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The Protection of the  
Underwater Cultural Heritage

## UNIT 13

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# Asian Ceramics



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Cover photo: The Underwater Archaeology Division, Fine Art Department of Thailand investigates the ceramic cargo belonging to a shipwreck in the Gulf of Thailand. © UAD, Thailand

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# UNIT 13

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# UNIT 13

**Author** Bobby C. Orillaneda

## Asian Ceramics

### Core Knowledge of the Unit

This unit provides students with an introduction to the subject of Asian Ceramics and its importance in understanding maritime trade in the South-East Asia region.

#### Upon completion of Asian Ceramics unit, students will:

- Understand the definition and basic classification of ceramics
- Be able to distinguish the types of Asian ceramics
- Understand the importance of ceramics in the interpretation of underwater archaeological sites
- Be familiar with the different types of shipwrecks in South-East Asian waters carrying ceramic cargo

### Introduction to the Unit

Although this unit focuses on Asian ceramics, it is important to note that some examples of the shipwrecks that contained Chinese and South-East Asian ceramics were not excavated following modern archaeological procedures, and priority was often given to the recovery of ceramics for commercial purposes. This has led to a considerable loss of contextual information, not only about the ceramics themselves, but also of the ship's other equally important, non-commercial cargo and the ship itself. This lost information could have helped to further elucidate the overall story of the ship and its role in maritime history. Hopefully, to prevent this being repeated, future maritime archaeology projects in the Asian region will focus more on the entire ship and its material assemblage, and follow the guidelines set out in the UNESCO Convention on the Protection of the Underwater Cultural Heritage (Paris 2001).

## 1 What are Ceramics?

The term ceramics is believed to be derived from the Greek word *keramikos*, which is said to have originated from the Indo-European word *ker*, meaning heat. It is produced as clay is transformed through heat, producing hard and durable products. The earliest ceramic artefacts in the archaeological record were fired clay figurines, found in the site of Dolni Vestonice in the Czech Republic some 26,000 years ago. It is hypothesized that the production of ceramics is related to the transition of humans from mobile, wandering societies, to increased sedentism and food production in most parts of the world.

Although there are many types of ceramics found in different archaeological sites, this unit will focus only on four types of ceramics that are generally found in underwater sites in Asia.

**Terra Cotta:** fired to temperature of less than 900 °C, coarse and porous, usually red.

**Earthenware:** fired to temperature of 900 - 1200 °C, porous, often brown or red.

**Stoneware:** fired to temperature of 1200 - 1350 °C, porous, often brown or red.

**Porcelain:** fired to temperature above 1350 °C, with vitrified bodies, usually white and translucent.

## 2 Why do we Study Ceramics?

#### There are numerous reasons for studying ceramics:

- In most archaeological sites ceramics represent the most abundant material remains, hence the primary type of artefact collected by archaeologists
- Past societies with different complexities have used ceramics as utilitarian items, such as food preparation, cooking and storage vessels
- Ceramics reflect human behaviour, as objects often are an expression of human creativity, craftsmanship, ceremonies and rituals
- Ceramics are also used for exchange, trade and other commercial activities
- In some societies, ceramics are symbols of power and economic prestige
- Ceramics are important barometers for establishing temporal chronology and determining geographical distribution
- For maritime archaeology, ceramics reveal an abundance of information on many aspects, such as maritime trade patterns, maritime routes and migration


To obtain the most comprehensive data on ceramics, archaeologists perform four types of analysis:

**2.1 Experimental studies:** these consist of controlled experiments used to replicate how ancient ceramic objects were produced. From these studies, archaeologists gain valuable information on firing techniques, firing temperatures and the properties of various tempers, glazes and paints. In addition, archaeologists also make ethnographic observations of pottery production by extant societies to understand the manufacture, use and reuse of pottery.

**2.2 Form and function analysis:** studies the various ceramic shapes and how they were used. It is based on the assumption that form follows function. However, there are many factors that need to be considered, which make this analysis very complex. Despite these considerations, this type of analysis can be very effective in learning the production, consumption and distribution aspect of human economic behavior when conducted well.

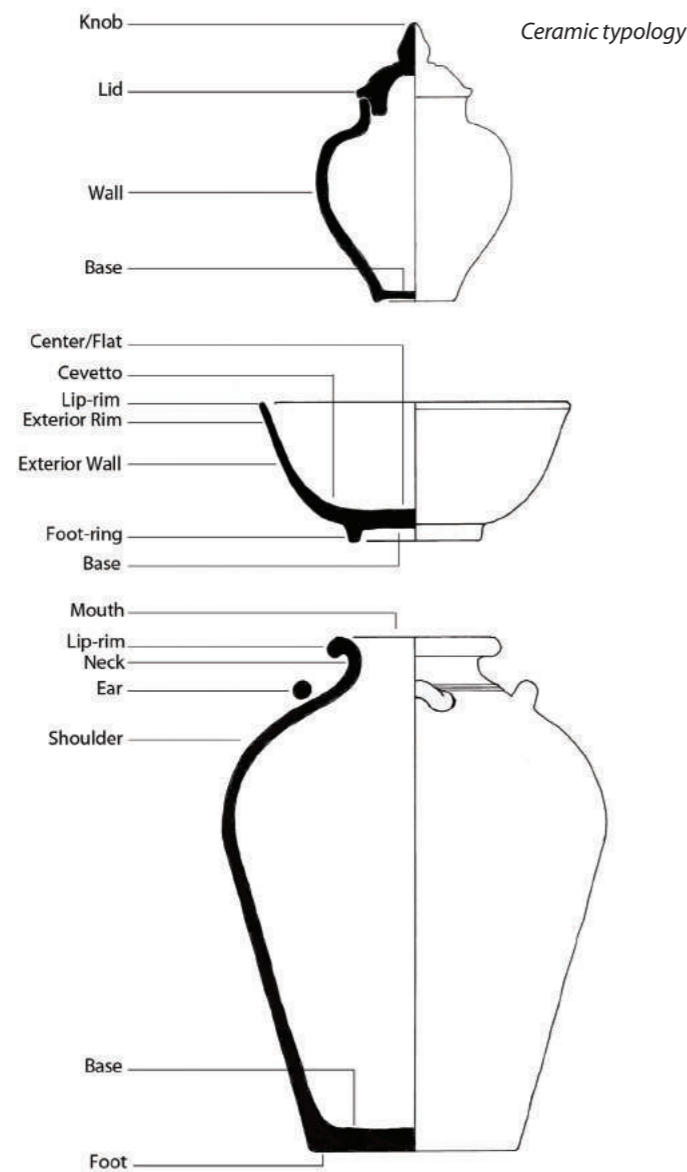
**2.3 Stylistic analysis:** examines the different decorative styles of ceramic vessels in the form of under and over glaze painted designs, pre and post-firing incising, pre-firing embossing, appliques and other surface treatments. One of the results of this kind of study is the formulation of classification systems that can trace social change through time.

