



ARQUEONAUTAS
WORLDWIDE
Arqueologia Subaquática, S.A.

Interim Report of the Marine Archaeological Survey
performed in Ilha de Moçambique, from May to July
2001.



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List of contents

<u>Subject</u>	<u>Page</u>
□ Aims	3
□ Results	4
□ Site Reports	5
□ Finds without Wreck Context	11
□ Modern debris	12
□ Survey Map	13
□ Equipment	14
□ Staff	15

Aims.

The objectives of this archaeological survey in the waters around Ilha de Moçambique were:

1. To identify and evaluate areas of interest defined by the year 2000 electronic survey.
2. To continue the electronic survey in areas those were not covered during the year 2000 season.
3. To locate and evaluate areas of interest identified by research or local knowledge.
4. To conduct visual surveys on areas of likely archaeological interest.
5. To establish better store-based facilities in preparation for artefact study, conservation and storage.
6. To save and protect national patrimony.
7. To train first local staff for dive and survey operation.

Results.

This survey operation took place from 05/05/01 to 17/07/01 with a total of 73 days of Operations. The total time of operation was split as follows:

- Down time (technical problems and equipment failure) = 0 days.
- Logistics (buying fuel, water, food, etc and illness) = 4 days.
- Bad weather = 1 days.
- Days off = 1 days.
- Survey days = 67 days.

During these **67 survey days** a total of **313 dives** were done amounting to **244.7 diving hours** for a rate of **3.65 diving hours per day**.

All the magnetic anomalous spots from the 2000 Survey (medium and big magnitude response) and the anomalies detected in the Survey of 2001 were checked, finding mostly modern debris, phone and electrical cable and some historical anchors, all properly recorded and GPS documented for future investigation. These spots were surveyed with metal detection and testing sondages in an area of 80m of radius from the "Zero" point.

Also the diving team performed a systematic visual exploration of the most interesting points or areas for wrecks (dangerous geographic features) in order to locate possible wreck sites and made a preliminary evaluation in terms of archaeological and cultural interest. These evaluations were done by test sondages as less intrusive as possible in order to avoid disturbing any cultural material until a proper excavation project is set up.

By the visual exploration, following historical information, interviews with fishermen and dangerous geographic features, 6 wreck sites were found during this first stage:

- West end of S. Sebastião fortress (New wreck found IDM-001)
- East end of S. Sebastião fortress (New wreck found IDM-002)
- North edge of the Channel (New wreck found IDM-003)
- Front of Centro Nautico (New wreck found IDM-004)
- Front of Centro Nautico (New wreck found IDM-005)
- Cabeceira Pequena reef (New wreck found IDM-006)

Details of the results of the survey and assessment of wreck sites on these areas are explained below.

Site Reports.

IDM-001

This site was found during the systematic visual survey around Ilha de Mozambique on the 15th of May 2001. In the course of its reconnaissance and assessment 24 dives were done amounting to 29.45 hours of bottom time.

The wreck is located at 7m depth and consist in a ballast mound of smallish stones (average size of 20 cm), some timbers are visible on the surface and a small intact olive jar was found in the site and recovered for identification purposes. Fragments of Chinese porcelain and some coarse ceramics were found badly fragmented some centimetres under the sediment that consists of thick sand and shell's remains. The debris field continues further to the North into the channel where ceramic fragments and glass bottles were observed. The visible objects on the site are one iron rudder pintle, a scattering of ballast stones and one wood timber. In one test sondage performed a large amount of ballast stones was observed lying over wood timbers, some still with the lead sheathing attached. One small fragment of white/blue Chinese porcelain was also observed on the site. The depth of the sediment is considerable; therefore more reconnaissance must be performed on this site for proper assessment.

At first sight, and because of the characteristics of the few objects found, the wreck could be tentative dated as early XVII century; the primary sketch and site plan of this site is in progress.

