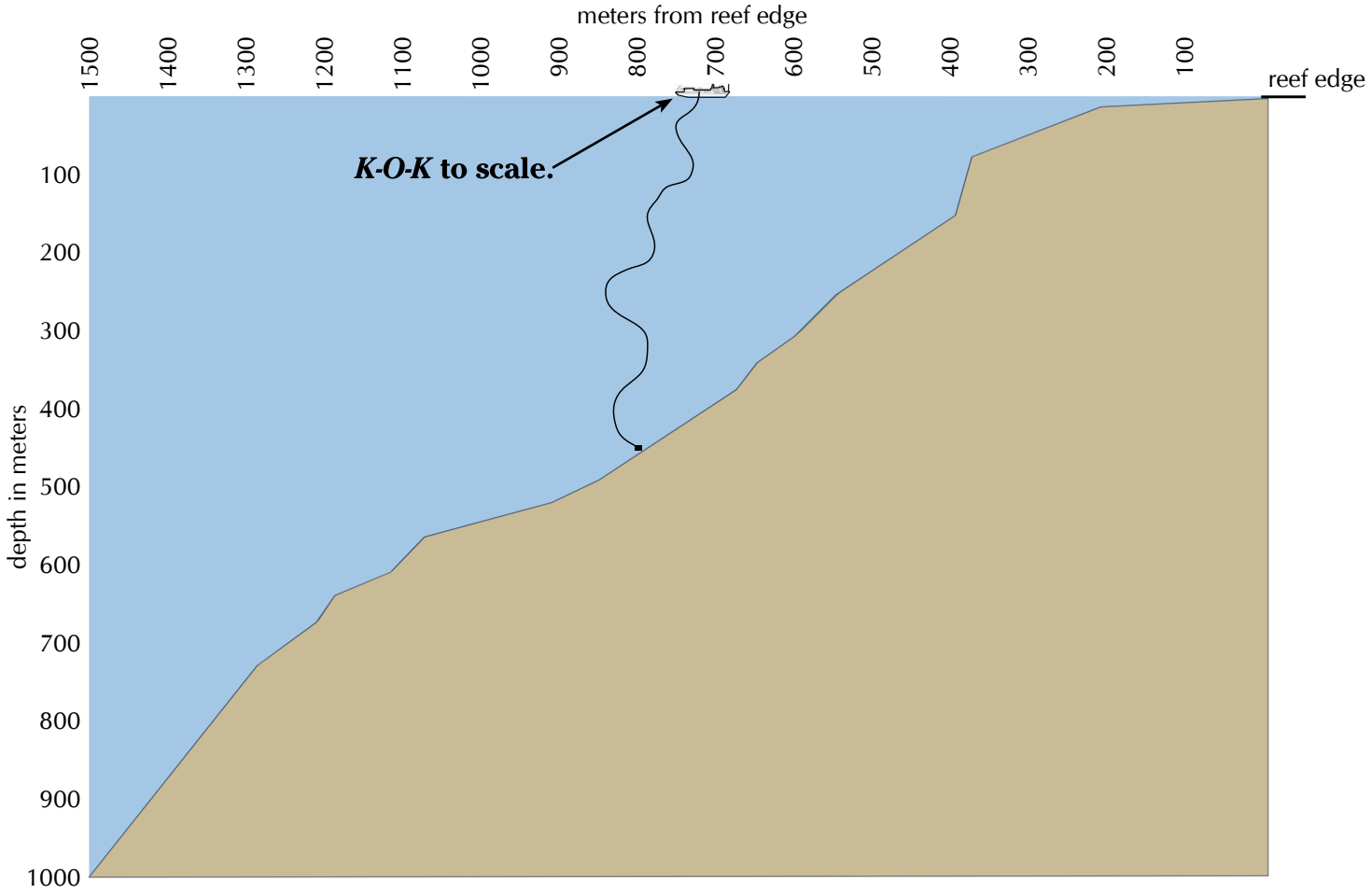
to carry out a particular search mission using its own onboard inertial navigation system. It is battery-powered and has a potential endurance of up to 24 hours, although our missions will be much shorter – probably no more than six hours. At the end of a mission the AUV is recovered, the data it has collected are downloaded, the batteries are swapped out for fresh ones, and the AUV is reprogrammed and launched for another mission. The data downloaded from the first mission are then analyzed and any targets of interest flagged for future investigation.



Side-scan sonar produces the clearest image when the target is on a flat sandy bottom. Our potential targets are not on a flat sandy bottom. This will be a difficult search.