**2.4 Technological analysis:** focuses on the materials from which ceramic objects are made. The clay's chemical composition and tempering materials are studied. The objective for this type of analysis is to know the provenance or source of the clay used, to determine origin, production, use, route and the final destination of ceramic vessels. This is important, as they were often used as utilitarian, exchange, and trade vessels by different early societies. The technological analysis examines the trace element of the clay and temper and is conducted in a number of ways using different techniques, such as neutron activation analysis, X-ray diffraction and ceramic petrology.

 **Suggested Reading**

- Rice, P. M. 1987. *Pottery Analysis: a Sourcebook*. Chicago, University of Chicago Press.
- Sinopoli, C.M. 1991. *Approaches to Archaeological Ceramics*. New York, Plenum Press.

### 3 Ceramic Shape Terminology



Illustrated By Eduardo D. Bersamira

## 4 Ceramic Kiln Sites

There are four ceramic producing countries whose products are found in shipwreck sites in South-East Asia: China, Viet Nam, Thailand and Myanmar.

### 4.1 China

Ceramic artefacts have been produced in China since the Neolithic Period (5,000–2,200 BC) in the form of hand molded earthenware that were used as utilitarian and ritual vessels. Archaeological evidence shows that glazed pottery appeared during the Zhou Dynasty period (1,100–771 BC), but are most common during the Han Dynasty (206 BC–220 AD). High quality celadon wares in both glaze color and body clay were introduced during the Six Dynasties period (265–588 AD), alongside the production of glazed proto-porcelain.

The earliest types of Chinese ceramics discovered in shipwrecks in South-East Asia belong to the Tang Dynasty (609–960 AD). Most of the export wares were produced from the kilns in Changsha and Yueh, in the north of the country. During this period, three coloured (yellow, green and white glazes) wares of different forms (bowls, vases and figurines) were made. High quality greenwares or celadons with bluish green glaze were also perfected and attracted a great demand from overseas.

By the ninth and tenth centuries, new manufacturing sites in the Guangdong province supplied the overseas trade. Guangdong wares then dominated the market until the thirteenth century, when white-ware from Fujian and celadon wares from Zhejiang (Longquan kilns included) were also exported and competed for popularity. Thirteenth century cargoes also carried small amounts of ceramic wares from the inland potting centre of Jingdezhen, Jiangxi province, where the imperial porcelains of the Ming and Ching Dynasties would eventually be produced.

The blue and white porcelains were believed to have been first produced during the Yuan dynasty (1280–1367 AD), although early examples recovered from the Belitung shipwreck in Indonesia dated to the early ninth century. Early blue and whites were of poor quality due to the scarcity of imported cobalt from the Middle East. This culminated in the much appreciated blue and white wares produced in the Jingdezhen kilns in Jiangxi, during the Ming Dynasty period (1368–1644 AD) and the succeeding Ching Dynasty period (1644–1918 AD), that are found in so many archaeological sites and museum collections worldwide.

Ceramic production reached its peak during the seventeenth century, due to an increase in demand in Europe and an observed improvement in all types of ceramics, including the blue and whites, celadon, polychrome (multicoloured) wares, as well as the stoneware vessels. As the Qing Dynasty collapsed and trade patterns shifted, the production and export of Chinese ceramic wares decreased.

### 4.2 Viet Nam

The Vietnamese produced pottery as early as the first century BC in the Tonkin, Annam and Cochinchina areas, during the Han conquest. However, Vietnamese ceramics only began to be exported sometime in the fourteenth century. Archaeological evidence from Japan shows that Vietnamese bowls were already in use there by about 1350 AD and these examples are similar to the type excavated from the Turiang shipwreck in Malaysia. At some point, Vietnamese potters introduced underglaze blue, perhaps in the late fourteenth century, during the early years of the Ming ban where the Chinese government internalized and forbade overseas trade, or else in the early fifteenth century when Viet Nam was annexed by China (1407–1427 AD).

There are currently two known kilns sites that produced ceramics found in various underwater archaeological sites outside Viet Nam. The Chu Dau kilns in the North and the BinhDinh kilns in central Viet Nam. The Chu Dau kilns are located in Hai Duong province and fourteen production centres have been archaeologically identified since 1983. A number of underglaze blue decorated wares have been produced in these kilns that have been found in a number of South-East Asian shipwrecks, starting from the late fourteenth century. The blue and whites are similar to Chinese design which suggest a Chinese influence or, as some scholars believe, the migration of Chinese potters into Viet Nam.

Archaeological surveys in the 1990s along the Con River in the BinhDinh province, identified five kiln complexes of which two kilns were excavated. These kilns were believed to have operated during the fourteenth and fifteenth centuries and only ceased production when the area was invaded by Viet military forces in 1471 AD. Examples of BinhDinh ceramic wares have been found in significant quantities in the Pandanan shipwreck and in burial sites in the Philippines, during the fifteenth and sixteenth centuries.

### 4.3 Thailand

The origin of glazed pottery in Thailand is still obscure. By the fourteenth and fifteenth centuries, however, sizeable potting centres were scattered across northern Thailand, most of them associated with former Thai states of that region. The Sukhothai kingdom supported two major export-oriented potting centres. Sukhothai, located in the ancient city of the same name and Sisatchanalai or Sawankhalok, located north of the city. Two other groups, from the Suphanburi and MaenamNoi (or Singburi) potting centres are known primarily from shipwrecks. Both of these kiln sites are located in central Thailand, not far from the former capital of Ayutthaya (1351-1767 AD). The Suphanburi potters made large majestic jars with stamped decoration round the shoulder. The MaenamNoi produced a variety of storage jars along with other sorts of utilitarian items. The Suphanburi kilns were active in the fourteenth and early fifteenth centuries, before they apparently closed. Only jars from the MaenamNoi complex are found on shipwrecks from the mid-fifteenth century onwards. A date for the end of production is elusive, but by the beginning of the seventeenth century neither Sukhothai nor Sisatchanalai ceramics appear in archaeological sites. The last of the kilns in the old Sukhothai kingdom may have finally closed during an invasion by the Burmese in the 1580s.

