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China Maritime Report No. 24: Incubators of Sea Power: Vessel Training Centers and the Modernization of the PLAN Surface Fleet

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Summary

The People's Liberation Army Navy (PLAN) is building modern surface combatants faster than any other navy in the world. Before these new ships can be deployed, however, their crews must learn how to effectively operate them across the range of missions for which they were designed. In the PLAN, this “basic training” largely occurs at specialized organizations called Vessel Training Centers (VTCs). Since their creation in 1980, VTCs have played a key role in generating combat power for the fleet. But as China's naval ambitions have grown, the VTCs have been forced to adapt. Since the early 2000s, and especially since 2012, they have faced tremendous pressure to keep pace with the rapid expansion and modernization of the PLAN surface fleet and its growing mission set, improve the standards and quality of vessel training, and uphold the integrity of training evaluations. This report argues that the PLAN's VTCs have generally risen to the challenge, ensuring that new and recently-repaired ships can quickly reach operational units in a fairly high state of readiness.

Introduction

China's first Type 055 cruiser, the *Nanchang*, was commissioned on January 21, 2020 in Qingdao, Shandong, home to the Northern Theater Command Navy.¹ Commentators naturally fixated on the physical characteristics of the new ship: her length and displacement, the numbers and dimensions of her missile cells, her dual-band radar, and her “stealthy” lines.² By these (and other) metrics, the *Nanchang* was among the most advanced warships in the world.³ But a ship, no matter how advanced, can only realize its full combat potential if it is operated by a competent crew.⁴ Development of that competence involves months—possibly years—of intensive training under the guidance of dedicated and knowledgeable instructors.

For the *Nanchang*, and hundreds of People's Liberation Army Navy (PLAN) ships preceding her, that training began immediately upon commissioning, at a specialized unit called a Vessel Training Center (VTC). These organizations serve the vital function of transforming new or recently-repaired ships into combat-ready assets. Instructors at VTCs help provide the “basic training” (基础训练) for ship crews that allows them to be certified for deployment on that platform. Training done at VTCs serves as the foundation for follow on training with other arms of the navy and the joint force. As such, PLAN experts often describe VTCs as “incubators” (孵化器) of surface fleet combat power.⁵

¹ 樊永强、李唐 [Fan Yongqiang and Li Tang], 海军 055 型驱逐舰南昌舰入列 [“Navy's Type 055 Destroyer *Nanchang* Enters Service”], 新华网 [Xinhua], January 12, 2020, http://www.xinhuanet.com/politics/2020-01/12/c_1125451631.htm.

² Franz-Stefan Gady, “China's Navy Commissions First-of-Class Type 055 Guided Missile Destroyer,” *The Diplomat*, January 13, 2020, <https://thediplomat.com/2020/01/chinas-navy-commissions-first-of-class-type-055-guided-missile-destroyer/>; KG Chan, “PLA's Destroyers a ‘Bigger Threat’ Than Carriers,” *Asia Times*, January 14, 2020, <https://asiatimes.com/2020/01/plas-destroyers-a-bigger-threat-than-carriers/>; Andrew Tate, “Chinese Navy's First Type 055-Class Destroyer Enters Service,” *Janes*, January 13, 2020, <https://www.janes.com/defence-news/news-detail/chinese-navys-first-type-055-class-destroyer-enters-service>.

³ Daniel Caldwell, Joseph Freda, and Lyle J. Goldstein, “China's Dreadnought? The PLA Navy's Type 055 Cruiser and Its Implications for the Future Maritime Security Environment,” *China Maritime Report No. 5*, China Maritime Studies Institute, February 2020, <https://digital-commons.usnwc.edu/cmsi-maritime-reports/5>.

⁴ At an event commemorating the Qing Navy's losses to a materially inferior Japanese Navy in the First Sino-Japanese War (1894-1895), one VTC staff member declared, “Even if it has the most advanced equipment, a military that cannot treat the training field like a battlefield is just a tiger without teeth and is unable to frighten a true enemy.” Another added, “No matter how good the equipment, if one cannot adroitly operate it then it is a pile of scrap metal.” 吕廷章, 侯瑞 [Lü Tingzhang and Hou Rui], 夜海讨“战”[“Discussing ‘War’ at Night on the Sea”], 人民海军 [People's Navy], May 16, 2014, p. 2.

⁵ See for example 正午国防军事 [Midday National Defense and Military Affairs], CCTV-7, April 21, 2022, <https://tv.cctv.com/2022/04/21/VIDEmFMr3n3g91PyDNiLxLNi220421.shtml?spm=C53074552346.P4BWJvVoMUKy.0.0>

Basic training conducted at VTCs is essential to PLAN preparations for high-end conflict in maritime East Asia, which is the primary focus of China’s current military strategy.⁶ The surface force, working in conjunction with PLAN aviation, submarines, and coastal defense missile batteries plus relevant units from the PLA Air Force and PLA Rocket Forces, would be expected to vie for “command of the sea” (制海权) in key operational areas within the first island chain and contest U.S. operations in waters beyond.⁷ Yet very little is known about the VTCs charged with helping them prepare to do that.⁸ This report seeks to fill this knowledge gap by providing an overview of VTCs—who they are, what they do, and how they do it—and examining some of the main factors affecting their effectiveness.

In particular, this report tracks recent efforts by the PLAN’s VTCs to evolve to meet the requirements of a rapidly expanding and modernizing surface fleet.⁹ This expansion/modernization began in the early 2000s, with the development of new classes of destroyers, frigates, and fast attack craft, but has accelerated since Xi Jinping came to power in late 2012. In the last decade, the PLAN has invested massive resources into new construction of advanced surface combatants, from stealthy corvettes intended for “near seas” operations to amphibious assault ships designed to project Chinese naval power throughout the Indo-Pacific and beyond.¹⁰ The PLAN’s embrace of surface warfare has placed huge stresses on the VTCs—to train more ship crews, to keep pace with new technologies and mission sets, and to ensure that training quality matches Beijing’s aspirations for a “world-class” navy.¹¹ This report argues that despite some enduring challenges the PLAN’s VTCs have generally succeeded in adapting to these new requirements.

⁶ “China’s Military Strategy,” Information Office of the State Council, May 2015, http://english.www.gov.cn/archive/white_paper/2015/05/27/content_281475115610833.htm; M. Taylor Fravel, *Active Defense: China’s Military Strategy since 1949* (Princeton, New Jersey: Princeton University Press, 2019), p. 232.

⁷ Ryan D. Martinson, “Counter-Intervention in Chinese Naval Strategy,” *Journal of Strategic Studies*, 44, no. 2 (2021), pp. 265-287. One 2015 article by then PLAN South Sea Fleet VTC political commissar Zhang Haiwen states that “surface warfare officers/enlisted will be the main combat force in future wars” (舰艇官兵是未来战争的主要作战力量)。张海文 [Zhang Haiwen], 铸魂，铸剑，铸形 [“Forge the Soul, Forge the Sword, and Forge the Mold”] 人民海军 [People’s Navy], March 16, 2015, p. 3. In a high-end conflict, PLAN surface combatants will likely operate as components of three main types of task forces: first, as members of surface actions groups (or “ship formations,” 舰艇编队); second, as members of aircraft carrier strike groups; and third, as members of amphibious formations.

⁸ For a brief but useful discussion of VTCs, see Dale C. Rielage, “Chinese Navy Trains and Takes Risks,” *Proceedings of the U.S. Naval Institute*, 142, no. 5 (May 2016), <https://www.usni.org/magazines/proceedings/2016/may/chinese-navy-trains-and-takes-risks>. For a pioneering monograph on PLAN training, see Kenneth Allen and Morgan Clemens, *The Recruitment, Education, and Training of PLA Navy Personnel* (Newport, RI: China Maritime Studies Institute, August 2014), <https://digital-commons.usnwc.edu/cmsi-red-books/10/>.

⁹ See Peter A. Dutton and Ryan D. Martinson, *China’s Evolving Surface Fleet* (Newport, RI: U.S. Naval War College Press, 2017), <https://digital-commons.usnwc.edu/cmsi-red-books/13/>.

¹⁰ Conor M. Kennedy and Daniel Caldwell, “The Type 075 LHD: Development, Missions, and Capabilities,” China Maritime Report No. 23, China Maritime Studies Institute, October 2022, <https://digital-commons.usnwc.edu/cmsi-maritime-reports/23/>.

¹¹ Ryan D. Martinson, “Deciphering China’s ‘World-Class’ Naval Ambitions,” *Proceedings of the U.S. Naval Institute*, 146, no. 8 (August 2020), <https://www.usni.org/magazines/proceedings/2020/august/deciphering-chinas-world-class-naval-ambitions>.

VTCs: An Overview

VTCs serve two core missions. The first is to provide “basic training”¹² to crews of newly-commissioned surface vessels and older surface vessels that have completed major repairs, upgrades, or extended maintenance and need to be prepared to return to active status.¹³ Most classes of PLAN surface ships receive basic training at VTCs. This ranges from fast attack craft to hospital ships, corvettes to cruisers. VTCs are not responsible for training the crews of aircraft carriers. Ships enter VTCs as “Class 2” (二类) vessels (nondeployable) and, assuming they meet all requirements and pass all tests, depart for their operational units as deployable assets (“Class 1,” 一类).¹⁴

The VTCs second core mission is to conduct formal “evaluations” (考核) to ensure that the ship as a whole meets basic standards of readiness and that individual sailors meet the training requirements for their respective posts. These evaluations occur over the course of basic training. Basic training also culminates in a final “comprehensive training evaluation” (全训合格考核)¹⁵ that determines whether or not the ship can be certified for deployment.

The basic training conducted at VTCs is comparable to “Basic Phase” training done by the U.S. Navy’s surface force. VTCs themselves are analogues of the U.S. Navy’s Afloat Training Groups.¹⁶ Like with the U.S. Navy, basic training received at VTCs lays a tactical and technical foundation for the crews of individual ships to conduct more advanced training in conjunction with other ships (“surface action groups,” or ship “formations” in PLAN parlance), other arms of the navy (air, submarine, etc.), and the joint force.¹⁷

The PLAN possesses three VTCs, one for each of its fleets, or “Theater Command Navies” (战区海军) as they are now called. The Northern Theater Command Navy VTC is located in Qingdao, Shandong;¹⁸ the Eastern Theater Command Navy VTC has facilities in Shanghai and Zhoushan,

¹² According to the PLA’s *Dictionary of Military Terms*, “basic training” (基础训练) is conducted by both individuals and units in order to “master basic military knowledge and basic skills.” It is the “precondition for applied training.” see 中国人民解放军军语 [*Dictionary of Military Terms*] (Beijing: Academy of Military Science Press, September 2011), p. 306.

¹³ 张永义 [Zhang Yongyi], ed., 海军军事训练学 [*Science of Navy Military Training*], (Beijing: Military Science Press, 2006), p. 209.

¹⁴ 吴海超, 曹卫民, 曹学军 [Wu Haichao, Cao Weimin, and Cao Xuejun], 沐浴在阳光中的航迹 [“A Track Bathed in Sunlight”], 人民海军 [*People’s Navy*], August 3, 2010, p. 1; 高毅, 徐广, 王乐 [Gao Yi, Xu Guang, and Wang Le], 多少惊涛骇浪, 才成就了这艘明星战舰 [“How Many Stormy Seas Has it Taken to Become This Famous Warship”], 中国青年报 [*China Youth Daily*], May 22, 2015, p. 9, http://zqb.cyol.com/html/2015-05/22/nw.D110000zqgnb_20150522_1-09.htm.

¹⁵ 全训 is likely an abbreviation for 全科目训练, literally “all-subject training.” See 刘亚迅, 孙宏杰 [Liu Yaxun and Sun Hongjie], 练强胜仗本领 磨砺胆气血性 [“Train the Ability to Win, Sharpen Boldness and Courage”], 人民海军 [*People’s Navy*], January 19, 2018, p. 1.

¹⁶ For an outline of Basic Phase training and a description of the responsibilities of the Afloat Training Groups, see *Surface Force Training and Readiness Manual*, U.S. Department of the Navy, November 1, 2018, pp. 2-4-2-6, 4-13-4-19.

¹⁷ 刘兵, 魏闻晓 [Liu Bing and Wei Wenxiao], 向着打赢的目标, 不停地远航——“长春”号驱逐舰舰长胡杰专访 [“Aiming for the Goal of Being Able to Prevail in Combat, Continuously Sailing—An Interview with the CO of the Destroyer *Changchun*”], 舰船知识 [*Naval & Merchant Ships*], no. 6 (June 2019), pp. 26-27. Basic training is the “precondition” (前提) for combined arms training. See 王庆厚, 张森, 张庆宝, 马宁 [Wang Qinghou, Zhang Sen, Zhang Qingbo, and Ma Ning], 基础训练, 务实能打胜仗根基 [“Basic Training, Foundation for Pragmatically Prevailing in Battle”], 人民海军 [*People’s Navy*], November 20, 2020, p. 1.

¹⁸ The Military Unit Cover Designator (MUCD) for this VTC is 92771. See *2021 Directory of Military Personalities* (Washington, D.C.: United States Department of Defense, Defense Intelligence Agency, March 2021). Confirmation of Qingdao as the location of the VTC comes from 唐晨, 孙秀文, 王旅 [Tang Chen, Sun Xiuwen, and Wang Lü], 反潜巡

Zhejiang;¹⁹ and the Southern Theater Command Navy VTC is located in Zhanjiang, Guangdong.²⁰ The VTCs provide training and evaluation for all eligible ships and personnel in the fleets to which they belong.

Ships are “stationed” (驻训) at VTCs for the duration of basic training.²¹ This allows the crew to focus entirely on the task at hand and use the dedicated training equipment and facilities available at the VTC. There is no explicit timeline within which basic training must be completed, but in practice it typically takes 6-12 months for a newly-commissioned ship to pass the comprehensive training evaluation. This differs from the U.S. Navy’s basic phase training, which is intended to last precisely 24 weeks (5.5 months).²²

While each VTC has some latitude to decide how it fulfills its training and evaluation missions, all must strictly adhere to a set of “Outlines on Military Training and Evaluation” (军事训练与考核大纲, OMTE).²³ The PLA issues a general, military-wide OMTE containing key principles that inform the development of a narrower set of OMTEs for each service.

逻辑对潜应召搜索声呐浮标布放阵位优化问题研究 [“Research on Optimization Position of Sonobuoy in Anti-Submarine Call-Search by Anti-Submarine Patrol Aircraft”], 舰船电子工程 [*Ship Electronic Engineering*], 42, no. 2 (2022), p. 62.

¹⁹ 视频点对点, 交流面对面 [“Video Teleconference Point-to-Point, Exchange Face-to-Face”], 人民海军 [*People’s Navy*], December 19, 2016, p. 2. The MUCD for this VTC is 92246. See 汪少铭, 廖继阳, 贾小权, 董瑞, 刘峰 [Wang Shaoming, Liao Jiyang, Jia Xiaoquan, Dong Rui, and Liu Fen], 一种共享动态缓冲的 MPNoC 路由器设计 [“Design of a Sharing Dynamic Buffer Router for Multiprocessor System-on-Chip”], 船电技术 [*Ship Electric and Electronic Engineering*], 36, no. 12 (December 2016), p. 49; 王强, 汪少铭, 刘永葆, 贾小权, 赵雄飞, 董瑞 [Wang Qiang, Wang Shaoming, Liu Yongbao, Jia Xiaoquan, Zhao Xiongfei, and Dong Rui], 阻尼对三自由度弹性碰撞系统周期运动倍化分岔的影响研究 [“Period-Doubling Bifurcation of Three-Degree-of-Freedom Elastic Collision System Under Different Damping Coefficients”], 武汉理工大学学报 (交通科学与工程版) [*Journal of Wuhan University of Technology (Transportation Science and Engineering)*], 39, no. 6 (December 2015), p. 1249.

