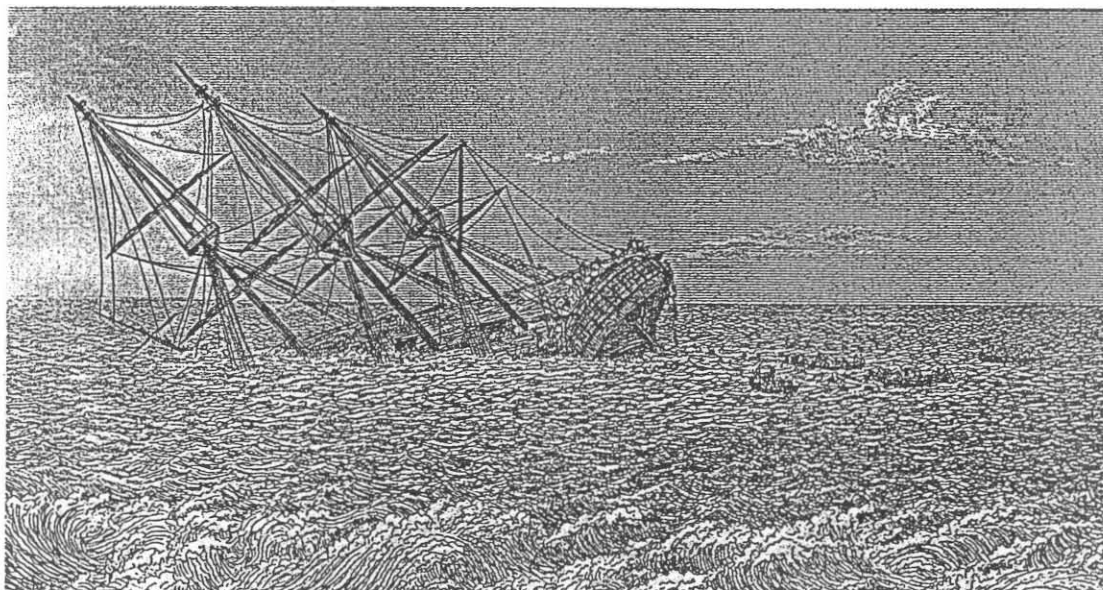


**Report on the Queensland Museum
1996 *Pandora* Expedition
31 January - 24 February 1996**

by
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Acknowledgments

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The Queensland Museum's 1996 expedition of the *Pandora* was funded by a grant from the Centre of Excellence for Maritime Archaeology and the Commonwealth Historic Shipwrecks Program.

Archaeologists and volunteers from all Australian States joined Peter Gesner and his staff from the Queensland Museum for a 21 day expedition to the *Pandora* wreck site in the Coral Sea.

Two areas of the lower deck were excavated. Firstly the ship's magazine, where gunpowder kegs were found, still stacked in tiers. One keg was retrieved. Secondly, the adjoining area immediately aft of the magazine, known to be the cabin of the First Lieutenant John Larkin. This section of the wreck proved extremely rich in artefacts of European and Polynesian origin.

Seventeen days were spent at the site, although diving operations were interrupted for 36 hours when cyclone "Dennis" passed within 100 km. Over 400 artefacts were recovered in ten days of excavation. A small number of these artefacts were selected for a temporary display at the Museum of Tropical Queensland to launch a fundraising campaign for the Pandora Foundation.

Abbreviations

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AIMS	Australian Institute for Marine Science
ANMM	Australian National Maritime Museum
AS 2299	Australian Standard (Commercial Diving Operations)
DCIEM	Defence and Civil Institute of Environmental Medicine
JCU	James Cook University
QM	Queensland Museum
SA	South Australia (Department of Environment and Planning)
SCUBA	Self Contained Breathing Apparatus
SSBA	Surface Supply Breathing Apparatus
TAS	Tasmania (Department of Parks, Wildlife and Heritage)

Introduction

In 1790, the British Admiralty frigate HMS *Pandora* was sent to the South Pacific to search for the mutineers from the HMS *Bounty* and return them to England to face disciplinary action.

Fourteen crewmen were captured at Tahiti and incarcerated in a wooden cage on the poop deck. This makeshift prison was called "Pandora's Box."

The *Pandora* was wrecked on 29 August 1791, approximately 130 km east of Cape York, while attempting to navigate a passage through the Great Barrier Reef to Torres Strait. Four prisoners and 31 crew were lost.

The wreck was discovered in 1977 and since 1982, the site has been partially excavated by the Queensland Museum under the Commonwealth's Historic Shipwrecks Program.

The excavations have shown that a substantial section of the hull and a large assemblage of artefacts remain in an excellent state of preservation.

