Arq. en Aguas Profundas III

Case Studies 1

Especialización en Patrimonio Cultural Sumergido
Cohorte 2021

Universidad Externado de Colombia

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história territórios comunidades

CENTRE FOR FUNCTIONAL ECOLOGY
SCIENCE FOR PEOPLE & THE PLANET

INSTITUTO DE HISTÓRIA CONTEMPORÂNEA

FACULDADE DE CIÊNCIAS SOCIAIS E HUMANAS
UNIVERSIDADE NOVA DE LISBOA

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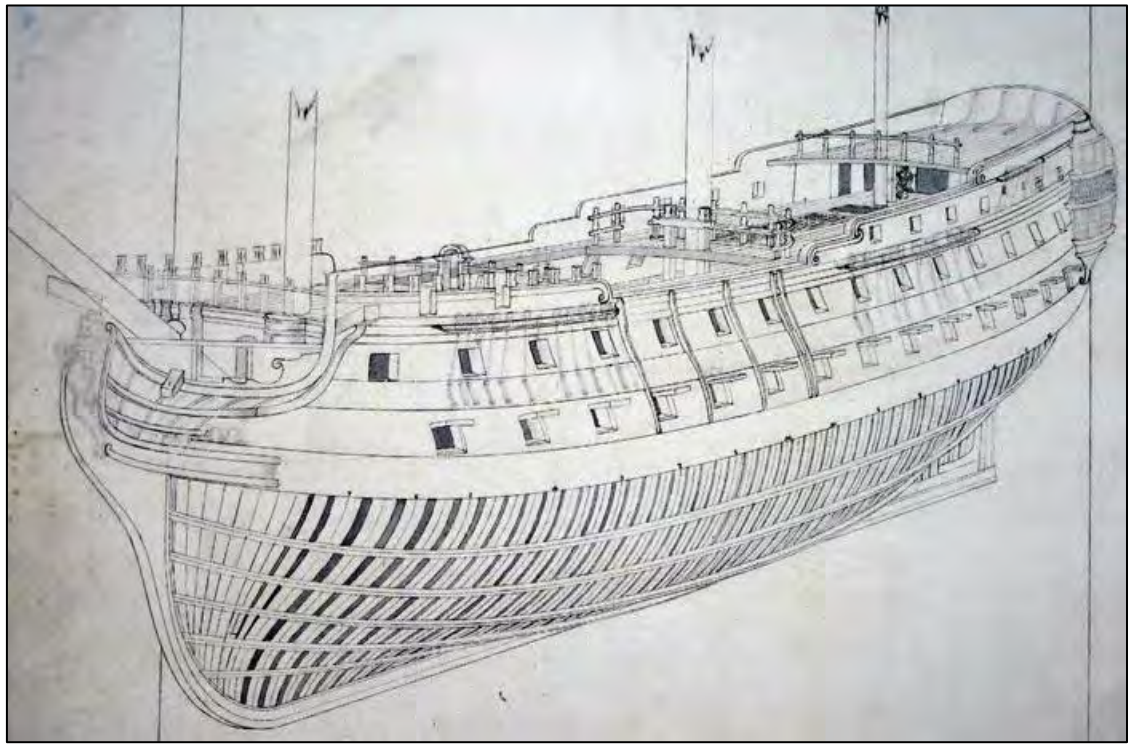
San Pedro de Alcántara, 1786

San Pedro de Alcántara was a 64-gun ship built with tropical timbers in Cuba, in the shipyards of La Habana, in 1770/71, lost on the coast of Portugal in 1786, and salvaged throughout the late 18th and 19th centuries.

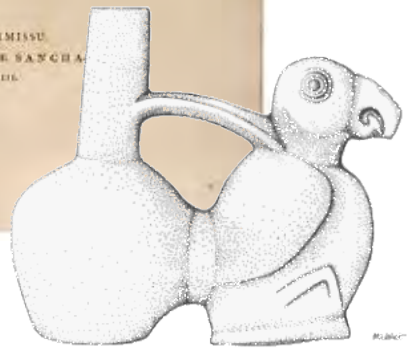
The *San Pedro* left Callao, Peru, to Cadiz, Spain, in 1784.



http://nautarch.tamu.edu/shiplab/baleal-ship-sanpedro.htm

Case Studies: *San Pedro de Alcantara*, 1786

San Pedro de Alcántara's holds were loaded with 600 tons of copper ingots, 153 tons of silver, and 4 tons of gold, together with a varied cargo, which included a collection of Chimu ceramics from the Hipólito Ruiz López and José Antonio Pavón Jiménez expedition in South America, from 1779 to 1788.



Case Studies: *San Pedro de Alcantara*, 1786

Aboard were almost 400 people, between ere also a number of prisoners in irons, on the way to prison, related to the Andean uprising of 1780-81, led by José Gabriel Condorcanqui, better know as José Gabriel Túpac Amaru.

Case Studies: *San Pedro de Alcantara*, 1786

After a long voyage, the ship hit a rocky promontory on the coast of Portugal around 22:30, in a calm and clear night, on the 2nd of February of 1786, with an extremely low tide, and was quickly destroyed.

The accounts mention 128 dead and 270 survivors.

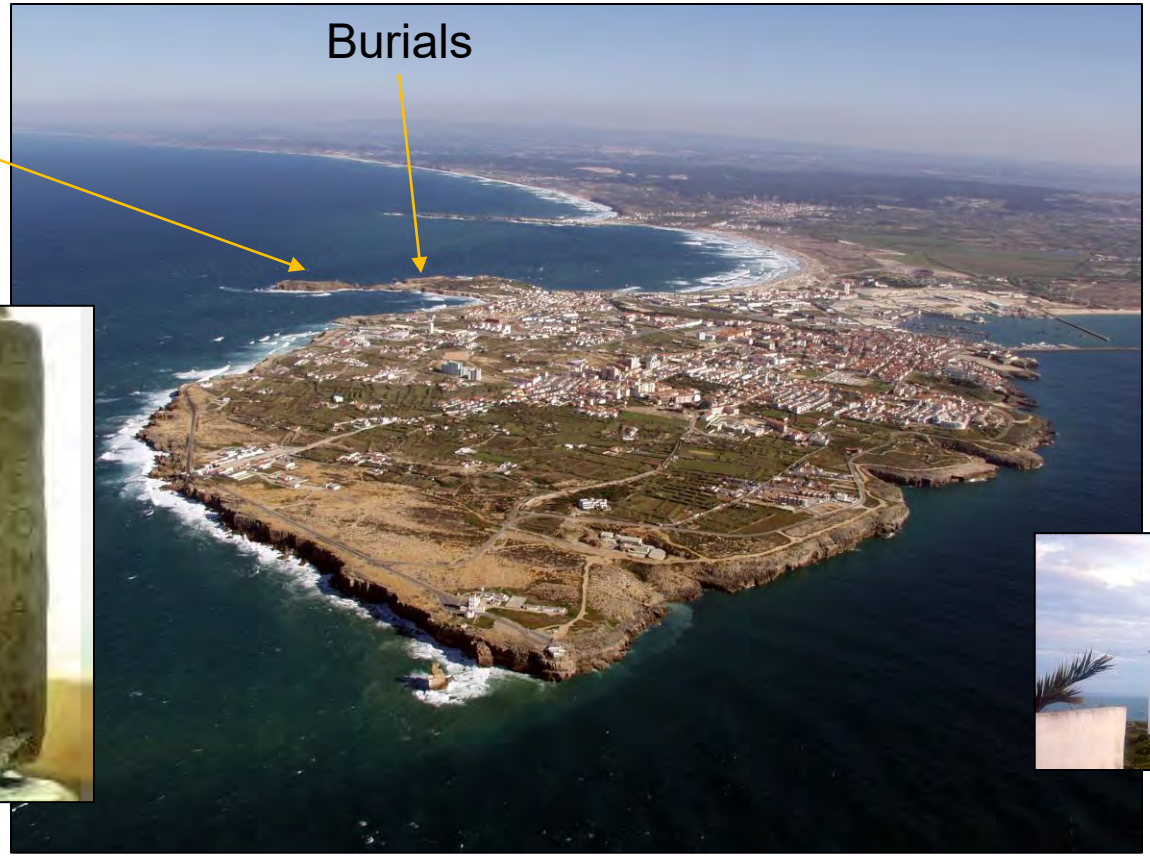
Case Studies: *San Pedro de Alcantara*, 1786

Given the value of the cargo, the Portuguese authorities assisted in the first salvage attempts, provided warehouses to keep the cargo safe, and did their best to shelter and feed the survivors.

Spain launched a major salvage operation and most of the cargo was recovered during the following 3 years.

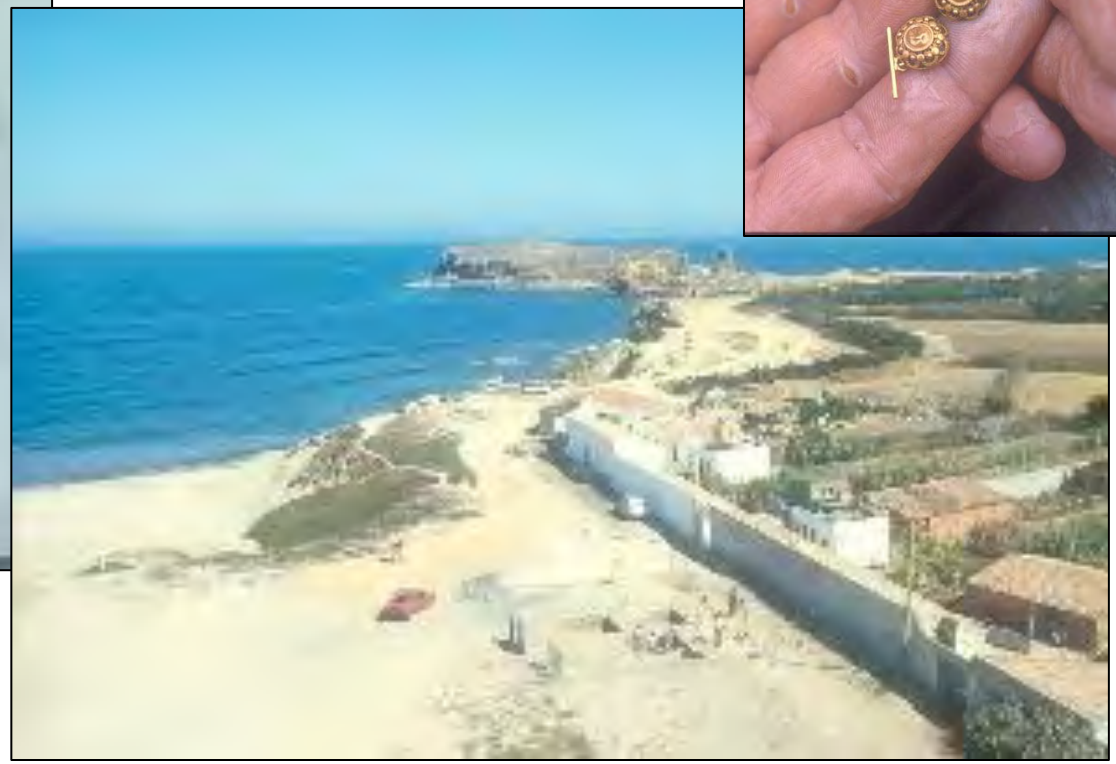
Shipwreck

Burials

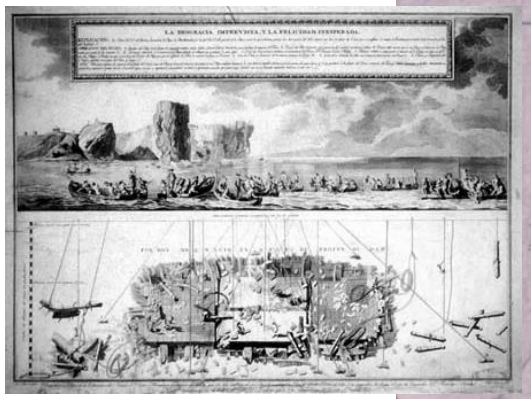


Case Studies: *San Pedro de Alcantara*, 1786

Map with the shipwreck position and view of one of the burial sites.



