

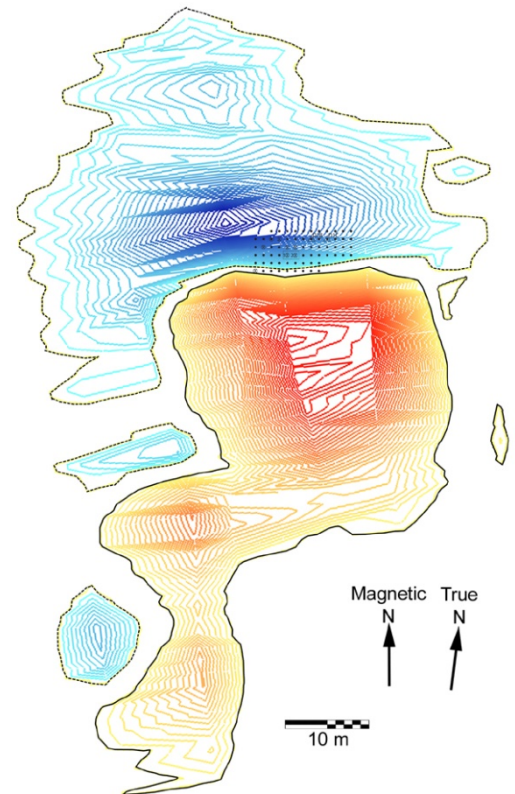
THE IRON BOX SITE

Iron Box Site

Discovery of the Iron Box Site

The sunken wreckage known as the Iron Box Site, like the [Centerboard Schooner Wreck](#) located nearby, was originally located during the 1995 shipwreck survey offshore St. Augustine enacted by Southern Oceans Archaeological Research, Inc. (SOAR). Originally known as Offshore Target 17, it was detected with a magnetometer, a device that measures the Earth's magnetic field, and distinguishes anomalies caused by the iron objects present on historic shipwreck sites. Divers in 1995 did not find any physical remains at this site, which may have been buried at the time. When SOAR divers returned in April 1999, however, a significant expanse of wreckage was exposed.

At that time divers observed a deposit of iron debris, including piles of massive chain, stretching out between 4.5 and 6 m (15 and 20 ft.) from a large, partially exposed, iron, box-like structure with wooden timbers beneath it. This site, which appears to be the remains of a 19th-century shipwreck, was named the Iron Box Site and designated site number 8SJ3526. Archaeologists speculated at this time that the Iron Box Site might represent a portion of the [Centerboard Schooner Wreck](#) which had separated from the main hull component. This has never been verified and the two are listed as individual sites in the Florida Master Site Files. Unlike the [Centerboard Schooner Wreck](#), which is regularly monitored by LAMP, the Iron Box Site was not ever regularly visited. LAMP archaeologists dived it in August 2006, but could not relocate any wreckage that had been described seven years before. It was presumed buried, as this is a very dynamic area prone to moving sands.

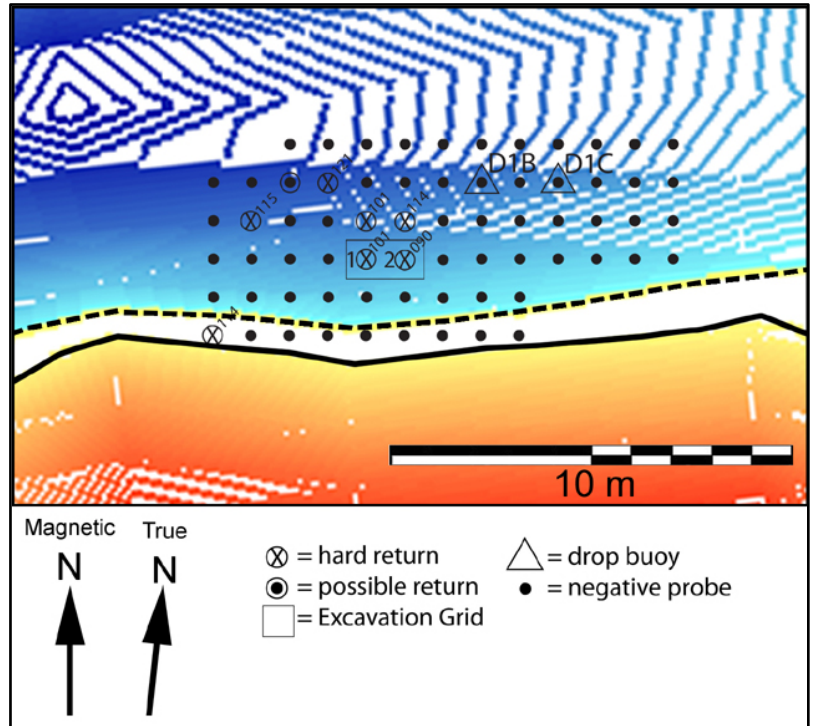


The magnetic contour of the Iron Box Site generated after LAMP's 2009 magnetometer survey. Click on image for larger version.

