

Underwater Intervention 2003

The SS *Alcoa Puritan* : Deepwater Discovery and Investigation

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During World War II German U-boats not only operated along the East Coast of the United States, but also prowled the waters of the Gulf of Mexico. From May 1942 until April 1943, 24 U-boats operated in the Gulf of Mexico and sank or damaged seventy merchant vessels with only one U-boat lost in the Gulf, U-166. Many of these maritime casualties have been found, most of them during oil and gas related surveys. As oil and gas industry increasingly explore deeper waters of the Gulf of Mexico, undoubtedly more historical shipwrecks will be discovered. In recent years many of these companies have been quite forthcoming in publicizing these historical finds and much of the collected data has been donated to institutions such as the National D-Day Museum in New Orleans. The announcements of these discoveries sparked the imagination of the public, and also help researchers fill in the missing pieces of the stories of these tragic events.

U-507 AND THE SS ALCOA PURITAN

The first U-boat to enter the Gulf of Mexico was U-507 under the command of Korvettenkapitän Harro Schacht. Schacht claimed the first vessel sank in Gulf waters when on May 4, 1942 he torpedoed the freighter *Norlindo* just off Key West, Florida. The U-507 sank eight vessels in the Gulf of Mexico, making it one of the most successful U-boats that ever entered the Gulf. The fourth victim of the U-507 in the Gulf of Mexico was the SS *Alcoa Puritan*.

The *Alcoa Puritan* was a 6,795-ton cargo steamship built in San Francisco in 1941. She was owned and operated by the Alcoa Steam Ship Co. As America geared up for World War II, aluminum was in great demand and production by ALCOA (Aluminum Company of America) increased by 600 percent. ALCOA deployed steamships such as the *Alcoa Puritan* to transport the raw bauxite ore from mines in South America to their plants in the United States (Alcoa, 2002). In May of 1942 the *Alcoa Puritan* was en route from Port of Spain, Trinidad, to Mobile, Alabama, with a cargo of 10,000 short tons of bauxite and seven passengers. The passengers were all survivors of the Esso Tanker *T. C. McCobb*, which had previously been torpedoed by another U-boat off the coast of Brazil. The vessel, under the command of Captain Yngvar Axelstien Krantz, was unarmed as she plied through the relatively unprotected waters of the Gulf of Mexico (Moore, 1993: 10).



Figure 1. SS Alcoa Puritan

From A. R. Moore, 1993.

Original photo from Steamship Historical Society of America Collection, University of Baltimore Library

On May 6, 1942, the *Alcoa Puritan* crossed paths with U-507 about a hundred and thirty miles south of Mobile, AL. It was a clear day with calm seas and no other ships were in sight. The *Alcoa Puritan* was heading on a northward course when five minutes before noon a torpedo streaked through the water, just missing the stern of the freighter. Captain Krantz immediately ordered full speed ahead and increased the steam pressure to put on speed. The captain turned his vessel to present as small a target as possible for the U-boat. The U-507 surfaced and began to pursue at a speed of approximately 19 knots. The top speed of the freighter was not much more than 16 knots and the U-507 slowly overtook her. At a distance of about one mile the crew of U-507 opened fire with their deck guns. Over the next forty minutes, the U-boat expended nearly seventy-five rounds, scoring approximately fifty hits and disabling the *Alcoa Puritan's* steering. The captain brought the crippled freighter to a stop and gave orders to abandon ship. By 12:40 all the crew was off the freighter. Five minutes later U-507 moved in on her port side and finished the ship off with a torpedo just below the No. 4 hatch. Within eight minutes the *Alcoa Puritan* slipped stern first beneath the sea. The U-boat approached within shouting distance of the survivors. A German officer, presumably Captain Schacht, addressed them in perfect English, "Sorry I had to do it. Hope you make it in." Some accounts say he waved as the U-507 sailed away (Powers, 1942; and Browning, 1996: 96).

The 41 crew and 7 passengers were alone on the surface in one lifeboat and two life rafts. The third mate immediately realized the boat was leaking from holes caused by shrapnel. The leaks were too severe to be repaired with the wooden plugs stored in the boat, so the sailors carved larger plugs out of available debris. With the leaks managed, all the survivors transferred into the one lifeboat. Just past 4:00 in the afternoon they were rescued by the U.S. Coast Guard Cutter *Boutwel*. Although two of the

crew were injured by shrapnel, all hands survived the encounter (Wiggins, 1995: 49-50).