### 4.4 Myanmar

Archaeological excavations at Beikthano and Sri Ksetra in central Myanmar have yielded unglazed earthenware pots and jars dated between the fifth and ninth centuries. The earliest use of glaze was mentioned in the ninth century Chinese text *Man Shu* (Book of the Southern Barbarians), which referred to the seventh century kingdom of Piao, the capital of which was enclosed by a circular wall, faced with green-glazed bricks. This claim, however, has been disputed by a Chinese scholar who believes the reference has been misinterpreted and that the mentioned architectural objects were not glazed.

Buddhist structures dated from the tenth to late thirteenth centuries provide, the earliest archaeological evidence of glazing. Bricks and plaques with green-glaze adorning the exterior walls of these structures can be found in Bagan, in central Myanmar. By the fourteenth to fifteenth centuries, however, Myanmar potters had begun producing high fired stonewares in the form of big, brown-glazed storage jars commonly known as *martabans*, which were traded to South-East Asia and even the Middle East.

In the late 1990s, archaeologists unearthed hundreds of ancient kilns in the Twante District. Based on the green-glazed stoneware shards, misfired wares, discards and firing supports, it was concluded that the kilns produced greenwares. These are more commonly known as celadon. The wares were previously unidentified in terms of provenance and were thought to have been produced in Thailand, China or Viet Nam. Many of these wares have been found in South-East Asian shipwrecks, such as the Brunei, Lena Shoal and Santa Cruz shipwrecks.

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## 5 South-East Asian Shipwrecks with Asian Ceramic Cargo

The remainder of this unit examines a selection of shipwrecks that were found in South-East Asia and carried significant amounts of ceramics as part of the ship's cargo. These wrecks have contributed knowledge on the production, trade and distribution of ceramics that forms a vital part of the maritime history of the region.

The list of shipwrecks is organized chronologically to track the current knowledge of entry and distribution of Asian ceramics, as they became part of international maritime trade. The number of shipwrecks included in this course is by no means complete and exhaustive and there are other shipwrecks that have been excavated that are not included. Furthermore, the summaries are very general and students are encouraged to read more on the appended references.

### 5.1 The Belitung Shipwreck (826 AD), Indonesia

The earliest shipwreck found that carried Chinese tradeware ceramics in substantial quantities is the Belitung shipwreck. The site was accidentally discovered by a sea cucumber diver in 1998, at a depth of 17 metres, just off the shore, north of the main town and port of Belitung Island, Tanjung Pandan. Excavations and salvage were carried out in 1998 and 1999 by a private company.

Based on the (limited) analysis of the ship construction, the Belitung wreck is similar to an Arab or Indian ship, as evidenced by the lashed and stitched boat construction, which contrasts the use of wooden dowels by South-East Asians and iron fastening typically used by Chinese. The ship was rendered watertight through extensive caulking, had a sharp bow with little rake, through beams stitched to the hull, removable ceiling planks, a keelson, stringers and the use of a composite iron and stone anchor. This is the first Arab or Indian ship to have been discovered in South-East Asia.



Belitung shipwreck model.  
© Bobby C. Orillaneda

The cargo comprised of some 60,000 trade goods. The majority of the cargo (98 per cent), comprised of Chinese glazed ceramics (that represent the major types of wares produced during the ninth century): Changsa wares from Hunan province, Yueh wares possibly from either Hunan or Zhejiang provinces, white wares possibly from Hebei province and green-splashed wares and coarse green stonewares from Guangdong province. The majority of the ceramics consisted of Changsa bowls that were produced in the kilns of Tongguan, Shizhu and Gucheng in the Hunan province. These wares were made during the latter part of the Tang Dynasty (618–906 AD), with the earliest piece bearing an inscription, ‘the third year of Kaicheng’, which is the equivalent to 838 AD. Chinese characters decorating one of the Changsa bowls have been interpreted as ‘the 16<sup>th</sup> day of the 7<sup>th</sup> month of the 2<sup>nd</sup> year of the reign of Emperor Jingzong’ (or 16 July 826). Another bowl has three characters which interpret as ‘the year 826’. Also recovered were the earliest examples of porcelains with underglaze blue decoration and a number of Chinese coins, produced between 618 and 626 AD, at the beginning of the Tang Dynasty.

Besides the ceramic cargo, gold and silver objects of high quality were also recovered that represent Tang period metal working examples. There were ten gold and twenty four silver vessels, eighteen inscribed silver ingots and thirty bronze mirrors.



LEFT: Belitung shipwreck green-splashed stoneware cups. © Bobby C. Orillaneda

MIDDLE: Belitung shipwreck stoneware jars. © Bobby C. Orillaneda

RIGHT: Belitung shipwreck Changsa bowls. © Bobby C. Orillaneda



LEFT: Belitung shipwreck blue and white dish.  
© Bobby C. Orillaneda

BELOW: Cirebon shipwreck stoneware bowls.  
© National Committee of Indonesia

BELOW MIDDLE: Cirebon shipwreck stoneware vase.  
© National Committee of Indonesia

BOTTOM: Cirebon shipwreck stoneware boxes with lid.  
© National Committee of Indonesia

This ship provides a very strong archaeological evidence for direct trade between the western Indian Ocean and China during the latter part of the first millennium, proving early Chinese and Arabic texts that mention the direct trade between China and the East.

## 5.2 The Cirebon Shipwreck (1100s AD), Indonesia

In 2001 or 2002, local fishermen caught a number of ceramic pieces in their nets about 110 nautical miles off the coast of Cirebon, West Java. Preliminary investigations revealed a shipwreck with ceramic cargo. In 2004 and 2005, the site was salvaged by a Dubai based firm in collaboration with an Indonesian commercial company.

Approximately 500,000 pieces consisted mostly of Chinese ceramics (est. 75 per cent) dated to the Five Dynasties period, along with Near East and Indian glassware, gemstones (sapphires and rubies), a pair of gold daggers, utilitarian and ceremonial objects and other raw materials. The ceramic inventory consisted of Yueh bowls, plates and dishes, white wares, porcelain jars, vases, basins, boxes and ewers. A bowl with a date of 968 AD and coins from the Nan Han Period (917-942/971 AD) suggest that the ship sunk during the tenth century.

