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Small Vessel Platforms Integrated into Large Joint Operations System

Breaking through information barriers and linking up command. A certain base in the Eastern Theater Command Navy breaks through a difficult warfighting bottleneck.[1]

By Zhai Shichen, Geng Haipeng, and imbedded East China Sea reporter Xu Wei

The sea surface was shrouded in fog. Dark currents flowed under the water.

"Sonar contact, Captain! Bearing XX, Range XX!" Not long ago, these words resounded in an area of the East China Sea. A navy base in the Eastern Theater Command had organized a realistic mine hunting and minesweeping exercise, simulating wartime. The [Type 81A minesweeper] *Renhuai* quickly maneuvered, racing to its operational station.[2]

"Clear the mines and open a route to the shore!"[3] Jiang Xiaomeng, the communications mission area expert of a certain minesweeper squadron (*dadui*), scrutinized the screen of his command terminal monitor, closely tracking the flow of incoming information. Streams of operational information about what was happening at sea passed via an easily portable command and control system to his shore-based command post.

It was the first time this base had used this command and control system to directly command small vessel platforms. It was a happy development. [They had] broken through the tough problems associated with establishing the terminal phase of operational communications links.

"This development may seem like a small breakthrough, linking up to a higher echelon of command. But from the perspective of building a joint operations command system, it's a big

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[1] 翟士臣 [Zhai Shichen], 耿海鹏 [Geng Haipeng], and 徐巍 [Xu Wei], 打破信息壁垒, 贯通指挥链路。东部战区海军某基地紧盯打仗破解瓶颈难题 – 小型舰艇平台融入联合作战大体系 ["Small Vessel Platforms Integrated into Large Joint Operations System—Breaking through information barriers and linking up command. A certain base in the Eastern Theater Command Navy breaks through difficult warfighting bottleneck"], 人民海军 [*People's Navy*], 25 July 2022, p. 1.

[2] **Translator's Note:** The 仁怀 [*Renhuai*] is a Type 81A XIAOYI Class minehunter/minesweeper. It was built at the Wuchang Shipyard in Wuhan and launched in 2017. It has a displacement of 1,200 tons and a maximum speed of 16 knots. It reportedly carries underwater mine hunting drones (USVs). See "WUCHUAN minehunters/minesweepers (project 081, 2007), XIAOYI minehunters/minesweepers (project 081A, 2012-2014)," *Navypedia*, undated, at https://www.navypedia.org/ships/china/ch_ms_wuchuan.htm.

[3] **Translator's Note:** Based on the text, the exercise was likely simulating a Taiwan amphibious assault scenario, during which PLA Navy minesweepers would be tasked with clearing routes into the invasion beaches for PLA Army amphibious combined arms brigades.

issue." This base's leader told reporters that, this year, they brought together technical experts from associated research institutes to focus on validating the communications links allowing small vessel platforms to be commanded from shore. By installing easily portable command and control systems, they had overcome over ten difficult technical problems, including building communications system links, reporting targets to a higher echelon, exchanging written electronic messages, and sharing positioning and status data. They had also effectively improved the commander's ability to judge the situation and make accurate command decisions.

The reporters walked into the base's operational command center. Monitor screens displayed real-time information on water and weather conditions, force deployments, front line surveillance videos, and other content. The battlefield situation was clear at a glance. At sea, the *Renhuai* sent in information from the exercise zone, which immediately appeared at the commander's decision consultation station. Previously, the screen showing shared data on the situation at sea had not included details on small vessel platforms like the *Renhuai*.

"After finding the crux of a problem, one must hurry to fill-in shortfalls." The leader of the base's staff department explained that to win a future war at sea, [the PLA] will depend on joint operations and achieve victory through systems. Under no circumstances, can [we] be brought down by the weakest "link."

However, being "the very first person to do something new" is no easy thing. When receiving and sending targeting information in port and along shore, everything worked normally, and transmission speeds match the designed standards. But after vessels actually pulled out to sea, "link breaks" "packet loss" "garbled text" and other problems piled up.

At that time, the frontline inspection teams truly realized that only with a real knife and real gun can theories be put to the test. Only in that way could it be clear whether or not in wartime [the C2 system] can "make a stable connection" "be fully integrated" and "be seamlessly connected." So, they conducted multiple rounds of testing in port and along the shore, improving on their work again and again, building up a foundation of multiple joint successes. Then they pulled out to the training range at sea to test how the command system actually performed, and how effective it was after being installed. They looked for specific issues and collected first-hand data.

"Real gold needs to be smelted with fire!" A certain minesweeping squadron leader told reporters that through sea tests they identified 14 problem areas, including allocating communications resources, sending and receiving on target status, and exchanging written electronic commands.

After months of continuous investigation, a special report was prepared with data analysis, research on associated problems, and recommendations for making progress, which made it to the base's research meeting on major operational problems.

Resource increases and cuts, data linkages, platform compatibility, at sea testing … reporters saw from a mission progress list that the tasks associated with getting the portable command and control system aboard vessels had all been assigned to responsible departments, with the division

of labor clearly assigned to specific individuals, ensuring that each component would closely coordinate and lean in together.

In order to solve the uneven data processing, low communications capability, and other problems that had been exposed by sea testing, they worked closely with equipment factory experts to upgrade and change hardware, develop new transmitters and receivers, and increase network redundancy. They accelerated equipment development projects and allocated them to units.

The payoff of this technological "ice breaking" was more far-reaching than this. Their project, focused on empirically and effectively developing and validating the construction of common command links between shore and small vessel platforms at sea, was entered into the base's list of operational innovations. They provided a new way of thinking about how to solve the difficult problems of not being able to see, communicate with, and transmit to small vessels at sea.

"By taking the big and difficult issues confronted when training forces and preparing for war, and using them as focus points for operational research and warfighting innovation, [we] went from being 'dragged down by problems' to 'tackling problems as we run ahead.'" Liu Shengliang, an engineer at this base who personally worked on overcoming these difficult problems, told reporters that linking up command chains, kill chains, and support chains was the best way to get the most combat power out of small vessels. It also blazed a new path forward in developing and building information systems that network weapons platforms.

By breaking through information barriers and linking up command, the power of command is unleashed. Recently, during a realistic joint minesweeping exercise, the base's commander made scientific decisions and accurate maneuvers, effectively honing the unit's joint operational capabilities.