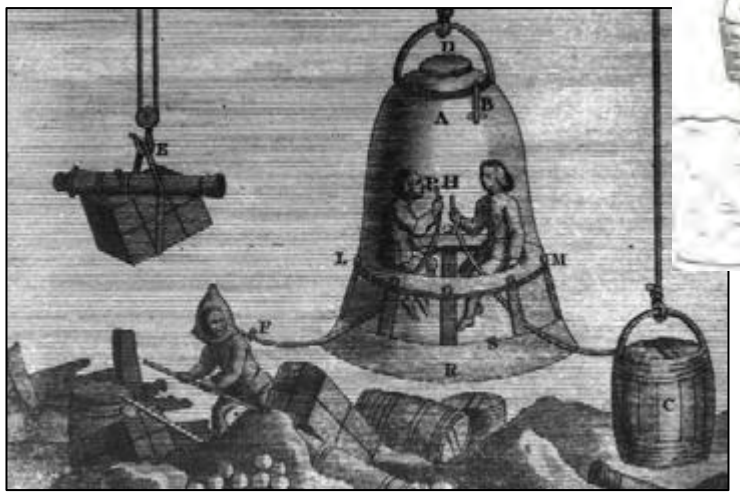
Case Studies: *San Pedro de Alcantara*, 1786



After recovering almost all its cargo the Spanish crown sold salvage permits for the best part of the following century.

Case Studies: *San Pedro de Alcantara*, 1786

As *San Pedro de Alcántara site* was salvaged throughout the 19th century, with the Spanish government giving licenses to successive contractors, it is said that some of the early 19th century salvors used diving machines, perhaps similar to the device developed by John Lethbridge.



Case Studies: *San Pedro de Alcantara*, 1786

Among the twenty or so prisoners – mostly the family of José Condorcanqui – was Fernando Túpac Amaru, his youngest son.

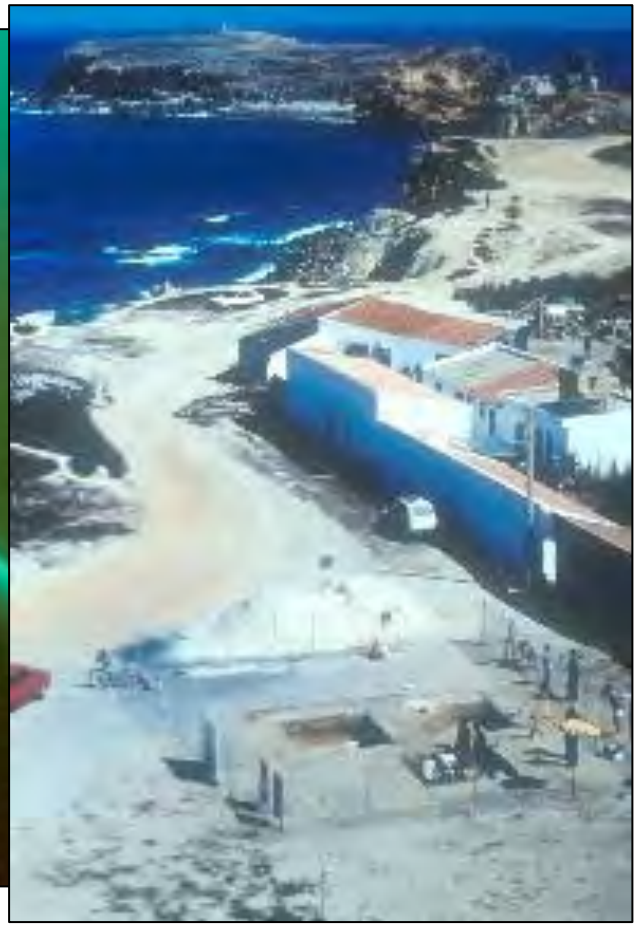
The natives that drowned were buried in a trench, still with the irons on their legs.

Fernando Túpac Amaru survived and was taken to Seville where he died in prison in 1799.

Fernando had been forced to watch his father being quartered, his mother garroted, and his elder brother hanged.

Case Studies: *San Pedro de Alcantara*, 1786

The 1980s excavation of this site was carried by Jean-Yves Blot (underwater) and his wife Maria Luisa Blot (on land). Of the 100 individuals thought to have been buried in the area, slightly over 30 were found and excavated.



Case Studies: *San Pedro de Alcantara*, 1786

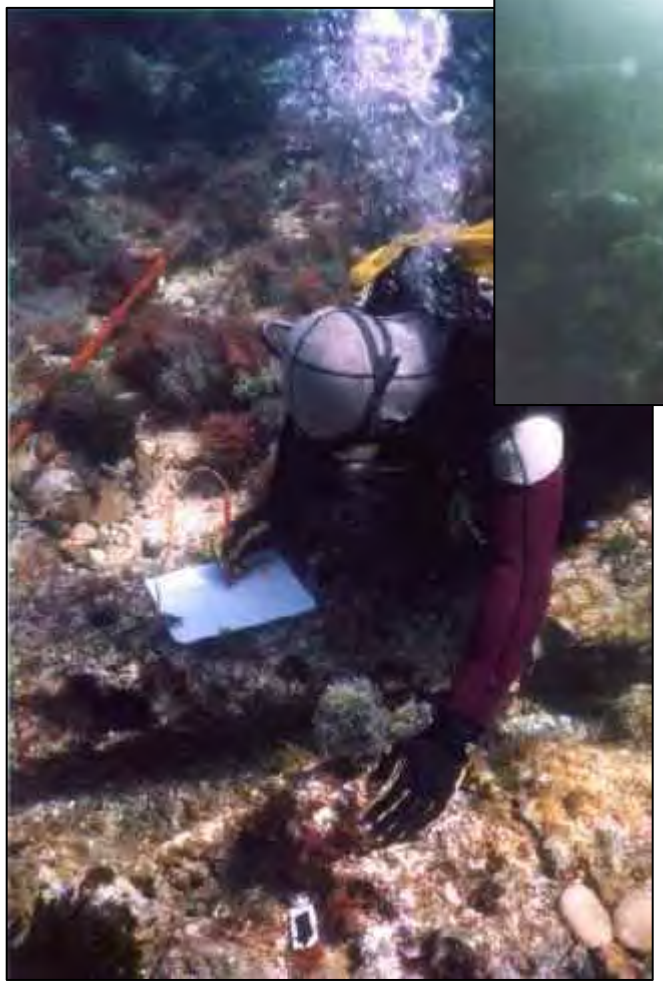
Some of the bodies had been covered with lime powder, which preserved their shape.

Case Studies: *San Pedro de Alcantara*, 1786

A French painter, Jean Auguste Pillement (1728-1808) painted a number of scenes representing this shipwreck.

Case Studies: *San Pedro de Alcantara*, 1786

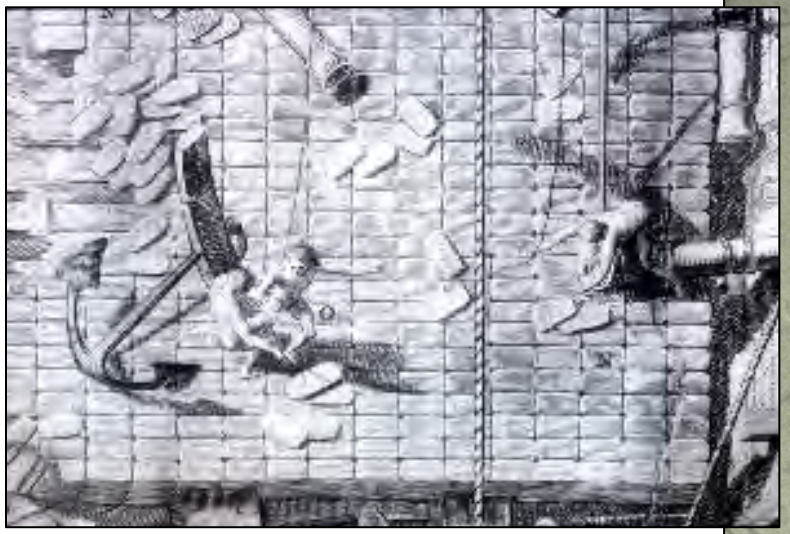
Case Studies: *San Pedro de Alcantara*, 1786



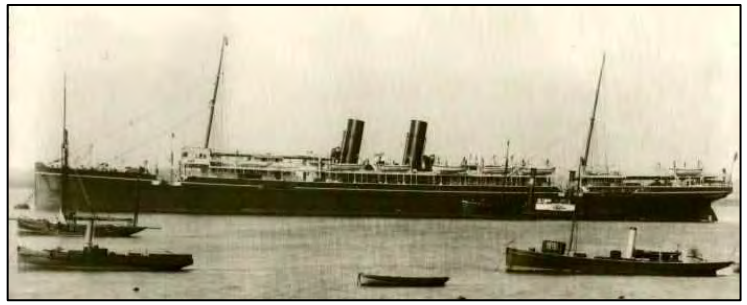
A significant number of artifacts was found on this site, in spite of the extensive salvage of the previous centuries.

Case Studies: *San Pedro de Alcantara*, 1786

Including copper ingots.



SS *Egypt*, 1922



SS *Egypt* was a British liner built in 1897 and lost in 1922 on its was to Bombay. Salvaged from 1932 to 1936.

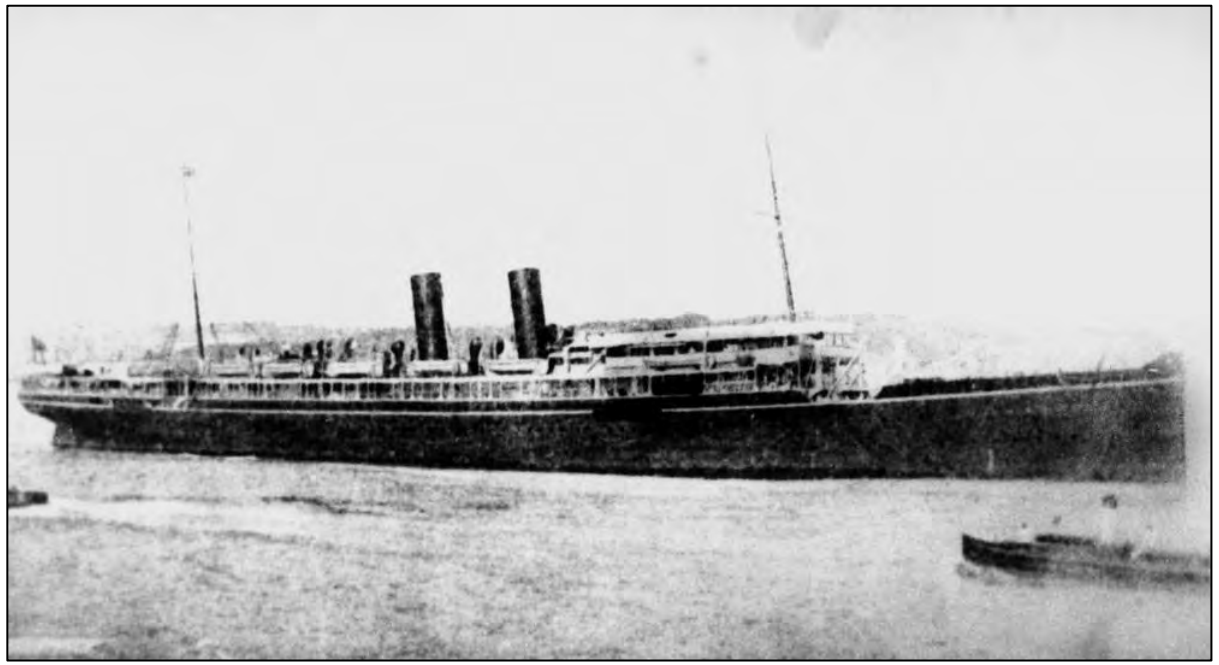
Builders: Caird & Company of Greenock,Yard No 285.
Port of Registry: London.
Engine: Steam triple expansion, 11,000 ihp. Trials Speed: 18.3 knots.
Launched: Saturday, 15th May 1897.
Tonnage: 7912 grt ~ Length: 499.8 feet ~ Breadth: 54.3 feet ~ Draught: 24.5 feet.

