

PLAN Acoustic Decoy and Towed Array Deployment Options

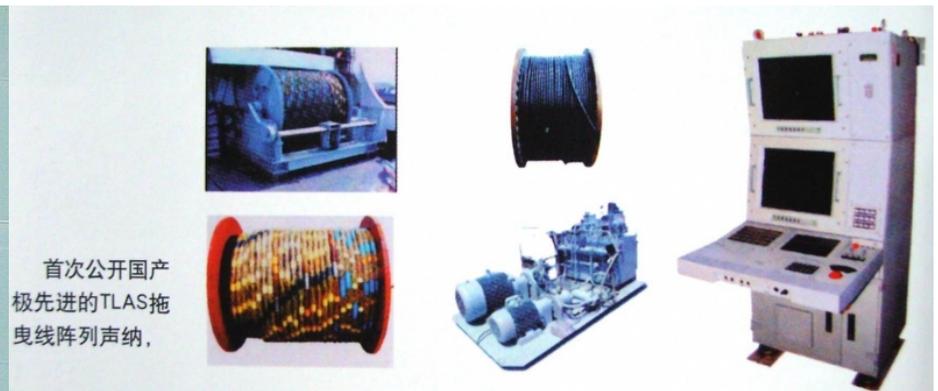


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Type 054A Stern Arrangement



The Type 054A frigate has two deployment ports for the towed array and the acoustic torpedo decoy. Chinese websites have identified the starboard opening as the one for deploying the towed array. The port opening is described as the one used by the towed torpedo decoy.



Towed Line Array Sonar (TLAS) Export Brochure

Type 054A Towed Torpedo Decoy



Photography of a Type 054A frigate with a streamed tow cable has recently been seen on Chinese websites. The accompanying discussions on the blog sites state this is evidence of a towed array.

Close up hand held photography confirm that a cable is streamed from the port opening, however, the exact system is not identified.



Type 053H2G JAINGWEI I *Huainan* (Hull 540)



Type 053H2G (JAINGWEI I) frigates 540 and 542 both have modifications to their sterns for a towed device of some kind. Internet photos have linked *Huainan* (Hull 540) as being equipped with a towed array and the deployment port is similar in configuration and location to that on the Type 054A. Unfortunately, the presence of the handling system and reel does not clarify which option is more likely as only a single cable-wrapped reel can be seen.

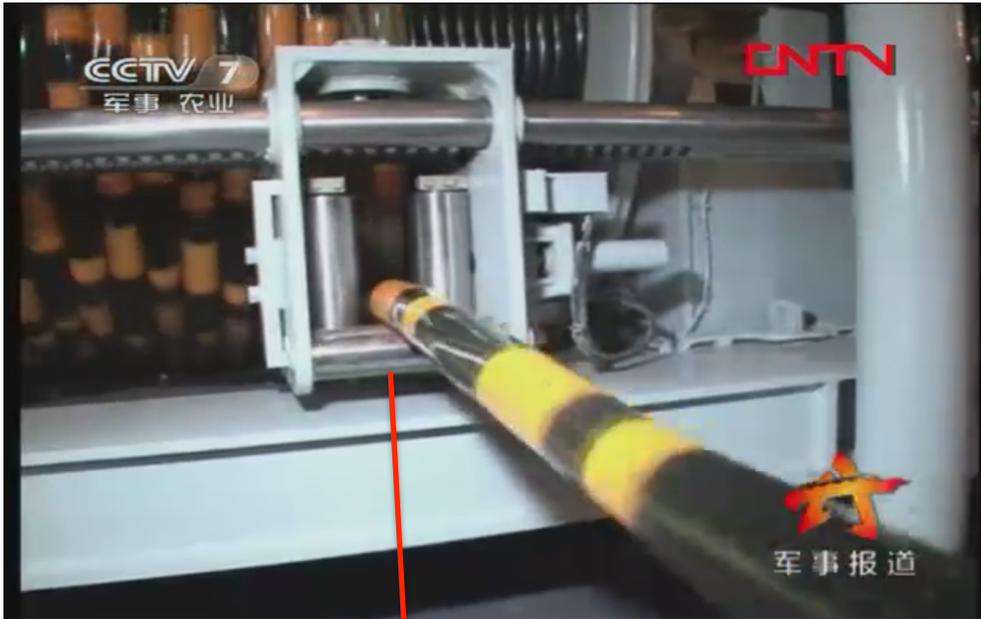
Type 054A Flight II and Type 053H2G



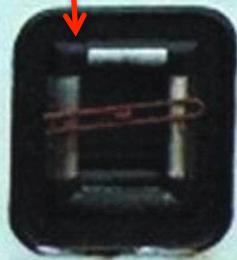
The towed array deployment port on Type 054A Flight II ships is virtually identical with the one found on the Type 053H2G JIANGWEI I frigates *Huainan* (Hull 540) and *Tongling* (Hull 542). This strengthens the argument that the ports share the same function.