²⁰ The MUCD for this VTC is 91889. See 张俊, 胡生亮, 杨庆, 范学满, 贺静波 [Zhang Jun, Hu Shengliang, Yang Qing, Fan Xueman, and He Jingbo] 基于 RCS 幅值特性相似度的浮空式角反射体布放态势寻优 [“Optimization of Position Situation of Air-Floating Corner Reflectors Based on Similarity of RCS Amplitude Characteristic”] 海军工程大学学报 [*Journal of Naval University of Engineering*], 31, no. 2 (April 2019), p. 32; 张俊, 胡生亮, 杨庆, 范学满, 王聘 [Zhang Jun, Hu Shengliang, Yang Qing, Fan Xueman, and Wang Pin], 异型角反射体阵列寻优研究 [“On Optimization of Heterotypic Corner Reflector Arrays”], 海军工程大学学报 [*Journal of Naval University of Engineering*], 31, no. 6 (December 2019), p. 47.

²¹ The term 驻训 literally means “stationed for training.” For an example of its use, see 朱敏煜, 吴政 [Zhu Minyu and Wu Zheng], 用问题推进训练 以作战牵引考核 [“Use Questions to Advance Training and Combat Operations to Drive Evaluations”], 人民海军 [*People’s Navy*], November 11, 2020, p. 1.

²² *Surface Force Training and Readiness Manual*, p. 4-16

²³ Officially, the PLA translates the term 军事训练与考核大纲 as “military training and evaluation program.” It is defined as follows: “The legal document regulating the content, timing, conditions, standards, and evaluations for military training. It is the foundational basis for the organization and implementation of military training.” See *Dictionary of Military Terms*, p. 301. On the importance of strict adherence to the OMTE, see 张海文 [Zhang Haiwen], 为新型舰艇强筋壮骨 [“Strengthen the Muscles and Bones of New-Type Warships”], 人民海军 [*People’s Navy*], January 11, 2016, p. 3. At the time this article was written, Zhang was the Political Commissar of the South Sea Fleet VTC. In recent years the PLAN has highlighted a problem with some units (not necessarily VTCs) failing to fully adhere to the relevant OMTE, as required. See, for instance, 基础训练一定要按纲施训 [“Basic Training Must Conduct Training According to the Outline”], 人民海军 [*People’s Navy*], November 20, 2020, p. 1.

To date, the PLA has issued three military-wide OMTEs. The first was issued in 2001, going into effect on January 1, 2002.²⁴ Among other aims, the 2002 OMTE sought to ensure that training evaluations were true assessments of capabilities instead of “theatrical performance.”²⁵ The 2009 update sought to increase the quantity of combined arms training, focus more on operations in complex electromagnetic environments, augment use of simulators, expand training for non-war military operations, increase “confrontation” (i.e., blue/red) training, and raise standards for basic training.²⁶ These new requirements directly impacted the policies and approaches of the VTCs. Very little is known about the 2018 OMTE, as the PLA did not allow any media commentary about its contents.²⁷ Four years later, key themes contained within it remain largely unknown.

Each military-wide OMTE begets a separate set of service-specific OMTEs.²⁸ These documents, in turn, inform the development of OMTEs for different service arms, and in the case of the PLAN surface force, OMTEs for each ship class.²⁹ VTC instructors adhere to existing OMTEs for ships they are training, and they also help develop OMTEs for new classes of ships.³⁰

VTCs are led by a Director, with the rank of Senior Captain (grade: Division Leader), and a Political Commissar of the same rank.³¹ Key staff positions include “trainer captains” (教练舰长), trainers (教练员), and mission area experts (业务长).³² Holding the rank of captain or senior captain, trainer

²⁴ The PLA has had “training outlines” (训练大纲) since 1957, but it was not until 2001 that it issued its first outline on military training *and* evaluation. See 构建信息化条件下军事训练新体系——解读新一代《军事训练与考核大纲》 [“Building a New System for Military Training under Informatized Conditions—Interpreting the New Generation ‘Outline on Military Training and Evaluation’ for the New Era”], 解放军报 [PLA Daily], August 1, 2008, p. 3.

²⁵ For more on the 2002 and 2009 OMTEs, see Dennis J. Blasko, *The Chinese Army Today: Tradition and Transformation for the 21st Century*, Second Edition (New York, NY: Routledge, 2012), p. 176. 董文久, 苏若舟 [Dong Wenjiu and Su Ruozhou], 新的军事训练与考核大纲颁发 [“The New OMTE is Issued”], 解放军报 [PLA Daily], August 10, 2001.

²⁶ “Building a New System for Military Training under Informatized Conditions,” p. 3.

²⁷ See Ken Allen, “PLA Terms and Concepts: Training, Exercises, & Education,” China Aerospace Studies Institute, undated, https://www.airuniversity.af.edu/LinkClick.aspx?fileticket=fPXsLbsP_Ik%3D&portalid=10.

²⁸ The updated PLAN OMTE (新一代《海军军事训练与考核大纲》) went into effect in January 2010, one year after the PLA-wide OMTE. See 秦若云, 鹿新国, 吕海华 [Qin Ruoyun, Tuo Xinguo, and Lü Haihua], 院校教学, 如何与新大纲对接? [“How do PME Institutions Get On Board with the New OMTE?”], 人民海军 [People’s Navy], March 16, 2010, p. 3.

²⁹ For example, open source Chinese materials refer to the OMTE for the Type 022 fast attack craft as the “OMTE for a Certain Missile Boat” (《某型导弹艇军事训练与考核大纲》). See 首艇就要首创 [“The First Boat of the Class Must be a Pioneer”], 人民海军 [People’s Navy], October 9, 2012, p. 3.

³⁰ 王素炎, 侯瑞 [Wang Suyan and Hou Rui], 轻舟疾驰, 战力实现“连级跳” [“Light Boat Gallops, Combat Power Achieves a ‘Continuous Jump’”], 人民海军 [People’s Navy], November 20, 2013, p. 1. The three VTCs also helped the China Coast Guard develop its OMTE for its cutters (《海警舰艇训练与考核》). See 李茂生 [Li Maosheng], 新编《海警舰船训练与考核大纲》试行效果浅析 [“Analysis of the Effects Based on Trial Effects of the Newly Developed ‘China Coast Guard Ship OMTE’”], 公安海警学院学报 [Journal of the China Coast Guard Academy], 16, no. 1 (February 2017), p. 30.

³¹ Former PLAN Commander Shen Jinlong served as the Director of the North Sea Fleet VTC in the early 2000s. See Andrew Erickson and Kenneth Allen, “China’s Navy Gets a New Helmsman (Part 1): Spotlight on Vice Admiral Shen Jinlong,” *China Brief*, 17, no. 3 (March 2, 2017), <https://jamestown.org/program/chinas-navy-gets-new-helmsman-part-1-spotlight-vice-admiral-shen-jinlong/>

³² According to the PLA’s *Dictionary of Military Terms*, the official translation of 业务长 (yewuzhang) is “professional chief.” The position is defined as “the officer within the headquarters at different levels within the navy specifically responsible for specialized technical work such as navigation, guns/cannons, missiles, underwater weapons, communications, radar and sonar, mechanical and electrical, nuclear propulsion, chemical defense, rigging, etc. This

captains lead teams of trainers and serve as senior evaluators and supervisors (discussed below). All trainer captains are experienced ship commanding officers (COs).³³ The mission area expert, a position unique to the navy, is an officer with deep expertise in a particular subject, such as navigation, guns/cannons, underwater weapons, communications, radar and sonar, and mechanical/electrical.³⁴ They train sailors in the areas of their expertise.

The Origins of Vessel Training Centers

For the PLAN's first three decades, there existed no organizations dedicated to basic training for ships. Instead, crews of newly-commissioned or recently-repaired vessels received training at the operational units to which they belonged. This resulted in inefficiencies and impeded operational units from focusing on more advanced formation and combined arms training.³⁵ Moreover, there existed no common training standards or practices across the fleet. In the words of one PLAN officer, "each unit was a temple, with each monk preaching his own set of scriptures."³⁶ Some ships went years without completing basic training, and many COs did not possess required qualifications to command their ships. Inspired by the practice of foreign navies,³⁷ in January 1980 the PLAN decided to solve these problems by creating dedicated training organizations—Vessel Training Centers. They were charged with providing basic training for both PLAN surface ships and submarines.³⁸

officer is the assistant to the chief of staff for each type of specialized technical work." *PLA Dictionary of Military Terms*, pp. 887-888.

³³ 任艺 [Ren Yi], 新舰“开刃”显锋芒 [“The New Ship ‘Opens its Blade’ to Show How Sharp It Is”], 人民海军 [People's Navy], October 18, 2017, p. 3. For example, Eastern Theater Command Navy VTC trainer captain Yan Hualiang (阎华亮) was transferred (调入) to the VTC in 2016. Before that, he was the CO of the Type 054A frigate *Huanggang*. The Northern Theater Command Navy VTC trainer captain Zhang Mingshuai (张铭帅) was the CO of the Type 056 corvette *Huizhou*. See Ren Yi, “The New Ship ‘Opens its Blade’ to Show How Sharp It Is,” p. 3; 闻令而动！全军各部队热血开训 [“Act on Orders! Troops from All Around the Military Start Training”], 中央广播电视总台央视新闻官方账号 [CCTV WeChat Account], January 6, 2021, <https://baijiahao.baidu.com/s?id=1688050891422544291&wfr=spider&for=pc>; 严德勇, 周汉青, 倪阳 [Yan Deyong, Zhou Hanqing, and Ni Yang], “香江第一舰”的和平守望——驻香港部队某舰艇大队惠州舰履行使命纪实 [“The Peace Watch of the ‘First Xiangjiang Ship’: A Chronicle of the Mission Performance of the *Huizhou*, a Vessel Based at a Ship Unit in Hong Kong”], 解放军报 [PLA Daily], July 19, 2017.

³⁴ Not all mission area experts at VTCs come from the surface force. Underwater weapons expert Ai Dong, for instance, spent years in the PLAN submarine service before coming to the East Sea Fleet VTC. See 王超, 葛正炎 [Wang Chao and Ge Zhengyan], 为战舰能战“引路” [“‘Leading the Way’ for Warships to Be Able to Fight”], 人民海军 [People's Navy], March 1, 2021, p. 1.

³⁵ 江汝标, 邓海明 [Jiang Rubiao and Deng Haiming], 海军各舰队设立舰艇训练中心 [“Each of the Navy's Fleets Establishes a Vessel Training Center”], 解放军报 [PLA Daily], August 6, 1988. In 1980, the PLAN surface force conducted three levels of training: basic, “ship-type” (舰种, i.e., ships of the same type), and combined arms (合成). Since basic training was so poor, PLAN ships rarely did ship-type training and never did combined arms training. The main goal of creating VTCs, then, was to provide conditions for more advanced combined arms training. See 陆石生, 孙新华, 黄代培 [Lu Shisheng, Sun Xinhua, and Huang Daipei] 从“原地踏步走”到“一步一层楼” [“From ‘Walking in Place’ to ‘One Step at a Time’”] 解放军报 [PLA Daily], April 4, 1980.

³⁶ See 李湘东, 施昌学 [Li Xiangdong and Shi Changxue], 舰艇基础训练成绩全部优良 [“Vessel Basic Training Results All Excellent”] 解放军报 [PLA Daily], May 4, 1992.

³⁷ 俞林森, 黄代培 [Yu Linsen and Huang Daipei], 南海舰队成立舰艇训练中心 [“South Sea Fleet Establishes a Vessel Training Center”], 解放军报 [PLA Daily], February 18, 1980; 许森 [Xu Sen], 构建现代海战场 [“Constructing the Modern Ocean Battlespace”], 解放军报 [PLA Daily], September 15, 1999.

³⁸ 乔平、何春喜 [Qiao Ping and He Chunxi], 南海舰队舰艇训练中心越办越好 [“The South Sea Fleet Vessel Training Center is Getting Better and Better”], 解放军报 [PLA Daily], May 17, 1982.

The first VTCs were experimental entities without a formal organizational status.³⁹ This meant their budgets and staffing were uncertain, their facilities makeshift. Yet by all accounts the experiment worked, and VTCs provided much-needed training for the three fleets. In 1981, PLAN leadership reportedly planned to give VTCs formal organizational status within the service, which would give them more authority and funding.⁴⁰

By mid-1983, however, the PLAN's pilot VTCs had been abandoned. One account blames their demise on the departure of South Sea Fleet Commander, Fu Jize (傅继泽), original champion of the VTCs. His successor purportedly “lacked the enthusiasm” to carry on with Fu's reforms.⁴¹ But this claim is unconvincing: Fu stepped down from his post in 1981 or 1982 (becoming Deputy Commander of the PLAN), and, more importantly, Fu's departure cannot explain the fate of VTCs in the other two fleets.⁴² The dissolution of the VTCs was clearly a senior level decision. At the very least, ADM Liu Huaqing, who assumed command of the PLAN in 1982, was complicit in their demise, a fact that surely undermines his legacy as champion of professionalization in the PLAN.⁴³

The VTCs, however, were not gone for long. Inadequate training was blamed for a May 1984 submarine mishap, and the VTC concept was resurrected in the wake of a service-wide conference held one month later to address the problem.⁴⁴ By 1986, VTCs had been re-constituted as “pilot” (试点) programs in each of the three fleets. The results were so positive that in 1988 the Central Military Commission formally established them as organizational entities within the PLAN.⁴⁵

The re-establishment of VTCs was well-timed. Beijing had decided to expand its activities in the southern part of the South China Sea and the navy was tasked to lead the charge.⁴⁶ Over the course of several expeditions to the Spratly Islands, PLAN vessels managed to avoid collisions, groundings, or other major accidents—despite operating in dangerous (and, to them, largely unknown) waters. More importantly, the surface force prevailed in a violent clash with Vietnamese naval forces at Johnson

³⁹ 俞林森 [Yu Linsen], 扩大施训范围 舰种增加一倍 [“Expand the Scope of Training, With Number of Ship Types Doubling”], 解放军报 [PLA Daily], January 30, 1981.

⁴⁰ 张柱坤, 张鸣, 黄国平 [Zhang Zhukun, Zhang Ming, and Huang Guoping] 且看八十年代第二春 [“And Look at the Second Spring of the 1980s”], 解放军报 [PLA Daily], January 3, 1981.

⁴¹ 司彦文 [Si Yanwen], 南海舰队训练中心的起落对改革的启示 [“Lessons on Reform from the Rise and Fall of the South Sea Fleet Training Center”], 解放军报 [PLA Daily], August 19, 1988.

⁴² See 缅甸驻华武官举行招待会庆祝武装力量日 [“The Myanmar Military Attached to China Holds Reception to Celebrate Armed Forces Day”], 解放军报 [PLA Daily], March 29, 1982.