Between 1915 and 1919 is was used as a hospital ship in the dardanelles.

https://en.wikipedia.org/wiki/SS_Egypt

SS *Egypt*, 1922

It left sunk on the north of France after colliding with the French ship *Seine* in 20 May 1922, due to fog.



https://en.wikipedia.org/wiki/SS_Egypt

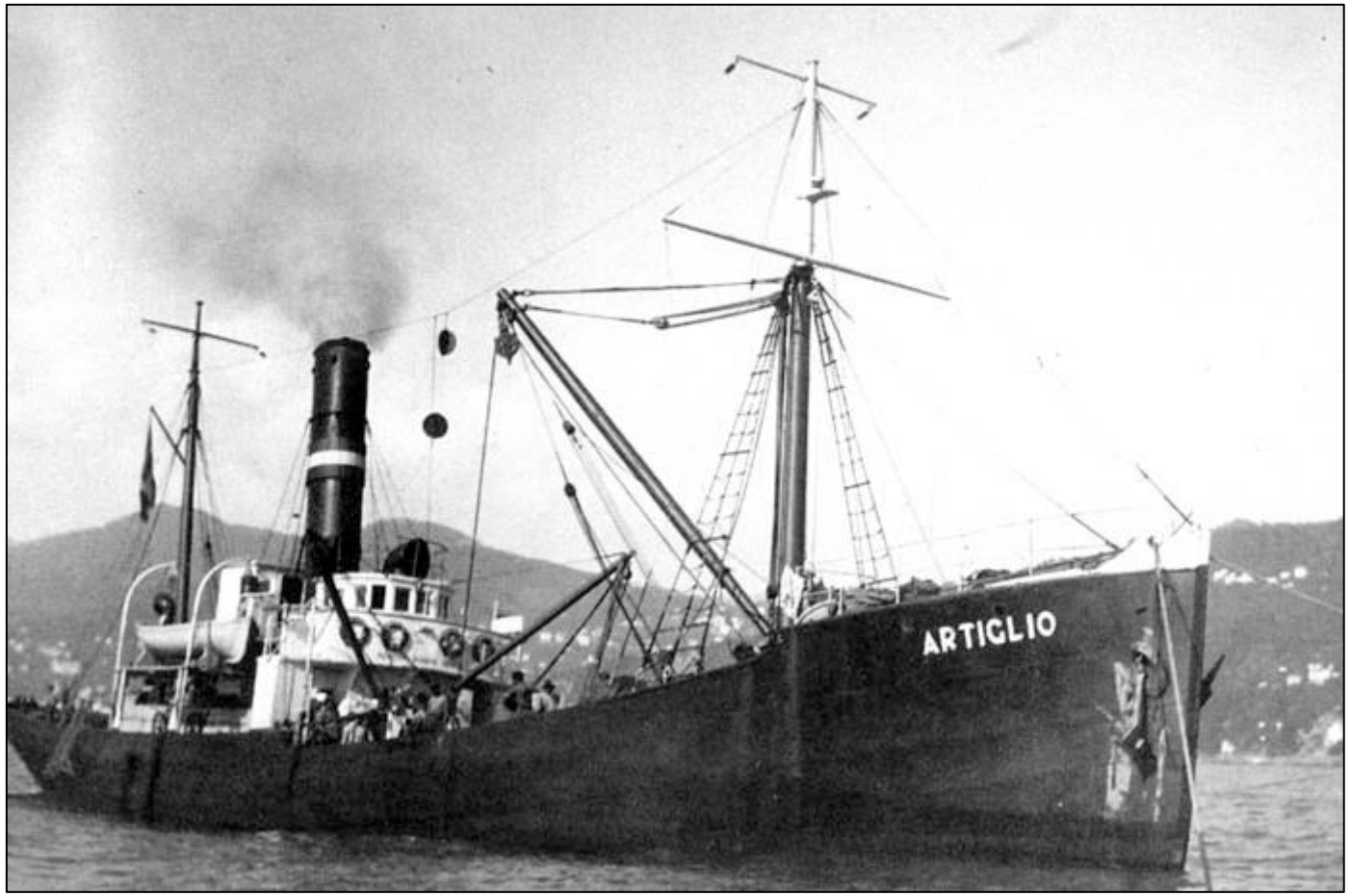
Case Studies: SS *Egypt*, 1922

THE OBSERVATION-SHELL GOING DOWN. THE DIVER IS INSIDE IT AND THE LID HAS BEEN SCREWED ON

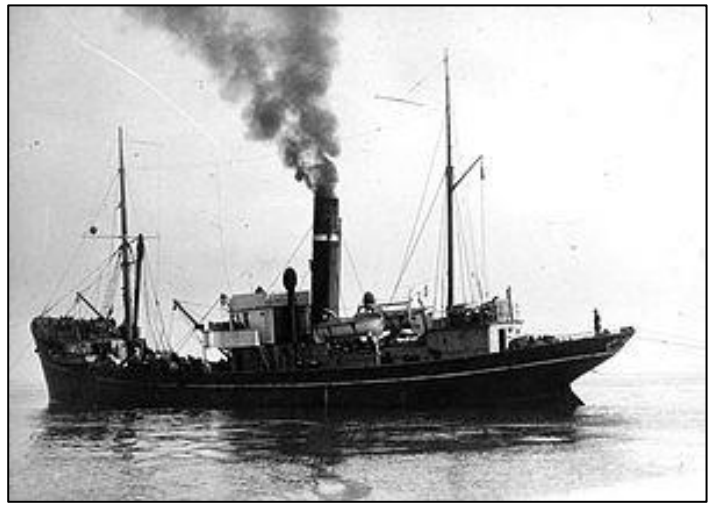
… Apart from the passengers' jewelry and valuables, they carried some 2,318 gold and silver bars and a mass of gold sovereigns together valued at over a million pounds. These, the property of the British government, were destined for India and the Far East.

http://waratahrevisited.blogspot.com/2016/06/the-case-of-ss-egypt.html

Case Studies: SS *Egypt*, 1922



It was found in 1929, around 120 m deep and salvaged by an Italian salvage company, **Sorima**, under the direction of Giovanni Quaglia. It is said that the salvage work (six years) cost $1,000,000. The value of the gold and silver recovered was estimated at $5,000,000.



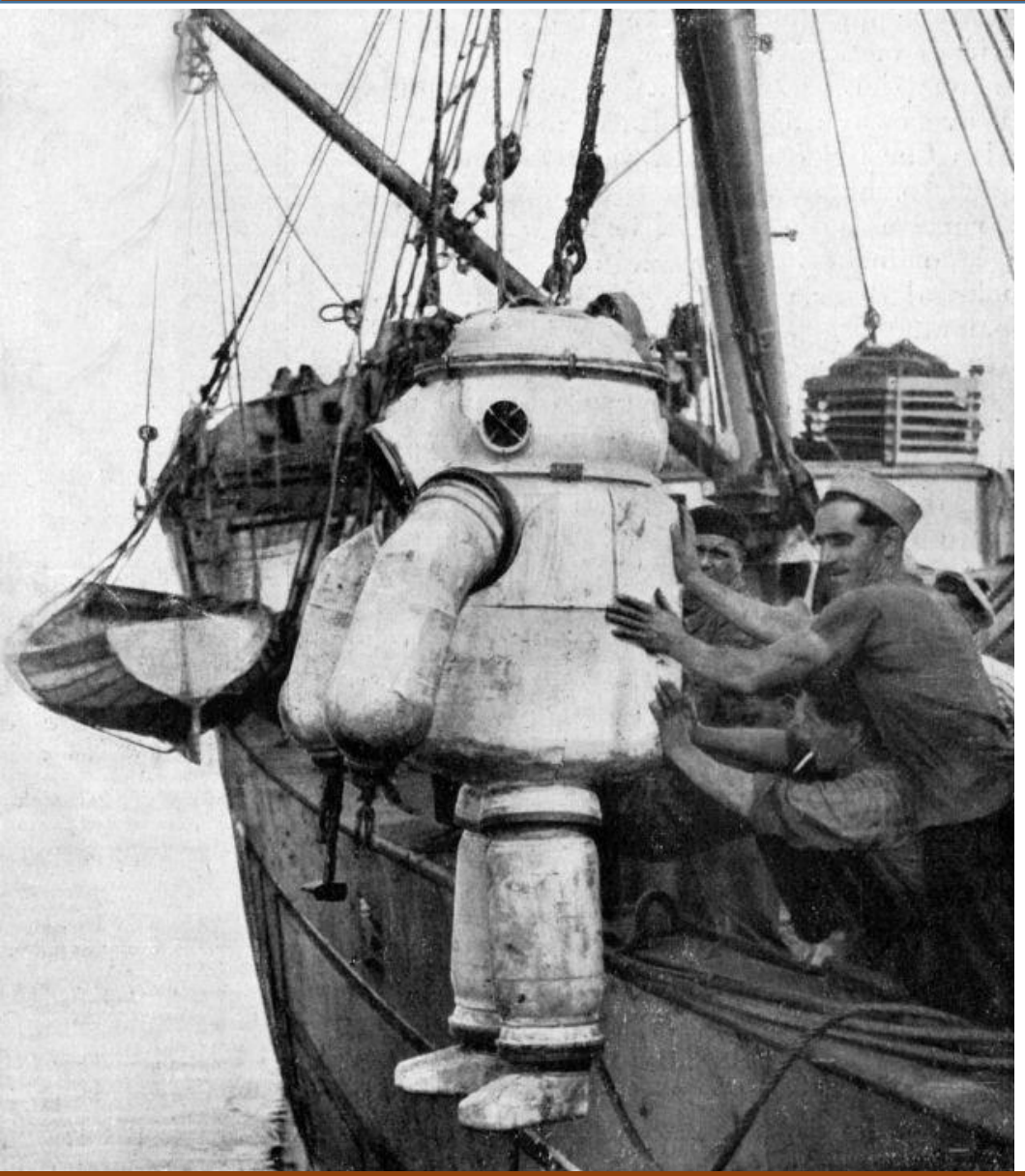
Artiglio I

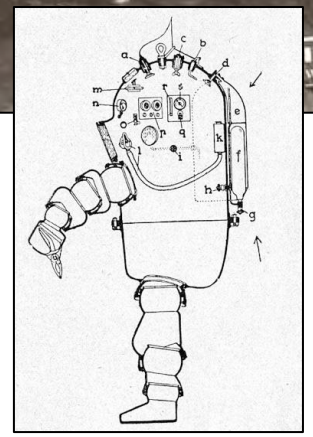
Case Studies: SS *Egypt*, 1922

THE IDENTIFICATION OF THE 'EGYPT'. FRANCESCHI, JUST UP FROM THE WRECK, DESCRIBING WHAT HE HAS SEEN

Sorima (Società Ricuperi Marittimi) found the shipwreck in 1930 and used an armored suit to direct the salvage operations in situ.