The Cirebon ship measured 31 metres long and approximately 10 metres wide. The ship was identified as a ‘lashed-lug’ vessel, based on a boat construction technique that uses wooden dowels and frames lashed onto *tambugu* lugs. The wood of the ship was identified to be found only in Sumatra and West Kalimantan and indicated the ship was locally built.



### 5.3 The Nanyang Shipwreck (ca. 1380 AD), Malaysia

The Nanyang shipwreck was found 10 nautical miles from Pulau Pemanggil, at a depth of 54 metres below sea surface level. The wreck was found to be carrying the earliest examples of Sisatchanalai celadon plates from Thailand. The plates have distinctive spur marks on the centre, which is a characteristic of early Sisatchanalai plate production. The spur marks are scars in the glaze caused by the tiny feet of disc-shaped spacers that were used to separate stacked plates in the kiln. Besides the Sisatchanalai celadon plates, there were large storage jars from the Suphanburi kilns, as well as celadon bottles, jars, jarlets and small jars from the MaenamNoi kilns. Both kilns are located in central Thailand.

The ship (which measures 18 metres long and 5 metres wide) is an early example of hybrid South China Sea shipbuilding traditions and incorporates both Chinese shipbuilding techniques (bulkheads), with the South-East Asian technique of using wooden dowels in joining planks. The construction of the ship suggests the possible migration of Chinese shipbuilders to South-East Asia as a result of the Ming ban.

### 5.4 The Longquan Shipwreck (ca. 1400 AD), Malaysia

The Longquan shipwreck belongs to another South China Sea shipbuilding tradition. It was found at a depth of 63 metres, approximately 23 nautical miles from the nearest landmass of eastern Malaysia. The ship measures 30 metres long and 8 metres wide.

Discovered in 1996, the wreck was subjected to a preliminary investigation that revealed a ceramic cargo mixture of Chinese celadon and Sisatchanalai celadon, underglaze black Sukhothai wares and storage jars from Suphanburi kilns of Thailand. Initial estimates were 40 per cent Chinese, 40 per cent Sisatchanalai and 20 per cent Sukhothai. The ceramic cargo is notable for its high quality and the absence of underglaze blue and white porcelain.

The shipwreck was not fully investigated due to its great depth and the similarity of the ceramic wares to those found in other Malaysian shipwrecks investigated earlier (Turiang and Nanyang). In 2001, the site was visually rechecked by scuba divers, which revealed the site's total destruction by fishing trawlers. This shows the priority often given in the Asian region to investigate and recover ceramics and other objects with commercial value, while less attention is paid to the ship's construction and its historical and archaeological significance. This is partly due to the immediate human threat from looting and the destruction arising from the worldwide demand for Asian ceramics.



LEFT: Longquan shipwreck Thai celadon bottle. © Sherman Sauffi

RIGHT: Longquan shipwreck Thai dish with underglaze black. © Sherman Sauffi

### 5.5 The Rang Kwien Shipwreck (1400–1430 AD), Thailand

Also known as the Chinese Coin wreck for its large amounts of Chinese coin cargo, the Rang Kwien wreck was found 21 metres below sea surface level in the KoKhram Channel. The wreck was located about 800 metres from the Rang Kwien islet which is 10 kilometres west of the Bangsare district in the Chonburi province.

The site was archaeologically excavated by the Fine Arts Department of Thailand from 1978 to 1981. The South-East Asian Ministers of Education Organization Project in Archaeology and Fine Arts (SEAMEO-SPAFA) sponsored another excavation in 2003 as a training venue for an underwater archaeology workshop for South-East Asian archaeologists. Besides the Chinese coins that dated to 1398, the wreck contained elephant tusks. Approximately 264 ceramic pieces were recovered, of which 50 per cent possibly came from Thai kilns. About 28 per cent are Vietnamese transitional ceramics and 10 per cent are Chinese wares that include storage jars. Ten Suphanburi storage jars, nine Sawankhalok vessels and one plate from the northern Thai Sankampaeng kilns were also recovered.



Rang Kwien shipwreck Chinese celadon bowl. © Bobby C. Orillaneda

The wreck's wooden remains included the keel, planks from the hull, ribs and the carved decorated pieces for the after deck. The vessel was constructed using the even-edged-joined technique and contained roundhead wooden pegs to fasten planks to ribs. No bulkheads were observed that would indicate a South-East Asian vessel.

### 5.6 The Ko Khram Shipwreck (1450–1475 AD), Thailand

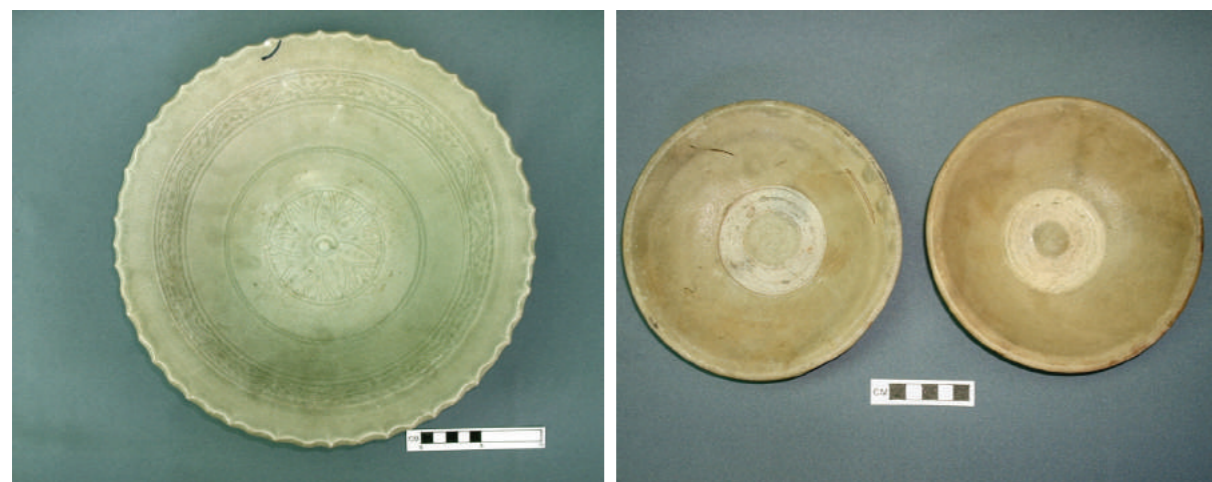
Alternatively called the Sattahip site, this wreck was found in the Ko Khram Channel that faces Sattahip Bay, Chonburi province, at a depth of 38 to 43 metres. Systematic underwater archaeological surveys and excavations in 1975 and 1979 were carried out by the Fine Arts Department of Thailand in cooperation with the Royal Thai Navy.