Type 054A Towed Array



拖曳阵声纳

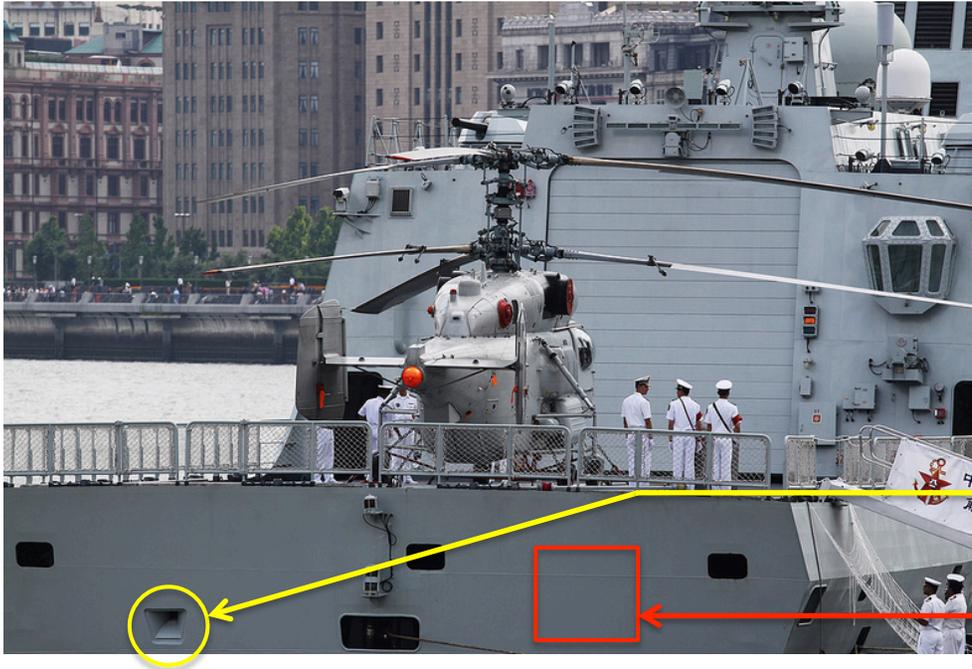


Chinese TV coverage of the Type 054A frigate *Zhoushan* (Hull 529) highlighted the deployment of a towed line array. The picture in the upper left clearly shows both reels for the towed array and cable. The cable reel is to the right of the array reel, which is consistent with the photo of *Huainan* (Hull 540). The deployment port structure is also similar in construction to the towed array reel guide.

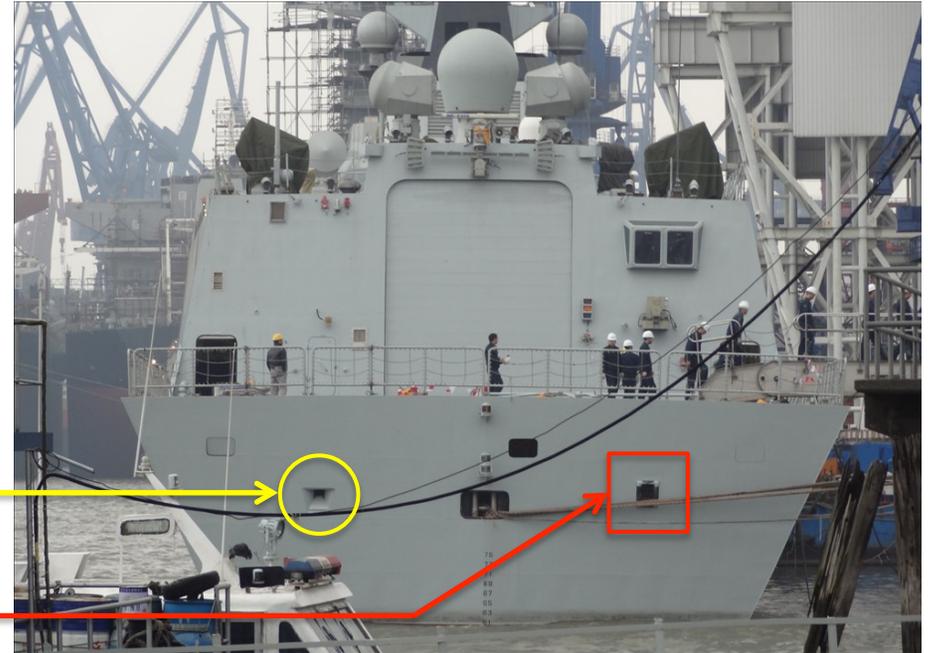
The photo in the upper right shows the array being streamed. The point of view suggests the individual is looking to his left, toward the starboard side of the ship.