Case Studies: SS *Egypt*, 1922



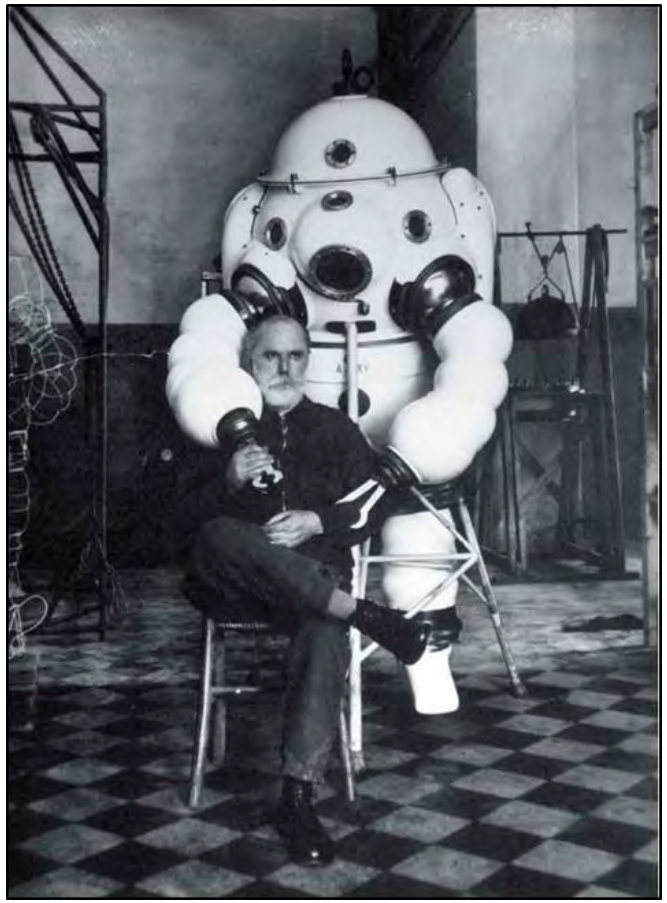


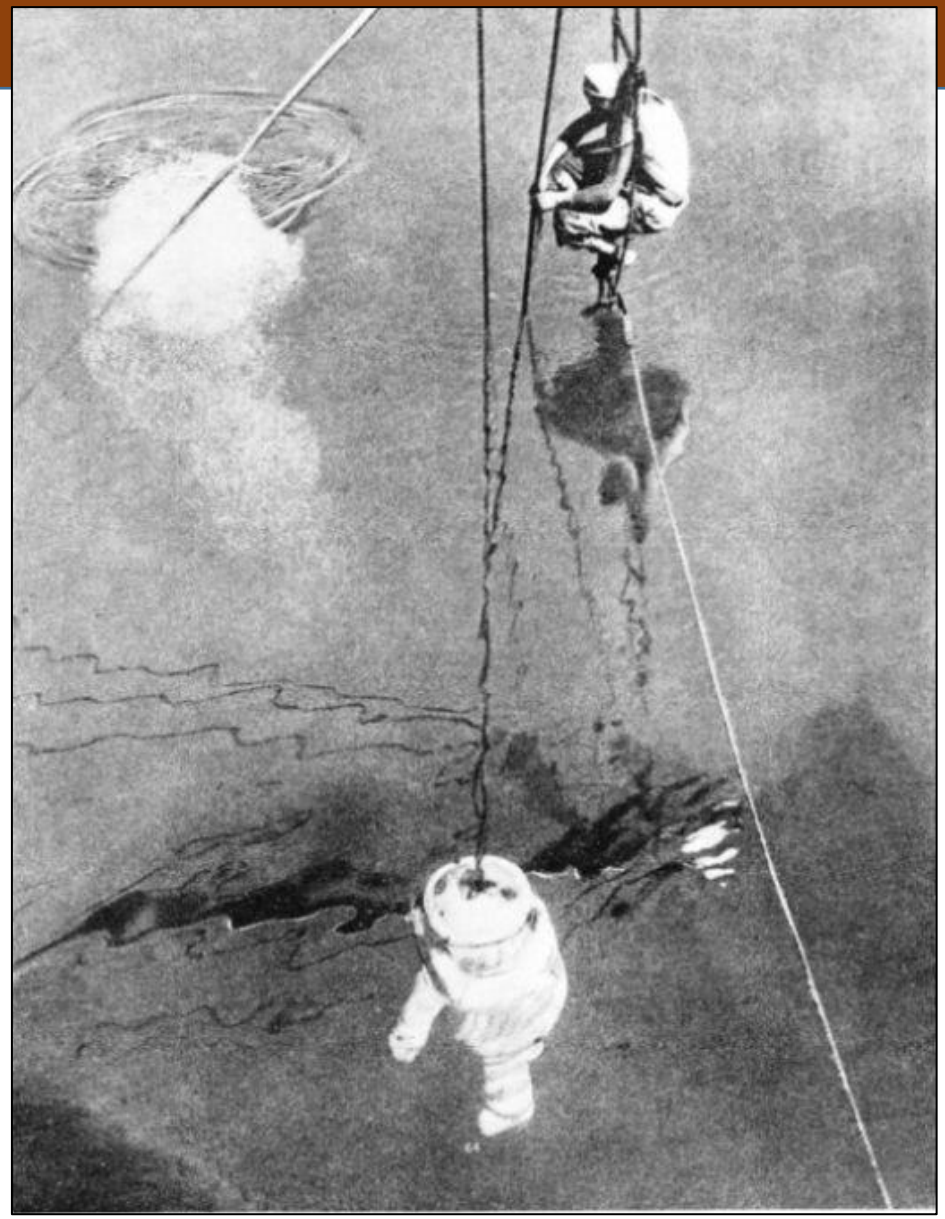
Neufeldt & Kuhnke 1916 suit

The suit was made by Neufeldt & Kuhnke, from Kiel, Germany, a company started in 1911.

Case Studies: SS *Egypt*, 1922

Salvage operations started in 1930 and lasted until 1936.





Case Studies: SS *Egypt*, 1922

Giovanni Quaglia and Peter Sandberg had found the site dragging, in 1929. Before going back, in 1930, the *Artiglio* had to go clear a warship from the harbor of St. Nazaire. An explosion of the ship's magazine sunk the *Artiglio*. Only seven of its crew members survived.

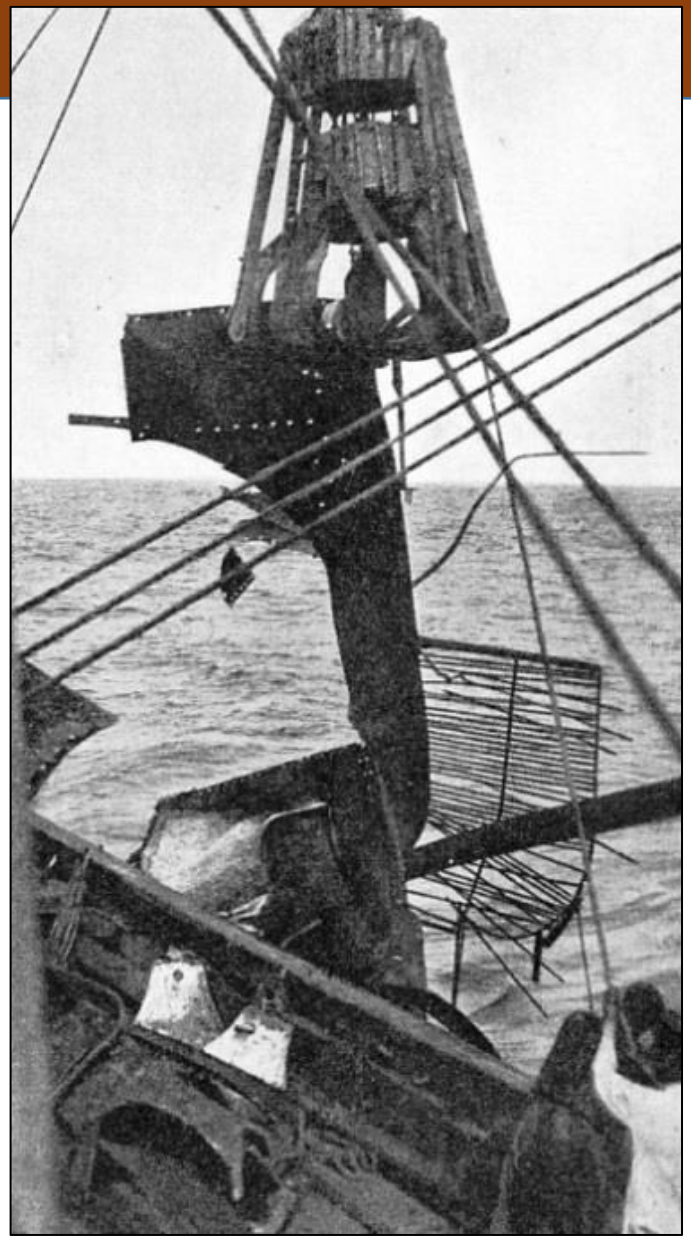
For three months, the crew of the "Artiglio" worked upon her, section by section, until, as Christmas approached, they tried to speed up the operation.

The divers laid the charges and the ship, instead of standing off safely two miles, retreated only 300 yards. And instead of the usual muffled underwater explosion, there was a tremendous noise. The charge had exploded all the munitions on the sunken ship. A huge column of water shot into the air. This and the shock waves forced the "Artiglio" under water. At one moment she had been supervising a successful salvage operation. At the next, only a mushroom shaped cloud of smoke and spray marked where she had been.

http://waratahrevisited.blogspot.com/2016/06/the-case-of-ss-egypt.html

Case Studies: SS *Egypt*, 1922

On the bottom for only a decade the ship was in very good condition and the salvors had to dynamite their way down the decks.



Case Studies: SS *Egypt*, 1922

THE CAPTAIN'S SAFE FROM THE 'EGYPT' COMING ABOARD THE 'ARTIGLIO'. NOTE HOW NEATLY THE GRAB IS HOLDING IT

Recoveries were done with a series of grabs, designed for different tasks. The work of the grabs was directed by phone from the armored suit.

Case Studies: SS *Egypt*, 1922

Giovanni Quaglia reached the level of the safe in 1932 and salvaged almost the entire treasure.

Case Studies: SS *Egypt*, 1922

Case Studies: SS *Egypt*, 1922

During the salvage works Quaglia had to fight in court over the rights of the treasure.

Case Studies: SS *Egypt*, 1922

Stenuit's check list for salvage works.

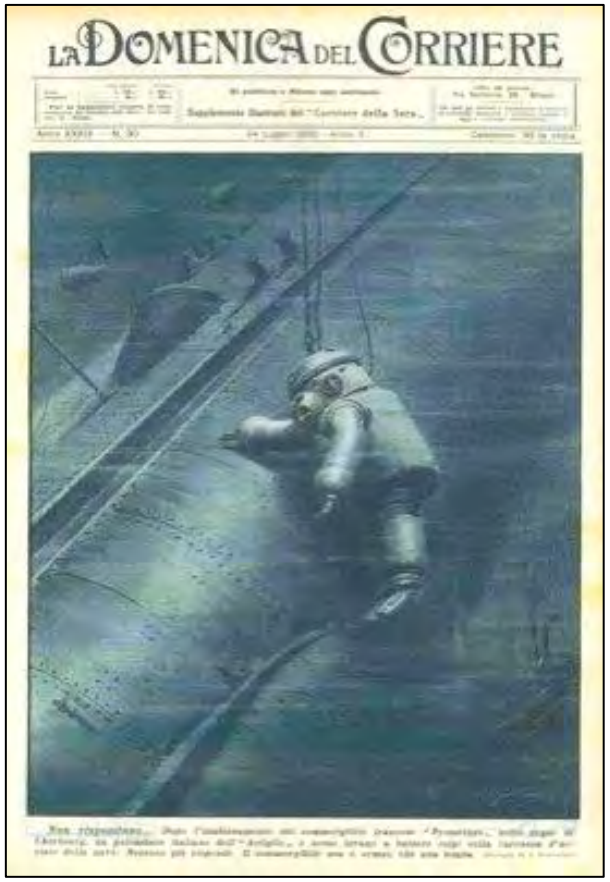
1. Find reliable information about a valuable cargo shipped in a particular vessel that sunk;
2. Make sure that the cargo was actually loaded on that particular vessel;
3. Make sure that the ship did sink (beached ships were invariably salvaged);
4. Make sure that the cargo was not unloaded on a port before the shipwreck took place;
5. Make sure that the cargo was not saved (transshipped) right before the shipwreck;
6. Make sure that the cargo was not jettisoned right before the shipwreck;
7. Make sure that the cargo was not salvaged immediately after the shipwreck;
8. Make sure that the cargo was not salvaged at a later date;
9. Make sure that time did not damage the cargo;
10. Make sure there are no claims on the shipwreck or its cargo;