Structural remains included wooden planks from the hull that contained thirteen bulkheads and ribs. The vessel was built using an even-edge-joined building technique with a double-planked hull. Wooden pegs and bolts were used to hold the planks together. The cargo walls were fastened to the wooden floor planks with iron nails, while split bamboo flooring lined the floor. Presumably, the Sattahip vessel is a flat junk and has no keel. Radiocarbon analysis yielded two conflicting dates: 1520±140 and 1680±270.

Thai ceramics from the Sukhothai and Sawankhalok kilns account for almost two-thirds of the cargo. These included celadon bottles, bowls, dishes and jarlets from Sawankhalok and underpainted fish plates and bowls from Sukhothai. A smaller number of Vietnamese wares, such as a blue and white jarlet and green-glazed saucers with an unglazed ring in the inside centre, were identified in 1975 by Roxanna Brown, a noted South-East Asian ceramic specialist, as probable Cham.

LEFT: Ko Khram shipwreck Thai celadon dish. © Bobby C. Orillaneda

RIGHT: Ko Khram shipwreck Vietnamese celadon bowls. © Bobby C. Orillaneda



### 5.7 The Pandanan Shipwreck (ca. 1450 AD), Philippines

A pearl farm diver accidentally discovered this wreck at a depth of 40 metres, some 250 metres from Pandanan Island, southern Palawan. A preliminary survey was done in 1993 and subsequent archaeological excavations were carried out from February to May 1995. The entire archaeological project was realized through a joint effort between the National Museum of the Philippines and a private company, Ecofarm Resources Inc.



ABOVE LEFT: Pandanan shipwreck Vietnamese bowl in storage. © National Museum of the Philippines

ABOVE RIGHT: Pandanan shipwreck blue and white bowl in storage. © National Museum of the Philippines

LEFT: Pandanan shipwreck Vietnamese blue and white dish in storage. © National Museum of the Philippines



The excavation recovered 4,722 archaeological materials. The ceramic assemblage of the Pandanan shipwreck consisted of a vast array of Vietnamese, Thai and Chinese wares. Vietnamese export wares in the form of celadon bowls, blue and white bowls and dishes, cups, saucers, blue and white jars and stoneware jars, made up more than 70 per cent of the ceramic load. Most of these were manufactured in the BinhDinh region, central Viet Nam, while a lesser number were produced in northern Viet Nam. Most of the blue and white porcelain pieces were identified as belonging to the Chinese early Ming period, specifically to the Interregnum Period (1436–1464 AD). The Thai wares were from the Sawankhalok and Sukhothai kilns. Other archaeological materials included glass beads, earthenware pots, a stove, metal artefacts, such as bronze gongs, iron cauldrons, small cannons and sharpening or grinding stones.

On the basis of a Chinese copper coin ascribed to the Yong-Le period (1403-24AD) and the latest ceramic pieces, a fifteenth century date for the Pandanan shipwreck was assigned. It is also believed to be a South-East Asian trading ship (probably Indo-Chinese), measuring approximately 25 to 30 metres long and about 6 to 8 metres wide



### 5.8 The Royal Nanhai Shipwreck (ca. 1460 AD), Malaysia

In 1995, a shipwreck measuring 28 metres long and 8 metres wide was discovered 40 nautical miles off eastern Malaysia, at a depth of 46 metres. This South China Sea shipbuilding tradition type of vessel was named Royal Nanhai, after Nanhai, the old name of the South China Sea. Sisatchanalai celadon in the form of bottles, dishes and jars comprised the bulk of approximately 21,000 ceramics, along with lesser quantities of brown-glazed Chinese bowls, jarlets and black-glazed storage jars from the MaenamNoi kilns of central Thailand.

ABOVE LEFT: Pandanan shipwreck Vietnamese stoneware jar in storage. © National Museum of the Philippines

ABOVE RIGHT: Pandanan shipwreck Vietnamese blue and white jar in storage. © National Museum of the Philippines

BELOW: Royal Nanhai shipwreck Thai celadon dish. © Sherman Sauffi

The date of the Royal Nanhai was based on five Chinese blue and white bowls that were found in a hidden compartment beside the keel. The blue and whites were identified as belonging to the reigns of Chinese emperors Jingtai and Tiensun of the Interregnum period (1450–1464 AD). Besides the blue and white porcelains, a green-glazed Chinese bowl, two Vietnamese blue and white covered boxes, as well as a red and black lacquer box, an ivory sword handle and a bronze seal were also found.





### 5.9 The Ko Si Chang III Shipwreck (1460–1487 AD), Thailand

The Ko Si Chang wreck measured approximately 20 metres long and 6 metres wide, and was found at a depth of 24 metres, about 5.9 nautical miles from the northern end of the island of Si Chang. Members of the Australian Institute of Maritime Archaeology (AIMA) and the Underwater Archaeological Division (UAD) of the Fine Arts Department of Thailand, systematically excavated the wreck in 1986. Trainees of the SEAMEO Project in Archaeology and Fine Arts (SPAFA) also participated in the excavation as part of their training in underwater archaeology. Results revealed a small trading vessel transporting mainly provisions, such as resin, eggs, etc. A radiocarbon date  $1410 \pm 70$  was given to the wreck.

The ceramic cargo retrieved comprised mostly of Thai ceramics, followed by Vietnamese and Chinese wares. The main ceramic items found on this site were Thai stoneware storage jars, lids, possible Sukhothai bowl, a brown-glazed jarlet from Sisatchanalai, an ovoid bottle, kendis and jarlets of probable Chinese or Vietnamese origin. Earthenware pots and a stove were also recovered. Other associated materials include metal objects, such as copper and lead ingots and bronze lime pots, Areca nuts and elephant tusks.