OIL AND GAS EXPLORATION

In 1986, Shell Offshore, Inc. was exploring interests in the deep waters of the Mississippi Canyon Area in the Gulf of Mexico. Shell contracted John E. Chance and Associates to conduct a survey using a 4075 EDO deep-tow system. While performing the survey they detected two shipwrecks. The only shipwrecks the U.S. Department of the Interior, Minerals Management Services (MMS) and other references listed in the vicinity were two World War II casualties, the *Robert E. Lee* and the *Alcoa Puritan*. One of the targets was easily interpreted as the *Robert E. Lee*, as the sonar data correlated well with photographs and descriptions of this vessel. The other target was more vague. Considering the published accounts of the loss of the *Alcoa Puritan*, this target was interpreted as possibly representing the *Alcoa Puritan*. At the time no archaeological assessment was required in deepwater lease blocks, and it would not be until 1994, after changes were initiated by the MMS for surveys in deep water, before any archaeologists would review the data and prepare an assessment. Given the current information it was realistic to assume the *Robert E. Lee* and the *Alcoa Puritan* had been found. No further investigations of the shipwrecks were conducted because of the expense and, more importantly, the time involved in conducting deep water surveys with a towed array (Church, et. al., 2002).

For fifteen years it was thought that the *Alcoa Puritan* had been found, but in 2001 C & C technologies, while working for BP and Shell, discovered that the wreck thought to have been the *Alcoa Puritan* was actually the long sought after German U-boat, *U-166*. Marine archeologists surmised that the U-166 was sunk by a naval patrol craft PC-566 shortly after the U-boat sank the passenger freighter *Robert E. Lee*. That discovery solved the mystery of what happened to the U-166, but posed the perplexing question of where was the *Alcoa Puritan*?

DEEP-TOW DISCOVERY

At about the same time as the *U-166* discovery, Shell International Exploration and Production contracted Fugro GeoServices, Inc. (FGSI) to conduct a deep-tow survey for the Nakika Pipeline Project. Fugro conducted the high resolution deep-tow survey from March 5 to June 8, 2001, aboard the *M/V Geodetic Surveyor*. The geophysical instrumentation included the FGSI DeepTow II system, which is equipped with full

spectrum CHIRP Deep-Tow Side Scan Sonar and Subbottom Profiler systems, and a Simrad EA500 Bathymetry Profiler. The sonar was operated at 120 kHz frequency, with a dual channel display of 200 meters per channel. For acquisition and processing of the subbottom profiler and side scan sonar data the Triton/Elics Delph Seismic and ISIS Acquisition and Processing Suite was used. Positioning of the deep-tow sensor was accomplished with a Sonardyne Ultra-Short Baseline (USBL) Acoustic Array.

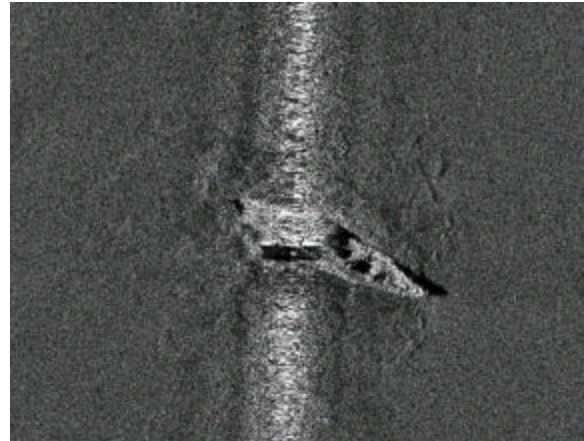


Figure 2. Sonar Image of the SS *Alcoa Puritan*
From FGSI DeepTow II system
Courtesy of Shell International Exploration and
Production Inc.

During the survey, a large shipwreck was discovered in 6,400 feet of water several miles to the southeast of the *Robert E. Lee* and the *U-166* site. Marine archeologist, Laura Landry, conducted the archaeological assessment for the survey. Based on the survey data and historical information, Landry identified the wreck as that of the SS *Alcoa Puritan* (MMS, 2002).