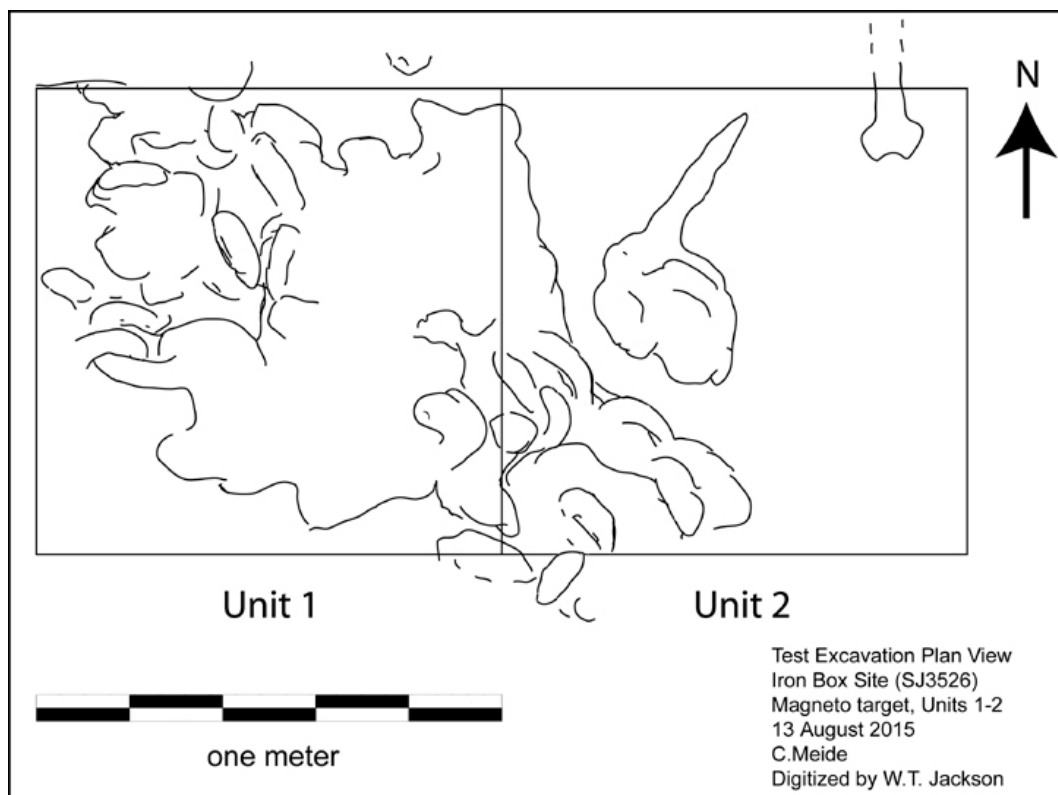
2015 Excavations

The site was visited again by LAMP in August 2015, during the 450th Anniversary Shipwreck Survey, a research program funded in part by the State of Florida's Division of Historical Resources (Meide et al. 2015). LAMP was interested in testing a magnetic anomaly which had been identified after analysis from a 2009 magnetometer survey. This anomaly was presumed to be related to the Iron Box Site, even though it was located 21 m (69 ft.) away from the reported location of the site. LAMP archaeologists decided to excavate at the source of the anomaly, to determine if it was indeed the Iron Box Site, or something else.

LAMP divers pinpointed the source of the magnetic anomaly and used a 10 ft. long hydraulic probe to conduct 68 probe tests at the site. Eight of these resulted in hard returns, meaning the probe hit hard objects buried between 90 and 115 cm (2.95 and 3.77 ft.) below the sand. A 1 m by 2 m area was excavated using two handheld dredges. After a day of dredging, a dense concentration of concretions were exposed. Further excavation revealed a pile of chain made up of massive links, with some other unidentified iron debris. It seemed clear to archaeologists that this magnetic anomaly did indeed represent the Iron Box Site.