TOP LEFT: Ko Si Chang III Thai large stoneware jar. © Bobby C. Orillaneda

TOP RIGHT: Ko Si Chang III Thai stoneware jar. © Bobby C. Orillaneda

ABOVE: Ko Si Chang III stoneware lids photo. © Bobby C. Orillaneda

### 5.10 The Santa Cruz Shipwreck (1488–1505 AD), Philippines

The Santa Cruz shipwreck is a late fifteenth century trading vessel discovered off the waters of Santa Cruz municipality, Zambales province, Northwest Luzon. Subsequent underwater archaeological excavation in 2001 by the National Museum of the Philippines and the Far Eastern Foundation for Nautical Archaeology (FEFNA), a private research outfit, revealed a wooden vessel in a remarkable state of preservation with a predominantly ceramic cargo. Blue and white wares, celadons and stoneware jars from China, Viet Nam, Thailand and Myanmar constitute about 98 per cent of the total cargo. Stylistic analysis of the ceramics puts the date of the Santa Cruz wreck during the Hongzhi period of the Ming Dynasty (1488-1505 AD). Other materials recovered include earthenwares, iron cauldrons and iron and bronze implements, glass and carnelian beads, ornaments, such as glass and bronze bracelets, weaponry, such as guns and small cannons, and organic and inorganic remains.

Research on this shipwreck and its ceramics was conducted by the author for his master's thesis. The research revealed the ship's importance in addressing questions regarding long distance ceramic trade during the end of the fifteenth century, an important period immediately preceding the European arrival in South-East Asia. It provides background on the Chinese and South-East Asian ceramic trade during the early period of the Ming Dynasty (1368–1644 AD), where foreign trade prohibitions restricted the outflow of Chinese export ceramics and also shows the participation of other South-East Asian ceramic producing countries, such as Thailand and Viet Nam and Myanmar in the regional ceramic trade. Finally, it also elucidates the role of the Philippines in this vibrant maritime trade.



TOP: Santa Cruz shipwreck site. © FEFNA/Franck Goddio

MIDDLE: Santa Cruz shipwreck site. © FEFNA/Franck Goddio

ABOVE: Santa Cruz shipwreck ceramics from China. © FEFNA/Franck Goddio

### 5.11 The Lena Shoal Shipwreck (1488–1505 AD), Philippines

The Lena Shoal wreck was discovered in February 1997 by a group of fishermen on the northwestern side of Busuanga Island, northern Palawan. The wreck and its cultural deposits lie 48 metres below sea surface level. Using the local hoo-kah system, the fishermen looted the site, retrieving porcelain blue and white wares and stoneware jars that were sold to antique dealers in Manila.



BOTH IMAGES: Lena Shoal ceramics and Chinese celadon on-site. © FEFNA/Franck Goddio

After preventing further looting activities and reconnaissance dives at the site, archaeological excavation commenced with the National Museum as the lead proponent in collaboration with the Far Eastern Foundation for Nautical Archaeology (FEFNA).

The site yielded 6,958 archaeological specimens, including a significant portion of ceramic cargo dated to the Chinese Hongzhi Dynasty period (1488–1505 AD). Blue and white porcelain, celadon and stoneware jars of different morphology and styles

were found alongside earthenware, bracelets, bronze gongs, elephant tusks, lead and iron ingots. The hull, measuring 18.3 metres long and 5 metres wide, was remarkably intact due to the accumulation of iron ingots and the sand overburden that protected the wood from further deterioration. Examination of the ship building technology revealed the Lena Shoal wreck to be a trading vessel that was constructed using an edge-pegged plank measuring approximately 24 metres long, with a tonnage of 100 tons.



Lena Shoal Chinese celadon. © FEFNA/Franck Goddio

### 5.12 The Brunei Shipwreck (1488–1505 AD), Brunei

The Brunei shipwreck was discovered by Elf Petroleum Asia during an oil exploration survey in 1997, some 40 kilometres off the coast of Brunei. Systematic archaeological excavations were conducted from May to August 1998, involving more than 130 specialists from all over the world.

The excavations yielded about 13,500 artefacts composed mainly of high-fired blue and white and stoneware trade ceramics from China, Thailand and Viet Nam, that were dated to the Hong-zhi period (1488–1505 AD) of the Chinese Ming Dynasty. It is interesting to note that no physical remains of the wreck were unearthed. This is the first wreck found inside the territorial waters of the Sultanate of Brunei and are exhibited in the country's only maritime museum. Together with similar ceramics that have also been archaeologically recovered on coastal and terrestrial sites in Brunei, it provides some inconclusive evidence that Brunei was a trading centre during the fifteenth century.



Brunei shipwreck blue and white ceramics on exhibit at the Brunei Maritime Museum. © B. C. Orillaneda

### 5.13 The Xuande Shipwreck (ca. 1540 AD), Malaysia

The Xuande site was named after five blue and white dishes and one blue and white ewer found as part of the ceramic cargo that bore reign marks of Chinese emperor Xuande (1426–1435 AD). The wreck was found in 1996, approximately 60 nautical miles from the nearest land. Besides the blue and white porcelains, covered boxes in underglaze black, jarlets with brown-glazed spots from the Sisatchanalai kilns were found, alongside bowls decorated with chakra and starburst motifs from Sukhothai kilns. This shipwreck illustrated the reappearance of blue and white Chinese porcelains in the South-East Asian trade and the corresponding decline of Thai and Vietnamese ceramic exports.

After further research of the ceramics and other shipwreck related objects, such as the cannons, it was revealed that the shipwreck was 100 years younger than previously assumed. The porcelains from the Xuande reigns were actually copies made by potters who worked during the reigns of later Chinese emperors. The cannons were thought to have been produced no earlier than 1520 AD, which dates the Xuande site to the middle of the sixteenth century.

It is remarkable to note that no shipwreck fragments were found at the site, although it was estimated based from the mound, that the shipwreck could have measured 28 metres long and 8 metres wide.

### 5.14 The Wanli Shipwreck (1573–1620 AD), Malaysia

This shipwreck was named after its predominantly Chinese ceramic cargo that consisted of blue and white porcelains produced during the reign of Chinese emperor Wanli (1573–1620 AD). A fisherman inadvertently discovered this wreck in 1997, after a large blue and white bowl was snagged in his trawler net. The site was investigated in 2004 and resulted in the discovery of the shipwreck at 40 metres below sea surface level, approximately 6 nautical miles off Tanjong Para, in the state of Terengganu.

Extensively damaged by fishing trawlers, nine tons of broken ceramic pieces were recovered from the site. The porcelains were identified to be 'Kraak' wares, manufactured in the kilns of Jingdezhen. Further research in Jingdezhen discovered similar ceramic wares in the Guanying kiln site.

