

The Underwater Archaeological Career Progress of Research in China Showed by "Nanhai I"

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Abstract—As a great cultural country, China not only has precious relics on the road, but also has valuable cultural treasures in far-reaching seas. This shows the importance of underwater archaeology. As a branch of archaeology, underwater archaeology has also experienced the development stage. "Nanhai I" is a major milestone in China's underwater archaeology process. It can be said that it is a sign of the beginning of underwater archaeology in China. This paper discusses this point from four aspects: exploration and planning, capital investment, mining technology, and laws and regulations, and expresses the author's opinion on its historical value.

Keywords—underwater archaeology; "Nanhai I"; salvage and preservation

I. INTRODUCTION

China is a country with a deep history and rich historical heritage. There are countless extremely precious cultural relics on the 9.6 million square kilometers of land. The exploration of these cultural relics can be traced back to the epigraphy of the Song Dynasty. China also has a territorial sea of about 3 million square kilometers. The underwater archaeology has gradually emerged in the world since 1960s. China has also gradually realized this precious cultural heritage. After experienced the initial stage of inexperience and no method, the Chinese underwater archaeology gradually began to get on track from the "Nanhai I". The author believes that the wreck salvage of "Nanhai I" is the sign of underwater archaeology in China. This view will be discussed through exploration and planning, capital investment, excavation technology, and laws and regulations.

II. EXPLORATION AND PLANNING

A. The Sign

China's underwater cultural heritage protection began in the 1950s, and it has begun to excavate underwater cultural relics on land at the same time. In April 1956, an ancient wreck of Ming dynasty was excavated from the old Songjin river road; it was located in the 9 kilometers north of Liangshan county, Shandong province. This is a sign that China has begun the process of protecting underwater cultural heritage. [1] The International Salvage Fleet upholds the rules of "who discovered that who salvage", and the

salvage companies didn't use professionals to salvage after discovering the remains. The technology is not mature enough at this stage, and some of the remains are not well explored and protected. For example, the internationally famous issue of British Michelle Hatcher salvages. Because Michel Hacher only pursues short-term benefits, there was no careful prior data collection and salvage plan. Michel Hacher made a rude direct extraction of artifacts from the "Godmarsen" that was discovered in the South China Sea. The devastating demolition of the hull has prevented the discovery of the historic and cultural value of the sunken ship.

When it comes to the "Nanhai I", it has started with the purpose and direction to carry out data collection and designated excavation plans. In August 1987, the NANHAI RESCUE BUREAU MINISTRY OF TRANSPORT and the British Ocean Exploration Company had cooperated in the South China Sea exploration operation to find a Chinese shipwreck of the Song and Yuan Dynasties in the waters near the Chuanshan Islands at the junction of Taishan County and the Yangjiang Sea in Guangdong Province. More than 200 pieces of important cultural relics such as porcelain and silver ingots from the Song and Yuan Dynasties in China were recovered. According to the analysis of the salvaged items, the shipwreck was loaded with daily porcelain of four kiln systems during the Song and Yuan Dynasties. This shipwreck was named "Nanhai I". [2] After further analysis, it was concluded that "Nanhai I" was a foreign vessel trading off the coast of China from South to West Asia. In April 2001, due to the donation of Mr. Chen Laifa, the Underwater Archaeology Research Center of the Chinese History Museum together with the Guangdong Provincial Institute of Cultural Heritage and Archaeology and other units, setting up a total of 12 members of the underwater archaeology professional team to search and locate the wreck site. The underwater archaeology team carried out the precise location of the wreck during the investigation. From March to May in 2002, the underwater archaeology team launched the water again, excavating and finely salvaging the seabed shipwreck, and salvaging more than 4,000 pieces of cultural relics. On January 16, 2007, the archaeological team went to the shipwreck area to carry out the last seabed survey before salvage, and then carried out salvage for more than 9 months. [3] The overall salvage plan was successfully implemented. The complete hull of "Nanhai

I" and most of the cultural relics were remained in the Guangdong Maritime Silk Road Museum (Crystal Palace).

B. The Estimate of Historical Evolution

The underwater archaeological institution established by China during this period was a sign of the beginning and laid a firm foundation for future development. For the salvage process of "Nanhai I", professionals have already had a preliminary awareness of information gathering. This is a historical underwater archaeological experience for the exploration of the ocean and the collection of relevant literature. Nowadays, with the development of science and technology, the advancement of technology and the improvement of experience, underwater archaeology have been gradually standardized in scientific exploration and preliminary investigation. Archaeological exploration is carried out with the use of techniques such as geochemical prospecting, geophysical exploration, and aerial remote sensing. Since the development of "Nanhai I", China has explored a set of exploration methods and production planning methods. It was believed that the advancement of technology will make this step more simplified and accurate.