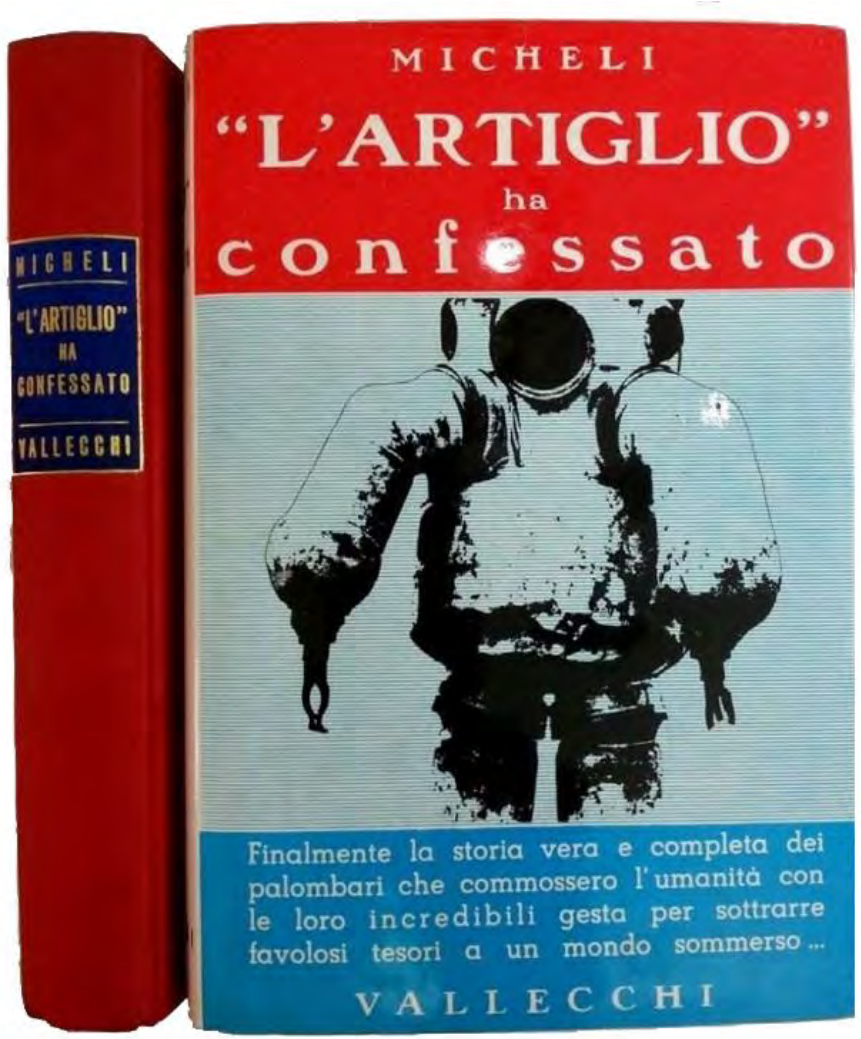
Case Studies: SS *Egypt*, 1922

Stenuit's check list for salvage works.

11. Make sure he has precise data to narrow the place where the shipwreck occurred;
12. Find the shipwreck (often the most difficult part);
13. Make sure that he actually found that particular shipwreck;
14. If he ever finds anything, make sure that the cargo is not spilled over too large an area;
15. Make sure that treasure hunting is legal, or at least that the local authorities are cooperative;
16. Make sure the country in whose waters the shipwreck lays is politically stable;
17. Make sure he has all the necessary means to salvage a substantial part of the cargo;
18. Make sure he gets away with destroying, or abandoning all non valuable items, which consume time and money, and are not accepted for sale by most auction houses;
19. Make sure he has safe port to disembark the cargo;
20. Make sure he has a good lawyer;
21. Make sure he has not spent by now much more money than he can make with the sale of valuable artifacts.

Case Studies: SS *Egypt*, 1922





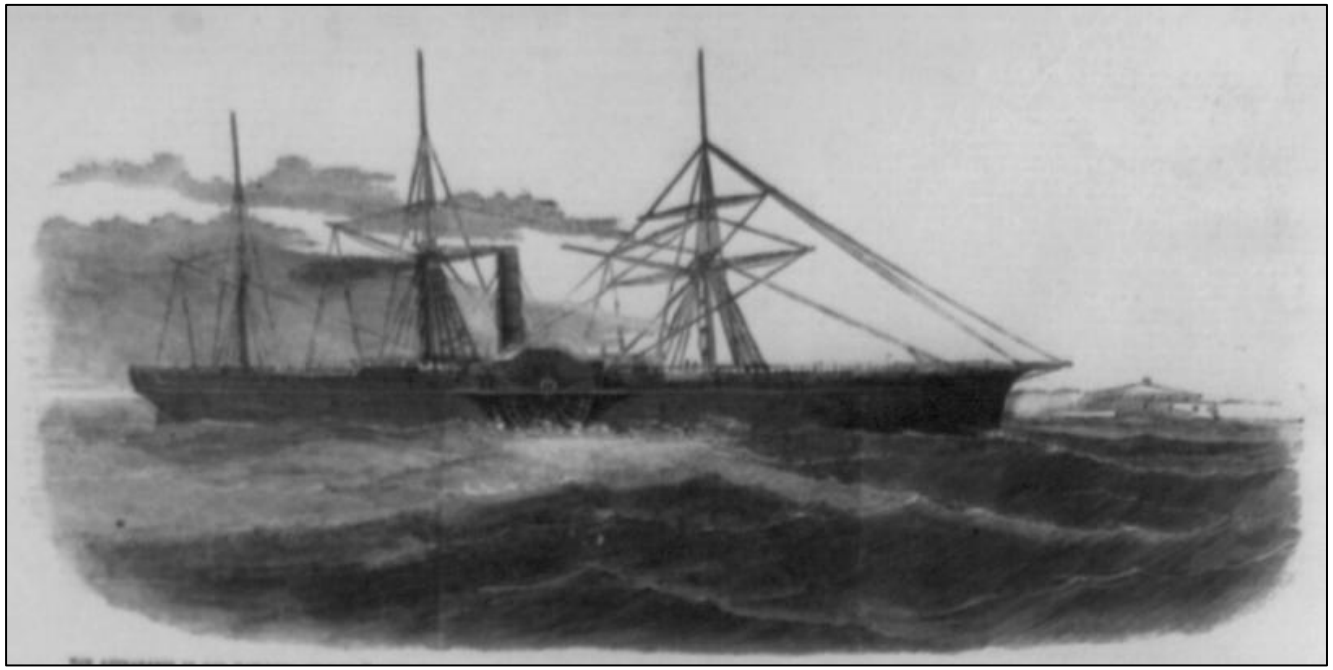
References

Ellsberg, Edward, 1981. *Men Under the Sea*. New York: Open Road.

Stenuit, Robert, 1990. *L'Or a la tonne.* Grenoble: Glenat.

Case Studies: - SS *Central America*, 1857

SS *Central America*, 1857, was a 85-meter (280-foot) wooden-hulled, copper-sheathed, three-masted side-wheel steamship launched in 1853 as the SS George Law. Operating during the California Gold Rush era, the ship was in continuous service on the Atlantic leg of the Panama Route between New York and San Francisco, making 43 round trips between New York and Panama. The Central America was caught in a hurricane and sank 160 miles off the coast of South Carolina on September 12, 1857. When she was lost, the SS Central America was carrying a large consignment of gold for commercial parties, mainly in the form of ingots and freshly minted U.S. $20 Double Eagle coins.



https://www.maritime-executive.com/article/Odyssey-Recovers-SS-Central-America-Shipwreck-Treasures-2014-07-18

Case Studies: 1988 - SS *Central America*, 1857

In 1988, Thompson convinced dozens of investors to fund an expedition to recover the gold. It was considered the richest treasure find in U.S. history: valued at $150,000,000.

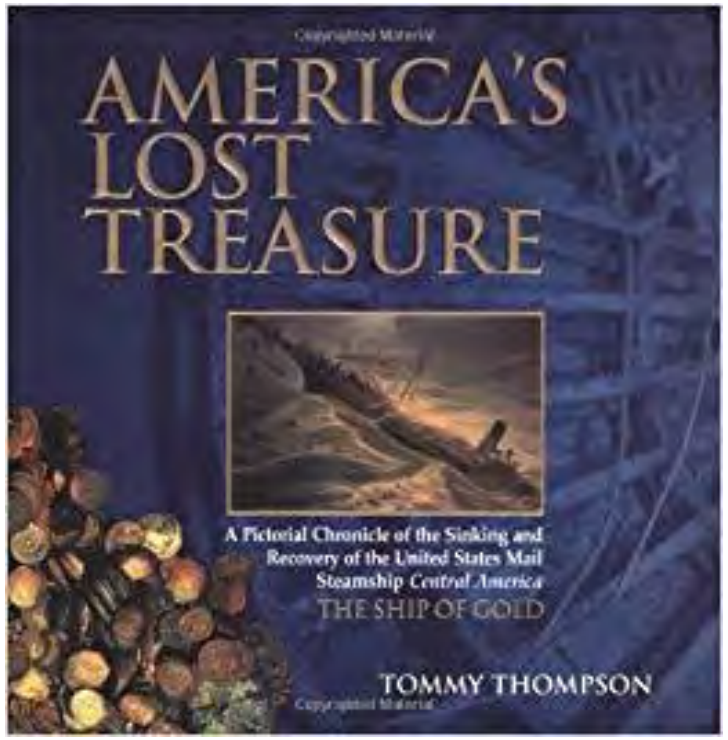
Local investors, who put up more than $12 million, grew frustrated when they did not receive any of the proceeds. They filed a lawsuit in 2005.

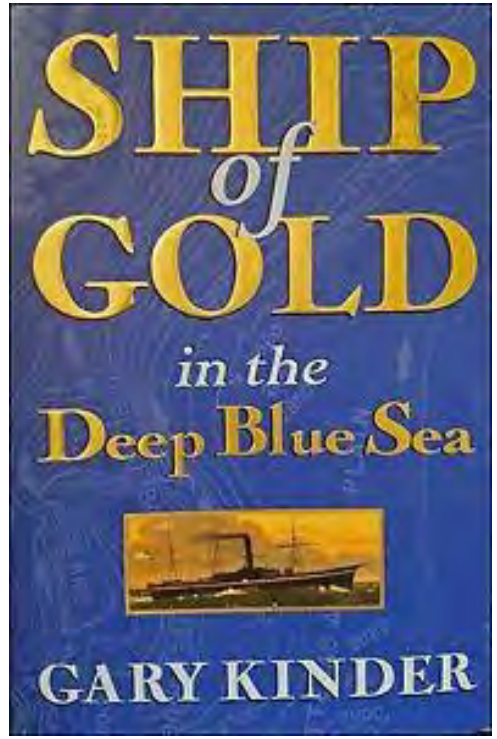
Case Studies: 1988 - SS *Central America*, 1857

SS *Central America* was found and salvaged in 1988 by treasure hunter Tommy Thompson at a depth of 2,200 m.

Thompson organized the salvage of the site, designed an ROV and invited a large team of specialists. The artifacts raised were conserved and he published a book about the salvage operations and results.