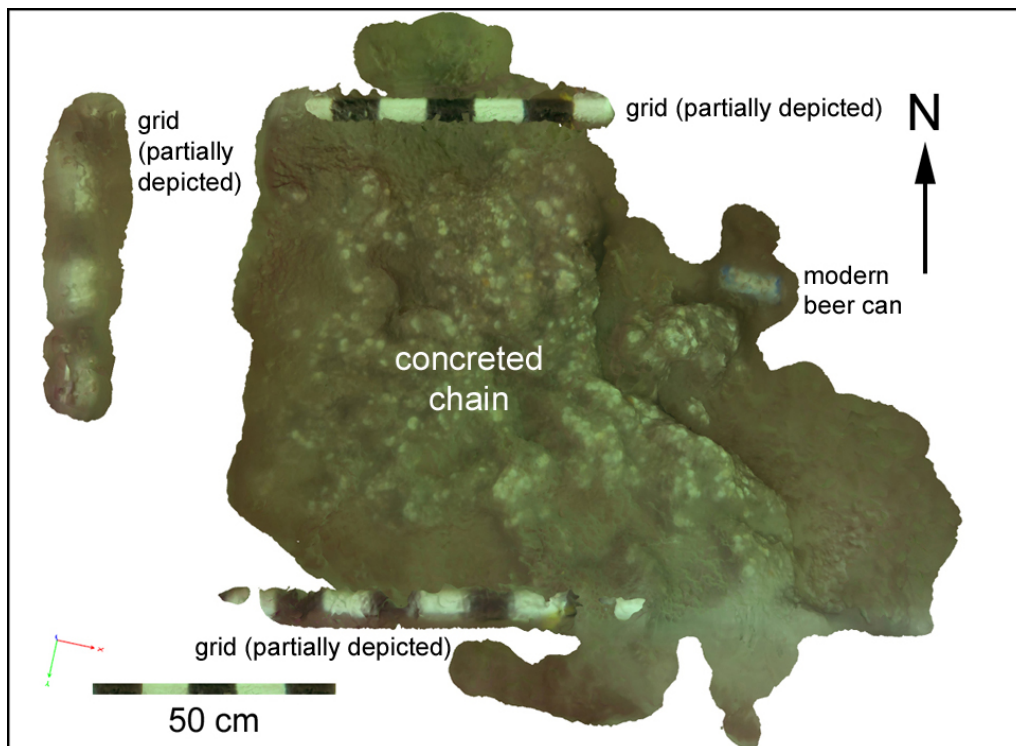


Map showing the locations of positive and negative probes at the Iron Box Site, superimposed on the magnetic contour, and showing the location of the 2 m by 1 m excavation. [Click on image for a larger version.](#)



Plan view drawing of the 2015 test excavation at Iron Box Site. [Click on image for a larger version.](#)

Despite the very limited visibility at the site, which is typical for diving in the waters near St. Augustine, divers were able to record some video footage of the wreckage exposed in the excavation unit. After the field season, using Agisoft Photoscan software, a 3D model was generated of the wreckage. It was not perfect, because of the poor visibility, but a portion of the exposed concretions and some of the black and white PVC grid are visible in the image below.



Three dimensional digital model of the 2015 test excavation at the Iron Box Site. Click on image for larger version.

Discussion

One significant difference between the site as reported in 1999 and its present condition is the accretion of sand which has completely covered all historic material. The concretions in the 2015 test excavation were buried by at least 60 to 80 cm (2 to 2.6 ft.) of sand. Sixteen years prior, evidenced by side scan sonar imagery and diver observation, a significant expanse of cultural material was exposed on the surface of the seafloor. This is interesting when considering a recent study by LAMP archaeologist Brendan Burke, which suggests that this and other nearby wrecks are in the most dynamic zone south of the inlet in terms of sediment movement, due to natural factors and periodic beach replenishment projects by the U.S. Army Corps of Engineers. A modern beer can found in Unit 2, visible in the image above, is another testament to the fact that this site was previously exposed. It seems likely that this site has fluctuated between burial and exposure over the last 16 years, though more regular monitoring may confirm this.

The iron box observed in 1999 was canted at an angle and sitting on apparently articulated hull timbers. It was at least 5 to 6 ft. (1.52 to 1.83 m) long before it disappeared into the sand, and measured 4 ft. 2 in. (1.27 m) across and 2 ft. (0.61) high, with walls 2 in. thick. It quite possibly represents the remains of a water tank. Iron tanks for storing drinking water only became practical after the invention of pumps with flexible hoses, and they could hold significantly more water in the same space it took to hold traditional wooden casks. Iron tanks began to replace casks in the British Royal Navy in 1814, though it took decades to implement the transition (Lavery

1987:190-191). Richard Meade, in his 1869 Treatise on Naval Architecture and Ship-Building, describes tanks built from iron plates that were “usually rectangular or about 4 feet square, and from 4 to 6 feet deep” and holding 400-600 gallons, though he notes “a small number only are now supplied to our [U.S. Navy] cruisers” (Meade 1869:415). As with many military technologies, it took longer for these innovations to trickle down to the civilian marine sector, and if the iron box is a water tank it most likely dates to later in the 19th century.