Historic references. The references in our historic research that match better with the location and characteristics of the visible remains are the following:

- ***Tigre***, Portuguese, 1566, Captain Bartolomeu de Vasconcelos, coming from India. lost in Mozambique on anchor. There is no information as to salvage. "e o mesmo succedeo a Bartolomeu de Vasconcelos que ao entrar da barra se perdeo" (Biblioteca Nacional de Lisboa; Reservados; Caixa 26, nº 153).
- ***San Francisco***, Portuguese Nau, 01/09/1607, Captain D.Francisco de Lima, stranded in the sand near Na Sa do Baluarte (Fort of Mozambique Island) everything was saved.
- ***Nossa Senhora de Nazare***, Portuguese, 1656, lost near the fortaleza of Mozambique. Some merchandise was saved and plundered by local officials.

Recommendations:

Due to the nature of the seabed in the area and the probable age of the wreck more survey and assessment is necessary in the future.

IDM-002

This site was found during the systematic visual survey around Ilha de Mozambique on the 30th of May 2001, and was later inspected by divers with metal detectors. In the course of its reconnaissance and assessment 95 dives were done amounting to 82.75 hours of bottom time.

The wreck site is located starting at 9 m depth, in the South side of the channel at NE of the fortress, is a huge stone ballast pile that falls abruptly into the channel until 32.5 m depth where wreck material has been found. In the deepest part of the site were found 4 intact Martaban jars (big ceramics recipients) and were recovered for identification. In two sondages opened in different parts of the stone ballast pile wood timbers were observed, lead sheathing, fragments of coarse ceramics, 2 historic anchors and white-blue Chinese porcelain objects, most of them intact and in very good condition. A complete survey of the wreck was done, every possible measurement was taken and a sketch to scale of the site was produced, including the depth isoclines. In order to evaluate the site only 2 test sondages were done, one of 6m² (3mx2m) and the other of 1m² (1mx1m) and both were plotted in the site sketch.

The first sondage was the biggest (where all the porcelain items were found), having its shallower end in a modern chain along the 3 meters wide and the deepest side of the rectangle 2 meters below. The size of this test sondage (slightly bigger than desired) was forced by the amount of ballast stones present and the inclination of them. As the test sondages should reach the bedrock, it was impossible to make it smaller because of the risk of rockslides if the inclination got a deeper angle. This excavation reached the bedrock in the deepest part of the rectangle and in the shallower end we stop when we found timbers. The artefacts were scattered inside the rectangle, without sign of packing system and the types were all mixed. The second sondage was opened shallower and in the East edge of the ballast mound and a group of trading beads (166) was found there. Both sondages were precisely located on the site sketch.

So far we had recovered 121 of this kind of artefacts in 7-m² area (approx 5% of overall potential area), and there is a strong possibility that this wreck have a cargo of Chinese porcelain items. The quality and variety of the artefacts recovered so far made of this discovery a very exciting incipient collection from the cultural point of view.

They can be generally grouped as follows:

Big Bowls: These group is formed by two very similar exemplars (88-90mm height and 178-180mm rim), with motifs inside like one crane standing in front of the nest (centre) and flying cranes and flowers all around the inside face. The exterior is white with not very polished surface, the material is thick and the stamp in the back is inside a square. Are the biggest artefacts found so far.

Medium Bowls: A very big variety in motifs and sizes (103 to 128mm rim). Were found bowls with design in both sides, with design outside and white inside, white outside and designed inside and with just lines in both faces. The most repeated motifs are cranes, farmers with ox, flying ox, flowers, Chinese towers (pagodas) butterflies and other insects. Many different stamps are found in the bottom of the pieces. Most of them are not circular but oval and in some cases *very* oval. Sometimes have a strip with different patterns around the rim or in the base and sometimes something like a "fire ring" in the inner bottom surrounding the central motif. We have one with 4 women (or philosophers???) outside and one in the centre, all dressed typically Chinese but with different attributes that made all of them different.

Small bowls: Smaller than the previous (81 to 86mm rim) but bigger than cups and without base but with depressed section in the down centre. The motifs are trees and flowers and flying "horses-dragons" and stamps of 4 characters surrounded by a small square.