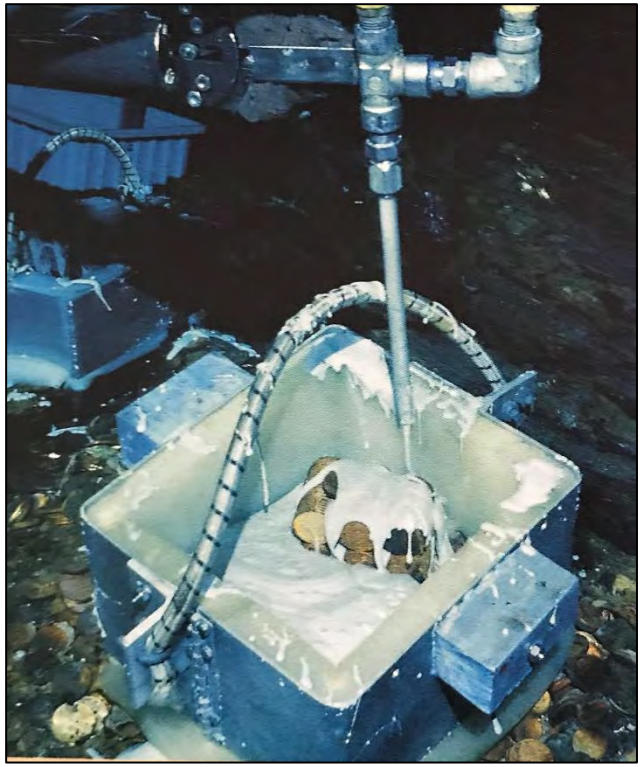
Then he sold the treasure and disappeared with his girlfriend.

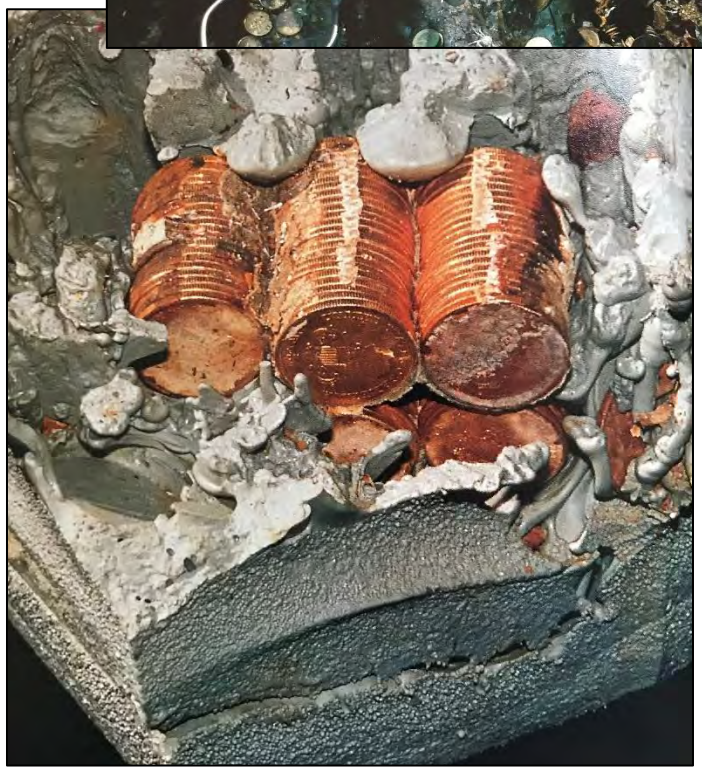




Case Studies: 1988 - SS *Central America*, 1857

It’s all about the coins.





Case Studies: 1988 - SS *Central America*, 1857

Thompson was arrested with his girlfriend in 2015 but as we speak he has not told his investors what he did with the money.

https://en.wikipedia.org/wiki/SS_Central_America

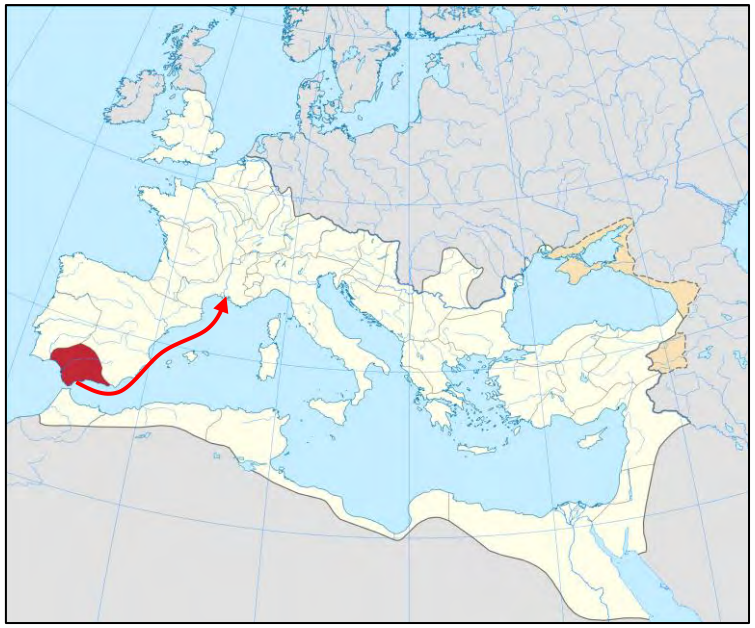
Case Studies: 1988 - SS *Central America*, 1857

Odyssey Marine resumed the salvage in 2014. Reports have been filed the court but not much information has transpired.

https://www.maritime-executive.com/article/Odyssey-Recovers-SS-Central-America-Shipwreck-Treasures-2014-07-18

Arles 4, AD 25-40

Found in 1988 and investigated in 1990 by DRASSM. It was almost 700 m deep and consisted of a 30 x 10 m mound of amphorae (about 1-2000) from Beatica.



Source: Soreide's book.

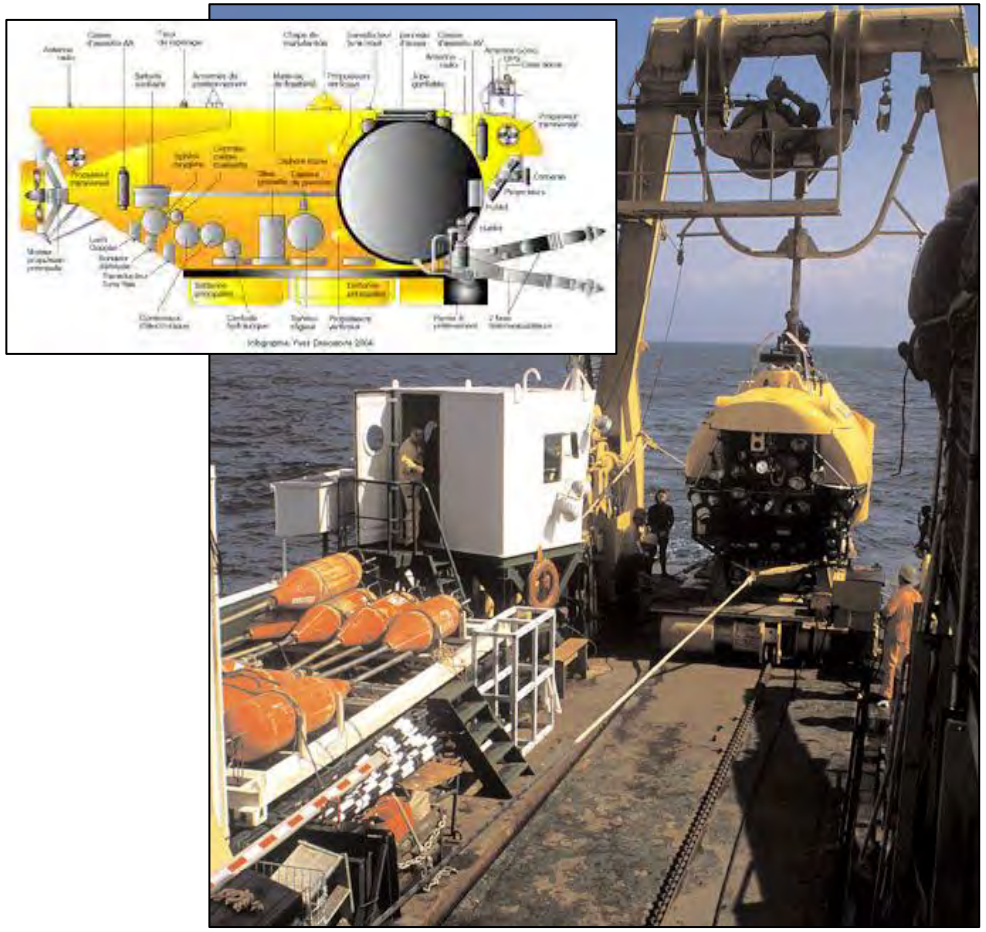
Case Studies: 1990 - Arles 4

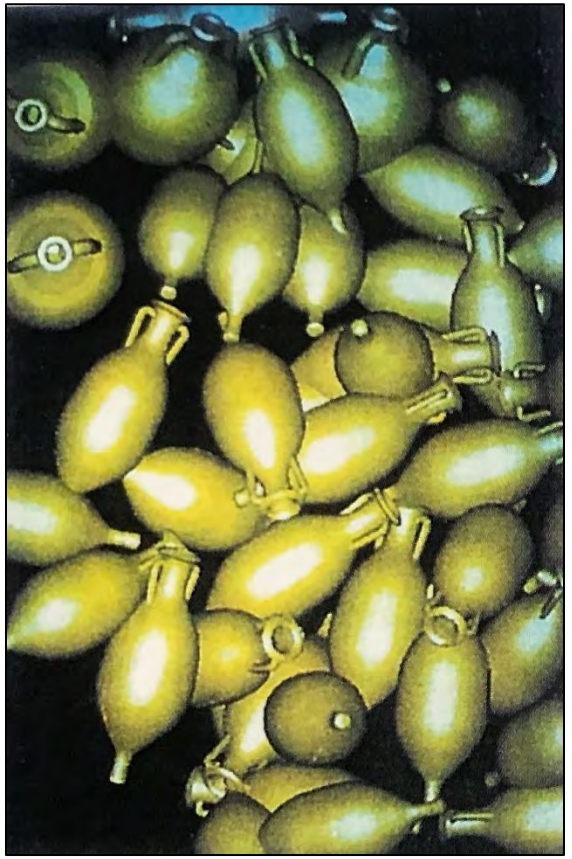
The site was inspected in 1990 with a manned submersible developed by Ifremer, named *Cyana*.

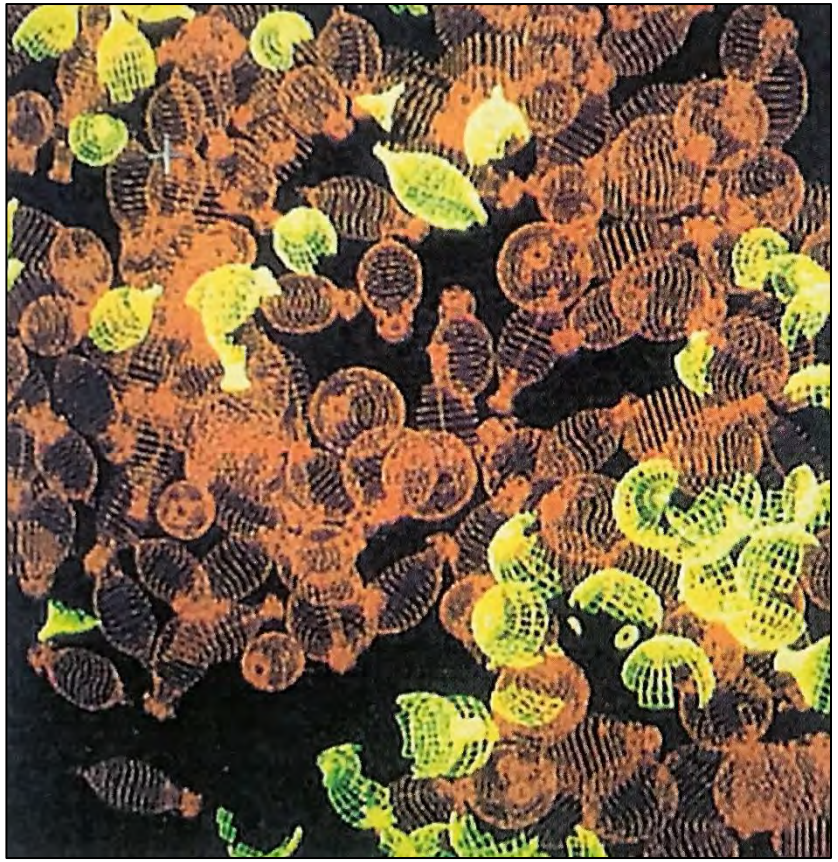
Source: Soreide's book.