Lack of Starboard Opening on Type 054

Type 054 frigate



Type 054A frigate



There is an intriguing difference between the Type 054 and the Type 054A frigates. The port opening is present on both classes, but the Type 054 *does not* have a starboard opening. Tactically, it makes more sense that both classes be fitted with a torpedo decoy system rather than a towed array.

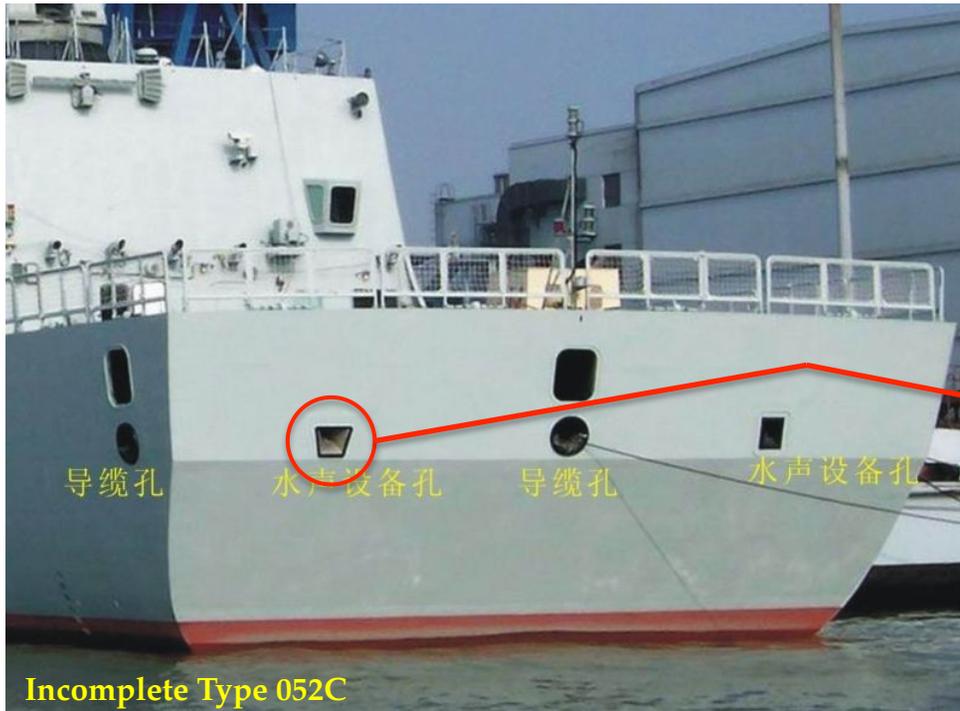
Given the photographic evidence, the assessment that the towed array is deployed from the starboard opening is the more likely option. Of equal interest is the linked conclusion that the Type 054 frigates will not be fitted with a towed array.

Differences within Type 054A Flights



Even among Type 054A frigates, there are some minor differences in the towed array and decoy ports. For the first flight frigates, the first four ships with the flared bow, the towed array and torpedo decoy ports are open, and not faired in with the transom. In the second flight, applicable to the rest of the class, the bow structure has returned to the same configuration as on the Type 054 frigates and the towed array and torpedo decoy ports are faired in with the hull. The modifications to the flight two ships suggest they were made for radar cross section and/or seaworthiness considerations.