Description of the site

The *Pandora* wreck lies on a gently sloping seabed at a depth of 30-33 metres, surrounded on three sides by reef. The area is prone to strong and unpredictable tidal currents of up to three knots. Due to the nature of the seabed sediments and the force of the tidal race, the wreck site is subject to significant sediment mobility, on a daily and seasonal basis.

Expedition objectives

1. Excavation of the magazine.
2. Excavation of the starboard side in the First Lieutenant, John Larkin's cabin.
3. Removal of non-essential survey materials from the site.

Mooring system

Before excavations could commence, the four permanent moorings had to be located and hawse lines attached so as to position the vessel over the site.

One mooring was re-positioned to a more suitable location before the vessel could be secured over the wreck site. This task was achieved using SCUBA as a diving mode.

A permanent shot-line from the dive platform to the wreck was used to guide the divers to the site.

Excavation Methodology

The focus of the excavation was in grids 70 and 89, this area being on the starboard side of the hull, towards the stern.

Measurements were taken from a permanent datum point to establish the positions of Grid Nos. 70 and 89. Hand fanning and a water dredge was used to expose the hull structure and artefacts. The position of artefacts and hull structure within the grids was plotted in three dimensions by trilateration, using three measuring tapes attached to survey points. These measurements were then recorded on underwater data sheets. Artefacts were tagged with a field number prior to removal from the site.

The information from the data sheets were transcribed to a computer program that converts slope distances to Universal Grid Coordinates. (See Appendix 4)

Most artefacts were photographed *in situ* before being recovered.

Underwater excavation work was videotaped and reviewed by all participants at the end of each days diving operations.

At the completion of the excavation, the exposed area was back-filled with sterile sand from the spoil heap and covered with shade cloth which was then weighted down with sand bags.

On-site conservation

An air conditioned transportable cabin mounted on the working deck served as the on-site conservation laboratory. This provided a stable temperature and humidity environment for the artefacts.

Management considerations

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1. Removal of intrusive material from the site.

The site was cleared of intrusive materials such as redundant survey equipment, ropes etc. that had been accumulated over the course of previous excavations.

2. Stabilisation of previously excavated areas.

Areas previously excavated were examined to determine the effectiveness of site stabilising techniques. The placement of shade cloth and sandbags on areas that have been back-filled appears to be very effective.

Achievements

1. Excavation of the magazine.

Several tiers of copper-hooped powder kegs were uncovered, still in their original configuration, stacked against a bulkhead. Attempts were made to recover a keg intact, however, due to the fragile nature of the artefact, this plan was abandoned in favour of dismantling the keg before being raised.

2. Excavation of the starboard side in the First Lieutenant, John Larkin's cabin.

Directly abaft of the magazine is the First Lieutenant's cabin. A high concentration of artefacts were recovered from this area. These artefacts could be classed as; (a) ship's fittings, (b) "tools of trade", eg. navigational instruments, (c) personal possessions, and (d) ethnological collections, (known as "artificial curiosities" in the 18th century). Material of European origin consists of toiletry items, cutlery, crockery, wine glasses, clothing accessories such as brass buttons and navigational instruments. Ethnographic material of Polynesian origin exacted from the cabin included seven well-preserved wooden war clubs, shell fishing lures, bone fishhooks, stone poi pounders and shell ornaments and ritual items.

3. Recovery of a (near) complete skeleton.

The skeletal remains are most likely the remains of one of the two men known to have been killed at the time of the wrecking event.

4. Recording of hull structure. Lower deck, deck beams, bulk heads, frames .

The outer planking and copper sheathing on the starboard side towards the stern were exposed to determine the shape and the limits of the hull structure. The hull structure in this section appears to be intact to about 30 cm above the waterline.

5. Site clean-up and stabilisation.

The site was backfilled with sand from the water dredge spoil and then covered with shade cloth. The shade cloth was then weighted down with sand bags.

6. Recording of events and finds.

All facets of the work was recorded with still photography and videotape by Gary Cranich. Significant finds were photographed *in situ* before retrieval.

8. Temporary exhibition.

An effective display of selected artefacts were temporarily exhibited in aquaria at the Museum of Tropical Queensland in Townsville for a fundraising drive for the Pandora Foundation.

This method of display is a cost effective way of safely displaying recently excavated material and engendered a positive response from the viewers. As circumstances permit, a similar display of recently-excavated material could mounted by the WA Museum's Department of Maritime Archaeology.

Problems

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The problems encountered on this expedition were largely environmental

1. Three days diving was lost as cyclone Dennis passed 100 km to the south. The vessel was forced leave the site and anchor in a safer location.
2. Underwater photography was hampered by low light levels because of the generally overcast conditions.
3. It has proved impossible to predict the tides and currents, particularly during spring tides. On occasions dives had to be aborted due to the strong currents.
4. The seas in the region are prone to plaques of jellyfish that inflict unpleasant, though not dangerous stings.