Case Studies: 1990 - Arles 4

In 1993 DRASSM went back to the site with the submarine *Nautile* (18 tons), equipped with photogrammetric cameras, shooting images with 60% overlap.





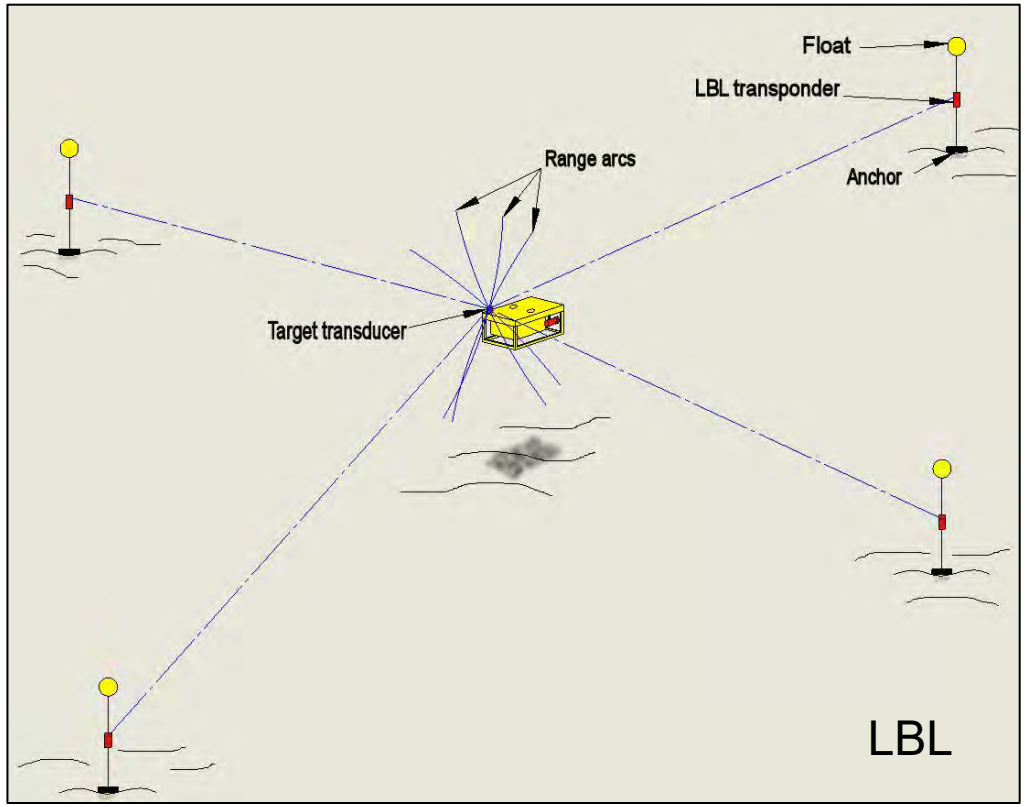


Source: Soreide's book.

Case Studies: 1990 - Arles 4

The position of the camera was established within 10 cm by a LBL acoustic positioning system (transponders). A series of cubes and targets were used to develop a

Transponder emits a signal when it receives a signal. Transducer transforms a physical signal (pressure or brightness) into an electrical signal and vice versa.



Source: Soreide's book.

Case Studies: 1990 - Arles 4

Long Baseline Acoustic Positioning System (LBL), Short… (SBL), and Ultra Short… (USBL):

LBL SBL USBL

Source: Xiang, X., et al., 2009, “Cooperative Acoustic Navigation Scheme for Heterogenous Autonomous Underwater Vehicles” in book *Underwater Vehicles*,

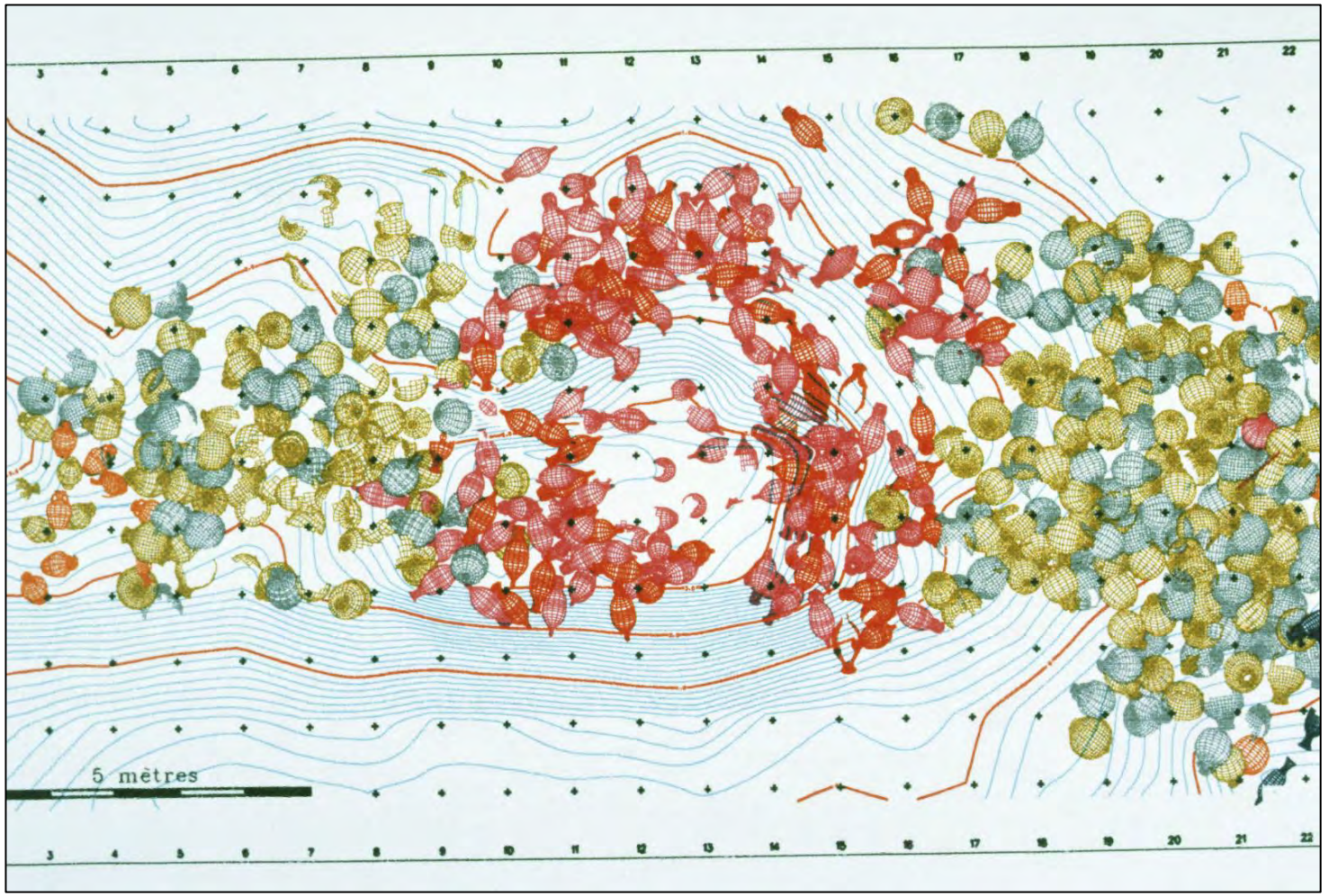
Case Studies: 1990 - Arles 4

Every amphora was classified (10 different types) and poisoned. A computer model for each type was developed and stored in a computer library, and the site was assembled in 3D, amphora by amphora.

Source: Soreide's book.

Case Studies: 1990 - Arles 4

A 3D model of the site with high accurate measures was developed and used to reconstruct the site.



Source: Soreide's book.

Dry Tortugas Shipwreck 1622

Found in 1965 when a shrimp trawler pulled in intact Spanish olive jars, metal artifacts, rigging and wood. In the early 1970s Robert Marx found the site dragging a cable between two boats and sold the information to a treasure hunter group for $10k and 10% of the artifacts in kind.

Source: Sean Kingsley pers. comm.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

The information eventually passed to Seahawk Deep Ocean Technology and the fishing hang was ground-truthed in 1989 by that company at a depth of 405 m by ROV.

Seahawk estimated the treasure at $92m and raised $12m (?) to salvage “the treasure” (1990-1991).

Source: Sean Kingsley pers. comm.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

The launch system onboard the RV *Seahawk* consisted of a winch, an A frame, armored tether and depressor weight that allowed ROV operations to be conducted in depths of up to 600 meters of water. The ROV was free-swimming, relying on the depressor weight connected to the armored umbilical, with a 50 meters neutrally buoyant excursion tether from the depressor that provided a 100 meters footprint for the ROV.

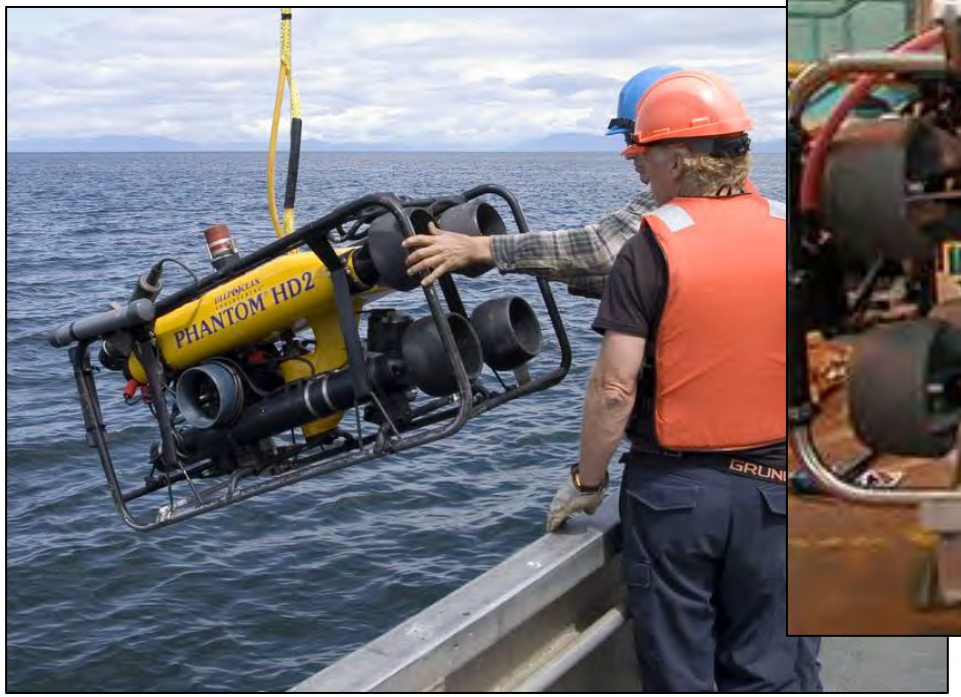
Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

Tentative identification: the ship *Buen Jesús* departed from the River Guadalquivir in late March 1622 with the fleet of General Juan de Lara Morán for Santa Marta, Rio de la Hacha and Nueva Cordoba. The homeward bound Tierra Firme flota left Havana on 4 September and sank on 5-6 September. No coins dated after 1621 were found in this shipwreck.