⁴³ Admiral Liu did indeed emphasize the importance of basic training, but apparently not until much later in his tenure. In an October 1986 article in a PLAN magazine, Liu highlighted how advanced navies (装备技术先进国家的海军) had specialized units that provided basic training for ships before they joined operational units. He then mentioned how “some [PLAN] fleets” (有的舰队) already had “pilot” (试点) VTCs, but there were problems impacting their effectiveness, such as lacking a formal organizational status (编制问题). At this point, he was openly advocating for VTCs, three years after he had allowed their demise. See 刘华清 [Liu Huaqing], 刘华清军事文选 (上卷) [Military Writings of Liu Huaqing (vol. 1)] (Beijing: PLA Press, 2008) pp. 442-445, 501-502.

⁴⁴ The conference was held in June 1984. In his memoirs, ADM Liu suggests that by 1986 he had come to recognize that the pilot VTCs were “shortening training cycles” (缩短了训练周期) for basic training and improving training quality. 刘华清 [Liu Huaqing], 刘华清回忆录 [Liu Huaqing Memoirs] (Beijing: PLA Press, 2004), pp. 485-486, 489.

⁴⁵ Jiang and Deng, “Each of the Navy's Fleets Establishes a Vessel Training Center.”

⁴⁶ John W. Garver, “China's Push through the South China Sea: The Interaction of Bureaucratic and National Interests,” *China Quarterly*, 132 (December 1992), pp. 999-1028.

South Reef in March 1988, resulting in China's seizure of the feature. PLAN accounts largely attribute these successes to solid basic training by the South Sea Fleet's VTC.⁴⁷

Training: Getting the Ship Ready to Fight

Training at VTCs begins immediately after a ship is commissioned or completes major repairs. The ship relocates to VTC facilities and the crew prepare for full-time training. Staff members at the VTC do a preliminary assessment of training levels aboard the ship and then draft a training plan, similar to the U.S. Navy's Afloat Training Groups.⁴⁸

Training at VTCs occurs at three different levels. First, individual crew members must be trained to handle the post (or watch station) to which they are assigned. This means starting with mastery of basic skills—and, in the case of experienced sailors, unlearning bad habits.⁴⁹ Second, watch teams must be trained to work effectively as a cohesive unit. Finally, the ship as a whole must be trained to perform the range of tactical functions for which it was designed.

The OMTE for the respective ship class outlines the training “subjects” (科目 or 课目) that must be covered during basic training. Examples of training subjects include man overboard recovery, damage control, use of small arms, underway replenishment, anti-submarine warfare (ASW), air and missile defense, casualty treatment, and beach assault. In recent years the PLAN has expanded its training subjects to meet the new requirements of the force. As discussed above, non-war military operations were highlighted in the 2009 OMTE, and emphasis on “diversifying” the PLA mission-set has likely accelerated under Xi Jinping.⁵⁰ To fulfill these new requirements, basic training now includes non-war subjects such as boarding and arrest, counterterrorism/counterpiracy, and “tracking and monitoring” foreign warships.⁵¹

VTC staff members train ship crews both ashore (港岸训练) and at sea (海上训练). Ashore training involves heavy use of simulation equipment.⁵² The shift to a simulator-heavy training approach began in the early 2000s, when VTCs built facilities to house simulators just then being developed for the navy.⁵³ By 2002, about 40 percent of shore-based training at the North Sea Fleet VTC was

⁴⁷ 沈顺根 [Shen Shungen], 海军全训合格舰艇长日日增多 [“Navy's Certified Vessel COs Increasing by the Day”], 解放军报 [PLA Daily], September 26, 1989; Si Yanwen, “Lessons on Reform from the Rise and Fall of the South Sea Fleet Training Center.”

⁴⁸ Ren Yi, “The New Ship ‘Opens its Blade’ to Show How Sharp It Is,” p. 3; *Surface Force Training and Readiness Manual*, p. 2-5.

⁴⁹ All officers and enlisted stationed at the VTC “must start by studying the most basic operations of their respective posts and the operating principles of their equipment.” Experienced crew members are expected to rectify any bad habits developed while assigned to other ships. See 吕廷章, 方立华, 侯瑞 [Lü Tingzhang, Fang Weihua, and Hou Rui], 战舰从这里驶向深蓝 [“Warships Depart from Here for the Deep Blue”], 解放军报 [PLA Daily], January 12, 2015.

⁵⁰ “The Diversified Employment of China's Armed Forces,” Information Office of the State Council, April 2013, http://eng.chinamil.com.cn/view/2021-06/23/content_10053009.htm.

⁵¹ Liu and Sun, “Train the Ability to Win, Sharpen Boldness and Courage,” p. 1.; 刘亚讯, 代宗锋 [Liu Yaxun and Dai Zongfeng], 把战舰交给放心的舰长 [“Give Warships to Trustworthy Captains”], 人民海军 [People's Navy], June 24, 2016, p. 1.

⁵² Ashore training also includes a classroom learning component.

⁵³ As early as 2002, the PLAN North Sea Fleet VTC had built a facility to house a range of simulators for everything from navigation to ASW. See 徐锋, 许森 [Xu Feng and Xu Sen] 教室操舰战荧屏练战法 [“Operating a Warship in a Classroom and Practicing Tactics on a Screen”], 解放军报 [PLA Daily], April 8, 2002.

done in simulators.⁵⁴ In 2013, the PLAN called for leveraging VTC facilities to further increase the proportion of simulation training by the surface force.⁵⁵ The PLAN viewed simulators as tools to save time and resources.⁵⁶ It also learned the value of simulators from studying the practices of more advanced navies. For example, PLAN experts attributed the U.S. military's awesome precision strike capabilities demonstrated during the First Gulf War to repetitive drilling in tactical simulators.⁵⁷

Today, VTC simulators range from mockups of bridge and combat information center (CIC) watch stations to facilities for practicing damage control skills. The latter were highlighted when Russian naval forces visited Zhanjiang, Guangdong in September 2016, during which the two navies participated in damage control exercises.⁵⁸ In October 2022, the Northern Theater Command Navy unveiled a major new simulation system for training sailors on underway replenishment.⁵⁹ (See Exhibit 1 below) The simulation equipment at VTCs is likely the best in the fleet, as even PLAN personnel not currently stationed at a VTC for basic training use the facilities there to refine skills during intervals between deployments.⁶⁰

⁵⁴ 许森, 司彦文 [Xu Sen and Si Yanwen], 北海舰队模拟训练成为演兵场新景观 [“Simulation Training at the North Sea Fleet Has Become a New Feature on the Training Grounds”], 解放军报 [PLA Daily], July 10, 2002.

⁵⁵ 张汉川 [Zhang Hanchuan], 稳中求进, 积极推进军事训练转变 [“Seeking Progress While Maintaining Stability and Actively Promoting a Shift in Military Training”], 人民海军 [People's Navy], January 16, 2013, p. 3. Author Zhang Hanchuan was the Director of the South Sea Fleet Training Bureau.

⁵⁶ One PLA Daily article described simulators used for surface force basic training as “accelerators (加速器) for combat power generation.” See 张金玉, 黄敬亮, 钱晓虎 [Zhang Jinyu, Huang Jingliang, and Qiang Xiaohu], 创新训练方法提高训练效益 [“Innovate Training Methods and Improve Training Effectiveness”], 解放军报 [PLA Daily], May 30, 2006. According to one 2020 People's Navy article on the role of simulators in the service, moving training from the ship to simulators ashore “reduces training costs, shortens the training cycle, [and] increases training benefits.” 陆松雷, 沈飞 [Lu Songlei and Shen Fei], 在“虚拟战场”探寻制胜因子 [“Exploring the Winning Factors on the ‘Virtual Battlefield’”], 人民海军 [People's Navy], November 12, 2020, p. 1. As early as 1986, Liu Huaqing was calling for the PLAN to develop simulators because, in his words, they “can greatly save money and munitions and reduce equipment wear and tear.” Liu, *Military Writings of Liu Huaqing (vol. 1)*, p. 505.

⁵⁷ 刘庆平, 王尤起, 米晋国 [Liu Qingping, Wang Youqi, and Mi Jinguo] 北海舰队某舰艇训练中心训练记 [“North Sea Fleet Vessel Training Center Training Record”] 当代海军 [Navy Today], no. 3 (March 2003), p. 38.

⁵⁸ This was part of “Joint Sea-2016” (海上联合-2016). See 刘兵 [Liu Bing], 与中俄官兵亲密接触 亲历“海上联合-2016”交流篇 [“Close Contact with Chinese and Russian Officers and Enlisted, My Personal Experience with ‘Joint Sea-2016’”], 舰船知识 [Naval & Merchant Ships], no. 11 (November 2016), p. 23.

⁵⁹ VTC staff members explained that the new simulator allowed for safer, faster, and cheaper training of crew members responsible for underway replenishment. See 正式投入使用! 央视专题报道的这套训练系统究竟是啥? [“Officially in Operation! What is this Training System that CCTV-7 is Reporting On?”], 人民海军微信号 [People's Navy WeChat Account], October 24, 2022, <https://mp.weixin.qq.com/s?biz=MzI2NTc3NTY0Nw==&mid=2247716288&idx=1&sn=a9641d2c4a9505c30d3f29cb94ff466c&chksm=ea95f2b0dde27ba6647867e0172d27df007bc613c3e327e84934a4a9bcd797243483ec855a9#rd>.

⁶⁰ In the words of the skipper of the Type 054A frigate *Nantong*, Gu Jun (顾军), simulators like those available at the Eastern Theater Command Navy VTC allow officers like him to maximize training efficiency during intervals between deployments, when opportunities for at-sea training are limited. See Lu and Shen, “Exploring the Winning Factors on the ‘Virtual Battlefield,’” p. 1. During intervals between deployments, some crews will go to VTCs to use damage control simulators. See, for example, 苏坤, 王庆厚 [Su Kun and Wang Qinghou], 海洋数字化的探路者 [“Pathfinder for Ocean Digitization”], 人民海军 [People's Navy], November 21, 2011, p. 3



Exhibit 1. PLAN sailors train on an underway replenishment simulation system.⁶¹



Exhibit 2. Crew members of the destroyer *Qiqiha'er* train in a bridge simulator at the Northern Theater Command Navy VTC.⁶²

⁶¹ “Officially in Operation! What is this Training System that CCTV-7 is Reporting On?”

⁶² 探访海军某舰艇训练中心 水面舰艇战斗力生成的“孵化器” [“Visiting a Navy Vessel Training Center, ‘Incubator’ of Surface Warship Combat Power Generation”], 国防军事早报 [National Defense Military Morning Paper], October 15, 2020, <https://tv.cctv.com/2020/10/15/VIDErBo70P46o96ctSXRX6z7201015.shtml>.

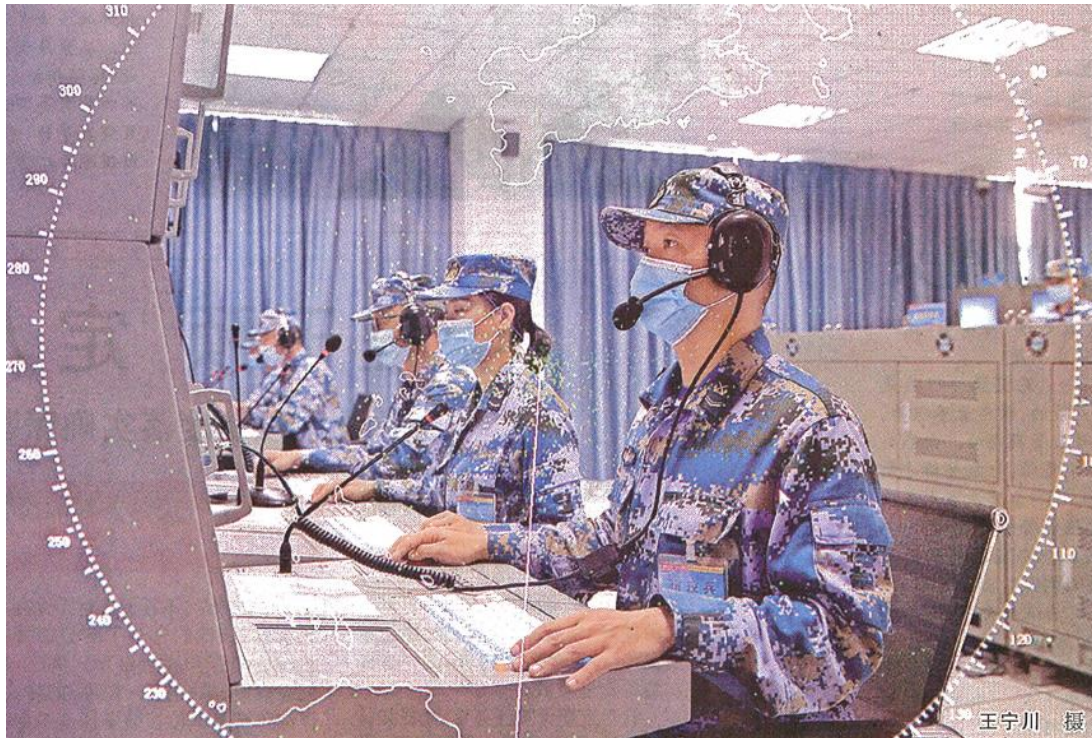


Exhibit 3. A CIC simulator at the Eastern Theater Command Navy VTC.⁶³

Despite embracing shore-based simulator training, VTCs also require ship crews to spend a significant amount of time training at sea, recognizing that success in the simulator does not automatically translate into capabilities on the battlefield.⁶⁴ At-sea training begins soon after the ship arrives at the VTC. It starts with fundamental skills such as single ship navigation, casualty treatment, and damage control. Ship officers practice giving clear, concise orders to sailors under their command. According to one VTC trainer, the primary purpose of at-sea training is to help individual crew members gain proficiency at their respective posts in different scenarios and to better coordinate their activities with other crew members—that is, to act as a cohesive unit. Training activities take place under the watchful eye of VTC training staff, who step in to provide feedback and alter training plans, as necessary.⁶⁵

Over time, the focus of at-sea training transitions from basic proficiency to handling complex scenarios under stressful situations. The experience of the Type 052D destroyer *Qiqiha'er* is a case in point. In October 2020, just two months after her commissioning, the Northern Theater Command Navy VTC took the *Qiqiha'er* out for seven days of training in the Yellow Sea.⁶⁶ The training

⁶³ See Lu and Shen, “Exploring the Winning Factors on the ‘Virtual Battlefield,’” p. 1.

⁶⁴ See Wang, Zhang, Zhang, and Ma, “Basic Training, Foundation for Pragmatically Prevailing in Battle,” p. 1.

⁶⁵ 某舰艇训练中心：让新入列舰艇早日形成战斗力 [“A Navy Vessel Training Center: Enable Newly Commissioned Vessels to Quickly Form Combat Power”], 军事报道 [Military Report], CCTV-7, February 26, 2017, <https://tv.cctv.com/2017/02/26/VIDEogj7t6JPbTXGpieM3EK5170226.shtml>.

