UNRAVELLING THE MYSTERY OF THE U-166

New Technology Rewrites History

In early 2001, BP Exploration and Production, and Shell International and Production contracted C&C Technologies Inc. to conduct a marine survey for the proposed Okeanos Gas Pipeline route, using their new HUGIN 3000 AUV. This state-of- the-art deep-water survey vehicle utilises a full array of survey instruments to survey faster and more accurately than can conventional deep-tow survey systems. Through the use of this new technology a startling discovery was made that has helped unravel an intriguing historical mystery in the Gulf of Mexico.

The sinking of the Norlindo by U-507 in May 1942 led to a wave of destruction in the Gulf of Mexico which resulted in 56 merchant vessels being sent to the bottom and fourteen more being severely damaged. All this represented just under twelve months work by seventeen German U-boats. One of the vessels that fell victim to the onslaught was the passenger freighter Robert E. Lee.

Historical Background

The Robert E. Lee was en route from Trinidad to New Orleans with limited cargo and 270 passengers and making its way through the Gulf of Mexico with naval escort, Patrol Craft (PC) 566, as it neared Tampa, Florida in late July. It was due to make a scheduled stop. A pilot was unavailable to guide the boat into the harbour at Tampa, so the captain of the Robert E. Lee decided to continue on to New Orleans. The Gulf Sea Frontier command ordered PC-566, to proceed with the Robert E. Lee.

One of the German U-boats operating in the Gulf in July 1942 was the U-166, commanded by Hans-GÃ¼nther KÃ¼hlmann. By 30th July, the U-166 had completed the task of setting mines off the mouth of the Mississippi River and had taken up position along the shipping lanes off the Louisiana coast with the purpose of sinking merchant vessels.

When PC-566 and the Robert E. Lee were within 45 miles of the Southwest Pass, the escort vessel sent a radio transmission to New Orleans to request a pilot. As they were sending the message, a German torpedo slammed into the starboard side of the Robert E. Lee exploding just aft of the engine room. Within minutes the Robert E. Lee slipped beneath the waves, taking 25 passengers and crew with her.

The crew of PC-566, travelling a half-mile ahead of the Robert E. Lee, came into immediate action. The patrol craft raced to the area where they had last spotted a periscope and dropped two spreads of depth charges. Following their attack, an oil slick appeared on the surface and the commander of the escort vessel felt he had seriously damaged the U-boat.

Two days later, Coast Guard aviators Henry White and George Boggs, on patrol in their Grumman J4F seaplane, spotted a German U-boat on the surface. They immediately radioed their position and began an attack run on the enemy vessel. A light to medium oil slick was observed on the surface. After returning to base, White and Boggs were instructed that the incident was classified. They were later told they had that day destroyed the U-166.

But was that the vessel? The last radio message from the U-166 was sent on 27th July 1942, three days before the sinking of the Robert E. Lee. The area in which the U-166 is thought to have been lost is probably one of the most surveyed regions in the world, yet no trace of the U-166 was ever located.

Oil and Gas Surveys

Before laying a pipeline, the oil and gas industry conducts engineering and hazard surveys utilising geophysical instruments to assess the proposed pipeline route. Prior to conducting the survey, the proposed centreline for the route is laid out by a professional surveyor and construction engineer. During the survey, side scan sonar is used to determine seafloor features, bathymetry data is recorded to examine the seafloor topography and a sub-bottom profiler is used to provide a cross sectional view beneath to seafloor within the survey area. A magnetometer is often used to detect ferrous material within the survey corridor.

The geophysical sensor positions are calculated using Differential GPS from the surface vessel. Deep-water towed systems typically use an Ultra-Short BaseLine acoustic tracking system (USBL) to determine the position of the sensor relative to the surface vessel. The farther the USBL transducer and towed sensor are separated in the horizontal plane, the more error in the position. In water depths greater than one thousand metres it is necessary to use a chase boat to track the position of the towed sensor because of its excessive distance from the tow vessel. Using a two-boat shoot in 1,500 metres of water, positional accuracy of the USBL system is approximately 30 metres.

