

WHERE IS THE ELECTRA?



If Earhart and Noonan, died on Nikumaroro, where is the Electra? The short answer is, we don't know. We can, however, make a few logical deductions about where it can't be and where it might be.

- ❖ If any of the nearly two hundred radio distress calls that were heard for at least four nights after the disappearance were genuine – and about half of the reported signals do seem to have been genuine – then the aircraft had to have made a relatively safe wheels-down landing and been able to run an engine to recharge the batteries.
- ❖ That means the distress calls could not have been sent if the plane landed in the lagoon or the ocean.
- ❖ Had the airplane landed on the beach or in any of the atoll's few open areas it should have been discovered by the Navy's aerial search, later island inhabitants, or TIGHAR's searches.
- ❖ That leaves as the only alternative the atoll's fringing reef, which dries at low tide and is smooth enough in some places to land an airplane.



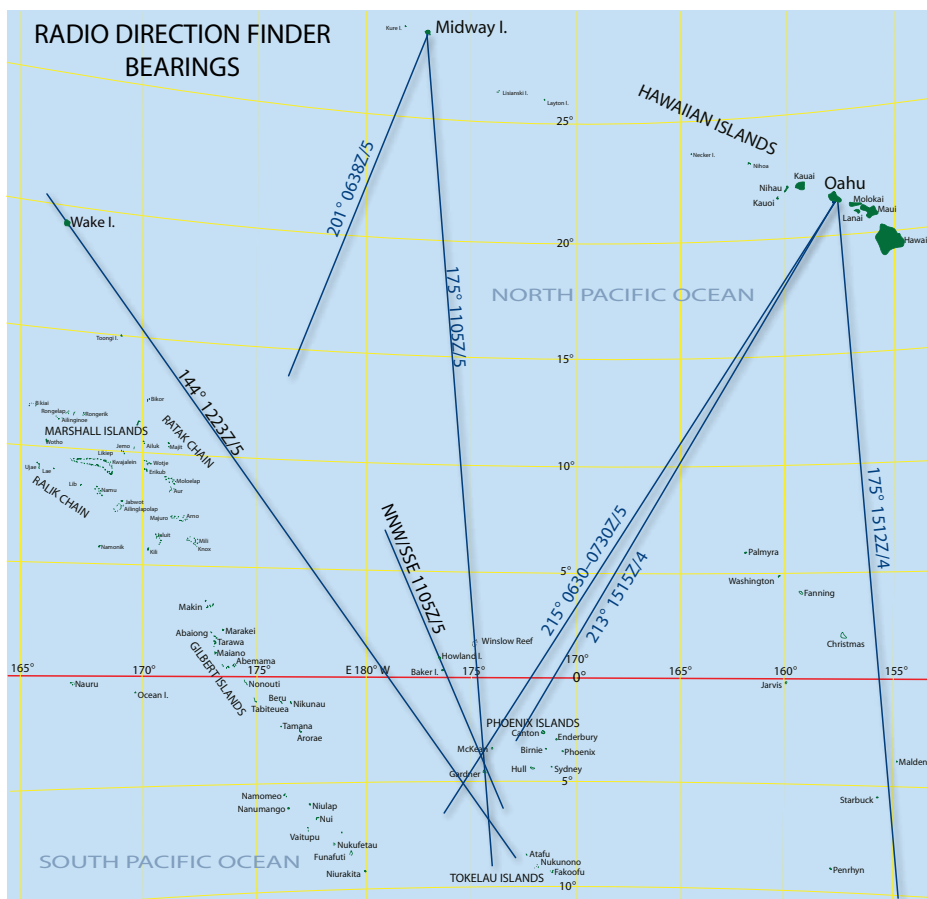
In 2001 TIGHAR inspected the section of reef just north of the shipwreck. The reef surface is smooth enough and, at low tide, dry enough to land a Lockheed Electra.

COULD THE ELECTRA HAVE LANDED ON THE REEF AT NIKUMARORO?

