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# TRANSLATIONS

## Lessons and Thoughts from the Struggle for Command of the Sea in the Red Sea







Lessons and Thoughts from the Struggle for Command of the Sea in the Red Sea<sup>1</sup>

Zhao Jiaxu and Huang Chunyu

Since mid-November 2023 to the present,<sup>2</sup> Houthi armed forces in Yemen have continued to hijack and attack vessels in the Red Sea that "use Israeli ports" or "engage in trade with Israel" to oppose Israel's military operations in Gaza and disrupt military assistance to Israel from the United States, the United Kingdom, and other countries. As of April 1, 2024, over 86 vessels related to the United States, the United Kingdom, Israel, and other countries have been attacked. The Houthis continue to maintain control over the Red Sea, forcing vessels from these countries to risk damage and loss of life while navigating through the area. The crisis in the Red Sea is worsening.

### The Use of Surface Ships in the Red Sea Crisis

On December 18, 2023, in response to attacks by Houthi armed forces, U.S. Secretary of Defense Austin announced the launch of "Operation Prosperity Guardian" in Bahrain. The aim was to establish a new [coalition] fleet with multiple countries to provide escorts for U.S. and allied vessels passing through the Red Sea, ensuring their safety. On February 19, 2024, European Commission President Ursula von der Leyen announced at the European People's Party Conference held in Berlin that the EU would launch a Red Sea escort operation. Germany, France, and other countries would send naval vessels to protect their merchant vessels.

The United States, the United Kingdom, and other countries are attempting to fight for sea control of the Red Sea through [the use of] vessel escorts, which is one of the key methods for contesting sea control within traditional naval warfare. Unfortunately, U.S., British, and other [nations'] vessels have been pushed back time after time in the face of anti-ship missiles and drones launched by the Houthi armed forces. The escort operations have not achieved the expected results, and many naval vessels themselves have been attacked.

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<sup>&</sup>lt;sup>1</sup> 赵家旭 [Zhao Jiaxu] and 黄春宇 [Huang Chunyu], 红海制海权争夺带来的启示和思考 ["Lessons and Thoughts from the Struggle for Command of the Sea in the Red Sea"], 当代海军 [*Navy Today*], no. 5 (May 2024), pp. 62-65.

Translator's note: Navy Today is an official magazine of the PLA Navy.

 $<sup>^{2}</sup>$  Translator's note: This article was published in May 2024, so the authors' reference to the present refers to the point up until the date of publication.

In January 2024, the U.S. Arleigh Burke-class destroyer USS *Barry* lost contact (失联) in the Red Sea and was suspected of being attacked. On 8 April, a spokesman for the Houthi armed forces stated that in the past 72 hours multiple attacks had been launched on British and Israeli merchant ships and U.S. warships. On 11 April, the Houthis claimed they attacked Israeli and American ships four times, including a warship. The U.S. aircraft carrier USS *Eisenhower* was not spared, suffering multiple attacks by drones and anti-ship ballistic missiles in the Red Sea.

In addition to escorting, U.S. and British surface ships also organized joint strikes aimed at destroying the military facilities of the Houthi armed forces. In the early morning of January 13th local time, the destroyer USS *Carney* launched Tomahawk missiles to attack a Houthi radar station. On the evening of February 3rd, the destroyers USS *Carney* and USS *Graveley* successively carried out strikes. However, in this operation, although the surface ships performed a strike mission, in contrast to the role played by air power, they only played a supporting role and had no fundamental impact on the local situation.

### Looking at the Main Difficulties Currently Faced by Surface Ships Amidst the Red Sea Crisis

Faced with the Houthi armed forces, which have weak naval forces and far inferior equipment and weapons, the United States, Britain, and other countries have not played the role of the invincible armada as in past naval battles. The surface ships have little offensive and defensive effect and as a result, appear weak. There are many reasons for this phenomenon.