⁶⁶ 直击演训一线·北部战区海军某舰艇训练中心 7 天 7 夜！多艘舰艇展开跨昼夜海上攻防训练 [“Heading for the Front Lines of Training: Northern Theater Command Navy Vessel Training Center for Seven Days and Seven Nights! Multiple Vessels Conduct Day and Night At-Sea Offensive and Defensive Training”], 正午国防军事 [Midday National Defense and Military Affairs], CCTV-7, October 19, 2020, <https://tv.cctv.com/2020/10/19/VIDELHumSKCbWMIWV0EFnG10201019.shtml>; See also 张海龙, 宫勋, 朱敏煜

involved 20+ subjects, including firing the ship's main gun against a surface target (an "enemy frigate"), missile defense (by simulating the firing of the ship's surface to air missiles and actual firing of its close-in weapons systems—CIWS), man overboard recovery, and underway replenishment.⁶⁷

Basic training at VTCs involves use of live ordnance.⁶⁸ Surface combatants fire their main guns against surface targets or targets ashore, CIWS against target drones,⁶⁹ rocket-propelled depth charges,⁷⁰ and surface-to-air and anti-ship missiles.⁷¹ Ships engaged in at-sea training also use onboard combat systems to simulate the firing of missiles and torpedoes.⁷²

Though the focus of basic training is on developing the technical and tactical capabilities of individual ships, VTCs will organize two or more ships to train together at sea, often for several days at a time. For example, in February 2021 the North Sea Fleet VTC took out eight ships for five days of at-sea training in the Yellow Sea. Participants included the Type 056A corvette *Zhangjiakou*; the Type 052D destroyers *Huai'nan*, *Qiqiha'er*, and *Tangshan*; and the auxiliary *Beilan 770*.⁷³

The composition of training groups changes over time, as some ships complete their training/evaluations and return to the fleet and new ships arrive. For example, in July 2021 the Type 052D destroyer *Huai'nan* that participated in the February 2021 training event (described in the previous paragraph), departed with another group of ships for six days of training in the Yellow Sea: the *Dongpinghu* (Type-903A), *Kaifeng* (052D), *Xinji* (056A), and *Dongying* (056A). Subjects included joint ASW with embarked helicopters, fires ashore with main guns, navigating in confined

[Zhang Hailong, Gong Xu, and Zhu Minyu], 连续攻防 7 昼夜 ["Continuous Offense and Defense Over Seven Days and Nights"], 当代海军 [Navy Today], no. 12 (December 2020), pp. 44-45.

⁶⁷ The *Qiqiha'er* ultimately passed her comprehensive training evaluation eight months later, in June 2021, thereby becoming a deployable (Class 1) ship. 直击演训场 海军新型舰艇政治工作干部通过全训考核 ["Heading Right for the Training Grounds, Political Work Officers Aboard a New-Type Warship Pass the Comprehensive Training Evaluation"], 军事报道 [Military Report], CCTV-7, June 5, 2021, <https://tv.cctv.com/2021/06/05/VIDE9hPOba237TL0RX8dzLrV210605.shtml>; Photo caption, 人民海军 [People's Navy], June 18, 2021, p. 1.

⁶⁸ This is also true for U.S. Navy Basic Phase training. See *Surface Force Training and Readiness Manual*, p. 3-8.

⁶⁹ See, for example, early 2021 training by the destroyer *Qiqiha'er* in which VTC staff launched high-speed target drones from the ship's flight deck and directed them to simulate a low-altitude cruise missile attack. 张海龙, 杨鸿轩 [Zhang Hailong and Yang Hongxuan], 迎春寒浪去, 带着硬功回 ["Welcome the Spring and See Away Cold Waves, Coming Back with Solid Skills"], 当代海军 [Navy Today], no. 2 (February 2021), pp. 40-41.

⁷⁰ See, for example, Photo caption, 人民海军 [People's Navy], March 8, 2010, p. 2.

⁷¹ For live firing of anti-ship cruise missiles, see Photo caption, 人民海军 [People's Navy], December 11, 2013. In February 2021, the Northern Theater Command VTC arranged for a PLAN destroyer to live fire a surface-to-air missile. See 北部战区海军某舰艇训练中心开展舰空导弹发射训练 ["Northern Theater Command Navy VTC Conducts Surface to Air Missile Training"], 解放军报 [PLA Daily], February 21, 2021, www.mod.gov.cn/power/2021-02/21/content_4879477.htm.

⁷² See, for example, 邹向民, 朱敏煜 [Zou Xiangmin and Zhu Minyu], 黄海风浪起 新舰练兵急 ["Wind and Waves are Up in the Yellow Sea and Sailors Urgently Train Aboard a New Warship"], 人民海军 [People's Navy], March 17, 2021, p. 1.

⁷³ See 直击演训一线·北部战区海军某舰艇训练中心 多艘新型舰艇连续 5 天海上多课目训练 ["Heading to the Front Lines of Training: Northern Theater Command Navy Vessel Training Center Organizes Multiple Classes of New-Type Vessels to Conduct Five Continuous Days of Multiple Subject Training"], 正午国防军事 [Midday National Defense and Military Affairs], CCTV-7, March 2, 2021, <https://tv.cctv.com/2021/03/02/VIDEdDD7J3WnazfTOhC3ApZM210302.shtml>.

waters, navigating in heavy winds and high seas, man overboard recovery, navigating while under tow, use of small arms, and “damage control under combat conditions” (战斗条件下损管).⁷⁴



Exhibit 4. A ship undergoing basic training at the Northern Theater Command Navy VTC fires a surface-to-air missile.⁷⁵

⁷⁴ 邹向民，朱敏煜 [Zou Xiangmin and Zhu Minyu], 五舰齐发，淬火锋刃--北部战区海军某训练中心开展实战化训练见闻 [“Five Ships Depart Together to Quench their Blades—An Account of Northern Theater Command Navy Vessel Training Center Conduct of Realistic Training”], 人民海军 [People’s Navy], August 4, 2021, p. 2.

⁷⁵ Ibid.

Ships undergoing basic training probably train in groups in order to reduce organizational and logistical burdens. If an area of China's coastal waters must be closed off for ship training, better that it happen infrequently. Despite going out as a group, the focus remains on individual ships. But in some cases, two or more ships in the group will operate together to fulfill training requirements. For example, the preferred PLAN approach to ASW requires multiple ships, aircraft, and other platforms working in close concert.⁷⁶ Therefore, ASW training will sometimes involve two or more ships in the group, plus embarked helicopters.⁷⁷ Such is also the case for joint search and rescue.⁷⁸

In at least some, perhaps all, cases, ships engaged in basic training at VTCs conduct more advanced "formation training" (编队训练). This involves members of a task force operating together as a surface action group, synergizing their efforts to complete tasking. For example, in October 2021 the Northern Theater Command Navy VTC took out two Type 052D destroyers (the *Huai 'nan* and the *Kaifeng*) and three Type 056A corvettes for five days of formation training in the Yellow Sea. While at sea, the five ships practiced joint air defense involving simulated attacks against enemy aircraft, joint fires strikes against enemy-held islands, mine countermeasures, and surveillance and counter-surveillance. Video footage of the training shows the ships operating in conjunction with at least one China Coast Guard vessel, demonstrating the ability of VTCs to enlist forces from other services to support training goals.⁷⁹ By contrast, the U.S. Navy defers task force and combined arms training until after Basic Phase training is complete.⁸⁰

At-sea training organized by VTCs is designed to be "realistic" (实战化), i.e., to approximate real combat situations.⁸¹ This involves bringing a ship (or small group of ships) to sea and forcing crews

⁷⁶ Original Chinese: 联合反潜是未来反潜作战的主要形式. See 范川川, 周柏冰 [Fan Chuanchuan and Zhou Bobing], 布下口袋阵智擒“大黑鲨” [“Set up a Pocket Array to Capture a ‘Great Black Shark’”], 人民海军 [People's Navy], March 3, 2016, p. 2.

⁷⁷ 北部战区海军某舰艇训练中心开展海上训练 [“Northern Theater Command Navy Vessel Training Center Conducts At-Sea Training”], 解放军报 [PLA Daily], October 26, 2021, <http://military.people.com.cn/n1/2021/1026/c1011-32264554.html>. Fleet helicopter units provide significant support to ships engaged in basic training. Helicopter regiments will send helicopters to support ASW training. For example, in July 2021 ships undergoing training at the Northern Theater Command VTC conducted joint training with a North Sea Fleet helicopter regiment. Training benefited both. See 舰机协同砺兵海天 [“Ships and Aircraft Coordinate to Improve in the Air and on the Sea”], 人民海军 [People's Navy], July 28, 2021, p. 4. See also 观众提问韦慧晓: 舰长全训考核 您是否有百分之百的把握? [“Audience Asks Questions to Wei Huixiao: Did You Have 100 Percent Certainty When Taking the CO Comprehensive Training Evaluation?”], 《开讲啦》 [Voice], CCTV-1, May 5, 2019, <https://tv.cctv.com/2019/05/05/VIDE2cQnbZTTDQ7con6u9b3D190505.shtml>.

⁷⁸ 邹向民, 张海龙, 王磊 [Zou Xiangmin, Zhang Hailong, and Wang Lei] 战舰蹈海 劈波斩浪——北部战区海军某舰艇训练中心舰艇编队海上训练掠影 [“Warship Jump Through the Sea and Smashing the Waves—A Glimpse at Northern Theater Command Vessel Training Center Ship Formation At-Sea Training”], 解放军报 [PLA Daily], January 5, 2021.

⁷⁹ 北部战区海军某舰艇训练中心: 组织多艘驱护舰连续 5 天进行海上编队训练 [“Northern Theater Command Navy Vessel Training Center: Organized Multiple Vessels to Conduct Five Consecutive Days of At-Sea Formation Training”], 今日-青岛 [Qingdao Today], October 29, 2021, <https://news.cctv.com/2021/10/29/VIDEINMhQexIEyEJyJsysg8C211029.shtml>. In July 2022, the Northern Theater Command Navy VTC organized several days of formation training for the Type 055 cruisers *Anshan* and *Wuxi* and the Type 052D destroyer *Baotou*. Among other training subjects, the ships practiced “joint air defense” (联合防空). 全时备战, 万吨大驱编队火力全开 [“Full-Time Preparation for Battle, 10,000t Large Destroyer Ship Formation Shows Firepower”], 北海舰队微信号 [North Sea Fleet WeChat], August 5, 2022, <https://mp.weixin.qq.com/s/b9u654vLUiw4XAxEiwrY9A>.

⁸⁰ *Surface Force Training and Readiness Manual*, p. 4-20-4-23.

⁸¹ Training realism has been a core focus of the PLA throughout the Xi Jinping era. See, for instance, 费士廷, 钱宗阳, 李学勇, 李宣良, 梅世雄 [Fei Shiting, Qian Zongyang, Li Xueyong, Li Xuanliang, and Mei Shixiong], 领航强军 铁流

to demonstrate mastery of the training subject in unpredictable circumstances. Ships receive orders to leave port to respond to a particular crisis—e.g. the menacing presence of an enemy warship—and must be prepared to cope with threats almost immediately upon departure. Inevitably, the crisis will escalate and the Chinese ship will be ordered to simulate an attack on the enemy combatant. The ship’s crew might also be forced to fend off attack from an enemy aircraft or evade an enemy missile. The purpose of at-sea training is to place crew members under stress to improve their ability to apply skills developed ashore (in simulators) to real world circumstances. These combat scenarios are created by VTC staff members, who also observe and critique the crew’s responses to them.⁸²

To further bolster realism, VTCs will sometimes enlist the help of other PLAN units to serve as adversary (i.e., “blue”) forces. For example, while conducting basic training in 2013, the Type 056 corvette *Bengbu* trained with a PLAN submarine.⁸³ In December 2015, the Type 052D destroyer *Changsha* conducted “confrontation” training with PLAN submarines, aircraft, and other ships.⁸⁴

The PLAN’s emphasis on “realism” differs from the U.S. Navy’s Basic Phase training, the focus of which is to ensure that crew members develop the technical skills to perform their jobs. While creating “realistic” scenarios is cited as a U.S. Navy training aim, it clearly does not reach the same degree of priority as in the PLAN.⁸⁵ In fact, unit-level combat scenarios designed to stress the whole crew only occur during the “Final Battle Problem”—a 2-3 day event at the end of the Basic Phase.⁸⁶ Moreover, unlike the PLAN the U.S. Navy does not generally involve real aircraft or submarines to serve as adversary (“red”) forces in the Basic Phase.

浩荡——习近平主席领导推进新时代军事训练纪实 [“Navigating a Strong Army, with an Immense Flow of Iron—A Chronicle of Chairman Xi Jinping’s Leadership and Promotion of Military Training for the New Era”], 解放军报 [*PLA Daily*], November 25, 2020.

⁸² For examples of this type of realistic training see Zhang, Gong, and Zhu, “Continuous Offense and Defense Over Seven Days and Nights,” pp. 44-45; Zou and Zhu, “Five Ships Depart Together to Quench their Blades,” p. 2. Though training realism is an oft-stated priority, it does not always receive the desired degree of emphasis. This point was made in a September 2018 *People’s Navy* article by Wang Mingyong, surface warfare officer and later commander of the PLAN’s 35th counter-piracy escort task force. According to Wang, “the level of realistic training for basic subjects is not high.” In his words, training on navigating vessels at night (夜间航行操纵) and live firing of shipborne weapons (舰炮实弹射击训练) was “not solid” (不扎实), and the design of tactical scenarios for damage control and air/missile defense was “relatively simplistic” (相对简单). Wang attributed the problem to “peace disease” (和平积弊, literally “harms accumulated during peacetime.”). See 王明勇 [Wang Mingyong], 破除和平积弊, 聚力备战打仗 [“Root Out Peace Disease, Gather Strength to Prepare for War”], 人民海军 [*People’s Navy*], September 17, 2018, p. 3. For an authoritative discussion of how the PLA understands “peace disease,” see 况猛 [Kuang Meng], 给和平积弊把把脉 [“Take the Pulse of Peace Disease”], 解放军报 [*PLA Daily*], September 10, 2018.

⁸³ This instance seems to have been unplanned. The East Sea Fleet VTC leadership happened to learn that a PLAN submarine was operating in the nearby submarine training area and contacted the submarine flotilla to take advantage of the coincidence. It is far more common to see PLA reporting of VTCs inviting outside units to participate in comprehensive training evaluations. See 吕廷章, 方立华, 侯瑞 [Lü Tingzhang, Fang Weihua, and Hou Rui], 无敌神剑, 从这里开刃 [“The Invincible Sword, Opening from Here”], 人民海军 [*People’s Navy*], March 11, 2015, p. 3.

⁸⁴ 长沙舰主炮射击 12 发炮弹发发中的 [“The Main Gun of the *Changsha* is Fired, All 12 Shots Hit the Target”], 人民海军 [*People’s Navy*], December 16, 2015, p. 2.

⁸⁵ *Surface Force Training and Readiness Manual*, p. 3-4

⁸⁶ The Final Battle Problem seeks to “train units under stressful and fatigue-inducing conditions.” Moreover, it strives to “push the crew to perform under the complex and difficult circumstances our Navy expects to encounter in a Peer/Near Peer conflict.” *Ibid.*, p. 4-16.