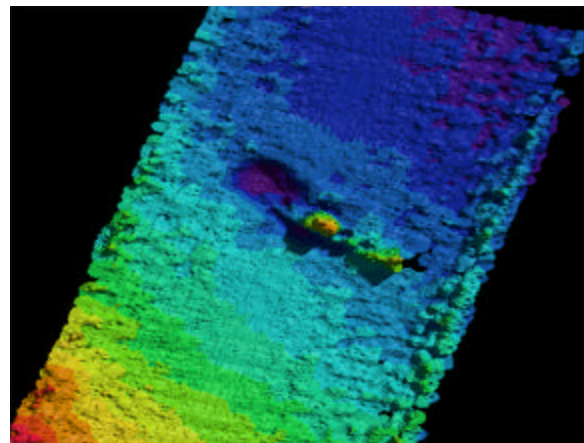


Figure 3. Multibeam Image of the SS *Alcoa Puritan*
From FGSI DeepTow II system
Courtesy of Shell International Exploration and
Production Inc.

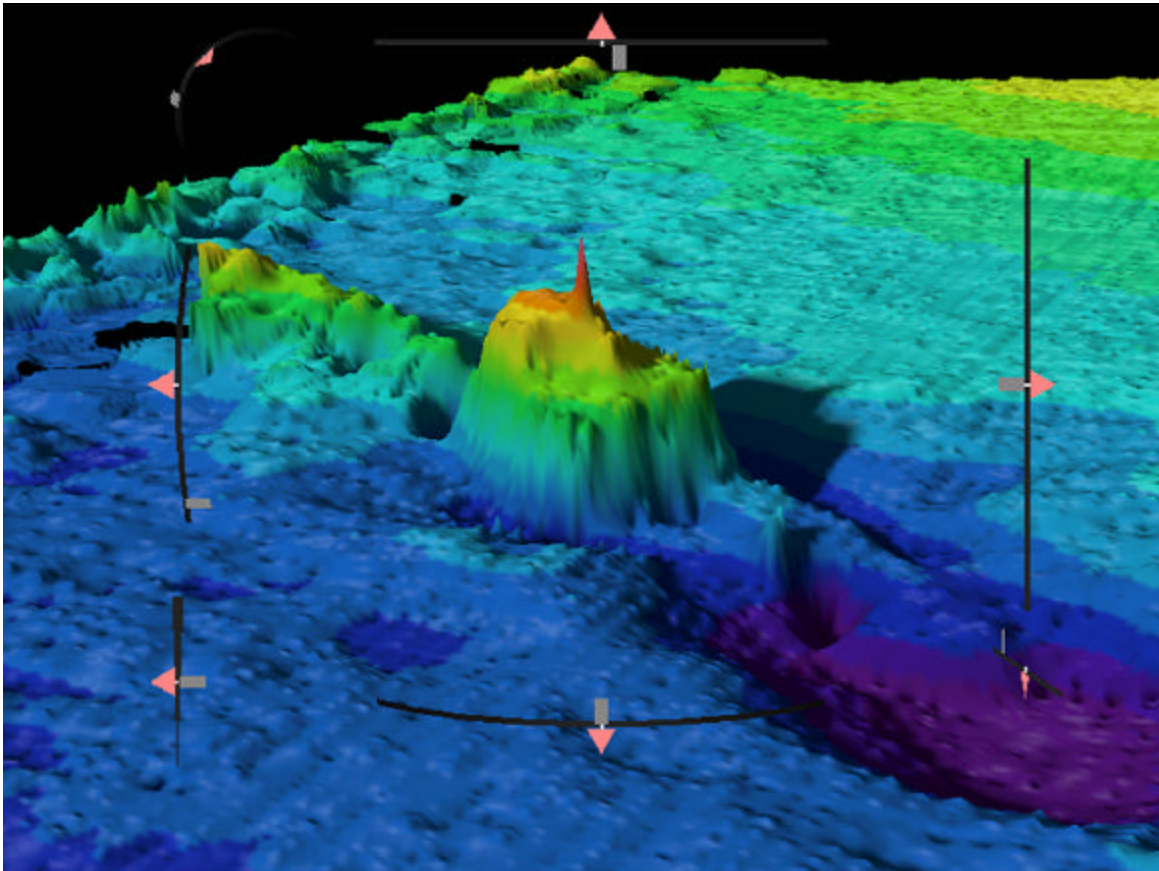


Figure 4. Multibeam Image of the SS *Alcoa Puritan*
 From FGSi DeepTow II system
 Courtesy of Shell International Exploration and Production Inc.