III. CAPITAL INVESTMENT

A. The Sign

The initial development of underwater archaeology was undertaken by private teams and salvage companies. The purpose is also biased towards exploration rather than archaeological excavation. Due to the unique underwater environment of underwater archaeology, the cost of equipment collection is much larger than that of traditional field archaeology. Archaeologists had to employ professional divers before the French invented "aqualung" in 1943 to solve the problem of breathing underwater below 10 meters. Professional divers are not only expensive but also without archaeological expertise. The result is not satisfactory. The value of cultural relics can't be measured by money, but the purpose of this stage of the merchant is very clear, just to explore the treasures. Since the founding of New China, the government has vigorously developed the cultural industry and gave financial support to the cultural and cultural industry. A large number of talents and equipment have been introduced, but the overall situation is still in the development stage. These investments have no economic value spillovers, and the protection of underwater cultural heritage is complicated and requires huge investment. In particular, China has a long coastline and developed ancient maritime trade and the number of underwater cultural heritages left at the bottom of the ocean is huge. It is obviously impossible to rely solely on government investment to meet the needs of China's underwater cultural heritage protection.

In 2004, the "Nanhai I" overall salvage program was confirmed. According to this plan, the salvage budget of "Nanhai I" is more than 100 million. However, with the postponement of salvage time, the cost of salvage has gradually increased. According to the figures disclosed by the "Nanhai I" underwater archaeology team, it took more

than 14 million yuan to build a temporary pier for the "Nanhai I". The rent for the two salvage boats was as high as 800,000 yuan per day. In addition, the amount of steel, cement, underwater facilities, ships and human labor invested in the project is estimated to be close to 150 million yuan. If the cost of "Crystal Palace" is 150 million yuan, the total cost of "Nanhai I" salvage and preservation will be as high as 300 million yuan. When the plan came out, it was evaluated as "a crazy move without cost." [4] "Nanhai I" not only has state financial subsidies, but also takes the donations from Mr. Chen Laifa to train the personnel during the former period. With such a large investment of funds, there are many voices in the country say it is not worth it. Zhao Ziqiang, an expert in cultural relics, said in an interview: "A Tang Dynasty sunken ship from southeast Asia was sold to China for 600 million yuan. I have followed the State Administration of Cultural Heritage to see that there are many excellent cultural relics. However, due to limited funds, Chinese museums can only be eagerly sighed and finally it was bought by a museum in Singapore for 500 million yuan. If the "Nanhai I" is equivalent to the Tang Dynasty shipwreck, then of course it is very worthwhile. "

It turns out that this investment is worthwhile. It took twenty years to salvage the shipwreck and build the "Crystal Palace". It can not only spread culture as a museum, and the research and development of "Nanhai I" documentary, stage plays, can be as cultural and creative products produce some revenue. What's more important is that its rich cultural relics have unique historical and cultural values.

B. The Estimate of Historical Evolution

Underwater archaeology is different from the Hatch-type submarine treasure for profit. The artifacts on the shipwreck are valuable in the market, but the economic value is virtual and can't be realized for archaeology. Assume that the porcelains of the "Nanhai I" has entered the market, and the price can only fall, and it is impossible to rise. [5] China's museum business and cultural and creative undertakings have been further developed after the exploitation of "Nanhai I". However, it is undeniable that the huge amount of money consumed by the "Nanhai I" is very worthwhile when it is generally not optimistic. There is a huge return on culture and a recovery in the economy. Nowadays, culture is popularized and the cultural industry is gradually developing. It is believed that archaeology will develop better on the basis of sufficient funds.

IV. EXCAVATION TECHNOLOGY

A. The Sign

The biggest difference between underwater archaeology and field archaeology lies in the unique underwater environment, so underwater archaeology has unique excavation techniques different from field archaeology. The more common way is the O'Olsen of the Danish National Museum, which found five Viking boats in the Sokol de Lewabai area of Roskilde Jorden, using the cofferdam method. The water in the site will be completely eliminated, and the site will be landed for excavation. Because of the

shallow water, the steel slabs were first drilled into the ground to build a dam, forming a cofferdam, and then 1600 square yards (1 yard = 91.44 cm) of water was pumped out. After the site was completely dry, it was excavated by terrestrial archaeological methods. It is also necessary to completely remove water from the remains, such as the excavation of Italy's lake wreck site. But this method of excavation is only suitable for small sites, and can't be used when the water level is too large. "Nanhai I" is located in the sea area of Taishan City in the South China Sea, and buried under 23 meters of mud. It is obvious that neither method is applicable. Therefore, it was determined that the "integrated salvage" scheme was adopted, and the shipwreck, cultural relics and its surrounding seawater and sediment were hoisted and transported as they were, and then moved to the "Crystal Palace" of the Guangdong Maritime Silk Road Museum. The difficulty of this type of salvage is also rare in the history of international underwater archaeology. This is also an excavation method that can minimize the damage to cultural relics. After the water is discharged, it is cleaned indoors for cultural relics. The natural environment in which the water is located determines that the cultural relics have been immersed in water for a long time, and the air is isolated from the air, especially in the offshore wrecks of the shipwreck. Oxidation is started immediately, and the powder is peeled off from the outside. The porcelain is peeled off due to the analysis of the salt after drying, and the wood product also has problems such as dehydration and desalting. It is also a great challenge for protecting and repairing work. [6] The repair room of "Nanhai I" was built in the Crystal Palace to ensure that the cultural relics were effectively protected during the first time they were unearthed.