Keeping Pace with Demand

The VTCs have faced tremendous pressure to keep up with the PLAN's production of new ships. In the last 20 years, PLAN shipbuilding has seen two distinct waves. The first wave occurred during Hu Jintao's tenure as General Secretary of Chinese Communist Party (2002-2012). In 2004, the PLAN built the first of what would become a class of 60 Type 022 fast attack craft.⁸⁷ In January 2008, it commissioned its first Type 054A frigate. To date, over 30 have been built.⁸⁸ During Hu's tenure, the PLAN also completed smaller production runs of several other new ship classes. This included the type 051C (*Shenyang* and *Shijiazhuang*, 2006 and 2007), Type 052B (*Guangzhou* and *Wuhan*, both 2004), and Type 052C (*Lanzhou* and *Haikou*, both 2005) destroyers; the Type 071 landing platform dock (LPD—*Kunlunshan*, *Jinggangshan*, and *Changbaishan*, respectively, 2007, 2011, and 2012); and the Type 072A Landing Ship, Tank (LSTs—nine commissioned between 2003-2004).⁸⁹

The second, much larger, wave of shipbuilding occurred after Xi Jinping assumed leadership of the CCP in late 2012. As production of the 054A frigate accelerated, the PLAN began commissioning a new class of corvette (officially, a "light frigate") called the Type 056 (later 056A). The first of these, the *Bengbu*, began basic training in March 2013.⁹⁰ Over 50 have been built in the decade since.⁹¹ In 2014, the PLAN commissioned its first Type 052D destroyer, a class that remains in serial production. Twenty-five of these ships have been commissioned to date.⁹² On top of that, the PLAN has built smaller numbers of several other major ship classes, including cruisers (Type 055, officially a "destroyer," first commissioned in January 2020), Type 071 LPDs (five commissioned between 2016-2020), Type 072A LSTs (six commissioned between 2015-2016), Type 075 landing helicopter docks (LHDs—first commissioned in April 2021, three to date), and a growing fleet of auxiliaries ranging from oilers to hydrographic survey ships.⁹³

The VTCs have been forced to adapt to accommodate both waves of shipbuilding. The first wave was dominated by the Type 022 fast attack craft. Providing basic training for the crews of these small, 220-ton boats created a huge challenge for the VTCs. PLAN leadership required them to fulfill training quotas that greatly exceeded their capacity. To meet the demand, they applied mass training

⁸⁷ David Lague, "Insight: From a Ferry, a Chinese Fast-Attack Boat," Reuters, June 1, 2012, <https://www.reuters.com/article/us-china-military-technology/insight-from-a-ferry-a-chinese-fast-attack-boat-idUSBRE84U1HG20120601>; *Military and Security Developments Involving the People's Republic of China (2021)*, Office of the Secretary of Defense, November 2021, p. 50, <https://media.defense.gov/2021/Nov/03/2002885874/-1/-1/0/2021-CMPR-FINAL.PDF>; *The PLA Navy: New Capabilities and Missions for the 21st Century*, Office of Naval Intelligence, p. 17, https://www.oni.navy.mil/Portals/12/Intel%20agencies/China_Media/2015_PLA_NAVY_PUB_Print_Low_Res.pdf?ver=2015-12-02-081233-733.

⁸⁸ Jiangkai II (Type 054A) class (FFGHM), *Janes*, Updated August 9, 2022.

⁸⁹ Luzhou (Type 051C) class (DDGHM), *Janes*, Updated February 8, 2022; Luyang I (Type 052B) class (DDGHM), *Janes*, Updated December 23, 2021; Luyang II (Type 052C) class (DDGHM), *Janes*, Updated February 21, 2022; Yuzhao (Type 071) class (Assault Ship) (LPD), *Janes*, Updated February 2, 2022; Yuting II (Type 072A) class (LSTH), *Janes*, Updated February 4, 2022.

⁹⁰ 代宗锋、吴登峰 [Dai Zongfeng and Wu Dengfeng] 我国新型护卫舰首舰蚌埠舰入列命名授旗仪式举行 ["Commissioning and Naming Ceremony Held for the *Bengbu*, First Ship of China's New Type Frigate"], 新华社 [Xinhua], March 12, 2013, http://www.gov.cn/jrzq/2013-03/12/content_2352682.htm

⁹¹ *Military and Security Developments Involving the People's Republic of China (2021)*, p. 50.

⁹² Luyang II (Type 052D) class (DDGHM), *Janes*, Updated August 8, 2022.

⁹³ Renhai (Type 055) class (DDGHM), *Janes*, Updated August 8, 2022; Yuzhao (Type 071) class (Assault Ship) (LPD), *Janes*, Updated February 2, 2022; Yuting II (Type 072A) class (LSTH), *Janes*, Updated February 4, 2022; Yushen (Type 075) class (LHDM), *Janes*, Updated July 19, 2022.

methods.⁹⁴ For instance, they took sailors training for the same watch stations from four different boats and had them train together on one boat. Doing so reduced the strain on VTC staff and enabled the sailors to learn from and compete with each other, thereby improving training efficiency.⁹⁵ As discussed below, the VTCs also required crews to play a more active role in their own training, as VTC staff could no longer provide “full-service” (全方位服务) basic training for crew members stationed there. The new training approach purportedly reduced the length of the training cycle by 40 percent and led to “an obvious improvement in training quality.”⁹⁶

PLAN VTCs suffered from instructor shortages, forcing them to take desperate measures to retain staff. The experiences of South Sea Fleet VTC trainer captain Yuan Runhui (袁润辉) is a case in point. He retired from his post at the end of 2006 after 37 years on active duty. Within a few days of his retirement, the VTC’s Political Commissar visited him at his home to try to rehire him. After some reflection, Yuan agreed to come back as a civilian on a salary of 800 RMB per month (~\$100). In the three years after he returned to work, he was directly involved in the comprehensive training evaluations of over 20 ships.⁹⁷

VTCs turned to operational units for help in expanding their training capacity. The East Sea Fleet VTC, for example, lacked sufficient berthing spots and training staff to meet training demands. To overcome this problem, the East Sea Fleet VTC negotiated agreements with other East Sea Fleet units to share training infrastructure, training staff, and training expertise. As an example, the Type 054A frigate *Yiyang* (commissioned in October 2010) received its basic training in the first half of 2011. The training and evaluation plan was developed by both VTC instructors and staff from the destroyer flotilla that owned the *Yiyang*. The VTC asked flotilla leaders to participate in at-sea training, subject evaluations, and other training elements. They used the flotilla’s training equipment to do simulation training on gunnery and navigation. They also invited the flotilla’s personnel to participate in the evaluation. As a result, basic training was completed in just four months instead of the normal six.⁹⁸

To meet the new demand, VTCs began accepting new ships all year round, instead of just once per year. In 2007, the South Sea Fleet VTC took the lead by implementing a “rolling” (滚动式)

⁹⁴ 昔日全职保姆今朝良师益友 [“In the Past They Were Full-Time Nannies, Today They Are Good Teachers and Beneficial Friends”], 人民海军 [*People’s Navy*], January 19, 2010, p. 1.

⁹⁵ This was called the “one pulling four” (一拖四) method. Photo caption, 人民海军 [*People’s Navy*], November 18, 2011, p. 2.

⁹⁶ “In the Past They Were Full-Time Nannies, Today They Are Good Teachers and Beneficial Friends,” p. 1.

⁹⁷ 谭全龙, 刘洪训, 仲继军 [Tan Quanlong, Liu Hongxun, and Zhong Jijun], 痴情那片深蓝的海洋 [“Infatuated with the Deep Blue Sea”], 人民海军 [*People’s Navy*], June 18, 2010, p. 3.

⁹⁸ They called it a “three borrows” (三借用) approach. Namely, they borrowed the training facilities of neighboring units to do simulation training, borrowed training staff from other units to support training, and borrowed the experience of other units to improve their own training. See 胡翔, 李义保 [Hu Xiang and Li Yibao], 整合训练资源战舰“水涨船高” [“Integrating Training Resources So That Warships Can ‘Ascend with the Rising Sea’”], 人民海军 [*People’s Navy*], August 22, 2011, p. 2.

admissions policy, enabling ship crews to begin training right after commissioning, regardless of when it occurred.⁹⁹ Other VTCs soon adopted the same policy.¹⁰⁰

All of these efforts seem to have generated a much greater training rate. In 2002, the East Sea Fleet VTC could only train and certify two ships. But by 2007 it could train and certify 16 ships per year.¹⁰¹ The South Sea Fleet saw a similar jump. Its training capacity tripled from 2005-2008.¹⁰²

During the second shipbuilding wave, which continues to the present, the VTCs did not just face a very large volume of new ships: Chinese shipyards were now producing vessels that were far more sophisticated than anything that the PLAN had ever operated. This required that VTC instructors master new technologies. It also placed new burdens on them because most of the crew members assigned to the new ships had never used such advanced equipment and their relevant training levels were low. Sailors trained to operate an old mine sweeper or missile boat now had to learn the skills of the digital age.¹⁰³

The case of the Type 056 corvette *Bengbu* illustrates the challenges this presented. In 2012, PLAN Commander ADM Wu Shengli visited the East Sea Fleet VTC and asked how long it would take to train the crew of the *Bengbu*, first ship of the new class of corvettes (commissioned in March 2013). The VTC Director, presumably Xu Haihua (许海华),¹⁰⁴ responded, “the fastest we could do it would be four months; the slowest should not exceed half a year.” But he quickly had to walk back his estimate because it did not consider the crew’s lack of preparation for operating an “informatized” naval vessel. Among a crew of over 100 sailors, three-fourths had come from old sub chasers and missile boats.¹⁰⁵ The *Bengbu*’s advanced new equipment and systems required changes to manning requirements, further complicating matters.¹⁰⁶ For example, automation allowed a noncommissioned officer (instead of an officer) to take command of the ship’s main gun.¹⁰⁷ This meant sailors needed to gain experience both with new equipment and new responsibilities. Ultimately it took seven

⁹⁹ 唐忠平, 李根成 [Tang Zhongping and Li Gencheng], 战舰从这里驶向海战场 [“Warships Leave Here for the Ocean Battlefield”], 解放军报 [PLA Daily], April 9, 2008, p. 3. Reportedly, the South Sea Fleet VTC began “exploring” rolling admissions as early as 2001. See 梁庆才, 刘兴安 [Liang Qingcai and Liu Xing’an], 南海舰队舰艇训练中心承训能力三年翻两番 [“South Sea Fleet Vessel Training Center Quadruples its Training Capacity in Three Years”], 解放军报 [PLA Daily], June 24, 2004; 蒋敏军, 司彦文 [Jiang Minjun and Si Yanwen], 南海舰队训练中心滚动式组训加速战斗力生成 [“The South Sea Fleet Vessel Training Center Rolling Training Approach to Organizing Training Accelerates Combat Power Generation”], 解放军报 [PLA Daily], June 6, 2002.

¹⁰⁰ 王宪洲, 张俊 [Zhang Xianzhou and Zhang Jun], 年度训练不再分批次 [“Annual Training is No Longer Divided into Batches”], 人民海军 [People’s Navy], January 11, 2010, p. 2.

¹⁰¹ 钱晓虎, 汪鲁迅 [Qian Xiaohu and Wang Luxun], 东海舰队某训练中心承训能力大幅跃升 [“East Sea Fleet Vessel Training Center Sees Great Increase in Training Capacity”], 解放军报 [PLA Daily], July 21, 2007, p. 2. Of course, many of these new ships would have been Type 022 fast attack craft, which would have had far simpler training requirements than large, multi-purpose surface combatants.

¹⁰² Tang and Li, “Warships Leave Here for the Ocean Battlefield,” p. 3.

¹⁰³ 邹向民, 吴政, 王涌 [Zou Xiangmin, Wu Zheng, and Wang Yong], 用最硬的“磨刀石”, 砺出最锋利的剑 [“Use the Hardest ‘Whetstone’ to Make the Sharpest Sword”], 人民海军 [People’s Navy], June 5, 2020, p. 3.

¹⁰⁴ 吕廷章, 琚振华 [Lü Tingzhang and Ju Zhenhua], 驻训舰艇有了“售后服务” [“Ships Undergoing Training Have ‘After Sale Service’”], 人民海军 [People’s Navy], October 24, 2012, p. 1.

¹⁰⁵ Lü, Fang, and Hou, “The Invincible Sword, Opening from Here,” p. 3.

¹⁰⁶ Wang and Hou, “Light Boat Gallops, Combat Power Achieves a ‘Continuous Jump,’” p. 1.

¹⁰⁷ 代宗锋 [Dai Zongfeng], 走近国产新型护卫舰首舰 [“Up-Close with the First Domestically-Built New-Type Frigate, the *Bengbu*”], 当代海军 [Navy Today], no. 5 (May 2013), p. 53.

months for the *Bengbu* to complete training and pass its comprehensive training evaluations.¹⁰⁸ The weak technical backgrounds of many PLAN sailors have impacted basic training for other ship classes, including the Type 052D destroyer.¹⁰⁹

During the second shipbuilding wave, the VTCs seem not to have lacked for training facilities, but staffing shortages remain a severe challenge.¹¹⁰ Instructors work long hours and carry tremendous burdens. According to one 2017 article about the East Sea Fleet VTC, the organization's training tasks had become so onerous that instructors were "spending the majority of their time at their posts and very little time with their families."¹¹¹ To ameliorate these burdens, the PLAN has expanded the size of VTC training staff, marking a stark contrast with other PLAN units, many of which have shrunk as a result of the "neck-down" reforms that began in 2017.¹¹²

Despite these challenges, the VTCs have managed to ensure that most new ships can be trained and certified within 6-12 months of commissioning. To be sure, there have been some exceptions. The first ship of the Type 052D destroyer class, the *Kunming* (commissioned March 2014), took nearly two years to complete basic training and all required evaluations.¹¹³ But much of this time was spent resolving problems with new equipment.¹¹⁴ Though outwardly similar to the Type 052C, the Type 052D possesses significant upgrades, including a new main gun and powerplant. It supposedly took over 600 rounds of live firing to find the right adjustments for the *Kunming*'s main battery.¹¹⁵

Basic training for the *Nanchang*, the first ship of the Type 055 class, was not marred by the same delays. The pace of training was naturally intense. One officer, perhaps with some exaggeration, reported that a half year into training aboard the *Nanchang* and he had only been home two or three times.¹¹⁶ But training and certification were probably still completed within a normal timeframe, as

¹⁰⁸ Wang and Hou, "Light Boat Gallops, Combat Power Achieves a 'Continuous Jump,'" p. 1; Lü, Fang, and Hou, "Warships Depart from Here for the Deep Blue." Basic training timelines for Type 056 corvettes subsequently fell to just four months. 周柏冰 [Zhou Bobing], 强化训练, 两舰 4 个月全训合格 ["Strengthening Training, Two Ships Pass Qualifications After Four Months"], 人民海军 [People's Navy], August 6, 2014, p. 2.

¹⁰⁹ 宋振明 [Song Zhenming], 导弹飞来不会数你肩上的“拐” ["When the Missiles Are Flying Nobody Will Count the 'Bumps' on Your Shoulder"], 解放军报 [PLA Daily], August 17, 2017.

¹¹⁰ For a source on staffing challenges, see Zou, Wu, and Wang, "Use the Hardest 'Whetstone' to Make the Sharpest Sword," p. 3. For a source on efforts to build physical infrastructure at VTCs, see 郭大海 [Guo Dahai], 打造官兵“幸福工程” ["Building a 'Happiness Project' for Officers and Enlisted"], 人民海军 [People's Navy], July 21, 2014, p. 3.

¹¹¹ 任艺, 吕廷章 [Ren Yi and Lü Tingzhang], 某中心组织军人家庭开展系列文体活动 ["A Vessel Training Center Organizes Families of Military Personnel to Take Part in a Series of Cultural and Athletic Activities"], 人民海军 [People's Navy], June 9, 2017, p. 2.