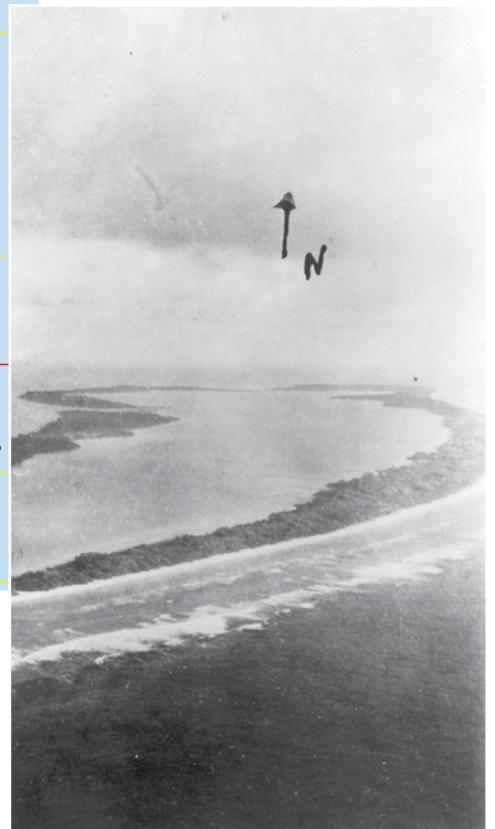
- ❖ The island is on the navigational line Earhart said she was following in the last in-flight radio transmission heard by *Itasca*.
- ❖ They should have had more than enough fuel to get there.
- ❖ The tide was low and the reef was dry during the time they could have arrived.
- ❖ The reef is smooth enough in places to permit a safe, if bumpy, landing.

ARE THERE ANY CLUES THAT THE AIRPLANE WAS LANDED ON THE REEF AT NIKUMARORO?

- ❖ The times when credible radio distress calls were heard over the next four nights correspond with times when the water level on the reef at Nikumaroro was low enough to provide enough prop clearance for an engine to be run.
- ❖ Directional bearings taken by Pan American and the U.S. Coast Guard on radio signals believed to be sent from the missing plane crossed in the vicinity of Nikumaroro.
- ❖ By the time Navy search planes flew over the island a full week after the disappearance, the credible radio calls had stopped. The pilots and observers saw “signs of recent habitation” on the officially uninhabited atoll but no aircraft. A photo of the island taken during the Navy search shows that the tide was high with significant surf on the reef edge. If there was an aircraft there it was hidden by the surf.



Most of the radio bearings taken on distress calls believed at the time to have been sent from the Earhart aircraft cross in the vicinity of Gardner Island (Nikumaroro). The notations on the lines denote the bearing, time, and date. For example: 175° (bearing); 1105Z (11:05 Greenwich); 5 (July 5, 1937).



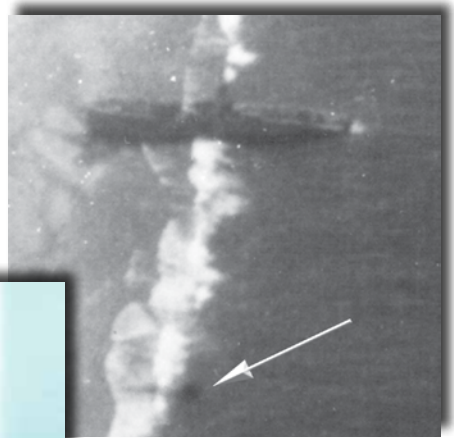
This photo of Gardner Island (Nikumaroro), taken from one of Colorado's search planes on July 9, 1937, confirms that the tide was high and there was heavy surf along the reef edge. The hand-drawn north arrow points due West.

IS THERE ANY EVIDENCE THAT THE PLANE WAS THERE AND, IF SO, WHERE?

Date: December 1, 1938

Source: Photograph

An aerial photo taken as part of the New Zealand Survey shows what appears to be an anomaly just below the surface on the reef edge just north of the shipwreck. The sea was calm with minimal surf on the reef.