The ship itself was approximately 17 metres long and constructed with a ribbed framework, suggesting a European style of ship-building. However, the wood used was a tropical type most frequently found in the Philippines and India. The outermost planks were made from a temperate species that grows in China or Europe. Therefore, it appeared that this is a European type vessel which had been built in South-East Asia or India and had later additional 'sacrificial' planks added in China to compensate for woodworm damage.



Wanli shipwreck Chinese blue and white dish. © Sherman Sauffi

The Wanli ship sailed during an interesting period in history. It was during this time that Europeans actively participated in Asia's maritime trade, distributing an array of products for different markets. It is believed that the Kraak wares were primarily destined for Europe, while others could be traded in local South-East Asian markets.



Wanli shipwreck Chinese blue and white double guarded bottle. © Sherman Sauffi

### 5.15 The San Diego Shipwreck (14 December 1600 AD), Philippines

The *San Diego* was a Spanish warship that sunk during a battle with the Dutch vessel *Mauritius* on 14 December 1600, off the waters of Nasugbu in the Batangas province, southwest of Luzon. The survey and excavation of this shipwreck has been a seminal undertaking between the Underwater Archaeology Section of the National Museum of the Philippines and the European Institute of Underwater Archaeology (IEASM).



Wanli shipwreck Chinese blue and white kendi. © Sherman Sauffi

Archival research on the possible location of the site was conducted in the libraries and archives of Spain, Holland, Italy and France. In April 1991, exploration activities commenced. Due to the conflicting historical accounts regarding the exact location of the sinking, the survey took longer and covered a lot of area before the shipwreck was discovered. The actual wreck site was only determined after a series of verification dives on one of the numerous anomalies detected. The wreck was finally discovered approximately 1 kilometre northeast of Fortune Island, lying 54 metres below sea surface level, on a mound of stoneware jars and cannons, which covered an area of approximately 40 by 200 square metres.



TOP LEFT: San Diego shipwreck blue and white dish. © FEFNA/Franck Goddio  
 BELOW LEFT: San Diego shipwreck blue and white vases. © FEFNA/Franck Goddio  
 TOP MIDDLE: San Diego shipwreck Chinese blue and white bowls. © FEFNA/Franck Goddio  
 CENTRE: San Diego shipwreck Burmese stoneware jars. © FEFNA/Franck Goddio  
 BELOW MIDDLE: San Diego shipwreck Thai stoneware jars. © FEFNA/Franck Goddio  
 ABOVE: San Diego shipwreck Chinese stoneware jars. © FEFNA/Franck Goddio

The first excavation season was conducted from 10 February to 28 April 1992, while the second excavation season commenced in 1993. The second excavation season focused on the recording of the shipwreck's wooden vestiges.

More than 34,000 archaeological specimens were retrieved and accessioned including ceramics (porcelain, stoneware and earthenware), armaments (cannons, samurai swords and katanas, swords, muskets, ammunitions), silver coins and silver wares, metals anchors (helmets, buckles, lead weights and ingots, bells, etc.), glasswares, jewelry and personal ornaments, gold objects (seal, coin, neck and finger ring and rosary), necklace, kitchenwares, wooden objects and implements, rope, floral and faunal remains and other unidentified objects.

Significant archaeological objects recovered include: navigational instruments (astrolabe and compass) and implements, fourteen bronze cannons, Chinese blue and white porcelain (Kraak and Zhangzhou wares), more than 750 Chinese, Thai, Burmese and Spanish or Mexican stoneware jars and over 70 Philippine made earthenware potteries.

The *San Diego* was the first galleon to be systematically excavated in Asia. It is a tangible evidence of the fabled galleon trade that lasted for 250 years, making the Philippines one of the world's central trading hubs during that period. The *San Diego* is also important in elucidating the inter-island trading activities during the early days of European influence.

### 5.16 The Griffin Shipwreck (1761 AD), Philippines

The *Griffin* foundered in the Sulu Sea in 1761. The vessel was part of a convoy sailing to the Sultan of Jolo to negotiate the treaty leading to the creation of a trading post by the Honourable East India Company (HEIC). The wreck is related to the expansionist aspirations of the HEIC to establish a trading post that would serve as a support base for the development of trade for the English Empire.

The search for the *Griffin* commenced with the examination of the archival documents in England, Paris, Madras, Brunei, St. Helena and Manila to gather a comprehensive and accurate historical picture of the vessel, before and during the sinking.

Magnetometer surveys that were carried out in 1986, led to the discovery of the *Griffin* inside the Pilas group of Islands in Basilan, southern Philippines. The on-site excavation period lasted 420 days, covering two excavation years.

The ship's cargo consisted of Chinese porcelain, silk and tea destined for Europe. The porcelain numbered more than 7,000 pieces. There are sets of blue and white octagon 'crab' plates, a set of cups with floral decorations, a set of saucers and bowls in the 'tea house' patterns and a set of punch bowls, as well as mugs and vases that were produced in the kilns of Jingdezhen. There are also whitewares in the form of figurines that were manufactured in the Dehua kilns in Fujian province.

The ship was classified as a merchant ship, measures 29 metres long and was perfectly preserved under 6 metres of sand. It was built in Blackwall, England and officially had a tonnage of 499 tons, but in actuality it could have been between 600 to 690 tons, based on similarities of boat building technology of the period. The ship has three masts and a massive hull to accommodate a substantial cargo.

FROM TOP: Griffin shipwreck Chinese blue and white 'crab' plates in situ. © FEFNA/Franck Goddio  
© FEFNA/Franck Goddio