¹¹² Zou, Wu, and Wang, "Use the Hardest 'Whetstone' to Make the Sharpest Sword," p. 3.

¹¹³ 刘勇彦, 王栋, 王柯鳧 [Liu Yongyan, Wang Dong, and Wang Keman], 昆明舰: “首舰必当领跑者” ["The Kunming: "The First Ship of the Class Must Be the Frontrunner"], 中青在线 [China Youth Online], April 23, 2017, http://m.cyol.com/content/2017-04/23/content_15978860.htm.

¹¹⁴ According to one PLAN source, "the performance of the new equipment was unknown and the PLAN lacked trained sailors with knowledge of new specialties." 刘勇彦, 王栋 [Liu Yongyan and Wang Dong], 深蓝航程写辉煌 ["Deep Blue Voyage to Write Glory"], 人民海军 [People's Navy], May 9, 2017, p. 2.

¹¹⁵ 刘勇彦, 王栋, 王柯鳧 [Liu Yongyan, Wang Dong, and Wang Keman], 国之利刃 扬威大洋 ["The Sharp Blade of the Country Rises to Prominence in the Ocean"], 人民海军 [People's Navy], September 15, 2017, p. 2.

¹¹⁶ 谭靛青, 王冠彪 [Tang Jingqing and Wang Guanbiao], 北部战区海军某驱逐舰支队南昌舰对海作战部门作战长于景龙——我是新时代的一朵浪花 ["Yu Jinglong, Head of the Operations Department of the Northern Theater Command Navy Destroyer Flotilla Destroyer *Nanchang*—I Am a Splash of Spray in the New Era"], 解放军报 [PLA Daily], July 1, 2020.

the *Nanchang* conducted at least five out-of-area deployments in 2021, including one in March, just 14 months after commissioning.¹¹⁷ (See Exhibit 5 below.) Compare this with the U.S. Navy’s U.S.S. *Zumwalt*, first of the class, commissioned in October 2016. She did not conduct her first deployment until September 2022—nearly six years later.¹¹⁸ Even ships of the *Arleigh Burke* class destroyer can require up to two years from commissioning to first operational deployment.¹¹⁹

¹¹⁷ The second Type 055 cruiser, the *Lhasa*, required 14 months to complete basic training and pass its comprehensive training evaluation. See 第 2 艘 055 大驱拉萨舰入列 起名背后的故事有些特别 [“The Second Ship of the Type 055 Class Lhasa is Commissioned and Has a Special Story Behind its Name”], 新华 [Xinhua], March 26, 2021, http://www.xinhuanet.com/mil/2021-03/26/c_1211084365.htm; 直击四大战区陆海空军大练兵·北部战区 多艘新型舰艇海上全训合格考核 [“Land, Naval, and Air Forces from the Four Major Theater Commands Conduct Training, Multiple New-Type Vessels of the Northern Theater Command Navy Conduct At-Sea Comprehensive Training Evaluations”], 正午国防军事 [Midday National Defense and Military Affairs], CCTV-7, May 15, 2022, <https://tv.cctv.com/2022/05/15/VIDEQmHkWFYOVmYsK0fONf5z220515.shtml>.

¹¹⁸ This is an unfair comparison, as the *Zumwalt* was intended to be a revolutionary platform. Clearly, though, that ambition has had its costs. Emma Helfrich, “Navy’s Stealth Destroyer May Be On Its First Operational Deployment,” *The Drive*, September 21, 2022, <https://www.thedrive.com/the-war-zone/navys-stealth-destroyer-may-be-on-its-first-operational-deployment>.

¹¹⁹ For example, the *USS Delbert D. Black* (DDG 119) was commissioned in September 2020 but did not take its first operational deployment until August 2022. See “U.S. Navy Guided Missile Destroyer Delbert D. Black Underway for First Deployment,” U.S. Navy, August 4, 2022, <https://www.navy.mil/Press-Office/News-Stories/Article/3118418/us-navy-guided-missile-destroyer-delbert-d-black-underway-for-first-deployment/>.

Exhibit 5. Out-of-Area Deployments Conducted by the Type 055 Cruiser *Nanchang* in 2021¹²⁰

| Date | Summary |
|-----------------------------|--|
| 18-25 March | Surface action group comprising the destroyers <i>Nanchang</i> and <i>Chengdu</i> and the frigate <i>Daqing</i> operates in the Sea of Japan. |
| 3-26 April | <i>Liaoning</i> strike group operates in the Philippine Sea for three weeks. Strike group includes the destroyers <i>Nanchang</i> , <i>Chengdu</i> , and <i>Taiyuan</i> , the frigate <i>Huanggang</i> , and the fast combat support ship <i>Hulunhu</i> . |
| 22 August - 11 September | Surface action group comprising the destroyers <i>Nanchang</i> and <i>Guiyang</i> and the replenishment ship <i>Kekexilihu</i> circumnavigates the Japanese main islands via the Tsushima Strait, Soya Strait, and Osumi Strait. |
| 11-22 October | Surface task force comprising the destroyers <i>Nanchang</i> and <i>Kunming</i> , the frigates <i>Guizhou</i> and <i>Liuzhou</i> , the replenishment ship <i>Dongpinghu</i> , and a submarine rescue ship enter the Sea of Japan to participate in a bi-lateral exercise with Russian Navy (Joint Sea-2021). Subsequently, the Chinese task force joins with a Russian Navy task force to enter the Pacific Ocean via the Tsugaru Strait. The combined task force then returns to the East China Sea via the Osumi Strait. |
| 16-25 December | <i>Liaoning</i> strike group including the destroyer <i>Nanchang</i> , frigate <i>Rizhao</i> , and fast combat support ship <i>Hulunhu</i> operates in the Philippine Sea, sailing there and back via the Miyako Strait. |

Improving Training Quality

At the same time that VTCs have strived to expand capacity, they have also sought to improve the quality of the training they provide. This has not been easy.¹²¹ At the core of this effort has been the development and improvement of a system of “training supervision” (训练监察). Initially, in the early 2000s, this involved the creation of a Training Supervision Department in each VTC, which later evolved into a set of committees charged with the task of monitoring training quality, providing

¹²⁰ “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, March 19, 2021, https://www.mod.go.jp/js/pdf/2021/p20210319_01.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, March 26, 2021, https://www.mod.go.jp/js/pdf/2021/p20210326_01.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, April 4, 2021, https://www.mod.go.jp/js/pdf/2021/p20210404_02.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, August 23, 2021, https://www.mod.go.jp/js/pdf/2021/p20210823_02.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, August 25, 2021, https://www.mod.go.jp/js/pdf/2021/p20210825_06.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, September 14, 2021, https://www.mod.go.jp/js/pdf/2021/p20210914_02.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, October 13, 2021, https://www.mod.go.jp/js/pdf/2021/p20211013_01.pdf; “Trends of Chinese and Russian Naval Vessels,” Joint Staff Press Release, Japan Ministry of Defense, October 21, 2021, https://www.mod.go.jp/js/pdf/2021/p20211021_03.pdf; “Trends of Chinese and Russian Naval Vessels,” Joint Staff Press Release, Japan Ministry of Defense, October 18, 2021, https://www.mod.go.jp/js/pdf/2021/p20211018_02.pdf; “Trends of Chinese and Russian Naval Vessels,” Joint Staff Press Release, Japan Ministry of Defense, October 23, 2021, https://www.mod.go.jp/js/pdf/2021/p20211023_01.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, December 17, 2021, https://www.mod.go.jp/js/pdf/2021/p20211217_03.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, December 21, 2021, https://www.mod.go.jp/js/pdf/2021/p20211221_01.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, December 21, 2021, https://www.mod.go.jp/js/pdf/2021/p20211221_03.pdf; “Trends of Chinese Navy Vessels,” Joint Staff Press Release, Japan Ministry of Defense, December 26, https://www.mod.go.jp/js/pdf/2021/p20211226_01.pdf.

¹²¹ As one PLAN source put it, “With the large numbers of new type surface vessels being commissioned one after another, the East Sea Fleet’s VTC training tasks have increased year after year. How does one improve the quality of training under existing conditions?” See Lü and Ju, “Ships Undergoing Training Have ‘After Sails Service,’” p. 1.

feedback, and (as discussed below) ensuring the integrity of evaluations.¹²² Training “supervisors” (监察员) point out problems/failings of individual crew members and weaknesses in the performance of the ship as a whole.¹²³ They record these problems in dossiers, which can be reviewed by the training staff and officers aboard the ship undergoing training so that adjustments can be made.¹²⁴ For example, Eastern Theater Command Navy VTC training supervisor Liu Zhiwan (刘志皖) noted eleven specific problems during a 2017 ASW training event. Among these, “the ship CO’s tactical awareness was not strong, the sonar operator lacked a clear mastery of the [tactical] situation, and the towed array was deployed at the wrong time.”¹²⁵

VTCs’ pedagogy has evolved over time to foster better training outcomes. For years, VTCs employed what was called a “nanny style” (保姆式) approach. That meant that VTC instructors did the bulk of actual teaching. This approach resulted in passivity among ship officers and “weakened the initiative” of ship COs. In 2010, the East Sea Fleet VTC, taking its cues from new OMTE requirements, revised its approach by empowering COs to take greater responsibility in organizing training for their ships. This reportedly increased the agency and creativity of the COs. Henceforth, they were responsible for organizing training for “ordinary” training subjects. The CO took the lead, with VTC staff providing assistance. They were also allowed a greater role in the organization of more important training subjects. The new approach, called a “guiding style” (指导式), “fully mobilized the initiative and creativity” of ship COs.¹²⁶

VTCs have also taken steps to improve the performance of individual instructors. This has been a challenge, because the knowledge and experience of instructors is quickly rendered obsolete by the pace of fleet modernization. For example, prior to arriving at the Northern Theater Command Navy VTC, Senior Captain Guo Genbao (郭根豹), last served as CO of the Type 051 destroyer *Yinchuan*. This would have been poor preparation to serve as the lead trainer for a Type 052D destroyer—which he later did.¹²⁷ To help remedy these shortcomings, VTC instructors receive professional

¹²² Wu, Cao, and Cao, “A Track Bathed in Sunlight,” p. 1. See also Liu, Wang, and Mi, “North Sea Fleet Vessel Training Center Training Record,” p. 39.

¹²³ 于彬, 刘刚 [Yu Bin and Liu Gang], 演练场上掀起“头脑风暴” [“Having a ‘Brainstorm’ on the Battlefield”], 人民海军 [People’s Navy], May 26, 2017, p. 3.

¹²⁴ 李道明, 虞章才, 施卫东 [Li Daoming, Yu Zhangcai, and Shi Weidong], 样板舰艇从这里驶出 [“Model Ships Depart from Here”], 解放军报 [PLA Daily], September 4, 2002; See Liu, Wang, and Mi, “North Sea Fleet Vessel Training Center Training Record,” p. 39.

¹²⁵ Ren Yi, “The New Ship ‘Opens its Blade’ to Show How Sharp It Is,” p. 3.

¹²⁶ 吴廷章, 方立华 [Wu Tingzhang and Fang Lihua], 驻训舰艇长唱主角 [“Ships Undergoing Training Play the Leading Role”], 人民海军 [People’s Navy], October 27, 2010, p. 1. Of note, the North Sea Fleet VTC appears to have adopted this approach several years earlier (giving it a slightly different name: 引导式). See 刘庆平, 赵成林 [Liu Qingping and Zhao Chenglin], 让驻训舰艇长唱主角 [“Let Ships Undergoing Training Play the Leading Role”], 解放军报 [PLA Daily], May 3, 2002.

¹²⁷ For information on Guo, see “Heading to the Front lines of Training: Northern Theater Command Navy Vessel Training Center Organizes Multiple Classes of New-Type Vessels to Conduct Five Continuous Days of Multiple Subject Training”; 王玉峰, 张欣 [Wang Yufeng and Zhang Xin], 宁夏银川: “银川”舰官兵列席“两会” [“Ningxia Yinchuan: Sailors from the Warship Yinchuan Attend the ‘Two Session’”], 解放军报 [PLA Daily], February 6, 2011. As another example, Northern Theater Command Navy trainer captain Gu Jianhua (顾建华) last served as the skipper of the Type 051 destroyer *Kaifeng*. 王旭, 吴冰山, 张海龙 [Wang Xu, Wu Bingshan, and Zhang Hailong], 万丈高楼平地起 [“Thousands of Tall Buildings Rise from the Ground”], 人民海军 [People’s Navy], March 23, 2015, p. 2; “Northern Theater Command Navy Vessel Training Center Organizes Multiple Destroyers and Frigates to Conducted Realistic At-Sea Training Evaluations.” As another example, Eastern Theater Command Navy VTC trainer captain Liu Zhiwan (刘志皖) last served as the CO of the Type 051 destroyer *Hefei*. See Ren Yi, “The New Ship ‘Opens its Blade’ to Show How

development training on new technologies and equipment, military theory and management practice, pedagogical approaches, and foreign military doctrines and capabilities.¹²⁸ Moreover, instructors also study new ship classes as they are being built and consult with equipment contractors to learn how new equipment functions.¹²⁹

VTCs have taken steps to ensure a highly-motivated training staff. By 2013, the leaders of the North Sea Fleet VTC, for example, had concluded that the attitudes of instructors assigned there were too lax. The problem was that the job was too “stable,” so that some of them “lacked enterprising spirit.” To stimulate greater zeal for their work, the North Sea Fleet VTC instituted an “incentive mechanism” and began providing extra compensation for high-performing training captains, trainers, and mission area experts.¹³⁰

VTCs have also instituted mechanisms that allow sailors receiving training to provide feedback on particular instructors or instructional practices. For example, the South Sea Fleet VTC invited sailors to complete appraisals of their instructors and mission area experts. Staff members with negative appraisals were reprimanded for their failings.¹³¹ Students dissatisfied with the quality of instruction can also provide feedback directly to training supervisors at the VTC.¹³²

Sharp It Is,” p. 3; 李伟, 魏一平 [Li Wei and Wei Yiping], 舰长刘志皖和他的舰 [“CO Liu Zhiwan and His Ship”], 生活周刊 [Life Weekly], no. 15 (April 21, 2009) <http://www.lifeweek.com.cn/2009/0421/24689.shtml>.

¹²⁸ 刘洋 [Liu Yang], 某训练中心对执教人员进行能力素质培训 [“Vessel Training Center Holds Capabilities and Quality Training for Instructors”], 人民海军 [People’s Navy], February 9, 2011, p. 2; see also 郭大海 [Guo Dahai], 育德良将驭新装 [“Gaining New Equipment to Educate Good Military Officers”], 人民海军 [People’s Navy], August 2, 2013, p. 3. For a discussion about the approaches taken by the South Sea Fleet VTC to ensure instructors remedy deficiencies in their knowledge abilities through professional development, see 刘洋 [Liu Yang], 自身素质欠缺, 施教怎能服务? [“If One Lacks Skills, How Can Serve as a Teacher?”], 人民海军 [People’s Navy], December 29, 2010, p. 1.

¹²⁹ Lü, Fang, and Hou, “The Invincible Sword, Opening from Here,” p. 3; 方立华, 王素炎, 杨荣 [Fang Lihua, Wang Suyan, and Yang Rong], 东海第一“武教头” [“East China Sea’s First ‘Martial Master’”], 中青在线 [China Youth Online], September 18, 2009, http://zqb.cyol.com/content/2009-09/18/content_2858491.htm.