Date: Sometime between January 1940 and November 1941

Source: Anecdotal recollection in 1999 TIGHAR interview

Emily Sikuli (née Segalo Samuela), teenage daughter of the island's carpenter Temou Samuela, saw debris that her father told her was airplane wreckage on the reef edge at low tide about 100 meters north of the *Norwich City* shipwreck.



Date: 1942

Source: Photograph

An aerial photograph shows the effect of severe weather that struck the island in January 1939. At that time the stern of *Norwich City* separated and tumbled down the reef slope into deep water. Other debris from the shipwreck was scattered shoreward. The photo shows no sign of the anomaly seen in the 1938 photo.



Date: 1944

Source: Anecdotal recollection in 1995 TIGHAR interview

U.S. Navy PBY pilot Jon Mims saw island residents using an airplane control cable as a fishing line leader for large fish. When he asked where they had gotten the cable the islanders said there was an airplane wreck on the island when the first settlers arrived in 1939. When he asked where the wreck was they said they didn't know.



Date: Sometime between 1946 and 1963

Source: Anecdotal recollection in 1997 TIGHAR interview

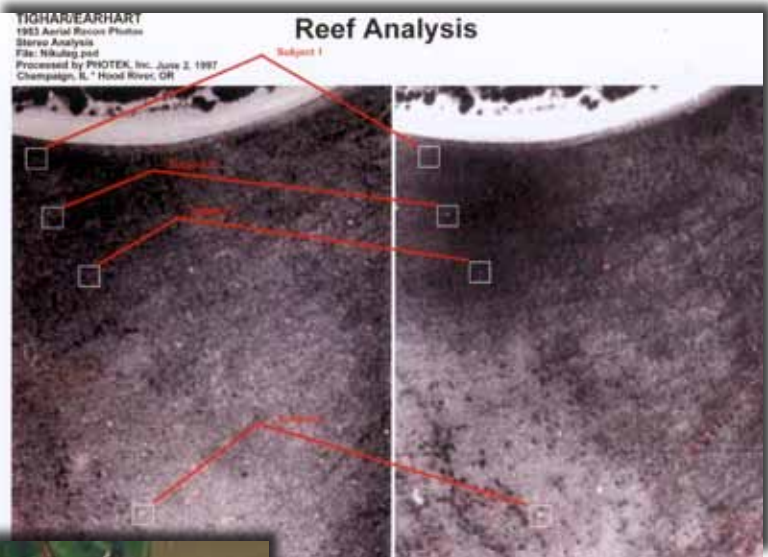
Island schoolteacher Pulakai Songivalu saw airplane parts on the lagoon shore opposite the main passage. The parts were salvaged by island residents for local purposes.



Date: 1953

Source: Photographs

Forensic imaging of two aerial mapping photos shows what appears to be a debris field of four pieces of light colored metal roughly 4 feet square on the reef flat downstream of the possible wreck site.



Date: Sometime between 1958 and 1963

Source: Anecdotal recollection in 1997 TIGHAR interview

Tapania Taeke, between 5 and 10 years old, saw a piece of an airplane wing on the reef in roughly the same area as the debris field in the 1953 photos.



Date: November 1991

Source: Artifact

TIGHAR's second expedition to Nikumaroro found a section of badly torn aluminum airplane skin that appeared to have been washed ashore in a severe storm that had struck the island since our initial visit in 1989. Whether the artifact could be from the Electra is the subject of intense controversy but the circumstances of its discovery strongly suggest that it came from the sea and was flung ashore by the storm.