Type 052B and 052C Destroyers



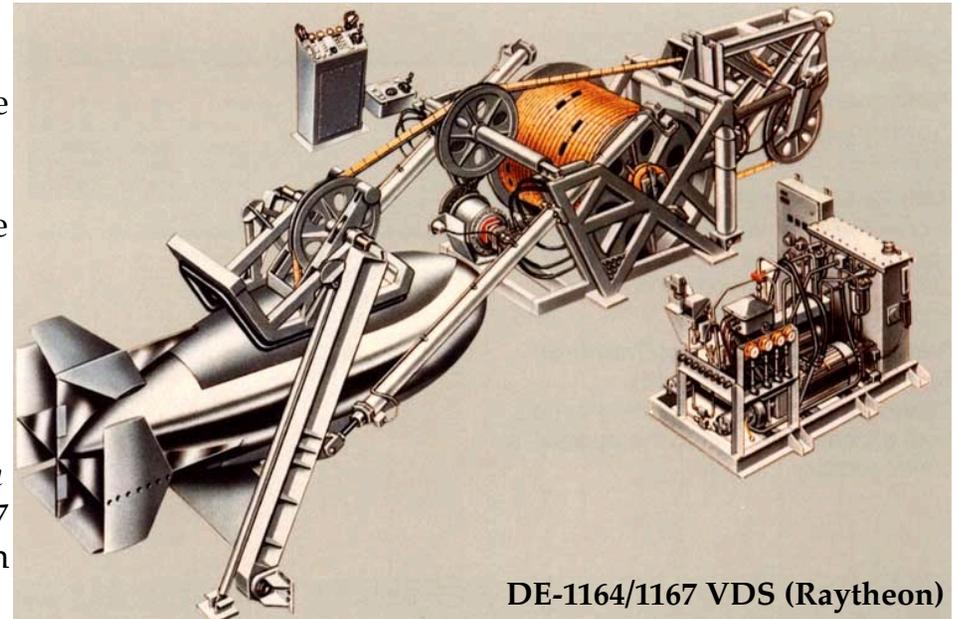
The configuration of the Type 054A Flight II frigates can also serve as an indicator for other PLAN ships. Case in point, all Type 052C destroyers have a very similar stern arrangement with a towed decoy opening to port and a towed array opening to starboard. The Type 052B destroyers only have a towed decoy opening at the center of the transom. From this it can be concluded that the Type 052B DDGs *will not* be fitted with a towed array, while the Type 052C will have one.

Type 052 Destroyers



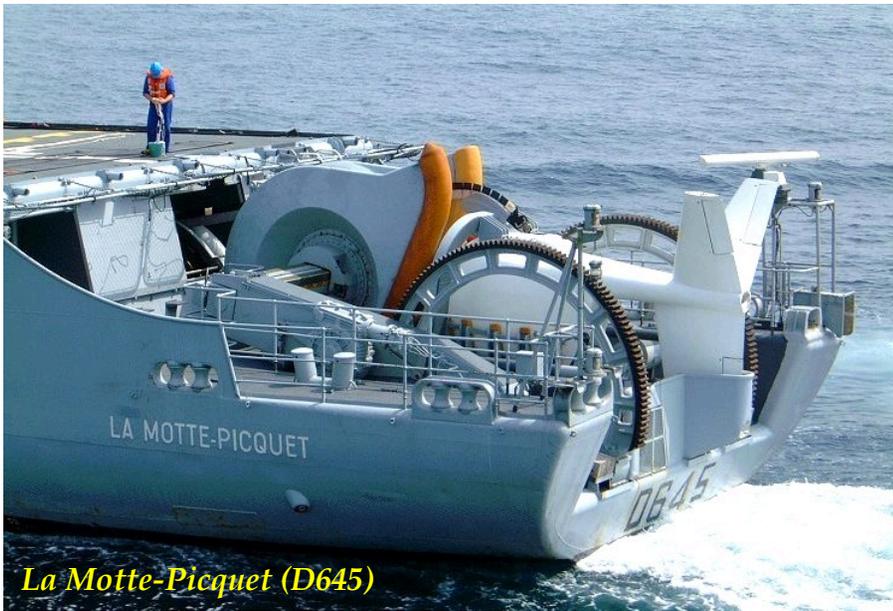
Both Type 052 Luhu class destroyers, *Harbin* (112) and *Qingdao* (113), were fitted with the U.S. designed DE-1164 integrated hull sonar and variable depth sonar (VDS), not the French DUBV-23/43 as reported in Jane's publications.