¹³⁰ Guo, “Gaining New Equipment to Educate Good Military Officers,” p. 3.

¹³¹ 刘洋 [Liu Yang], 测评不合格被诫勉谈话 [“Instructors Not Passing Student Evaluations Will Be Admonished and Spoken To”], 人民海军 [People’s Navy], September 27, 2010, p. 2.

¹³² Wu, Cao, and Cao, “A Track Bathed in Sunlight,” p. 3.



Exhibit 6. A Northern Theater Command VTC staff member observes at-sea training.¹³³

Evaluation: Making Sure the Ship is Ready to Fight

Evaluations are the method by which the PLAN ensures that desired levels of technical and tactical training proficiency are reached for all training subjects. They are also seen as an instrument—in their words, a “command stick” (指挥棒)—to force units to train hard and well.¹³⁴

While stationed at the VTC, individual sailors assigned to the ship must gain certification on their watch stations. This involves taking and passing written examinations, analogous to U.S. Navy Level of Knowledge tests, and demonstrating proficiency through formal evaluations.¹³⁵ The goal is for all crew members to be certified capable of independently standing watch at their respective stations.¹³⁶ For an active (i.e. Class 1) ship, the job of certifying individual watch standers falls upon officers in charge of the relevant department on the ship.¹³⁷ It is unclear who provides these evaluations while ships are stationed at VTCs.

¹³³ “Heading to the Front lines of Training: Northern Theater Command Navy Vessel Training Center Organizes Multiple Classes of New-Type Vessels to Conduct Five Continuous Days of Multiple Subject Training.”

¹³⁴ Zou, Wu, and Wang, “Use the Hardest ‘Whetstone’ to Make the Sharpest Sword,” p. 3; 陈治国 [Chen Zhiguo], 欲成利剑先淬火 [“If One Wants to Become a Sharp Sword One Must First Quench the Fire”], 人民海军 [People’s Navy], June 5, 2020, p. 3.

¹³⁵ These are called “billet evaluations” (岗位考核). See 王素炎、侯瑞 [Wang Suyan and Hou Rui], 蚌埠舰通过全训合格考核 [“The Bengbu Passes its Comprehensive Training Evaluations”], 解放军报 [PLA Daily], November 14, 2013.

¹³⁶ The “gas turbine team” (燃机班) of the *Kunming* was the first team on the ship to have all team members achieve the level of independent watch stander. See Liu, Wang, and Wang, “The *Kunming*: “The First Ship of the Class Must Be the Frontrunner.”

¹³⁷ Department heads are responsible for evaluating sailors who want to get certified as an independent watchstander (独立值更) in a given department. E.g., in the CIC, the head of the Intelligence and Electronic Warfare Department (情电部门) is responsible for evaluating a sailor that wants to get certified as a watch stander in that department. See 陈国全、孙阳

The ship as a whole is evaluated on its ability to meet requirements for each training subject. Requirements are met through subject evaluations (科目考核), akin to “certification exercises” during Basic Phase training for U.S. Navy vessels. Some evaluations are conducted over multiple days at sea; others are done ashore in simulators.¹³⁸ Some elements of these subject evaluations are extremely fundamental. For example, to evaluate seamanship crews are tested on their ability to pull into and depart from a pier.¹³⁹ The crews of ships with deck guns are evaluated on their ability to employ them against shore and surface targets, both day and at night.¹⁴⁰ The *Nanchang*’s first at-sea subject evaluation, which occurred in May 2020, four months after training began, was an underway replenishment.¹⁴¹



Exhibit 7. The Type 055 cruiser *Nanchang* completes its first at-sea subject evaluation.¹⁴²

[Cheng Guoquan and Sun Yang], 新兵在远海大洋领取“上岗证” [“New Sailors Obtain their ‘Qualifications’ While in the Far Seas”], 解放军报 [PLA Daily], February 23, 2014.

¹³⁸ In December 2006, for example, North Sea Fleet VTC organized subject evaluations on ASW and “over-the-horizon” strikes for three ships, doing so in simulators, not at sea. It is possible that the PLAN has moved away from this approach. See 张乡林, 龙君, 李德, 徐锋 [Zhang Xianglin, Long Jun, Li De, and Xu Feng], 基地化考核砺兵三军训练转变提速 [“Evaluations Occurring at Bases Strengthen the Soldiers and the Three Services See Acceleration of Training Shift”], 解放军报 [PLA Daily], December 21, 2006.

¹³⁹ Photo caption, 人民海军 [People’s Navy], November 29, 2010, p. 1.

¹⁴⁰ In October 2017, the 052D destroyer *Xiamen* completed an evaluation for a single subject: daytime use of main gun against surface targets. Ren Yi, “The New Ship ‘Opens its Blade’ to Show How Sharp It Is,” p. 3.

¹⁴¹ 邹向民, 吴政, 韩驷超 [Zou Xiangmin, Wu Zheng, and Han Sichao], 南昌舰完成航行补给考核加快推进战斗力生成 [“The Nanchang Completes its Underway Replenishment Evaluation Accelerating the Generation of Combat Power”], 人民海军 [People’s Navy], May 18, 2020, p. 1.

¹⁴² 快来看! 南昌舰首次开展海上训练科目考核 [“Come Quick! The Nanchang Conducts its First At-Sea Training Subject Evaluation”], 人民海军微信号 [People’s Navy WeChat Account], May 19, 2020, https://mp.weixin.qq.com/s/R5lyBluZACNtT_Q7KDgCmQ.

After the ship passes all subject evaluations, it can proceed to the comprehensive training evaluation.¹⁴³ Taking place at sea over the course of two or more days, the comprehensive training evaluation is both a judgment of the competence of the ship's commanding officer (and other senior officers) and the competence of the ship as a whole.¹⁴⁴ The core focus is on "integrated offense/defense" (综合攻防), i.e. engaging multiple threats from all three domains (air, surface, and subsurface).¹⁴⁵ PLA media coverage of these events often shows footage of the CO and XO in the ship's CIC, issuing orders to neutralize (or avoid) enemy threats. Behind them stand members of the "evaluation group" (考核组), who judge the correctness of their words and actions given the situations that they face.¹⁴⁶ Other members of the evaluation group are likely dispersed around the ship, observing the performance of other crew members.

During comprehensive training evaluations, surface combatants will live-fire weapons systems including main guns, CIWS, and rocket-propelled depth charges. When engaging aerial threats, they will launch decoys. When engaging enemy submarines, they will simulate the firing of torpedoes.¹⁴⁷

¹⁴³ "Graduation" from the VTC is not the only time a ship will complete a comprehensive training evaluation. These evaluations occur on operational (Class 1) ships in order to certify that officers aboard the ship are qualified to serve in new posts, such as officer of the deck, department head, and commanding officer. Historically, operational units such as destroyer flotillas have had the authority to conduct comprehensive training evaluations. However, according to one 2017 television report, as a result of the "neck-down" PLA reforms the VTCs were supposed to take responsibility for organizing all comprehensive training evaluations for all frigates and destroyers (驱护舰), not just the evaluations that occur at the end of basic training. As of late 2017, the VTCs were "exploring" ways to "independently" conduct comprehensive training evaluations. But it appears that this intention was never fully realized, as subsequent PLAN reporting clearly shows operational units still have some responsibility for organizing comprehensive training evaluations. See 蔡盛秋, 越洋, 周鹏飞 [Cai Shengqiu, Yue Yang, and Zhou Pengfei], 大洋砺剑, 风雷激荡 ["Sharpening the Sword on the Great Ocean, the Wind and Thunder are Turbulent"], 当代海军 [Navy Today], no. 11 (November 2018), pp. 20-23; 蔡盛秋 [Cai Shengqiu], 对接战场, 让每一项考核都与实战对表 ["Connect to the Battlefield, So that Every Evaluation is Realistic"], 解放军报 [PLA Daily Reporter], December 12, 2018, http://www.mod.gov.cn/power/2018-12/12/content_4831942.htm; 海军某舰艇训练中心: 全训合格考核 全程紧贴实战 ["A Certain Navy Vessel Training Center: Comprehensive Training Evaluation, Being Close to Realistic Throughout the Whole Process"], 军事报道 [Military Report], CCTV-7, December 16, 2017, <https://tv.cctv.com/2017/12/16/VIDE12k0Uo5ghADyoldgc58i171216.shtml>; 郭胜男, 蔡盛秋 [Guo Shengnan and Cai Shengqiu], 考出打仗的味道—南部战区海军某护卫舰支队海上全训合格考核见闻 ["Test Evokes Taste of War—Observations of Southern Theater Command Navy Frigate Flotilla At-Sea Comprehensive Training Evaluation"], 当代海军 [Navy Today], no. 6 (June 2019), pp. 46-49; 郝向东、王柯鰲 [Hao Xiangdong and Wang Keman], 南部战区海军某训练中心强化家风建设“廉政港湾”激发正能量 ["Southern Theater Command Navy Vessel Training Center Strengthens Character Building at Home, 'Clean Government Harbor' Stimulates Positive Energy"], 解放军报 [PLA Daily], August 27, 2019.

¹⁴⁴ See Wu, Cao, and Cao, "A Track Bathed in Sunlight," p. 1.

¹⁴⁵ "Integrated offense/defense" is the core of the comprehensive training evaluation. See 杨哲, 葛正炎, 王超 [Yang Zhe, Ge Zhengyan, and Wang Chao], 海上砺剑, "意外"不断 ["Sharpening the Sword at Sea, with a Continuous Stream of 'Unexpected Circumstances'"], 人民海军 [People's Navy], November 30, 2020, p. 2.

¹⁴⁶ 东部战区海军某训练中心 直击多艘舰艇全训考核 全程充满“硝烟味” ["Eastern Theater Command Navy Vessel Training Center, Multiple Warships Participate in Comprehensive Training Evaluations, the 'Smell of Gunsmoke' All Around"], 正午国防军事 [Midday National Defense and Military Affairs], CCTV-7, November 5, 2020, <https://tv.cctv.com/2020/11/05/VIDElucmvTMHAr5QCGgV3HOT201105.shtml>.

¹⁴⁷ For an example of comprehensive training evaluation containing many of these elements, see 北部战区 多艘新型舰艇开展海上全训合格考核 ["Northern Theater Command Navy Multiple New-Type Vessels Conduct At-Sea Comprehensive Training Evaluation"], 午夜新闻 [Midnight News], CCTV-13, May 1, 2021, <https://tv.cctv.com/2021/05/01/VIDEm2aRRJAJeJDCu6iEhrCI210501.shtml>.

To mimic real combat conditions, comprehensive training evaluations are unscripted. Ships put to sea without any knowledge of the challenges they will face. Therefore, these events are naturally very stressful for the CO and the crew. PLAN officers often describe the years of preparation and the culminating event as “more difficult than getting a PhD.”¹⁴⁸

To further increase realism, VTCs will involve outside units to serve as “blue” aggressor forces. For example, in December 2021 the Northern Theater Command Navy VTC organized three ships—the destroyer *Harbin* and corvettes *Xinji* and *Songyuan*—to participate in a 72-hour comprehensive training evaluation. VTC staff members responsible for organizing the evaluation enlisted the participation of other PLAN surface vessels, at least one PLAN submarine, PLAN early warning and strike aircraft, PLAN observation and communications stations, and electronic warfare forces.¹⁴⁹



Exhibit 8. Chief of Staff of the Eastern Theater Command Navy VTC, CAPT Zhang Jinjun, discusses the importance of “realism” during comprehensive training evaluations. CAPT Zhang’s red badge identifies him as the head of the evaluation group for this particular evaluation.¹⁵⁰

¹⁴⁸ Gao, Xu, and Wang, “How Many Stormy Seas Has it Taken to Become This Famous Warship,” p. 9.

¹⁴⁹ 北部战区海军某舰艇训练中心组织多艘驱护舰 进行海上实战化训练考核 [“Northern Theater Command Navy Vessel Training Center Organizes Multiple Destroyers and Frigates to Conducted Realistic At-Sea Training Evaluations”], 今日-青岛 [Qingdao Today], January 5, 2022,

<https://news.cctv.com/2022/01/05/VIDEc5MyIWbQsvxWI3rhYeLJ220105.shtml>. This appears to be standard practice for comprehensive training evaluations. See, for example, 邹向民、吴政 [Zou Xiangming and Wu Zheng], 战斗警报！新型驱护舰考核上演惊险大片 [“Battle Alert! New Type Destroyers and Frigates Hold Evaluation and It Is a Thrilling Blockbuster”], 解放军报 [PLA Daily], March 24, 2020, http://www.81.cn/syjd/2020-03/24/content_9775686.htm; 直击演训场 练协同 连续 72 小时 舰艇指挥员全训考核 [“Navy Heads for the Training Grounds to Train Coordination for 72 Hours Straight, Vessel CO Undergoes Comprehensive Training Evaluation”], 国防军事早报 [National Defense Military Morning Paper], September 25, 2020, <https://tv.cctv.com/2020/09/25/VIDEW9JzAQWnarFSM8RbNsPO200925.shtml>.

¹⁵⁰ “Eastern Theater Command Navy Vessel Training Center, Multiple Warships Participate in Comprehensive Training Evaluations, the ‘Smell of Gunsmoke’ All Around.”

Satisfactorily completing the comprehensive training evaluation allows the ship to return to its operational unit as a deployable (Class 1) ship.¹⁵¹ Some ships are immediately deployed on major tasks—including out-of-area operations. For example, the Type 052C destroyer *Changchun*, commissioned in January 2013, completed training/evaluations in January 2014 and was deployed to the Gulf of Aden less than two months later as the command ship of the 17th counter-piracy escort task force (ETF).¹⁵² The Type 903 replenishment ship *Chaohu*, commissioned in September 2013, also participated in the 17th ETF right after completing the comprehensive training evaluation. The *Chaohu* ultimately deployed for 367 days, supporting both the 17th ETF and 18th ETF, including during operations to locate the wreckage of flight MH370 in the Indian Ocean.¹⁵³

By contrast, the U.S. Navy’s Basic Phase training does not have a capstone assessment with the same finality as the PLAN’s comprehensive training evaluation.¹⁵⁴ Moreover, while completion of the U.S. Navy’s Basic Phase training in theory qualifies ships to conduct some peacetime operations (“phase zero” operations, homeland security, humanitarian assistance and disaster relief, etc.), in reality Basic Phase training is almost always followed by additional training—i.e., Advanced Phase and Integrated Phase training—before the ship is judged ready to deploy to forward areas.¹⁵⁵

Ensuring the Integrity of Evaluations

Evaluations have an enormous impact on training outcomes. If the standards of proficiency in the evaluation are too low, the ship’s crew would be unable to fully leverage the performance of its weapons, systems, and sensors, placing the ship at a disadvantage in combat. If the standards of proficiency are high, but those conducting the evaluations do not fully enforce the standards (i.e., their evaluations lack rigor), the ship would likewise not reach its potential as a fighting unit. The PLAN does not release its OMTEs, so little is known about its standards of proficiency. But it does openly discuss its struggle to ensure rigorous enforcement of its evaluation standards, which has been long and not completely successful.