Conclusions

It is clear that from the lower deck down to the keel, a large section of the hull, the interior fixtures and fittings and personal possessions remain *in situ* in an excellent state of preservation.

This season was free from diving accidents or incidents. The ship's crew were both obliging and very professional, able to comply with the specific requirements of archaeological excavation.

The future

The Queensland Museum plans to conduct five more expeditions to the *Pandora* wreck site. It is hoped that funds will be available to extend the 1997 expedition to six weeks duration and operate two dive teams simultaneously, one team excavating the foc'le while the second team continue with the excavation of the officers quarters in the stern.

References

- Gesner, P., 1991, *Pandora: An archaeological perspective*. Queensland Museum.
Gesner, P., 1993, *Report on the Queensland Museum Expedition to the Pandora historic shipwreck*. Queensland Museum, 1993.

Schedule of events

January	28	Depart Perth - Arrive Townsville
	30	Load equipment onto <i>Pacific Conquest</i>
	31	<i>Pacific Conquest</i> - Depart Townsville
February	2	Arrive at Pandora site and commence mooring procedures.
	8	Commence excavation of grids 70 & 89.
	15	Abandoned site due to cyclone alert.
	17	Recommence excavation.
	19	Complete excavation work. Backfill and clean debris from the site.
	20	Release moorings and depart.
	22	Arrive Townsville.
	23	Unload <i>Pacific Conquest</i> .
	24	Depart Townsville - arrive Perth

Personnel

Team Members

Peter Gesner	Director (QM)
Warren Delany	2 IC/senior technical Officer (QM)
Colin Hodson	Dive supervisor (Dive Bell)
John Reed	Assisting dive supervisor
Tom Fallowfield	Medical officer (QM)
Janet Campbell	Site Registrar/chamber attendant (QM)
Freya Bruce	Site conservator (QM)
Gary Cranich	Senior photographer (QM)
Len Zell	Assisting archaeologist/photographer (AIMS)
*Elizabeth Illidge	Marine biologist (AIMS)
Peter Illidge	Assisting technical officer/archaeologist
Howard Smith	Assisting technical officer
Geoff Kimpton	Assisting technical officer/archaeologist (WAMM)
Dena Garratt	Assisting archaeologist (WAMM)
Bill Jeffery	Assisting archaeologist (SA)
Peter Veth	Assisting archaeologist (JCU)
Mike Nash	Assisting archaeologist (TAS)
Kieran Hosty	Assisting archaeologist (ANMM)

*Withdrew from the expedition on day two.

Technical data

Charter vessel:	T.S.M.V. <i>Pacific Conquest</i>
Crew:	Skipper, Engineer, Mate, Cook
Duration of charter:	22 days
Diving equipment:	(EXO 26 and DIVATOR MK II masks) Double lock recompression chamber equipped for mixed gas treatment schedules. Bench seat at the decompression stop. Capacity - 88 cu ft
SSBA	
SCUBA	
SSBA diving regime:	In accordance with AS 2299 requirements
Dive Tables	Canadian DCIEM Working Depth - 33 metres Bottom time - 45 minutes Decompression - 27 minutes at 9 metres breathing %100 O ₂ No repetitive dives.
SCUBA diving regime:	In accordance with AS 2299 requirements
Dive Tables	US Navy Working depths - 28-38 metres Bottom time - within no decompression diving limits Precautionary decompression stop - 5 minutes at 5 metres No repetitive dives.
All diving operations were carried out in accordance to the Queensland Museum's Code of Practice and manual of Diving Operations. Divers are required to hold a Commercial Diver Certificate of Competency, (AS 2815-Parts 1 and 2).	
Excavation equipment	GAAM MK 200 pump powering a 150 mm diameter water dredge

Diving schedule

Teams of two divers worked on a roster for the duration of the expedition. Each team was required to act as dive tenders and Stand-by divers to designated dive team. This system worked well as each diver was able to develop a good working rapport with their own "buddy" as well as the divers they tended. The dive roster was rotated so that each team dived six days out of seven. This was designed as a precautionary measure to prevent nitrogen saturation.

Appendix 4

Queensland Museum - Interim conservation report

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February 1996 saw another short but successful field trip to the wreck of the HMS Pandora. After approximately ten days of excavation we had recovered over 400 artefacts, mostly in near-perfect condition. Organic materials made up a small but significant part of the collection, and these included Polynesian clubs, coconut discs, quiver covers and barrels from the ships magazine.