Deep dishes: Beautiful objects very richly decorated (186-190mm rim). They have dragons in the centre, one with wings and the other with legs and 3 claws. Motifs of trees surrounding the dragons, flowers outside, strip with pattern in the rim and in the base and the stamp in the back inside a square.

Dishes: Various designs and sizes from 132 to 149 mm rim. 2 of them fully decorated with flowers, branches and stamp in the back. One with some flowers and symbols all around the rim and 2 are flower shaped in the edge. Five with a crab painted in the centre and with lines or pattern around the rim. These ones have two other kind of subtle design. One is visible *through* the light (branches and butterflies in white) and the other is visible with a certain angle but *against* the light (flowers in black). One of them with the "fire ring" in the inside bottom.

White cups: From 76 to 80mm rim. Completely naked of visible designs, the only blue trace is the stamp in the back. The material of these cups is quite different to the rest of the artefacts, is not completely white and is thinner and more fragile. Flowers and branches are visible from a certain angle of the light. It looks more that the place where the designs are is even thinner than the rest and the light goes trough easier than the rest.

Small cups: From 59 to 67mm rim. These are the most common artefacts and also the most similar between them, even if there are not 2 identical objects. Decorated both sides with trees and birds in very different situations. Mostly oval than circular and with stamp in the back, but from the last 4 that we recover, 3 has the stamp in *black* ink instead of the usual blue.

Historic references. The historic files on our research which better match with the location and probable time of this wrecks are the following:

- ***Tigre***, Portuguese, 1566, Captain Bartolomeu de Vasconcelos, coming from India. Lost in Mozambique on anchor. There is no information as to salvage. "e o mesmo succedeo a Bartolomeu de Vasconcelos que ao entrar da barra se perdeu" (Biblioteca Nacional de Lisboa; Reservados; Caixa 26, nº 153).
- ***San Francisco***, Portuguese Nau, 01/09/1607, Captain D.Francisco de Lima, stranded in the sand near Na Sa do Baluarte (Fort of Mozambique Island) everything was saved.
- ***Nossa Senhora de Nazare***, Portuguese, 1656, lost near the fortaleza of Mozambique. Some merchandise was saved and plundered by local officials.

Recommendations:

Due to the location of this wreck (almost under the fortress walls) and the fact that part of it is in very shallow waters; there is a strong possibility that the ship have been rescued at the time of the accident. Nevertheless, the finds made so far indicates that at least part of the Chinese porcelain cargo was lost and is still buried under the ballast and surrounding sediment.

The site is very accessible to sport divers and fishermen, therefore we recommend that more detailed survey, assessment and subsequent excavation should be carried out as soon as possible.

IDM-003

This site was found on the 3rd of July 2001, when performing a drift dive for visual survey taking advantage of the strong incoming current and the exceptionally good visibility conditions that day. In the course of its reconnaissance and assessment 6 dives were done amounting to 10.80 hours of bottom time.

The wreck site is located at 5m depth on the North side of the channel in front of the fortress and consist in a ballast stones mound under a coral reef (that grows over the wreck), some iron debris is also present. In small test sondages performed in the site, we found 6 interesting lead ingots, boat shaped, with marks and app. 50kg of weight each one. One of these lead ingots was recovered for identification purposes. So far no wood structure, anchors or cannons were found in this site.

Historical references. There are some ships in the historic files that could match with this wreck due to its location and characteristics. The more probable are the following:

- ***Rainha***, Portuguese, 1569-70(?), lost in Baixo (Shoal) da Cabeceira.

- **San Luis**, Portuguese, 1591-2(?) galleon, Captain Diogo Nunes Gramaxo, lost at Mozambique, coming from Malaka. No information about crew or cargo. Poor condition of ship (Guinote et al, 1998)

-**San Lourenço**, 1586, Captain Fernao Cotta, stranded by decision at Cabeceira. Ship coming from India was lost in Mozambique because she was leaking. Cargo saved.

