## Reappearance of the Danton



In December 2007, the Fugro survey vessel Geo Prospector was performing part of the Detailed Marine Survey for routing the proposed Galsi gas pipeline across the Southern Mediterranean Sea between Algeria and Sardinia. One day later, interpretation of side-scan sonar data collected by the AUV revealed a large wreck lying upright among a group of smaller sonar targets in an area of disturbed sea-bed, close to the proposed pipeline route in 1000m of water.

Analysis of the data indicated a vessel approximately 125m long with a beam of around 27m. Both sonar and multi-beam data revealed that the bow of the wreck was tilted proud of the sea-bed with an estimated elevation of 15m. These records also indicated that the seabed around the wreck was very disturbed, littered with numerous small sonar contacts

that probably related to debris from the wreck. On board interpretation suggested that the large object might be a sunken battleship, but it was not possible to identify the vessel. Closer inspection was not possible using the AUV or other survey systems available on board Geo Prospector.

In January 2008, the Fugro ROV support vessel Skandi Inspector was undertaking ROV operations to locate and survey subsea telecommunication cables that cross the proposed Galsi gas pipeline route at various points along its length. Cable crossing investigations require even more precise survey sensors and techniques to gather sufficient data to design pipeline installation in close proximity to an active communications cable. Skandi Inspector was equipped with two deepwater Remotely Operated Vehicles (ROVs) fitted with a variety of survey instruments including forward looking sonar, underwater video cameras, a bathymetry suite and a high resolution multi-beam echo sounder.

On 18 January 2008 Skandi Inspector was surveying approximately 20nm off the South coast of Sardinia gathering data at the location of the Artemis cable crossing location. The large wreck previously detected by the Geo Prospector's AUV was re-observed and the ROV work scope was expanded to include an initial visual examination of the vessel. The wreck was first located using the ROV-mounted scanning sonar. Then the suite of video cameras carried by the underwater vehicle was trained on the wreck to learn more about the characteristics of the sunken vessel.

During this initial ROV visual survey various video images and still photographs were obtained, confirming that the wreck was indeed a battleship, probably dating from WW1.

Records showed that the French battleship Danton was sunk in the vicinity in March 1917. The discovery was provisionally identified as the wreck of the battleship Danton and particulars of its location and disposition were passed to the Italian, French and UK Hydrographic Departments.

The Galsi Project Management Team in Milan, immediately recognised the cultural significance of the battleship and quickly decided to reroute the proposed gas pipeline well away from the charted wreck and associated debris. This was achieved by performing a comprehensive review of all the available survey data and preparing detailed mapping to consider the character of the debris field, the attitude of the wreck and the nature of the surrounding disturbance of the seabed.

During this review, a clear model emerged of the tragic way in which the Danton was lost, and dynamics of debris dispersal and ultimate impact with the seabed. Concluding that the battleship landed at the seabed from the northwest, a decision was taken to offset the proposed pipeline to the southeast, at a minimum distance of 300 metres from any observable debris or seabed disturbance. This distance was applied as being "best practice" in the Project Management Team industry experience, and in a position as to avoid any risk of the pipeline interfering with any debris. By taking these precautions, GALSI will ensure the shipwreck remains undisturbed, thereby protecting the tranquillity and integrity of the environment surrounding this important and unique historical monument.

Later, on 26 January 2008, an opportunity presented itself to deploy the survey equipment on board Skandi Inspector to acquire more detailed information about the wreck. The Fugro Triton XL ROV was launched to re-examine the vessel, to collect underwater video footage and to conduct a very high resolution multi-beam survey of the wreck site. The multi-beam data was processed to construct digital

3-dimensional models of the ship and the surrounding sea-bed. The results represent a collection of highly detailed images of a naval relic of WW1, preserved in 1000m of water at the bottom of the Tyrrhenian Sea.

Subsequent discussions with French Navy Commission, Droit de la Mer et Événements de Mer (DREM), confirmed conclusively that discovery was indeed the French battleship Danton, built in Brest in 1910, one of the largest French naval vessels of her era.

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