Seven clubs were recovered from the First Lieutenants cabin. Six of these are intricately carved and are Tongan in origin. They are made from a type of wood known locally as ironwood (*Casuarina equisetifolia*) and are in excellent condition with very little damage to the designs from either marine bores or abrasion. The seventh "club" is as yet unidentified. It appears to be of a different type of wood to the others and is much softer.

The coconut material also found in the 1st lieutenant's cabin, costume and quiver covers for arrows. The quiver covers are made from the insides of whole immature coconuts and are tear-drop in shape.

Many fragments of barrel staves were recovered from the ships magazine. These copperhooped barrels were stacked as many as four deep and although the first layer of barrels were mostly disintegrated, the remaining layers were intact. An attempt was made to recover a complete barrel in one piece but it was eventually brought to the surface in sections. We hope to be able to reconstruct the barrel after treatment.

Currently, all organic material is stored in tap water with Panacide added, whilst the practicalities of cool storage are being investigated.

HOW TO CONVERT SLOPE DISTANCES TO UNIVERSAL GRID COORDINATES

- 1) At *MAIN MENU* _____ select Option 5 (Coordinate Program)
(this brings up *DSM MENU*)
 - 2) At *DSM MENU* _____ select Option 3 (Edit Data File)
(this brings up *OPENING MENU* for WORDSTAR)
 - 3) In *OPENING MENU* _____ select O (copy a file)
 - 4) At question: document to be copied ? _____ select Sample.in
 - 5) At question: document to hold a new copy ? _____ type: your day/month-initials.in
(example: 66feb-pg.in)
(this creates your DAYFILE or RAWDATA FILE)
 - 6) After creating DAYFILE / RAWDATA FILE) _____ press Enter key
(this brings up *OPENING MENU* again)
 - 7) In *OPENING MENU* _____ select N (Open a non document)
 - 8) At question: non-document to open ? _____ type (name DAYFILE) eg: 66feb-pg.in
 - 9) EDIT THIS example to suit your data. Ensure the DATUMS to be entered on the topline are the ones you have used for your measurements that day. Now
 - 10) Type the artefact numbers and the corresponding measurements from each of the DATUMS (eg. MA 4200 2.12 2.34 1.67 1.89)
(make sure the sequence is the same as the sequence of the DATUMS !!)
 - 11) When finished entering your measurements _____ press F10 key
(this brings up *OPENING MENU* again)
 - 12) In *OPENING MENU* _____ select X
(this brings up *MAIN MENU* again)
 - 13) At *MAIN MENU* _____ select Option 5 (Coordinate Program)
 - 14) This brings up *DSM Menu* again
 - 15) At *DSM MENU* _____ select Option 4 (Calculate coordinates)
 - 16) At question: what is the name of the raw data file ? — type name DAYFILE
(eg: 66feb-pg.in)
After typing, press Enter key
- The screen will now start scrolling several times DON't WORRY, the programme is converting your measurements to grid coordinates. When scrolling stops.....
- 17) _____ press Enter key (this brings up *MAIN MENU* again)
 - 18) At *MAIN MENU* _____ select Option 5
This brings up *DSM Menu* again
 - 19) At *DSM MENU* _____ select Option 5

Phone Classifieds 22 4466

Big interest in Pandora relics

FINDINGS from the sixth expedition to the *Pandora* have generated a terrific amount of interest at the Museum of Tropical Queensland.

Almost 400 people inspected the finds over two days before the items were sent to Brisbane to undergo special treatment during which they would be stabilised for dry storage or display.

Expedition leader and Queensland Museum maritime archaeology curator Peter Gesner said the trip was short but successful.

"We targetted the cabin of First Lieutenant John Larkan," Mr Gesner said.

"We found everything from personal belongings to Polynesian war clubs which he would have collected as the ship scoured the Pacific in search of the *Bounty* mutineers.

"This cabin was above the magazine, and we found the kegs of gunpowder

stored neatly just as they would have been in 1791."

Some of the 400 artefacts on display at the museum for the two days included a bottle of port with the cork still intact, glasses for the drink, a chamber pot, tea cups and saucers and a navigation quadrant.

Above sea for the first time in 205 years, these precious items had to be kept in water.

Museum of Tropical Queensland director Carden Wallace said those who saw the artefacts were amazed at their good condition.

"There were no barnacles or anything covering the items because they had been protected deep down in the sand for so long," Ms Wallace said.

The Pandora Foundation is raising funds to excavate, conserve and interpret the contents of the wreck for future display at the Museum of Tropical Queensland.



Eager shipwreck supporters Debbie Garrett and Judy Johnson inspect some of the finds from the sixth expedition to Pandora at the Tropical Museum before they were shipped to Brisbane for treatment. In the tank a chamber pot, a bottle of port and some saucers can be seen.