-**N^{as} da Nazaré**, 15/7/1593, Captain Braz Correia. Abandoned at Mozambique because she was leaking. No references to cargo or crew. Storm and overloading (Guinote et al, 1998)

- **N^a S^a da Consolação**, 26/7/1608, Captain Diogo de Sousa. Burned out to avoid be captured by the Dutch. Burned near Cabeceira with another galleon. Not everything was salvaged from both ships.

Recommendations:

Due to the location of this wreck and the characteristics of the seabed in the area, is probable that an important amount of artefacts and possibly wood structure of the hull are still buried under a thick layer of sand. More survey and assessment is recommended to define if an archaeological excavation of the site is required.

IDM-004

This wreck was found during the systematic visual survey around the Island of Mozambique on the 4th of July 2001 and inspected the same afternoon. In the course of its reconnaissance and assessment 2 dives were done amounting to 2.10 hours of bottom time.

The site is located at 3 m depth in front of the entrance of the fortress and a ballast pile of small stones is visible in the place as well as some small pieces of wood. Fragments of ceramics were found (possibly Portuguese). No other visible signs of wreckage are present.

Historic references. The references in our historic research that match better with the location and characteristics of the visible remains are the following:

- **San Francisco**, Portuguese Nau, 01/09/1607, Captain D.Francisco de Lima, stranded in the sand near Na Sa do Baluarte (Fort of Mozambique Island) everything was saved.
- **Nossa Senhora de Nazare**, Portuguese, 1656, lost near the fortaleza of Mozambique. Some merchandise was saved and plundered by local officials.

Recommendations:

Due to the proximity of the fortress of São Sebastião and the easy access to the site from the beach, together with the shallow depth and calm waters, we find very unlikely that important archaeological and/or cultural material has survived. No immediate intervention required.

IDM-005

This wreck was found during the systematic visual survey around the Island of Mozambique on the 4th of July 2001 and inspected the same afternoon. In the course of its reconnaissance and assessment 2 dives were done amounting to 2.50 hours of bottom time.

The site is located at 3 m depth in front of the entrance of the fortress and a ballast pile of small stones is visible in the place as well as some small pieces of wood. Fragments of ceramics were found (possibly Portuguese). No other visible signs of wreckage are present.

Historic references and recommendations are the same as for IDM-004 site as all characteristics and locations are very similar. Both wrecks seems to be of the late XVI or early XVII century period.

IDM-006

This wreck was found on the 6th of July 2001 following information from local fishermen who allegedly had recovered lead sheathing and iron fittings from the area. In the course of its reconnaissance and assessment 2 dives were done amounting to 3.25 hours of bottom time.

The site is located at 1.8 m depth (in low tide), inside the reef of Cabeceira Pequena. A stone ballast pile is visible in a flat rocky seabed with little possibilities of hiding bigger parts of the ship. Five iron cannons were found 328m to the NE of the ballast and are probably belonging to the same ship.

Historic references. There are some ships in the historic research files that could match with this wreck due to its location, but is necessary to point out that the information we have from the field is very poor to make any serious asseveration. The most probable wrecks are the following:

- **Rainha**, Portuguese, 1569-70(?), lost in Baixo (Shoal) da Cabeceira.
- **San Lourenço**, 1586, Captain Fernao Cotta, stranded by decision at Cabeceira. Ship coming from India was lost in Mozambique because she was leaking. Cargo saved.
- **St. Luc**, 04-01-1760, French. Lost between Goa Island and Mozambique Island with a cargo of iron and clothes. Salvaged.

Recommendations:

Due to the proximity to the shallow depth of the water in the area and the characteristics of the seabed, we find very unlikely that important archaeological and/or cultural material has survived. No immediate intervention required, although more survey in the surrounding area could locate wider scattering.

Information to confirm.

The following information coming from historical researches, interviews with fishermen and divers are still to confirm in the area, and are listed as follow.