Griffin shipwreck Chinese blue and white table wares. © FEFNA/Franck Goddio

Griffin shipwreck Chinese blue and white vases. © FEFNA/Franck Goddio

Griffin shipwreck figurines. © FEFNA/Franck Goddio

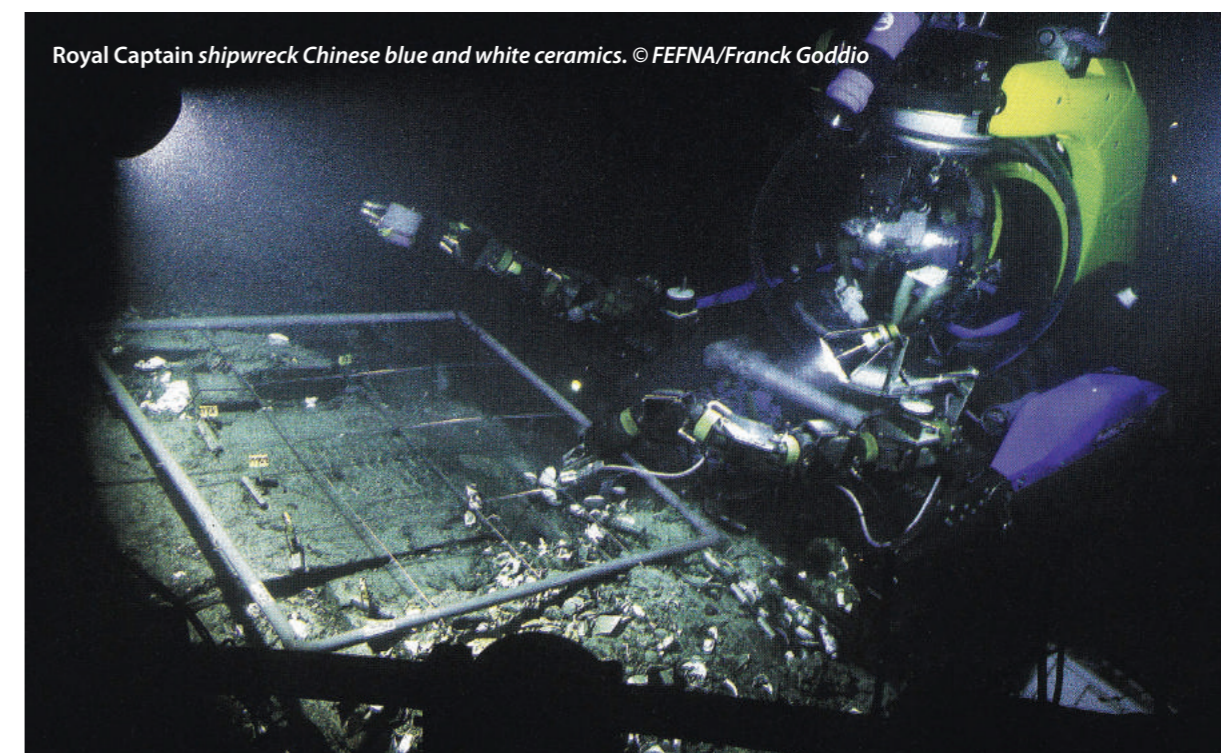


Royal Captain shipwreck Chinese blue and white ceramics. © FEFNA/Franck Goddio

### 5.17 The Royal Captain Shipwreck (17 December 1773 AD), Philippines

On 17 December 1773, the *Royal Captain*, another HEIC ship, struck a reef and sunk. She was part of a convoy of three ships that traveled from China to Balambagan, Borneo, an HEIC settlement, carrying more than 4,000 tea chests, bundles of silk, Chinese porcelain, barrels of Arrack and three chests of silver dollars.

The *Royal Captain* was located based on archival research of the ship's log that detailed the sinking of the ship. In 1985, a magnetic survey was carried out by the National Museum of the Philippines and



Royal Captain shipwreck Chinese blue and white ceramics. © FEFNA/Franck Goddio

the European Institute of Underwater Archaeology (IEASM) that discovered metal objects related to the vessel, but the wreck itself was not found. It was believed that the vessel sunk in deeper waters or floated away from the reef. Another investigation was carried out in 1995, this time with Remote Operated Vehicles (ROVs) and submarines. The wreck was found 350 metres below the sea surface level and the ship's bell was located 110 metres deeper than the site.

After a failed investigation in 1996 due to technical difficulties of excavating such a deep site, systematic excavation was finally conducted in 1999. A state of the art high-precision acoustic system, laser measurement system and special photographic equipment was used to map the site. A customized elevator operated by submersibles was used in the recovery of the artefacts. The objective of the endeavor was to systematically excavate a limited area and leave the rest of the wreck intact for future research.

About 1,847 artefacts, constituting approximately 5 per cent of the entire shipwreck cargo were recovered. Along with the Griffin shipwreck, the two vessels were instrumental in explaining the history of the HEIC and its attempt to establish a free port in South-East Asia to attract Chinese trade.

### 5.18 The Desaru Shipwreck (ca. 1830 AD), Malaysia

In 2001, a shipwreck was discovered about 2 nautical miles from Desaru Beach, on the east coast of Johor, in 20 metres of water. A preliminary investigation was conducted in April of the same year, while



mapping and site measurements were completed in 2002. A plan to do further research on the site in 2003 was not fulfilled due to the total destruction of the site by fishing nets.



Based on the presence of transverse bulkheads, it is believed that the Desaru shipwreck was constructed using Chinese shipbuilding technology based on the presence of transverse bulkheads. More than 7,000 artefacts were retrieved, of which the majority comprised of large stoneware storage jars produced by the Maenam Noi kilns of Thailand. These storage jars occupied all except two of the bulkheads which contained porcelains, including 53,000 blue and white spoons and other blue and white wares of excellent quality. It is interesting to note that many of the storage jars contained Yixing teapots and small stoneware pieces, including covered boxes, bowls and beakers.

TOP: Desaru shipwreck Chinese blue and white dish. © Sherman Sauffi

LEFT: Desaru shipwreck Chinese blue and white jar photo. © Sherman Sauffi

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## Unit Summary

The unit provides a general introduction to the subject of Asian ceramics and its importance in understanding maritime trade in the South-East Asian region. Each South-East Asian shipwreck containing ceramic cargo discussed in the unit has provided important archaeological information in terms of temporal sequence, delineation of different trade practices and distribution of trade goods.

## Suggested Timetable

30 mins	Introduction to Asian Ceramics - <i>What are ceramics?</i> - <i>Why do we study ceramics?</i> - <i>Ceramic shape terminology</i> - <i>Ceramic kiln sites</i>
60 mins	South-East Asian Shipwrecks with Asian Ceramic Cargo
	Break
80 mins	Visit to the open storage of the National Maritime Museum's ceramic collections
10 mins	Concluding Remarks and Closure

## Teaching Suggestions

To supplement student knowledge, it is recommended that trainers organize a visit to a ceramic storage in a museum to look at actual ceramic specimens from shipwreck sites. The students should be encouraged to identify pieces and describe the type of ceramics, provenance and its possible use, e.g. utilitarian, ceremonial, etc.



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