Step 3. When the AUV has concluded its coverage of the search area, the collected sonar data have been analyzed, and a list of targets of interest has been compiled and prioritized, a Remote Operated Vehicle (ROV) will be deployed to investigate the targets. The ROV is tethered to the expedition vessel and is "flown" to the desired location by an operator in a dedicated control van installed aboard the expedition vessel. The

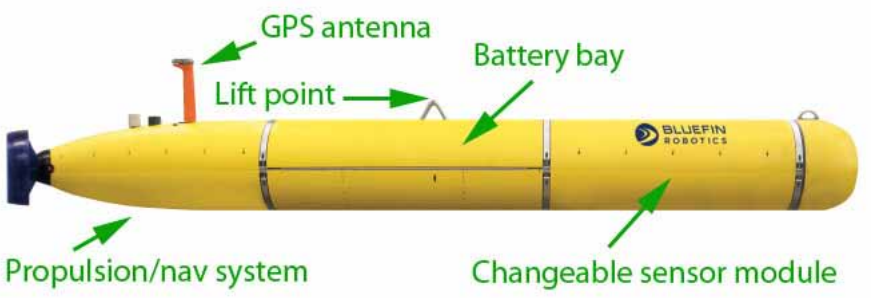
ROV is equipped with sector-scan sonar to help re-locate the target. It has powerful lights and high-definition video cameras to provide real-time imagery to the operator. A manipulator arm can be used to remove obscuring objects.



Search Technology

The overall contractor for managing the search operation is Phoenix International Holdings, Inc., the U.S. Navy's primary contractor for deep ocean search and recovery.

The AUV will be a Bluefin Robotics 21 capable of simultaneous multi-beam and side-scan data collection and, as a separate payload, black & white still photography down to 1,500 meters (4,921 feet).



The ROV will be a Submersible Systems, Inc. (SSI) TRV 005 capable of depths down to 1,000 meters (3,300 feet).

Documentation

The Discovery Channel will have a three-person film crew aboard shooting video for a two-hour special to air later this year. Mark Smith of Oh Seven Films will be shooting video for TIGHAR. Daily reports will be posted on the TIGHAR website at http://tighar.org/Projects/Earhart/niku7dailies.html.

Expedition Itinerary

Thur. 6/15	ROV and associated equipment depart Patterson, Louisiana via FedEx Freight (truck).
Tue. 6/19	ROV and associated equipment arrive Long Beach, CA.
Wed. 6/20	ROV and associated equipment depart Long Beach via FedEx Ocean (ship).
Fri. 6/25	AUV and associated equipment depart Quincy, Massachusetts via FedEx Express (air).
Tue. 6/26	ROV and AUV arrive Honolulu.
Thur. 6/27	Ric Gillespie, camera crews and Phoenix Int'l crew arrive Honolulu.
Fri. 6/28	ROV, AUV and associated equipment loaded aboard R/V *K-O-K*.
Sat. 6/30	TIGHAR team arrives.
Sun. 7/1	Dockside trials of AUV and ROV. Press event dockside hosted by FedEx and Discovery Channel.
Mon. 7/2	Departure press event dockside. Expedition departs 08:00.
Mon. 7/9	Expedition arrives Nikumaroro. Begin search operations.
Thur. 7/19	Conclude search operations. Depart Nikumaroro.
Fri. 7/27	Expedition arrives Honolulu.
Sat. 7/28	Demobilization.

Expedition Team

1. Richard Gillespie – TIGHAR Executive Director & Expedition Leader
2. Megan Lickliter-Mundon, MS.Sc. – TIGHAR Archaeologist
3. Timothy Mellon – TIGHAR sponsor/volunteer
4. Andrew Sanger – TIGHAR sponsor/volunteer
5. Mark Smith – TIGHAR camera
6. Paul Nelson – Phoenix Technician
7. Evan Tanner – Phoenix Technician
8. Charles Kapica – Phoenix Technician
9. Craig Turner – Phoenix Technician

10. Jesse Doren – Phoenix Technician
11. Wolfgang Burnside – SSI Technician
12. Malcom Griffiths – SSI Technician
13. William Halloran – Bluefin Technician
14. Benjamin Pelletier – Bluefin Technician
15. Steven Schnee – Discovery producer
16. Donald Friedel – Discovery camera
17. Vincent Liotta – Discovery sound

Ship Description & Photo Gallery

R/V *Ka'Imikai-o-Kanaloa* (aka K-O-K)

Built:	1979 (modified 1993)
Length:	223 feet
Beam:	38 feet
Draft:	13 feet 6 inches
Gross Tonnage:	259
Displacement:	1,961 tons
Crew:	14
Science Crew:	19
Ownership:	State of Hawai'i
Speed:	10 knots
Endurance:	50 days
Range:	15,000 NM
Main Engines:	2 Detroit Diesel, 1,035 SHP ea.
Bow Thruster:	1,000 HP electric (derated to 250 HP)
Service Generator:	250KW 12V71 Detroit Diesel
Auxiliary Generator:	150KW 8V71 Detroit Diesel
Water maker:	Reverse osmosis system

K-O-K is equipped with a hull-mounted SeaBeam 210 multi-beam sonar bathymetric mapping system capable of acoustically charting seafloor topography with high resolution coverage to depths of 11,000 meters (nearly seven miles).

K-O-K from the forward starboard quarter.

"Air Castle" – open area amidships.

Skiff – fiberglass hull, inflatable sides.

Hangar

Bridge

Bridge, communications station

Galley

Mess

Laundry

Lower Deck – Conference Room, Laboratories, Lounges, Offices

Conference Room

Laboratory

Laboratory

Lounge

Upper Deck – Cabins

Most cabins share a head and shower with the cabin next door.

Nikumaroro

16 June 2012

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