It appears that the DE-1164 was sold to the PRC as part of the late 1980s purchase from Italy of A224/S torpedoes and the B515 triple torpedo tubes. Whitehead Alenia was an authorized licensed manufacturer of the Raytheon DE-1160 series sonars for the Italian Navy. One set was installed on the Type 051 Luda class destroyer *Zhuhai* (166), launched in 1990, as a trials platform. Two other sets were fitted to *Harbin* (launched in 1991) and *Qingdao* (launched in 1993). The SJD-7 integrated sonar has been identified as an indigenous version of the DE-1164 – possibly both hull and VDS.



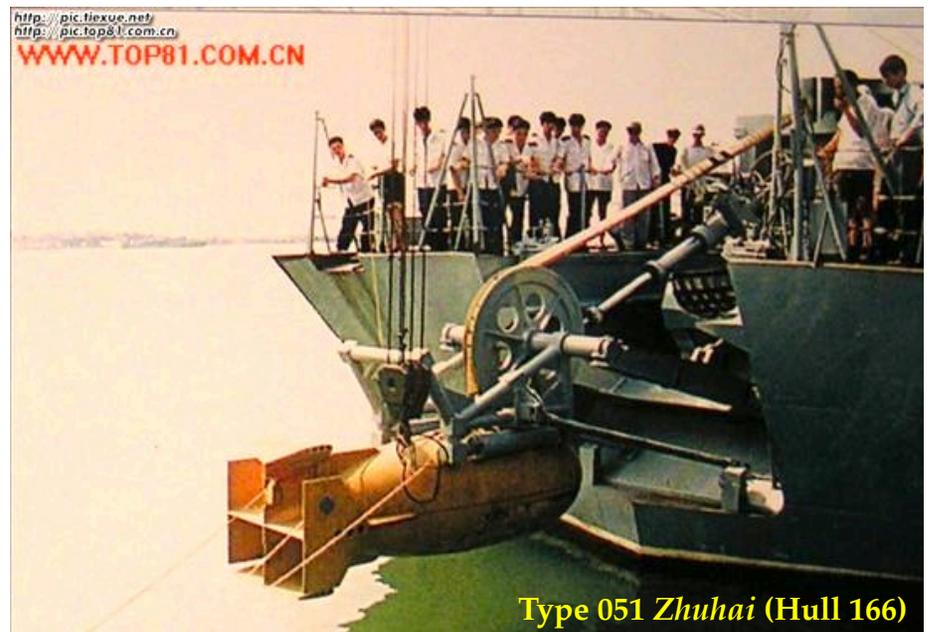
DE-1164/1167 VDS (Raytheon)