One reason is the clear difficulty of concealment at sea. Today's ocean is gradually becoming an open and transparent ocean, and surface ships are easily discovered and tracked by the enemy This directly resulted in the Houthi armed forces continuing to monitor the dynamics of ships from the United States, Britain, and other countries during the Red Sea conflict, looking for opportunities to launch attacks on them at any time. As a result, the escort operations of surface ships were followed in real time, making it difficult for them to succeed. Since World War II, various countries have been committed to the construction of thousands of reconnaissance and observation systems. Space-based satellites, early warning aircraft, reconnaissance aircraft, shore-based radars, and other means have been continually introduced, and their functions have become increasingly powerful. Space-based satellites can monitor the world over a wide area, and early warning aircraft and reconnaissance aircraft can monitor targets within hundreds of kilometers in real time. Surface ships have large radar cross-sections and are easily captured by radar. In addition, their maneuvering speed is slow, and once they have been discovered, it is difficult for them to evade monitoring. These factors makes it more difficult for surface ships to conceal themselves at sea.

Second, the threat of anti-ship weapons has increased. According to media reports, the Houthis recently conducted a test launch of a "hypersonic weapon" system. It is said that the maximum speed of the weapon can reach Mach 8, and it is difficult to successfully intercept it with surface ships alone. In addition to hypersonic weapons, there are many weapons that can threaten the safety of surface ships, such as the suicide unmanned boat used by Ukraine to sink the Russian Navy's *Sergey Kotov* and the kamikaze drones used by the Houthis in the Red Sea conflict. These new weapons have diverse attack methods and are difficult to defend against. From the perspective of cost-effectiveness, the average cost of a Burke-class destroyer is about US\$3.7

billion, the basic drone used by the Houthis costs about US\$30,000, and the "Persian Gulf" antiship missile costs about US\$300,000. Therefore, the cost of building a Burke-class destroyer is far greater than that of drones and anti-ship missiles. Anti-ship weapons are extremely costeffective, which in turn makes the situation of surface ships even more dangerous.

Third, surface ships are highly dependent on the system (体系) [as a whole]. They have many functions and can independently carry out strikes, anti-missile operations, anti-submarine warfare, and other tasks, but the capabilities of a single ship platform are very limited. In actual combat, they are highly dependent on the system.

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In early 2024, the United States launched OPERATION POSEIDON ARCHER, and several Arleigh Burke-class destroyers launched Tomahawk cruise missiles to attack the military facilities of the Houthis. In terms of its own early warning and detection capabilities, the Arleigh Burke-class destroyer detection and tracking distance is less than 100 kilometers, while the Tomahawk missile strike distance exceeds 1,000 kilometers. If it leaves the system, the power of the Arleigh Burke-class destroyer will be reduced by a factor of 10. In addition, once it leaves the support of the system, it will be difficult for the ship to determine the direction of the threat, the type of target, and the time of attack, and the safety factor will be greatly reduced.

Fourth, it is difficult to maintain a high-intensity alert state for a long time. In order to ensure that surface ships can perform tasks for a long time, countries currently adopt a shift duty system, where multiple people take turns at the same position to keep the surface ships on alert. However, the ability level of operators is not uniform, and the status of the same operator under different conditions at different times will also fluctuate, which makes the alert state of surface ships different. Today's air defense and anti-missile [systems] have extremely high requirements for the operators themselves and the coordination between operators. Under normal alert conditions, it is difficult to meet defense requirements. Therefore, during a battle, a high-intensity alert state must be maintained, and the most skilled operators are distributed to various positions in the best state. Maintaining a high-intensity alert state requires a lot of personnel and energy. Long-term, high-intensity duty will inevitably lead to inattention and slow action from the embarked personnel, making it difficult to maintain the safety of surface ships. The risk will increase accordingly.

#### Forecast of Future Surface Ship Construction and Operation

Surface ships are an important part of maritime power. They used to be a powerful tool for seizing command of the sea and were the main force relied on in early naval battles. However, they are now repeatedly frustrated at sea. Since the outbreak of the Red Sea crisis, the United States, Britain, and other countries have implemented a series of operations relying on surface ships, but the results have been disappointing. In-depth research on this can help us see the future construction, development, and utilization of surface ships:

The first point involves intelligent autonomy of defense systems. Intelligent autonomous system defense is an effective way to solve the problem of continuous high alert. At present, the reason why the high alert state cannot be maintained for a long time is mainly because of the over-reliance on system operators, causing human factors to have a huge impact on a series of

processes such as reconnaissance and observation, target judgment and selection, and target issuance. Any delay or negligence in any link will cause the alert state of surface ships to decline. In addition, modern anti-ship weapons create higher and higher requirements for air defense and anti-missile [systems], and the previous system model has a hard time meeting combat requirements. If the defense system is intelligent and autonomous, the impact of human factors will be greatly reduced, and the defense action will become an instinctive reaction of the surface ship, which can achieve the effect of normal monitoring and real-time judgment. Once an emergency occurs, it can be quickly defended in a short time.