B. The Estimate of Historical Evolution

The biggest advancement of "Nanhai I" is the way of excavation. From the violent excavation of Michel Hacher to the small-scale drainage excavation, then it comes to the "Nanhai I" to successfully explore this behemoth. China's underwater archaeology has achieved certain achievements. The achievements so far are inseparable from the research results of scientific researchers, and they are also inseparable from the exploration of technology by archaeologists. However, the fishing method of "Nanhai I" also has shortcomings such as long time-consuming, huge cost, and fault-tolerant rate. As China's underwater archaeology continues to develop, it is necessary to continuously upgrade its scientific technology, detection methods, and excavation methods. As a successful case, "Nanhai I" is worthy of the excellent experience of later generations.

V. LAWS AND REGULATIONS

A. The Sign

As an ancient civilization with a history of 5,000 years, China has a large number of underwater cultural heritages, and these heritages also face various threats. In response to such threats, China promulgated the Regulations on the Protection of Submerged Waters in 1989. The regulations still have many shortcomings for various reasons and need to

be improved. [7] Due to the previous Michel Hacher incident and the shipwreck in the Tang Dynasty, in the unearthed phase of "Nanhai I", China's laws and regulations have been continuously improved to cope with unpredictable risks. For example, the revision and improvement of the "Law of the People's Republic of China on the Protection of Cultural Relics" also includes the formulation of local underwater cultural relic conservation regulations in accordance with relevant national laws and regulations, such as Fuzhou has formulated several regulations on the protection of underwater cultural relics in Fuzhou sea area. This regulation is the first special local regulation in the country to protect the underwater cultural relics. It is stipulated in the regulations that "Pingtan, Lianjiang, Changle and other parts of the sea are the key protected areas of waters. In addition to emergency rescue, fishery production, and approved construction, which are related to personal safety, it is forbidden to work near the area. Where diving and excavation operations are necessary for fishery production or project construction, an application for permission shall be made to the local administrative department of culture (cultural relics) at the county level; Those who illegally salvage, plunder or destroy underwater cultural relics in sea areas may be fined up to 20,000 yuan." [8] But there are also many problems." For example, relevant laws should clarify how to implement the principle of situ local protection. The protection of underwater cultural heritage in situ doesn't mean that the underwater cultural heritage is passively left in place. If an underwater cultural site is found, it is still necessary for the cultural relics administration to conduct a preliminary investigation of the site and the surrounding environment to understand the characteristics of the site and the surrounding environment. And according to the need to take positive measures to prevent the occurrence of which is unfavorable for the protection site surrounding environment changes, such as control, reduce the pollution of waters around so as to reduce the speed of the sites natural decay, deterioration, surrounding ruins to draw a reserve, prevent human activities such as fishing) disturb, evaluation exercises, weapons testing activities around the ruins of the Marine environment and the impact of site and so on. In situ conservation doesn't mean that all activities related to underwater cultural heritage are prohibited. The cultural relic management agency may conduct necessary investigations on the site to understand and confirm the content and characteristics of the site and take effective protection measures. [9]

B. The Estimate of Historical Evolution

The law is the guarantee of all systems. China's archaeology started late, and underwater archaeology is even later. For the field of zero experience, it can only gradually develop through the way of international cooperation to learn and cultivate talents. The starting stage is always quite awkward, just like the Tang Dynasty shipwreck incident that suffered before. As the saying goes, "It's never too late to mend." The perfection of the legal system means that when someone find a problem, it's necessary to find a way to avoid the same problem. For the exploration of underwater archaeology, it is necessary to gradually accompany laws

and regulations. The problem of having to rescue the "Nanhai I" must be avoided. Legal guarantee system, there will be better development with the system.

VI. CONCLUSION

China's underwater archaeology has achieved initial success through the efforts of generations of archaeological scholars. "Crystal Palace" is one of the outstanding cultural treasures. For the emergence of "Nanhai I", after the difficult start under the circumstances of talent shortage, technical gap and lack of legal guarantee in the 1980s, the underwater cultural heritage protection work in China was discovered and excavated by "Nanhai I". The investigation, salvage and preservation of the museum are as a symbol, slowly goes to mature, and lay a solid foundation for further protection of China's water products and safeguard the country's maritime rights and interests. "Nanhai I" has a profound preliminary investigation, detailed excavation plan, strong national support, unique excavation methods, and perfect legal guarantee. From these aspects, "Nanhai I" is worthy of the starting sign of underwater archaeology in China. The "Crystal Palace" of "Nanhai I" is the result of the efforts of several generations of archaeologists. It is believed that in the future, the new archaeologists will use a more advanced technology and more convenient equipment to create a new miracle for Chinese underwater archaeology.

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