DUBV-43 versus DE-1164 VDS

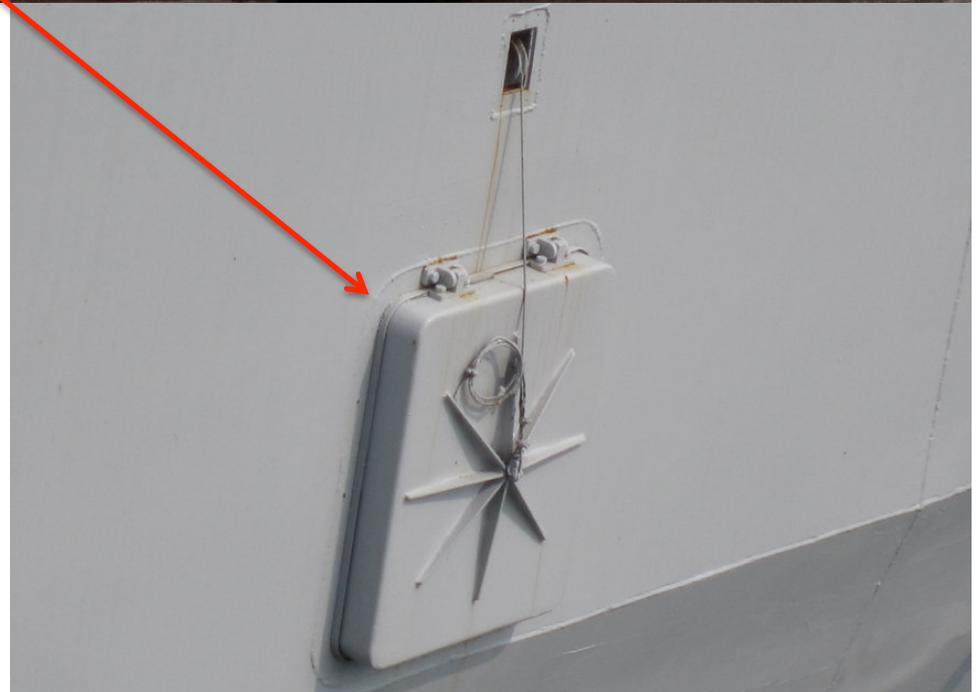


The French DUBV-43 VDS uses a large towed body and the beefy MSR 2D handling system. Together, the VDS and the handling system weigh approximately 100.8 metric tons, or 111.1 short tons. The towed body's large size is driven by the sonar array's frequency, which is centered on 5.0 kHz and is classified as a medium frequency sonar.

The DE-1164 is also a medium frequency sonar, operating at 7.5 kHz, but is considerably smaller. The towed body and the handling system weigh in at about 25.4 metric tons or 27.9 short tons. A quick visual comparison clearly shows the PLAN ships were not fitted with the much larger French system.



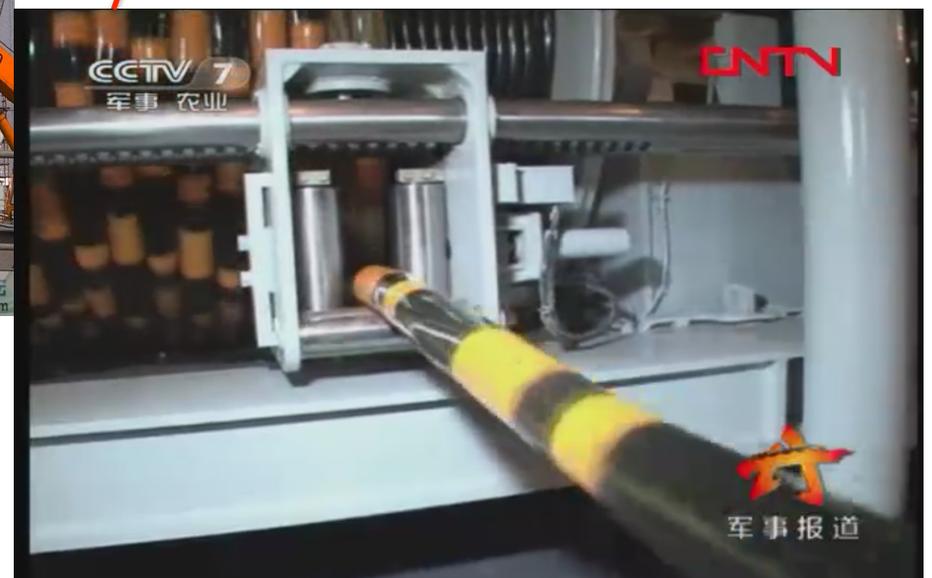
Type 052 2009-2011 Overhaul



Both *Harbin* (112) and *Qingdao* (113) underwent an extensive overhaul between 2009 and 2011, to include significant structural modifications to their stern areas.

The DE-1164 VDS towed body and handling system were removed and the open stern section was covered over. In the center of the transom, between the mooring line fairleads, is a single rectangular opening. The size and shape of the opening was consistent with ones seen on the Type 054A and 052C classes for the towed array. But the opening had a unique decorative cover plate that prevented positive identification.

Type 052 2010-2011 Overhaul



Internet photos of *Harbin's* overhaul showed two large cable reels had been lowered on to the helicopter landing deck. One reel held a towed array, whose construction was similar to the one seen on the CCTV / CNTV footage of the Type 054A. However, because only one stern opening was seen, the Type 052 destroyers do not have a towed torpedo decoy.

Type 056 Corvette



The recent launching of the Type 056 reveals that it has neither a towed array or a towed torpedo decoy. The only functional opening in the transom is a mooring line fairlead.

PLAN Towed Arrays



So far, Chinese sources have only listed two towed array systems. The first is the H/SJG-208 which is described as a “surveillance array” akin to the U.S. SURTASS. The second towed array is the H/SJG-206, often compared with the U.S. AN/SQR-19, and is typically paired with the H/SJD-9 medium frequency hull sonar. The TLAS-1 is described as the export version of the H/SJG-206 system.