In 1986, while conducting a deep tow survey for Shell Offshore, Inc. in the Mississippi Canyon Area of the Gulf of Mexico, a survey team from John Chance and Associates detected two shipwrecks. The shipwrecks were detected in 1,500 metres of water. These wrecks were tentatively identified as the Robert E. Lee and another casualty of the U-boat assault, the Alcoa Puritan, which was sunk by U-507 on 6th May, 1942.

In January 2001, C&C Technologies, Inc. conducted a deep-water pipeline survey for BP and Shell in the vicinity of the reported location of these shipwrecks. This survey was conducted using the technology companyâ€™s HUGIN 3000 AUV (High Precision Untethered

Geosurvey and Inspection System). Because this system is untethered it can operate, even in rough seas, at faster speeds (4 knots) and with greater mobility and accuracy than can conventional towed arrays. The HUGIN utilises a state-of-the-art multibeam bathymetry and imagery system, a dual frequency chirp side scan sonar, a chirp sub-bottom profiler and an inertial navigation system. Differential GPS provides the mother ship positions while AUV vehicle positions are calculated using HiPAP (High Precision Acoustic Positioning), inertial navigation and Doppler velocity speed log. The combination of these positioning systems allows an accuracy of three to six metres after post-processing, in survey depths of 1,500 metres.

Offshore oil and gas development in the United States is governed by the US Minerals Management Service (MMS). The MMS has determined that many areas in the Gulf of Mexico have high potential for archaeological sites, such as historical shipwrecks, and require an archaeological assessment. During the January survey, which passed through one of these archaeological areas, a large shipwreck was detected at the edge of the survey corridor. C&C Marine Archaeologists Robert A. Church and Daniel J. Warren verified with the MMS that this was the wreck of the Robert E. Lee. Because of the possible proximity of the Robert E. Lee and the Alcoa Puritan, thought to be nearby, it was agreed upon by BP and Shell that C&C would conduct an investigation survey with the HUGIN to identify all possible wreckage near the proposed pipeline corridor. This survey was conducted in March 2001 and detected two areas of shipwreck remains. Analysing the data, the C&C Marine Archaeologists realised that the debris scatter identified as the Alcoa Puritan did not match the characteristics of a 6,759-ton freighter but closely corresponded to the dimensions of the U-166 (252 feet in length and 22 feet wide), the only German U-boat lost in the Gulf of Mexico during World War II.

A New Interpretation

It did not seem reasonable that the U-166 could have sunk the Robert E. Lee and then travelled 140 miles to the west to be bombed by the Coast Guard plane, only to limp all the way back and come to rest on the seafloor within less than a mile of its last victim. A new hypothesis was therefore put forward. What if the crew of the PC-566 had actually sunk the U-166 on 30th July as they suspected and White and Boggs had bombed a different U-boat on August 1st?

Further research revealed that in early August 1942 the U-171, commanded by GÃ¼nther Pfeffer, was operating in the area of the Gulf of Mexico in which White and Boggs attacked a U-boat. Pfeffer also reported that between late July and early August a â€˜flying boatâ€™ had dropped a bomb on them, but the U-171 escaped with little or no damage. The exact date and location of this attack is, however, uncertain, since their logs were lost when the U-171 struck a mine and sank in the Bay of Biscay while returning home from its patrol in the Gulf of Mexico.

Further Investigations

Following disclosure on the part of C&C to their clients of the possibility that this could be the remains of the U-166, both BP and Shell voluntarily sponsored further site-specific investigations of the Robert E. Lee and the suspected U-166, using the HUGIN 3000 AUV. The results of this data provided further evidence supporting the U-166 hypothesis and stressed the importance of obtaining ground truth of the site with a Remotely Operated Vehicle (ROV) for final verification of the remains.

On 31st May and 1st June 2001, a research team from BP, Shell, C&C, and the MMS conducted an ROV survey of the Robert E. Lee and the site suspected to concern the U-166. They utilised an Oceaneering, Inc. ROV and brought back detailed images and important archaeological information. The combined efforts of the team enabled the expedition to positively reveal the final resting-place of the Robert E. Lee and the U-166, thus solving one of the great mysteries of World War II in the Gulf of Mexico.

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