Source: Sean Kingsley pers. comm.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

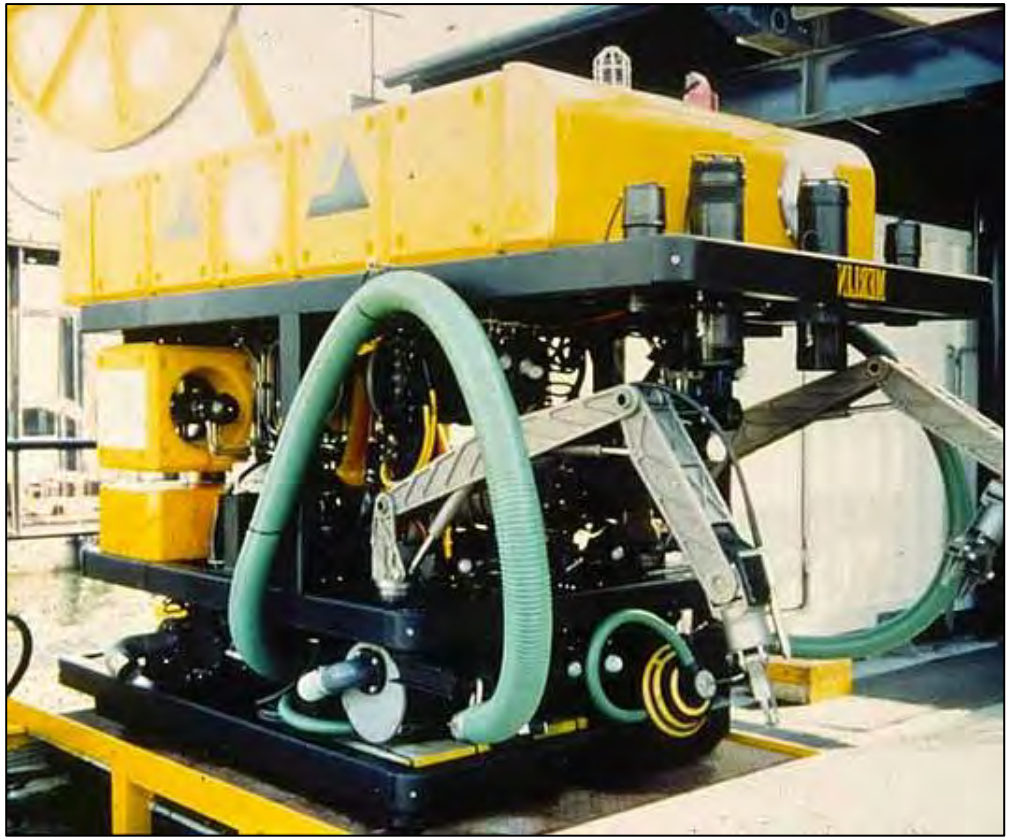
Initial visual survey of the wreck site was accomplished using the Phantom DHD2 ROV, which was equipped with a Mesotech 971 sector scanning sonar and was utilized to define the location and perimeter of the site. The ROV was linked to *Seahawk* via 610 meters of shielded 42 separate conductor umbilical cable (no single wire multiplex control system was available in 1990-91) and was fitted with two 250-watt halogen lights and two Panasonic CCD low light video color cameras to illuminate the site.



https://www.shipwreck.net/tortugas-operations

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

For the recovery operations a new vessel the 64 m *Seahawk Retriever* was chartered and a new ROV (*Merlin*) acquired.



Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

Merlin was designed and constructed to the specifications laid out by Seahawk's technology team specifically for excavation in deep water.

https://www.shipwreck.net/tortugas-operations

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

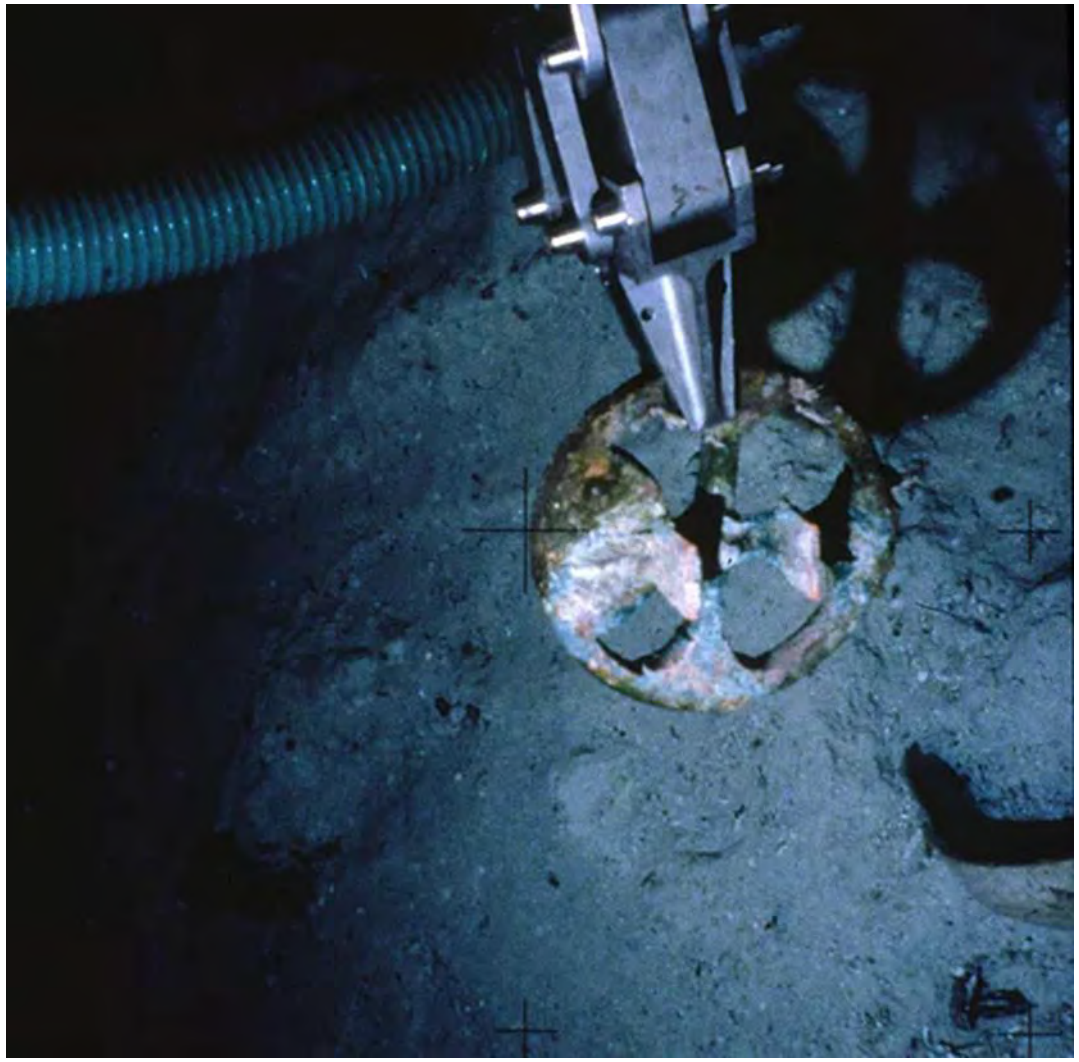
Merlin was fitted with *Schilling* manipulators, a customized suction dredge, an acoustic long baseline positioning system and weighed approximately three tons out of water. Buoyancy blocks of syntactic foam (to resists the crushing effects of pressure at 400m) made *Merlin* 272kg positively buoyant. The ROV had six hydraulic powered positioning thrusters; vertically oriented thrusters allowed it to work above the seafloor without stirring up sand or silt.

Source: Soreide's book.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

Lifting baskets were placed in sectioned off partitions in a large steel basket designed for retrieving artifacts from the sea bottom, nicknamed the 4Plex, which had a lifting capability of three tons.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622



The thrusters also held the ROV steady when artifacts were lifted. Either manipulator arm could lift up to 113kg without affecting Merlin's position in the water. One of the manipulators used a system controlled by a master replica of the manipulator at the surface desk; the jaw pressure could be dialed up to 500lbs or reduced to a few ounces.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

Positioning was determined and recorded by a system of long baseline transponders installed on the site, which communicated with transponders on Merlin and the ship.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

Suction devices were installed to recover ceramic jars.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

The artifact collection, which had been evaluated in $92m in 1989 was appraised by John de Bry in 1991 at $4,792,100 (he appraised the olive jars at $10,000 apiece).

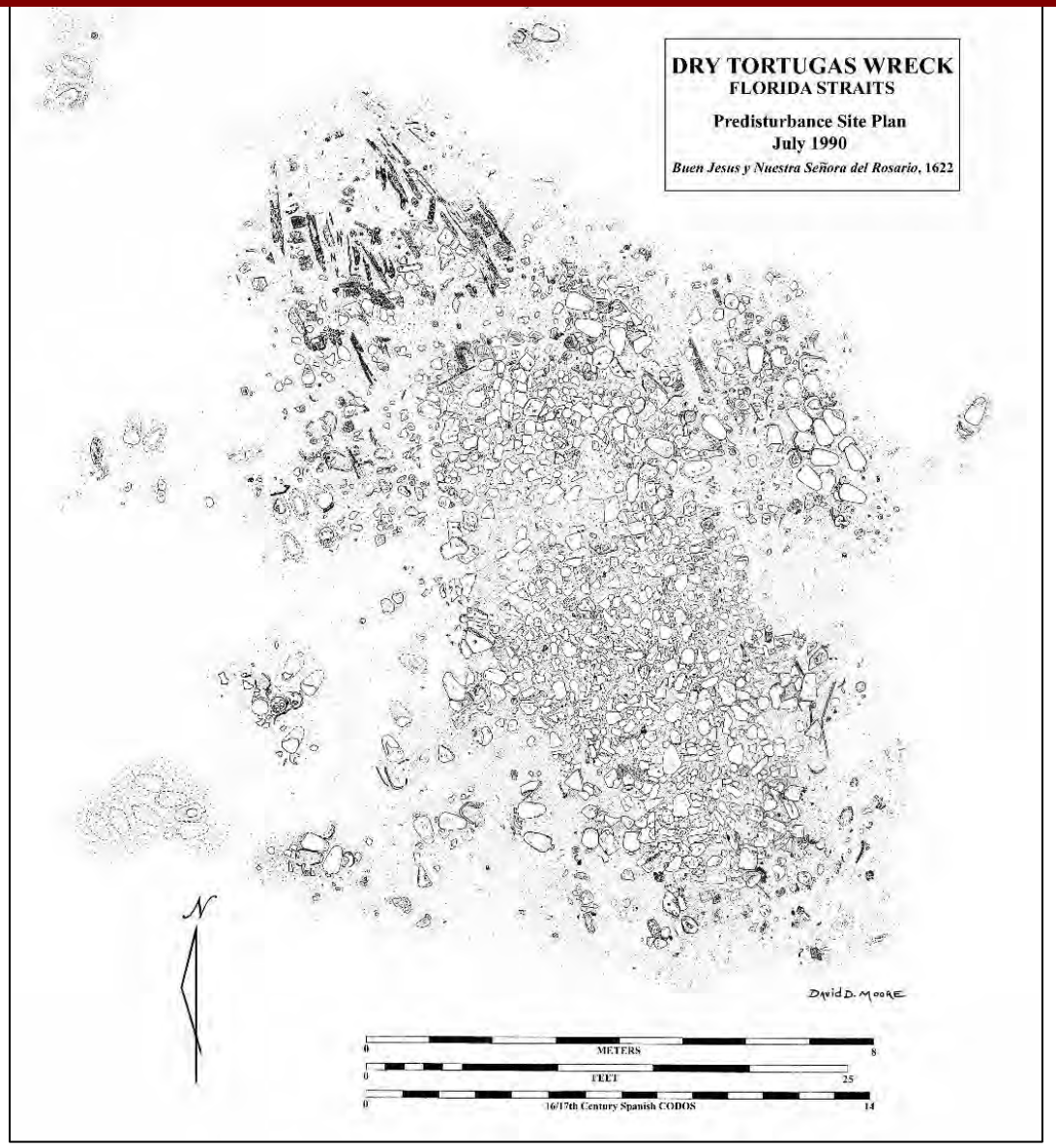
In 1992 a Christie's appraiser put the collection value at $1m or less.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

In 1992 The Securities and Exchange Commission sued Seahawk. The company eventually settled and evolved into other companies, such as Deep Ocean Shipwreck Exploration and Odyssey Marine Exploration.

Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

The hull remains were not recorded and were not covered after the salvage operations.



Case Studies: 1990-1991 - Dry Tortugas Shipwreck, 1622

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Questions?