

PRE-CLEANING IDENTIFICATION OF ANCHORS FROM *TANTURA F* SHIPWRECK BY NDT AND DT METHODS

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The vessel *Tantura F* was discovered in 1996 during a survey in Dor/Tantura lagoon by a combined expedition of the Institute of Nautical Archaeology at Texas A&M University (INA) and the Recanati Institute for Maritime Studies at the University of Haifa (RIMS), headed by S. Wachsmann. The wreck was excavated between 2004 and 2007 by a combined expedition of the Nautical Archaeology Society (NAS) of Great Britain headed by Chris Brandon, and the RIMS headed by Yaacov Kahanov. It was a vessel about 15 m long with a beam of 5 m. It was dated based on 14C tests and pottery analysis to the end of the 7th century /beginning of the 8th century CE; the local early Islamic period.

Two anchors were found.

Anchor A was lying in the sand layer amidships on the port side. It was not attached to the hull and it is not sure that it was *in situ*. Anchor B was on the starboard side between Frames F21 and F24.

Both were covered with heavy concretion. Before removing the concretion from the anchors we conducted radiographic analyses with Co 60 radiation. These gave the exact measurements of the anchor and helped in analyzing the method of its manufacture.

The advantage of applying radiography before starting with the "cleaning" process is obvious for the planning of the process. The radiographic image shows clearly the border line of the item covered by the concretion; it provide idea about the composition [metal, stone] and the extent of corrosion. The image is the guide for of the "cleaning" process.