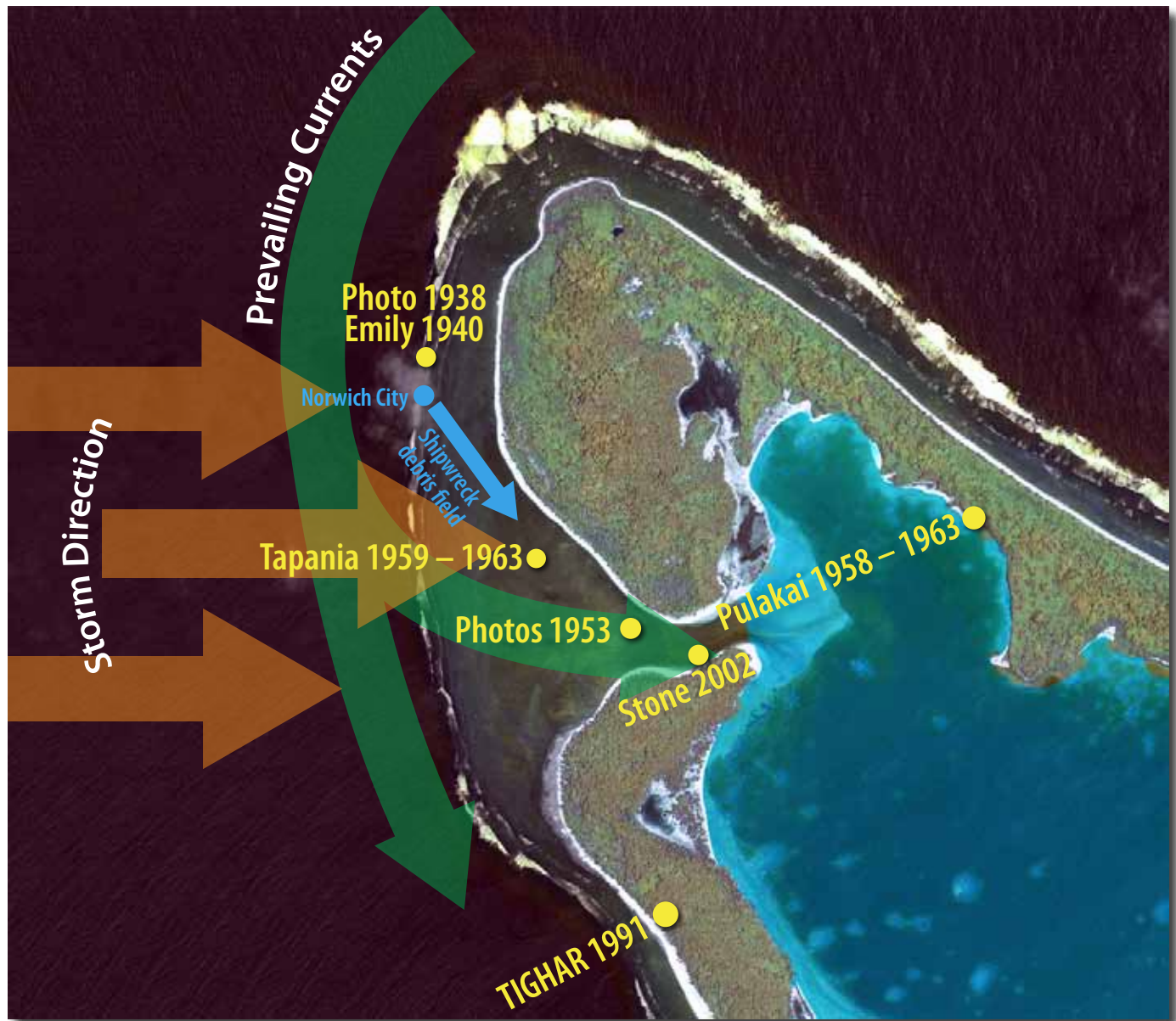
Date: June 2002

Source: Anecdotal recollection in 2002 TIGHAR interview

During a New England Aquarium marine biology expedition to the island in 2002, the expedition leader, Dr. Greg Stone, saw a wheel (no tire) near the shore in the main lagoon passage that looked to him like it might be an airplane wheel. Greg was familiar with TIGHAR's work and, because the wheel was so easy to see, he assumed that TIGHAR had examined it and dismissed it. Only after leaving the island did he learn that we had never seen such an artifact at Nikumaroro. After close questioning, his description of what he saw sounded right for a wheel from the Electra so we mounted a special expedition in 2003 to see if we could re-locate it. Unfortunately, in the interim, more storms had devastated the west end of the atoll and the object that Greg Stone had seen was gone.



