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Central Pacific Edition

M/V Mermaid Vigilance

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## The Search

### Where to Send the REMUS?

No matter what you are seeking, be it lost car keys or a Lockheed Electra, two conditions must be satisfied: you must be able to see what you are looking for, and you must look in the right place. WHOI's REMUS 6000 has the sensors to detect the Electra, provided we send it to the right place. Today the analysis team gathered to review the body of analysis work we have conducted over the years to give a search area to the REMUS team to plan their survey.

Forty years of research by Elgen Long, pilot, aircraft investigator, and author of *Amelia Earhart: Mystery Solved* form the basis of solid information about Amelia's disappearance. Aeronautical analysis of Earhart's fuel consumption was performed by Dr. Fred Culick of Cal Tech. His analysis confirms that Amelia ran out of fuel right around the time of her last radio transmission, which is consistent with her own assessment that "gas is running low."

A series of radio messages were received by the Coast Guard cutter *Itasca* in the preceding two and a half hours that tell us a lot about what Amelia was doing. Though the messages make it clear that she was desperately trying to find Howland Island and went down in the ocean nearby when her fuel ran out, the details are open to some interpretation. Because of this, the point the Electra went down is uncertain.

But the radio messages tell us more than just words. Led by Chief Radioman Leo Bellarts, the radio operators on *Itasca* recorded the strength of the signals they received. Engineering analysis of these radio transmissions can determine her distance from Howland Island. This work has been led by Tom Vinson and Rod Blocksom of

Rockwell Collins, with the support of a cadre of radio engineers from the Collins Amateur Radio Club. The CARC team has invested over 4,000 hours into this endeavor, including a number of experiments to compute sea-wave propagation, measure performance of vintage radio equipment, and determine antenna patterns, among others.

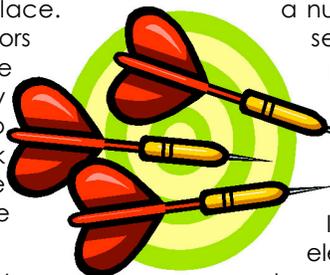
Another clue in the analysis is visibility of the island. Howland Island is very small with little elevation, and Amelia would have been looking into the rising sun.

Scientific analysis of visibility distance under the conditions of Earhart's flight was performed at MIT Lincoln Labs among others. Elgen flew the approach himself to judge visibility under similar circumstances.

Using this information, navigation reconstruction of her final flight and statistical "renavigation" analysis has been done by Nauticos using techniques proven to be successful in other searches. This approach used a "decision tree" to explore a range of assumptions in the flight scenario. In a second technique, called a Monte Carlo analysis, Jeff Palshook of Nauticos explored four million computer-generated paths to generate a search area. A third approach developed by the CARC team did not assume any path at all, but rather considered the basic statistics of the problem and created a probability map. All three of these analyses rely on the radio range analysis performed by CARC. All are in excellent agreement.

Taking into account all of the uncertainties of the problem, the Electra should lie on the seafloor near Howland Island, somewhere in a region of about 1,800 square miles. This is a large area – half again the size of the State of Rhode Island, and around 18,000 feet deep. Over prior expeditions, almost 85% of this area has been searched.

Our meeting concluded with firm direction for the REMUS search team to pick up where we left off and complete the search for the Electra.



**Plan of the Day** February 24, 2017

**0001-2400** Transit.

**0900** SEA School: Sea porch, Marika.

**1000** Daily Progress Meeting.Ops Ctr.

**1030** Engine Room tour.



### Captain Elgen Long

Aviator, author, explorer

"Preparation is rightly two-thirds of any venture." – Amelia Earhart

Preparation for this endeavor began many years ago, with the research of Elgen and Marie Long. An aviation pioneer in his own right, and a veteran of the Flying Tigers commercial cargo airline, Elgen won a Gold Air Medal in 1971 for his successful solo trip around the world, pole-to-pole. Flying a small twin-engine Piper Navajo, alone for many hours over uninhabited Arctic wastelands, Elgen must have felt a strong kinship to Amelia and an

understanding of her motivation and vision. As a long-distance pilot, engineer, and navigator, Elgen is well suited to research and analyze the circumstances surrounding Amelia's tragic loss. He has acquired a wealth of valuable data including flight records, equipment specifications, actual working instruments, and field observations personally taken during flights along Amelia's route.

Elgen has proven to be a remarkably thorough detective, carefully documenting and organizing his information, and avoiding second-hand reports whenever possible. For example, he personally conducted interviews, preserved on tape, with members of the crew of *Itasca* who heard Amelia's last words; nuances of tone of voice and details not captured in official reports were noted. Official reports and other documents of the time were cataloged for reference. Another example is the working

radio, of identical design and comparable vintage to Amelia's, which he has collected and operates to study radio propagation (a crucial issue in the analysis). His training as an aeronautical engineer with significant flying experience heightens his credibility and that of his data. He has spent many years flying around the Howland Island area, and has personally observed the weather conditions prevailing in the region. We are very lucky to have Elgen with us as we strive to solve the mystery of Amelia.



### It's National Engineers Week Hug an Engineer Today!



The Engineer won't like it, but do it anyway!

### Nauticos "SEA" School

One of the greatest assets of our mission is the quality of the team that is working together. We have a wide range of talent on board, and the Nauticos SEA School allows all of us to share what we know best and learn from others. In this way, we all better understand the many complex aspects of our mission and we become a stronger team. And equally important, it's fun!

SEA school will be in session throughout the mission. Topics will range from background

information on our mission, ships operations and systems, and other topics that highlight some of the unique skills of some of our team members. All members are encouraged to attend and also to be a sea school presenter. The time and location of SEA school classes will be established by Sallie, SEA School coordinator.

**Today's SEA School:** As soon as a massive pile of colored paracord was plopped on the picnic table, Sue proved she was out to win the award for most engaging SEA School class! Though most of us had to unwind our creations a time or two, we all walked away with beautifully knotted survival bracelets. The crew was enthralled, and the event proved to be a great team building exercise. There are rumors Pam was weaving a



stockpile of the new fashion late into the night.



### MERMAID CLASSIFIEDS

PERSONALS 100

WANTED 200

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Place New Ads by Friday – ed.