A number of factors allowed for the interpretation of this target as the *Alcoa Puritan*. First, the 1986 sonar target was confirmed as *U-166*, so that the location of the *Alcoa Puritan* remained unknown. Improvements since 1986 in deep water geophysical data acquisition and the application of digital processing parameters resulted in much clearer imagery in the sonar, pinger and echo sounder data sets. The dimensions of the target as recorded in the data set indicated that the target represented a large vessel. These dimensions correlated roughly with the reported dimensions of the *Alcoa Puritan*, which had a length of 397 feet, a beam of 60 feet, and a draft of 35 feet. The proximity of the 2001 DeepTow II sonar target to the known site of the *Robert E. Lee*, when considered with the historical references and recent deep water discoveries and confirmations, suggested that the 2002 target represented the remains of the *Alcoa Puritan*.

The sonar and subbottom profiler data revealed the shipwreck from one wing line of the survey. The DeepTow II towfish appears to have crossed the vessel midship. Figure 2 portrays the vessel and surrounding debris as recorded on the sonar data. Although the stern is obscured in the

image, three cargo holds in the bow and the stack can be identified from these data. A seafloor rendering of this vessel from the multibeam bathymetric data, shown in Figures 3 and 4, provides a much clearer image of this target. Figure 5 presents a view of the shipwreck from the subbottom profiler data.

The vessel is sitting upright on the seafloor, oriented about N60W, with the bow to the east. The pinger data suggest it is in a depression seven to ten feet below the ambient seafloor, which slopes gently to the southeast. Seafloor sediments in this area are very soft clays and silts. From the sonar data, the target displays a length of about 449 feet (137 meters). The width of the contact covers an area of about 120 feet, with the strongly reflecting mid section about 75 feet across. Several slightly more strongly reflecting features and linear depressions occur around the bow. Data gaps in the sonar and subbottom profiler data precluded identification of any debris or depressions that could be detailed near the stern. The contact is about 6,750 feet east of the pipeline route where no seabed disturbing activities are planned.

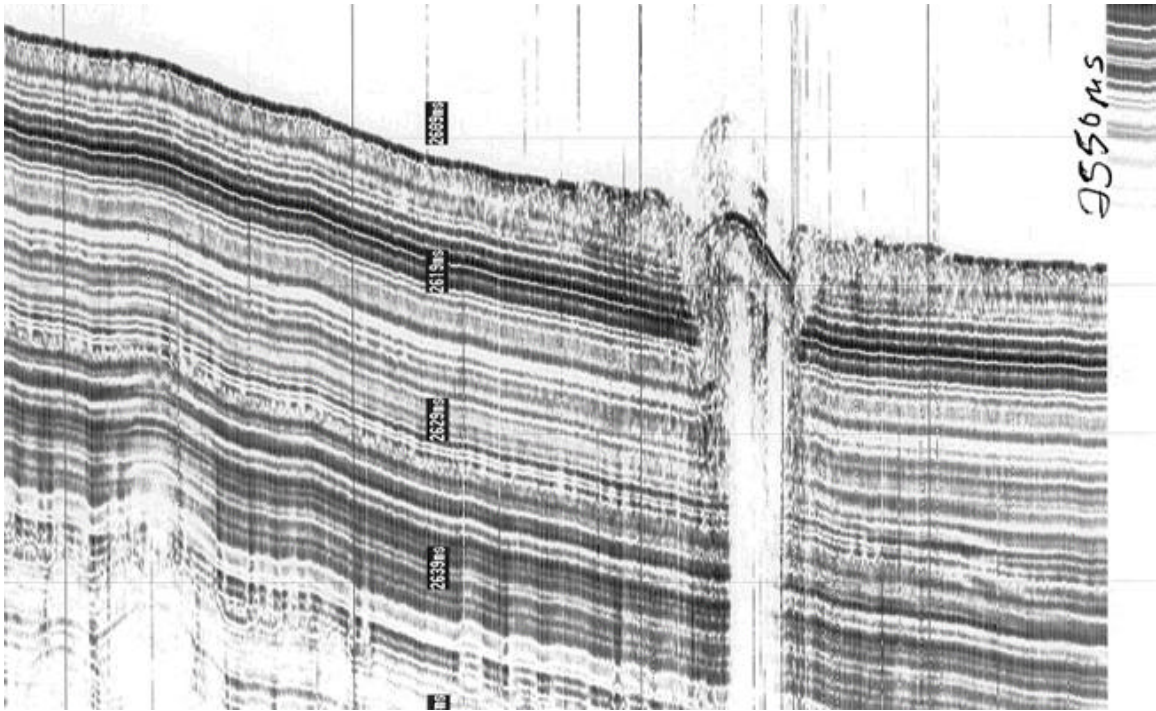


Figure 5. Subbottom Profile over the Wreck Site
From FGSi DeepTow II system
Courtesy of Shell International Exploration and Production Inc.