The first challenge to the integrity of evaluations is institutional. Specifically, groups and individuals who have an interest in high success rates for evaluations have been allowed to play key roles in the evaluation process. Through the 1990s, the task of evaluating training proficiency was the job of VTC staff members in charge of training. In PLAN parlance, “whoever organized training did the evaluations” (谁组训谁考核). This practice was later recognized as hugely problematic, since trainers had a professional interest in seeing high pass rates because it reflected well on them. As a result, “training was not realistic and evaluations lacked rigor” (训练不实、考核不严), and ships judged certified sometimes fell short when conducting real-world operations.¹⁵⁶

¹⁵¹ In PLAN parlance, passing comprehensive training evaluations gives the ship an “access card (准入证) for the battlefield.” 李恒江, 侯瑞 [Li Hengjiang and Hou Rui], 在真打实抗中获取战场准入证 [“Obtaining an Access Card to the Battlefield By Engaging in Real Combat and Confrontation”], 人民海军 [People’s Navy], August 21, 2015, p. 1.

¹⁵² Lü, Fang, and Hou, “Warships Depart from Here for the Deep Blue.”

¹⁵³ 侯瑞, 林健 [Hou Rui and Lin Jian], 367 天, 在大洋拔节成长 [“367 Days Growing Up at Sea”], 人民海军 [People’s Navy], May 13, 2015, p. 3.

¹⁵⁴ The comprehensive training evaluation is perhaps analogous to the U.S. Navy’s Basic Phase Final Battle Problem discussed above. But unlike the comprehensive training evaluation, the Final Battle Problem is not graded as a “pass/fail” event. *Surface Force Training and Readiness Manual*, p. 4-16.

¹⁵⁵ OPNAV INSTRUCTION 3000.15A, Office of the Chief of Naval Operations, November 10, 2014, p. 4, <https://www.secnav.navy.mil/doni/Directives/03000%20Naval%20Operations%20and%20Readiness/03-00%20General%20Operations%20and%20Readiness%20Support/3000.15A.pdf>.

¹⁵⁶ Wu, Cao, and Cao, “A Track Bathed in Sunlight,” p. 1.

The VTCs took steps to mitigate this problem in the early 2000s. Responsibility for evaluating crew performance was stripped from training staff and assigned to training supervisors (discussed above).¹⁵⁷ Supervisory organizations evolved over time, but the principle remained the same: namely, to “separate training from evaluations” (训考分离).¹⁵⁸

But assigning training and evaluation to different staff members within the same organization is also problematic, since the organization has a strong interest in passing ships that received training there. High success rates reflect well on the training organization. In theory, VTCs have rules preventing senior leaders from directly interfering in evaluation results.¹⁵⁹ However, that has not always stopped them from trying to exert influence.¹⁶⁰ Moreover, members of the evaluation group no doubt feel indirect pressure to act for the benefit of the organization to which they belong.

This conflict of interest was not just a problem in the PLAN. Early in Xi Jinping’s tenure, the PLA recognized that organizations responsible for conducting training should not also be responsible for evaluating training outcomes. Doing so resulted in a lack of focused training, obsession with safety, exercises that were highly scripted (演习念稿子), formalism (形式主义; i.e., focus on image, not substance), and a tendency to fake results (弄虚作假). To remedy this problem, in 2014 the PLA as a whole began embracing principles of training supervision that relied on evaluators external to the organization undertaking training.¹⁶¹

For its part, the PLAN took steps to create “third parties” responsible for supervising comprehensive training evaluations. By 2016, the East Sea Fleet, for example, was organizing third party “joint evaluation groups” (联合考核组) to evaluate officers for ship command. This resulted in more objective evaluations and much higher failure rates.¹⁶² By 2018, the Eastern Theater Command Navy Staff Department had begun sending teams to supervise evaluations of ships that had received training at the VTC. As a result, according to the VTC Deputy Director, Wu Guoyu (吴国瑜), “judgments had become more objective and accurate, and some problems with training had been

¹⁵⁷ Ibid., p. 1, 3.

¹⁵⁸ Ren Yi, “The New Ship ‘Opens its Blade’ to Show How Sharp It Is,” p. 3. The conflict of interest between organizing training and evaluating the results of that training was not just found at VTCs. Destroyer flotillas, for example, had to deal with the same issue when evaluating their own training outcomes. See 汪光鑫, 胡君华 [Wang Guangxin and Hu Junhua], 东海舰队某驱逐舰支队实行训考分离新机制 [“East Sea Fleet Destroyer Flotilla Implements a New Mechanism Separating Training from Evaluations”], 解放军报 [PLA Daily], May 30, 2002. The problems of “evaluating one’s own training” (自训自考) and the need to “separate training from evaluations” were discussed following the issuing of the 2009 OMTE. According to one September 2010 essay, the desired approach involved combining evaluation personnel from the fleet, operational unit, and VTC into an “authoritative assessment organization” (权威考评机构). See 王文聪 [Wang Wencong], 加强精细化管理落实训练考评 [“Strengthen Fine Management and Implement Training and Evaluation”], 人民海军 [People’s Navy], p. 3.

¹⁵⁹ Liu, Wang, and Mi, “North Sea Fleet Vessel Training Center Training Record,” p. 39.

¹⁶⁰ In October 2003, for example, one destroyer captain failed to meet standard on one item during the live firing of weapons, and the training supervisor judged him unqualified (全训不合格). A number of senior officers protested the decision, saying it was “close enough” (差不多就行了)—but the supervisor was unmoved. See Wu, Cao, and Cao, “A Track Bathed in Sunlight,” p. 3.

¹⁶¹ 邹格银, 梁蓬飞, 尹航 [Zou Geyin, Liang Pengfei, and Yin Hang], 推动实战化训练的“第三种力量” [“Promote a ‘Third Force’ for Realistic Training”], 解放军报 [PLA Daily], March 11, 2015.

¹⁶² See, for instance, Liu and Dai, “Give Warships to Trustworthy Captains,” p. 1.

exposed more prominently.”¹⁶³ These accounts suggest that the involvement of the Fleet (now Theater Command Navy) Staff Department has strengthened the integrity of comprehensive training evaluations and improved overall training quality.

The second major challenge to the integrity of training evaluations involves institutional culture. Like in other segments of the Chinese party-state, bribery, cheating, and cronyism are deep-rooted problem for the PLAN. Because of the high stakes for their careers, officers undergoing training at VTCs, especially commanding officers, sometimes try to bribe evaluators to divulge test questions or give favorable evaluations.¹⁶⁴ Moreover, VTC staff members face social pressure to cater to past relationships with the sailors they are evaluating.¹⁶⁵ Favoritism of this kind may be a challenge for all navies, but in PRC institutions there exists a strong culture of reciprocity, in which favors of the past create social obligations that must be repaid, even if doing so involves morally objectionable or even illegal behavior.¹⁶⁶ In the context of training evaluations, this type of behavior is called “giving points out of social obligation” (送人情分).¹⁶⁷ Lastly, there is a problem with students cheating on written examinations.¹⁶⁸

For at least 20 years, the VTCs have strived to combat these baleful tendencies. Written examinations and at-sea evaluations are filmed, and evaluator notes receive official stamps in order to “forestall the giving of points out of social obligation after the evaluation is over.”¹⁶⁹ Students caught cheating are punished.¹⁷⁰ VTCs have developed imaginative methods to ensure that members of the evaluation group provide objective assessments of observed capabilities. For example, the Northern Theater Command Navy VTC Party Committee now proactively issues reminders—grandiosely called “early warning information notices” (预警信息函告)—to evaluators about the risks of corruption during particularly fraught moments in the evaluation process.¹⁷¹

Nevertheless, results have been mixed. Cheating remained enough of a problem in mid-2020 that the Director of the Northern Theater Command Navy VTC, Chen Zhiguo (陈治国), publicly called for

¹⁶³ See Liu, Jia, and Qi, “Training Supervision and Guidance, A ‘Fulcrum’ for Prying Out Readiness Quality and Efficiency,” p. 2.

¹⁶⁴ See Wu, Cao, and Cao, “A Track Bathed in Sunlight,” p. 3.

¹⁶⁵ The then Director of the South Sea Fleet VTC, Zhang Leyi (张乐意), explained it well. Most staff members at the VTC have come from the “front line” (一线) surface force and the COs that come to train there are “old comrades in arms” (老战友). Therefore, there are real temptations to give them a free pass—in his words, to “cater to the relationship” (讲情面). See Tang and Li, “Warships Leave Here for the Ocean Battlefield,” p. 3.

¹⁶⁶ Peng Wang, “Military Corruption in China: The Role of Guanxi in the Buying and Selling of Military Positions,” *The China Quarterly*, no. 228 (December 2016), pp. 973, 986, 988.

¹⁶⁷ See 坚决治虚打假 [“Resolutely Crack Down on Fraud”], 人民海军 [*People’s Navy*], August 3, 2010, p. 1.

¹⁶⁸ Wu, Cao, and Cao, “A Track Bathed in Sunlight,” p. 3.

¹⁶⁹ Original Chinese: 杜绝事后送人情分. Guo and Cai, “Test Evokes Taste of War—Observations of Southern Theater Command Navy Frigate Flotilla At-Sea Comprehensive Training Evaluation,” p. 47. This source discusses steps taken by a frigate flotilla to avoid cheating on comprehensive training evaluations. These practices are probably standard for all comprehensive training evaluations, including those conducted by VTCs. For steps taken to reduce cheating on written examinations, see Wu, Cao, and Cao, “A Track Bathed in Sunlight,” p. 3.

¹⁷⁰ See Wu, Cao, and Cao, “A Track Bathed in Sunlight,” p. 3.

¹⁷¹ This was an effort to curtail problems with sailors asking for test questions in advance (要题) and cozying up to evaluators (打招呼). See 朱敏煜, 王冠彪 [Zhu Minyu and Wang Guanbiao], 北部战区海军某舰艇训练中心推行预警信息函告制度 [“Northern Theater Command Vessel Training Center Promotes Early Warning Information Notification System”], 解放军报 [*PLA Daily*], January 10, 2022, p. 10.

“resolutely putting an end” (坚决杜绝) to problems such as cheating on evaluations and the “giving of points out of social obligation.”¹⁷² These problems are not isolated to VTCs. Cheating and cronyism also pose challenges to comprehensive training evaluations done by operational units across the PLAN.¹⁷³

Conclusion

Like other modern navies, the PLAN relies on specialized organizations to provide basic training for newly-commissioned or recently-repaired surface vessels. These organizations, called VTCs, are located in each of the three Theater Command navies. Since their creation in the 1980s, they have played a vital role in transforming PLAN ships—everything from mine sweepers to amphibious assault ships, but excluding aircraft carriers—into technically- and tactically-competent fighting units prepared for integration with the rest of the operational navy.

In recent years, VTCs have faced tremendous pressure to adapt to the needs of a rapidly expanding and modernizing fleet. Beginning in the early 2000s with a wave of new fast attack craft and frigates, followed later by a surge of new corvettes, frigates, destroyers, cruisers, LPDs, LHDs, and auxiliaries, the PLAN has built dozens of surface vessels at a rate unmatched by any other contemporary navy, with the most recent classes ranking among the most modern in the world. How have the VTCs fared in their efforts to translate this latent combat power into real operational capabilities across the full range of wartime and peacetime missions for which these ships were designed?

As this report demonstrates, the VTCs have clearly succeeded in their most basic function: providing enough training to enough crews so that new ships can quickly reach the fleet with an acceptable degree of readiness. This has been extremely challenging for the VTCs, previously accustomed to training small batches of ships, with training beginning at the same time every year. To augment training capacity, they have borrowed training expertise and resources from operational units, altered internal processes to allow new ships to begin training throughout the year (instead of a single annual start date), developed mass training methods, embraced the use of simulators, expanded training staff and training facilities, and required that VTC personnel work as long and as hard as necessary to get the job done. As a result, VTCs have proven themselves capable of supporting the PLAN’s colossal shipbuilding program, enabling most new ships to complete basic training within the standard 6-12 months.

At the same time that the VTCs have expanded training capacity, they have also strived to improve the quality of the training they provide. They have done this through a system of “training supervision” comprising a staff of officers charged with monitoring training quality and providing feedback to crew members (and trainers) and soliciting feedback from sailors receiving instruction. Due to the rapid pace of modernization, VTC instructors may lack first-hand experience with the weapons, equipment, and systems installed on the newest ship classes. To bridge this knowledge gap, VTCs provide professional development opportunities for training staff and require them to keep abreast of new technologies by consulting with shipbuilders and equipment vendors. To ensure a committed and motivated training staff, the VTCs provide additional compensation tied to job performance.

¹⁷² Chen, “If One Wants to Become a Sharp Sword One Must First Quench the Fire,” p. 3.

¹⁷³ Guo and Cai, “Test Evokes Taste of War—Observations of Southern Theater Command Navy Frigate Flotilla At-Sea Comprehensive Training Evaluation,” pp. 47, 49.

Even if basic training is led by a highly dedicated and knowledgeable training staff working at well-equipped training facilities, training outcomes may still be less than optimal. Much depends on the standards of competence ship crews are expected to achieve. These standards are defined in training outlines (OMTEs) specific to each class of ship. Because the PLAN does not release these documents, it is difficult to gauge how training standards compare with those of other modern navies. This may only be possible through careful observation of deployed PLAN vessels that have recently completed basic training.

What is clear is that institutional and cultural problems have undermined the PLAN's efforts to ensure that ship crews actually meet all the training standards outlined in the OMTEs. This is done through formal evaluations over the course of basic training and a final, multi-day comprehensive training evaluation held after basic training is complete. VTCs have strong incentives to give passing marks to all ships/crews that they train, because doing so reflects well on them. However, in recent years the PLAN—following guidance from above—has implemented a system that involves “third party” entities in the evaluation process. These teams of experts from the Theater Command Navy Staff Department are more insulated from institutional pressures to achieve high success rates. By some accounts, this new system is yielding more objective assessments. Perhaps more problematic, the PLAN continues to be plagued by a culture of corruption, cheating, and cronyism. In some cases, individual training evaluators accept bribes in exchange for positive evaluations or a preview of testing content. In other case, they may show favoritism to friends and former colleagues. Recent reports indicate that these problems with PLAN organizational culture continue to harm the integrity of training evaluations, despite efforts to mitigate them.

The data presented in this report does not allow for a detailed comparison between PLAN basic training and U.S. Navy Basic Phase training. Still, some insights are possible. First, training timelines are very similar. PLAN basic training generally lasts 6-12 months, sometimes longer and sometimes shorter, largely depending the class of ship and the initial training levels of the crew. U.S. Navy Basic Phase training is intended to last precisely 24 weeks (5.5 months).

Second, despite similar timelines, PLAN basic training appears to cover more content than U.S. Navy Basic Phase training. After completing basic training and passing all evaluations, PLAN vessels are expected to be ready for almost immediate deployment, as single ships or as members of “ship formations” (i.e., surface action groups). Therefore, basic training includes subjects such as joint ASW, joint air defense, and joint search and rescue, which the U.S. Navy leaves for later phases in the training process. Moreover, PLAN basic training concludes with a multi-day comprehensive training evaluation that certifies that a ship and its CO are ready for action. The U.S. Navy's Basic Phase does not.

Lastly, PLAN basic training places much heavier emphasis on training ship crews under “realistic” combat conditions. The aim is to force sailors to demonstrate competence in unpredictable circumstances, under stress, and against “blue” aggressor forces enlisted for the purpose. Except for a 2-3 day capstone Final Battle Problem, reserved until the end of Basic Phase training, the U.S. Navy does not prioritize training under realistic conditions until months later, during follow-on training phases.

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