CONNECTING THE DOTS



Some of the clues are stronger than others. Forensic imaging from two photos is much more reliable than an anomaly in a single photo. Human memory is notoriously frail, but it is interesting that all of the clues, so far, appear to tell a consistent story that conforms with the known natural forces affecting wreckage distribution as evidenced by debris from the *Norwich City* shipwreck.

BREAKIN' UP IS HARD TO DO

This is how the Electra may have broken up over time in such a way as to explain the various photos and reports of wreckage seen and not seen. We have good information about the reef surface where the plane seems to have landed, and good information about the underwater environment down to about 100 feet. Beyond that we have only general information from soundings done by the U.S. Navy in 1939. The shelf at 250 feet may or may not be there. It was reported by a diver on a New England Aquarium expedition in 2002 who was suffering from nitrogen narcosis.

July 2, 1937

NR16020 is landed near the surf line on the dry reef north of the *Norwich City* shipwreck.

July 2 – 6, 1937

Earhart and Noonan send radio distress calls during hours of darkness and low tide.

July 7 or 8, 1937

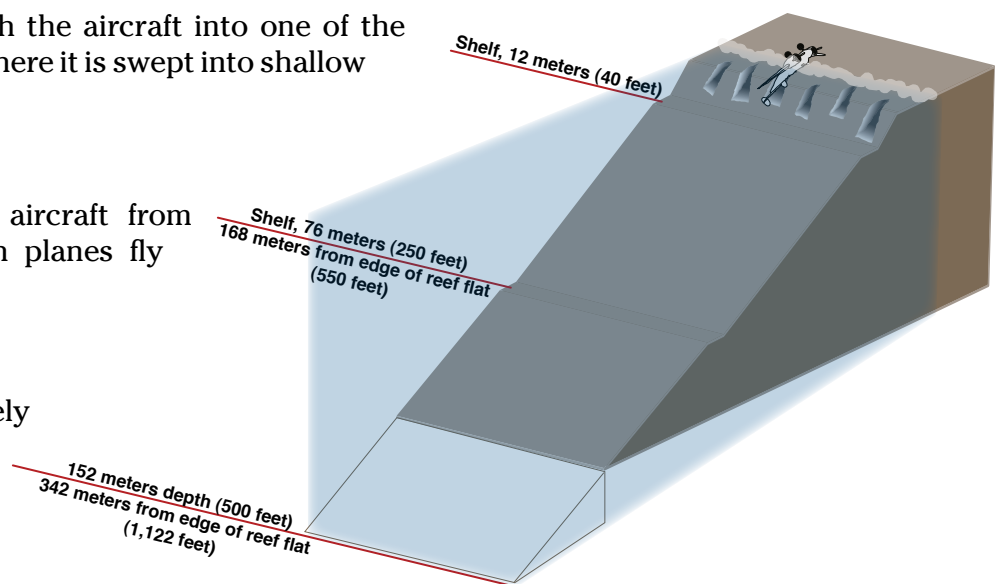
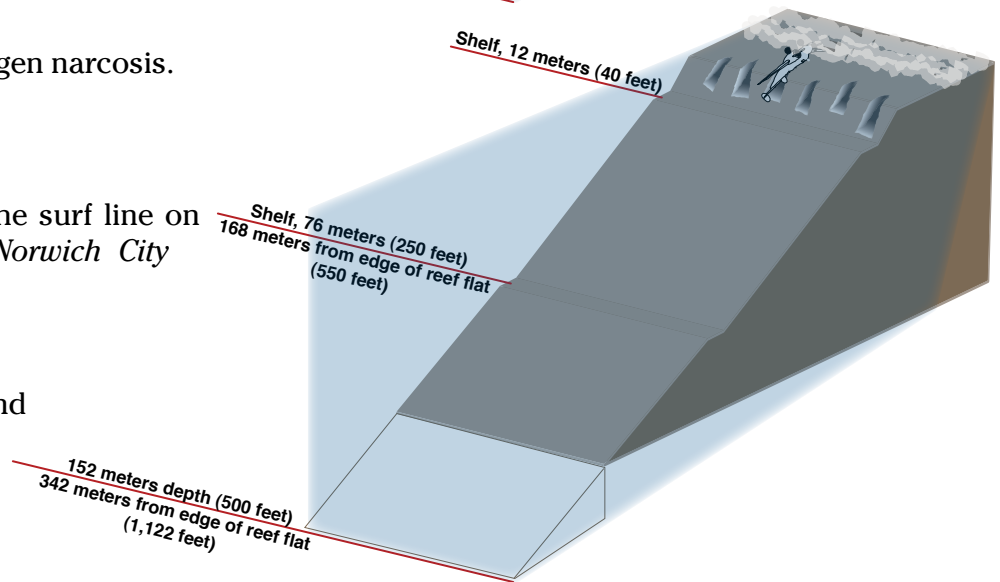
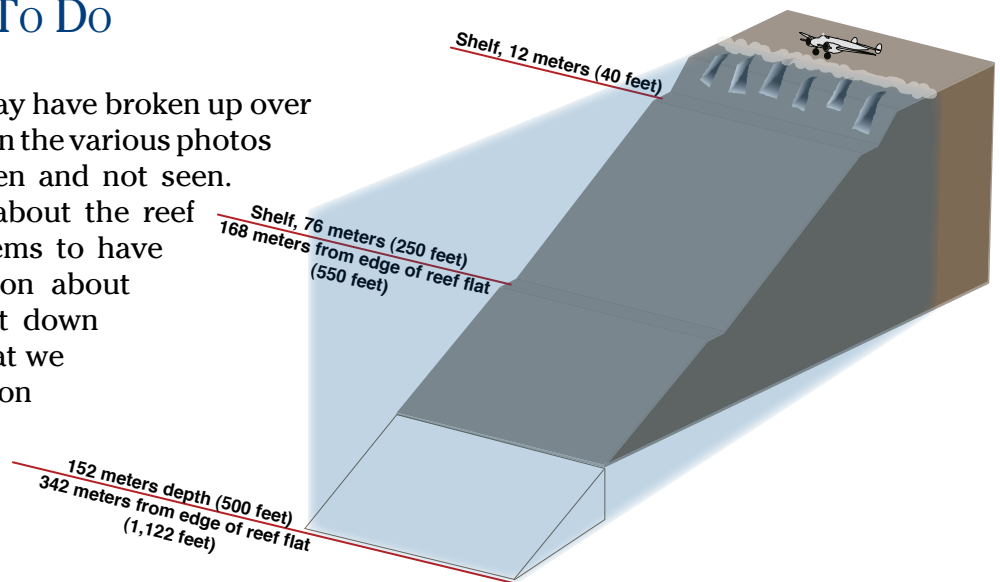
Rising tides and surf wash the aircraft into one of the “spur and groove” features where it is swept into shallow water in the surf zone.

July 9, 1937

Breaking surf hides the aircraft from view when the Navy search planes fly over the island.

December 1, 1938

The aircraft remains largely intact but hidden from view in shallow water just off the edge of the reef. Parts of the wreck are visible above water at unusually low tides on calm days.



1939

Fishermen from the new island settlement discover the wreck and salvage useful pieces. They know it's an airplane but have no interest in what airplane it is or how it got there.

Spring or summer 1940

Emily Sikuli sees some of the wreckage on the reef on a calm day at low tide.

November 1940

Severe westerly weather shifts the wreck onto a reef shelf at a depth of about forty feet.

1941 – 1952

The airplane remains on the reef shelf, battered but largely intact.

1953

The wreck begins to break up due to time and storms. Lightweight pieces travel southward along the reef face with the prevailing current. Some are thrown up on to the reef flat in storms. Buoyant wreckage (fuel tanks, wooden flooring) goes through the lagoon passage and washes up on the opposite lagoon shore where it is seen by Pulakai Songivalu.

1958 – 1963

Wreckage continues to wash up on to the reef flat and beach to be salvaged and used by the colonists. Other lightweight underwater debris becomes more widely scattered.

By 1989 (first TIGHAR expedition)

Storm action has shifted debris below 100 feet (diver limit).