AUV SURVEY

Following the initial identification of the vessel, Shell asked C & C if they would conduct further investigations of the wreck site with the HUGIN 3000 AUV. In February 2002, C & C had the opportunity to survey the wreck site while conducting tests with the AUV after mobilizing the HUGIN 3000 on a new support vessel, the R/V *Rig Supporter*. Survey lines were run around the shipwreck site from three different directions to box in the vessel. Approximately 3 parallel survey lines were run each direction. Each set of parallel survey lines were at a 30 degree angle to the other two sets of lines, creating a "star pattern" survey grid. This provided 160,000 square meter area of overlapping survey coverage and required less than 1 1/2 hours to complete.

The images from the EM 2000 swath bathymetry and dual frequency high resolution sonar (120 kHz and 410 kHz) left little doubt this was the *Alcoa Puritan*. The sonar images (Figures 6 and 7) clearly show the mid-ship superstructure with its central stack, the bases of each crane, and the five cargo hatches. The dimensions of the vessel match up to the foot of that of the *Alcoa Puritan*. The vessel is oriented with the stern to the northwest and bow pointing southeast. The bow is slightly more

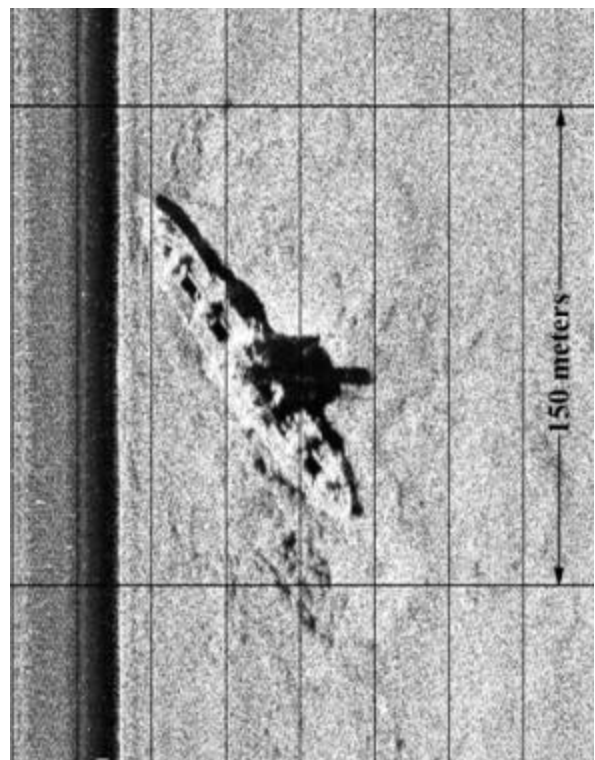


Figure 6. SS *Alcoa Puritan*
120 kHz Sonar Image
From HUGIN 3000 AUV
Courtesy of C & C Technologies, Inc.