The chain observed on the site may also be diagnostic. Chain this size almost certainly represents anchor chain, which came into general use in around the 1820s (Stone 1993:121; Curryer 1999:96-102). This was a massive chain, with links measuring 7 in. (17.78 cm) long and 1.5 in. (3.81 cm) thick. The size of the chain reflects the size of the ship, and standards set by insurance companies or shipbuilding treatises prescribed set sizes of chain for given tonnages (Paasch 1997[1885]:106; Stone 1993:12; Souza 1998:58). The table below presents standard minimum sizes for anchor chains for various sized vessels in the 19th century.

Chain cable (anchor chain) thickness for 19th-century vessels compared with that at the Iron Box Site (Stone 1993:12; Souza 1998:58).

Ship's Net Tons	Diameter (in. / cm)	
100	13/16	2.06
250	1 3/16	3.02
500	1 7/16	3.65
750	1 9/16	3.97
1000	1 3/4	4.45
1250	1 13/16	4.60
<i>Iron Box Site chain</i>	<i>1 1/2</i>	<i>3.81</i>

The Iron Box Site chain thickness as measured by divers is somewhat greater than that mandated for ships of 500 net tons, but it must be remembered that the chain links are covered in concretion which exaggerates their dimensions. It is plausible that there could be perhaps 0.5 cm of concretion on either side of the link, and thus the original thickness would be closer to 2.81 cm than than 3.81 cm. Chain of this size would indicate a ship of less than 250 net tons, according to the table above. A vessel at the upper range of this tonnage may have been too large to attempt to enter St. Augustine. If that is the case, it could instead represent a coastal trader passing by, or a vessel bound for St. Augustine that anchored outside the inlet to lighter cargo into the harbor. Given the location of wrecking so close to the 19th-century inlet, the latter scenario seems more likely.

The concentration of concreted chain is probably be associated with the location of the cable locker, and the water tank would also indicate a location low in the ship, probably on a platform built just above the ballast in the lowermost part of the hull. The hull timbers reported in 1999 indicate that at least some of the ship's structure has survived. This ship dates to the 19th century, and probably later in the century rather than earlier. The vessel was probably between 100 and 250 tons, and in all likelihood was an American merchant ship.

Unfortunately, there is relatively scant evidence to further speculate on the age, nationality, form, or function of this vessel. The SOAR researchers who originally found this site noted the similarity between the chain here and that at the [Centerboard Schooner Wreck](#) some 153 m away. They speculated that perhaps a section of this large centerboard schooner broke off and drifted away to the north, being deposited to form the Iron Box Site. This speculation cannot be confirmed without further research.

While seen as a viable hypothesis, it is also quite possible, given the high concentration of 19th shipwreck events in this vicinity, that the Iron Box Site is a completely different shipwreck. LAMP is dedicated to an increased effort to monitor this site, along with possible future excavation, in order to help answer these questions.

References:

Curryer, Betty Nelson

1999 *Anchors: An Illustrated History*. Chatham Publishing, London.

Lavery, Brian

1987 *The Arming and Fitting of English Ships of War, 1600-1815*. Naval Institute Press, Annapolis, Md.

Meade, Richard W.

1869 *A Treatise on Naval Architecture and Ship-Building or An Exposition of the Elementary Principles Involved in the Science and Practice of Naval Construction*. J. B. Lippincott & Co., Philadelphia.

Meide, Chuck, Olivia McDaniel, P. Brendan Burke, and Samuel P. Turner

2015 *450th Anniversary Shipwreck Survey: Report on Archaeological Investigations*. Lighthouse Archaeological Maritime Program (LAMP), St. Augustine Lighthouse & Maritime Museum, St. Augustine, Florida.

Paasch, H.

1997[1885] *Paasch's Illustrated Marine Dictionary: in English, French, and German, Originally Published as From Keel to Truck*. Originally published in 1885. Conway classics. Conway Maritime Press, London.

Souza, Donna J.

1998 *The Persistence of Sail in the Age of Steam: Underwater Archaeological Evidence from the Dry Tortugas*. The Plenum series in underwater archaeology. Plenum Press, New York.

Stone, David Leigh

1993 *The Wreck Diver's Guide to Sailing Ship Artifacts of the 19th Century*. Underwater Archaeological Society of British Columbia, Vancouver, British Columbia.