- Zierickzee (1607), Dutch ship stranded in the North side of the channel in front of the fortress under the fire of the Portuguese, then set on fire by the crew. Several dives were done in the area without success.
- Site with bronze cannons in the WNW of Ilha de Goa, app depth around 14-18m. A huge visual survey was done in the area, but is not covered completely yet.
- Isolated bronze cannon with "arganeos" in the NE of Ilha de Goa, app depth of 12-17m and no other wreck debris reported.
- Site with at least 3 cannons, between Ilha de Sete Paus and Inhaca, to the East, app depth around 25-30m, no other big objects reported.

All these information must to be confirmed during the following steps of OPS in Ilha de Mozambique.

Finds without wreck context.

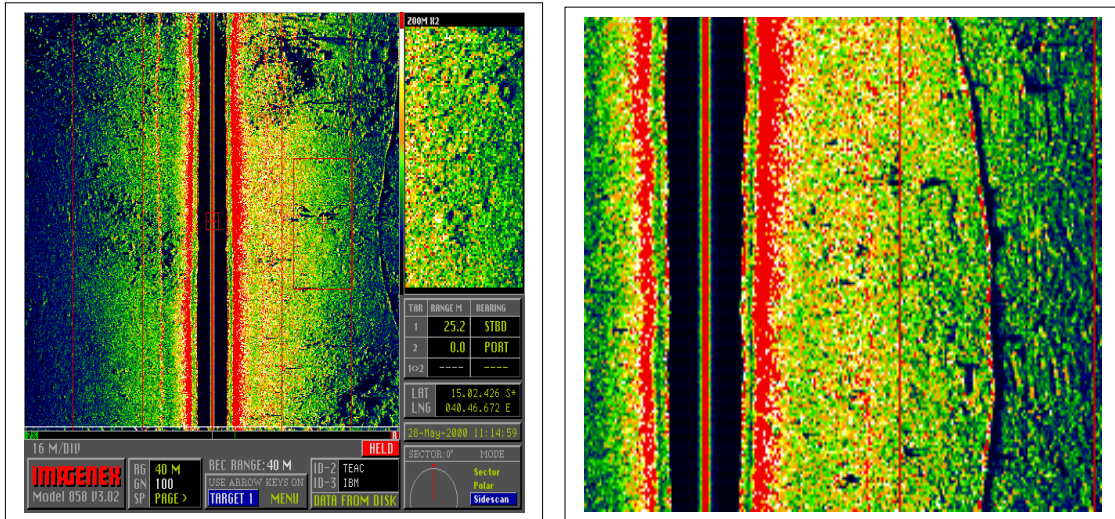
During the visual survey were found several anchors without wreck context. Details of depth and position are listed below:

Visible remains	GPS position	Depth m	Comments
Fragment of anchor (fluke)	15° 02 77 S, 40° 48 10 E	18,4	Isolated, outside of Goa.
Anchor (A1)	15° 01 390 S, 40° 44 910 E	36,3	No other visible evidence
Anchor (A2)	15° 01 410 S, 40° 44 860 E	44	No other visible evidence
Anchor (A3)	15° 01 470 S, 40° 44 940 E	36	No other visible evidence
Anchor (A4)	15° 01 500 S, 40° 44 890 E	44	No other visible evidence
Anchor (A5)	15° 01 610 S, 40° 44 700 E	15,3	No other visible evidence
Anchor (A6)	15° 01 530 S, 40° 45 050 E	24	No other visible evidence
Anchor (A7)	15° 01 516 S, 40° 45 015 E	28	No other visible evidence
Anchors (A8 and A9)	15° 01 410 S, 40° 44 920 E	12	No other visible evidence
Anchor with chain (AnC)	15° 02 117 S, 40° 46 350 E	12	No other evidence
Anchor with chain (AnCC)	15° 03 517 S, 40° 46 517 E	13	No other evidence, sandy seabed.
Anchor (A10)	15° 01 683 S, 40° 44 917 E	20,7	Possibly belongs to IDM-002
Anchor (A12)	15° 02 756 S, 40° 47 558 E	7	Very old arrow anchors (app. 5m).
Anchor (A13)	15° 02 726 S, 40° 47 519 E	7	Very old arrow anchors (app. 5m).
Anchors (A11) (3)	15° 01 350 S, 40° 44 833 E	33	3 anchors together
Anchor without flukes (A14)	15° 02 117 S, 40° 47 633 E	17,3	Survey needed
Anchor (A15) (anchor+grapnel)	15° 02 420 S; 40° 46 085 E	14	On a rock/coral seabed.
Anchor (A16)	15° 02 210 S; 40° 46 300 E	14	On a rock/coral seabed.