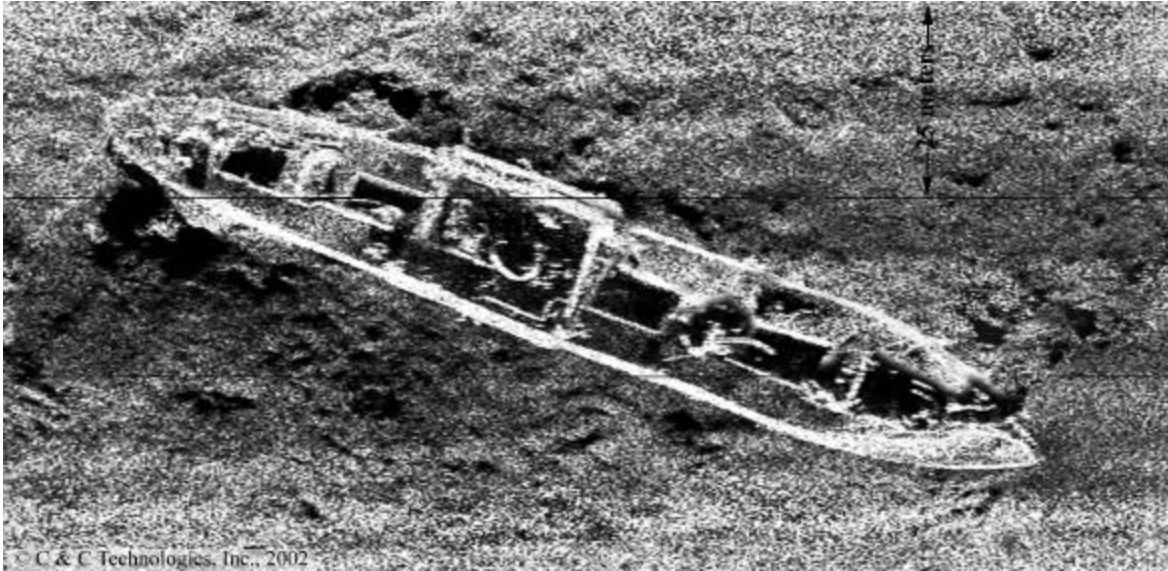


Figure 7. 410 kHz Sonar Mosaic Image of the SS *Alcoa Puritan*
 From HUGIN 3000 AUV
 Courtesy of C & C Technologies, Inc.

elevated than the stern and the seafloor depression is deeper around the stern of the wreck. It appears the stern of the ship impacted the seafloor first, which is consistent with the historical account of the vessel sinking stern first.

ROV INVESTIGATION

Shell International and Production Inc. conducted an ROV investigation of the wreck site on July 3, 2002. The visual inspection was conducted with Sonsub's ROV vessel the HOS *Dominator* while in the area as a support vessel for the construction of the Nakika pipeline. The crew brought the ROV in slowly from the starboard side using their Simrad



Figure 8. 105mm Shell Damage on the Starboard Side of the SS *Alcoa Puritan*.
 From Sonsub ROV Footage
 Courtesy of Shell International Exploration and Production Inc.



Figure 9. Torpedo Damage on the Port Side of the SS *Alcoa Puritan*.
 From Sonsub ROV Footage
 Courtesy of Shell International Exploration and Production Inc.

Mesotech scanning sonar to navigate to the wreck site. The gray shape of the vessel loomed out of the dark waters as the ROV moved down the starboard side of the freighter from bow to Stern. A thick powdery silt covers the deck of the vessel. Toppled cranes, cables, and cargo nets are visible along the edge of the ship. One large shell hole is visible on the starboard aft portions of the vessel (Figure 8). As the ROV moved down the port side of the freighter, several large shell holes were visible, undoubtedly from the U-507's 105mm deck, and numerous smaller bullet holes are also present, possibly from the U-boat's 20 mm gun. Similar damage is also visible on the superstructure and smokestack. It appears that most of the attack took place from the stern and port side of the *Alcoa Puritan*. Just aft of the



Figure 10. Stern of the SS *Alcoa Puritan*.
From Sonsub ROV Footage
Courtesy of Shell International Exploration and Production Inc.

superstructure near the silt line there is a large gaping hole caused by the torpedo, which ripped into the port side of the freighter (Figure 9). Along the stern of the vessel, the raised letters “ALCOA PURITAN” are clearly discernible, positively confirming the identity of the shipwreck (Figure 10).

CONCLUSION

As the oil and gas industry has move into deeper waters of the Gulf of Mexico, regulatory changes initiated by the MMS in the conduct of offshore archeological surveys have permitted deepwater archeological exploration. Technological leaps in data acquisition and processing have widened the resource base available for interpretation of the cultural landscape that characterizes the sea bottom. In 1986, archival references with sometimes poorly-imaged geophysical data supported only tentative identification of shipwrecks on the deep water seafloor. Then, we had the historical accounts of the survivors, the acknowledged poor positioning of wreck sites, and discrete cultural features embedded in the soft sediments of the Gulf. Today, the high resolution geophysical survey discoveries and data interpretations are refined with the assistance of close inspection ROV and AUV investigations. Twenty-five years and three archaeologists later, we have fleshed out the sea tales, precisely positioned the seabed features, and viewed the sad but fascinating details of the remains of these historic vessels. The discovery of the final resting places of the *Robert E.*

Lee, *U-166*, and finally, the *Alcoa Puritan* brings closure to a story begun over half a century ago.

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