Second, the means of defense and resistance have diversified. In the Red Sea conflict, the Houthis used a variety of anti-ship weapons to attack ships from the United States, Britain, and other countries, achieving good results.

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Among them, the Kamikaze UAV has given its opponents a headache with its super high performance-to-cost ratio, and it has also exposed the problem that current surface ships lack defense and resistance measures against such cheap and flexible small targets. The construction of future surface ships should fully consider the impact of these weapons and establish a more complete, economical, and efficient defense and resistance system. This can be done in the following ways: upgrading the existing shipborne active jamming system to use electromagnetic interference to affect the control signal of the UAV, causing it to lose control and lose its combat capability; the shipborne passive jamming system can also play a miraculous role in countering UAV operations, and jamming bombs can effectively interfere with the optoelectronic, infrared and radar systems of UAVs, causing the UAVs to temporarily lose their targets and gain a certain amount of reaction time for surface ships; in addition, laser weapons are also a good choice for attacking UAVs, using high-energy lasers to destroy their components, which is economical and efficient.

The third point involves the integration of surface ships and unmanned equipment. The widespread use of new-type equipment such as drones not only threatens the safety of surface ships, but also provides new tools for their own operations. On the one hand, surface ships have strong carrying capacity and can be used as carriers and launch platforms for unmanned ships and aircraft. Their good maneuverability can greatly expand the effective range of equipment. On the other hand, unmanned ships and aircraft have low platform requirements, which makes it possible to combine manned/unmanned equipment. Their flexible and changeable combat methods also provide new options for surface ships to carry out various tasks. For example, surface ships can use unmanned ships and aircraft to form a small-scale early warning and reconnaissance system, comprehensively improving the vessel's detection capabilities for sea, air, and subsurface targets; remotely controlled unmanned suicide ships and aircraft can conduct precise strikes against light and small targets and consume the opponent's air defense forces, providing cover against anti-ship missile raids.

At present, many countries have carried out experiments on shipborne unmanned equipment. In 2003, the U.S. military tried to deploy unmanned boats on cruisers and participated in missions such as "Operation Iraqi Freedom." France and Israel have also developed shipborne unmanned boats. On July 10, 2013, the X-47B shipborne unmanned aerial vehicle successfully landed on

the US Navy's nuclear-powered aircraft carrier USS *Bush*, becoming the first stealth unmanned combat aircraft that could take off and land on an aircraft carrier. The integration of surface ships and unmanned equipment is not only a trend in future construction and development, but will also open a new chapter in their use in maritime operations.

Fourth, the use of mobile warfare is emphasized. While the ocean limits the concealment of surface ships, it also gives them the ability to maneuver in a wide area, which is also a huge advantage of surface ships over land-based platforms. The wide-area maneuverability, combined with the current powerful early warning and detection system, makes maritime operations more precise and efficient. Whether in the Red Sea crisis or the Russian-Ukrainian conflict, the reason why the security of surface ships is difficult to guarantee is that they have not been able to give full play to their maneuverability. The Russian cruiser *Moscow* was sunk near the port of Odessa, and the U.S. ships were attacked many times in the Red Sea. These cases are because the activities of surface ships are restricted to a limited sea area and are always under the threat of enemy anti-ship weapons. Surface ships must use wide-area maneuvers to keep themselves in the position of the attacker and avoid falling into the position of the defender, so as to achieve the effect of "first being invincible and then waiting for the chance to defeat the enemy."<sup>3</sup>

This method is also applicable to blockade operations. In previous blockade operations, surface ships were usually deployed in the waters around the blockade targets to intercept passing ships. However, the practice in the Red Sea crisis tells us that even the weaker party can effectively strike maritime targets within a certain range with limited weapons and equipment. Therefore, in future blockade operations, the use trend of surface ships should be a combination of long-range maneuvers and precise early warning. On the one hand, it is necessary to fully consider the threats that may be faced in the deployment sea area, and on the other hand, it is necessary to give full play to the maneuverability of surface ships to seize the initiative on the battlefield.

<sup>&</sup>lt;sup>3</sup> Translator's note: This quote comes from Sunzi's Art of War (Chapter 4)