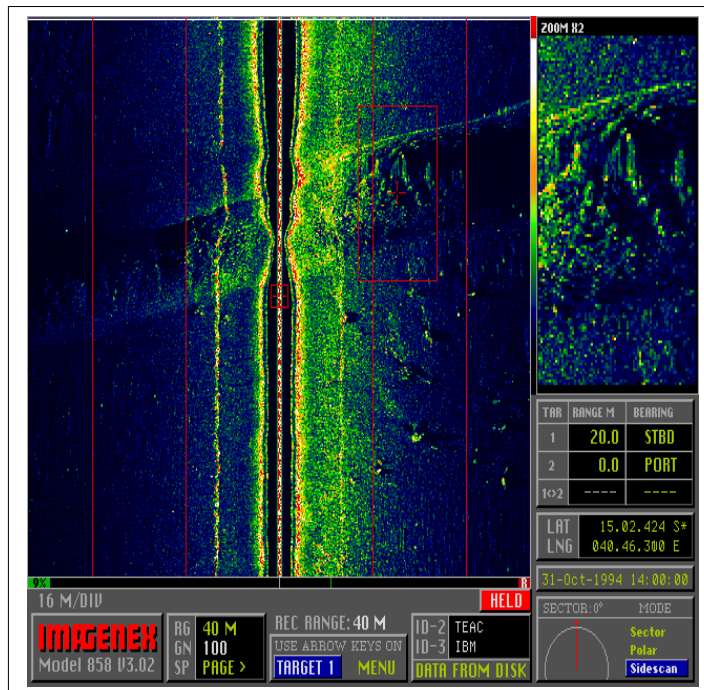
Modern debris.

As result of the visual inspection of the magnetic anomalies a large amount of modern man-made objects with no archaeological significance were located, been most of them portions of an electric cable deployed in the past and presently out of use.

In some of the cases the presence of such cable was clearly observed by the side scan sonar, but in other parts the cable was completely buried under the sand and dive inspection was necessary.

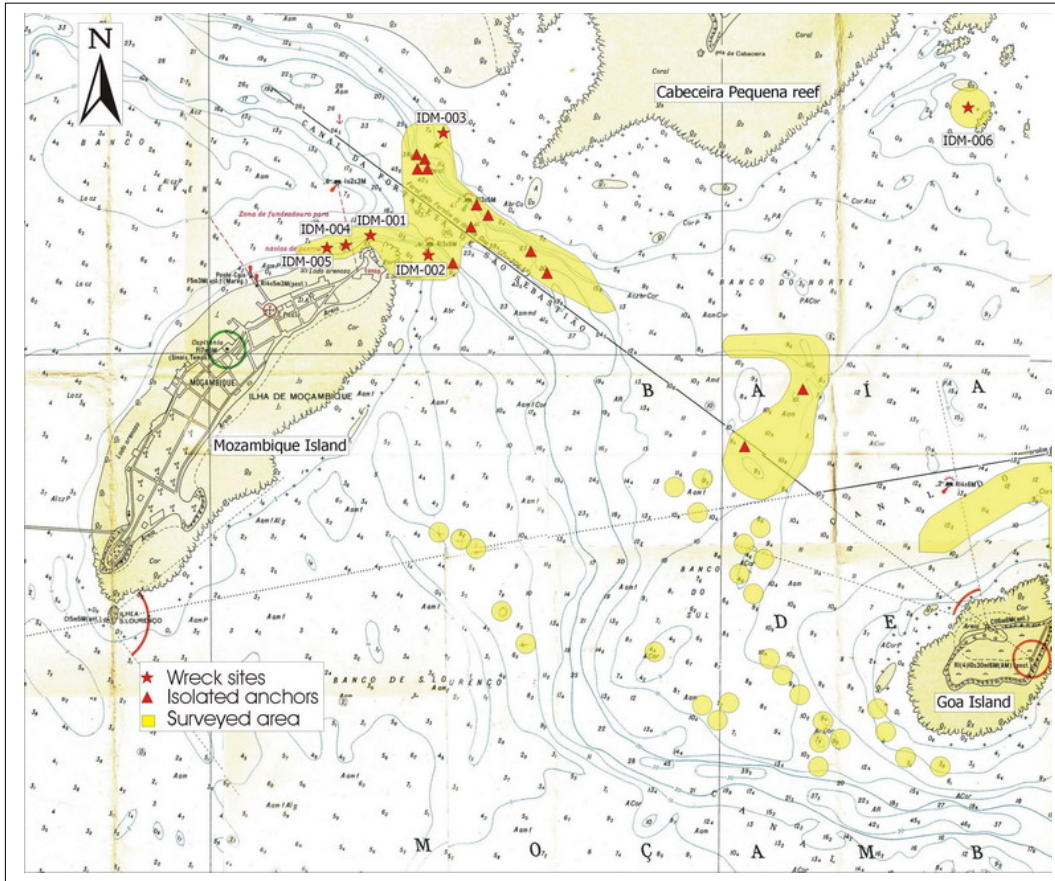


Two samples where electric cable was identified by the Side Scan Sonar



One interesting geographic feature was also located by the Side Scan Sonar; a sand bar which cross the entry channel of the harbor and is a natural hazard for navigation.

Map of surveyed areas and cultural material located.



Map showing the surrounding area of Ilha de Mozambique and areas where visual survey and reconnaissance was done. Note that modern debris is not plotted in this map.

Equipment

Following equipment and peripherals were used in the survey.

- RIB Humber (5.5 m length).
- Zodiac Mark VI (6m length).
- 2 x Yamaha 40 HP outboard engines.
- Mercury 25 HP outboard engine.
- 1 x Magnetometer AX2000DET/60-033200 with TOROID towfish and 60m cable & depth sensor.
- GPS Eagle view with NMEA interface.
- Handheld GPS Magellan 3000.
- Echo sounder MAP2000/SAM MODULE.
- 2 x ELSEC 2000 Metal detectors.
- Aquascan AQUAPULSE Metal detector.
- U/W Digital video camera Panasonic with housing.
- Surface digital camera Nikon Coolpix 950.
- 6 x full diving gear sets.
- 2 x full diving gear as spare.
- 6 x 15 Lts steel diving bottles.
- 2 x 12 Lts aluminum diving bottle.
- Diving compressor BAUER (Diesel engine).
- Laptop Toshiba Libretto 70 CT, Pentium.
- Desk PC Pentium II.
- AxLogger editor software.
- AQLogedit software.
- Corel Draw 7 software.
- Adobe Photoshop 7.0 software.
- Microsoft Office suite 2002 software.

Staff

For this survey operation the following team was mobilized:

Team.

- Alejandro Mirabal (Archaeologist/ OPS Manager/ Diver)
- Faure Cambiella (Archaeologist/ Surveyor/ Diver)
- Alejandro Selmi (Archaeological diver)
- Joachim Meier (Logistics Manager/ Representative PI/ Diver)
- Jose Rosado (Diver) (8 days)
- Abagare (Boatman)

With the fulltime backup and temporary help in the field of:

- Mensun Bound (Archaeologist / Project Director)
- Niki Sandizell (CEO AWW/ Diver)

Lic. Alejandro Mirabal Jorge
Archaeologist / OPS Manager