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### China Maritime Report No. 39: A Hundred Men Wielding One Gun - Life, Duty, and Cultural Practices Aboard PLAN Submarines

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## Summary

Submarine performance is not just measured in technical terms, but also in how crews operate over time. As the People's Liberation Army Navy (PLAN) increasingly deploys its submarine force beyond the near seas on long-distance combat readiness and training missions, studying the force's human components benefits a broader understanding its overall effectiveness. This report explores work and living conditions, crew endurance, service culture, political requirements, and approaches to resolving human issues in the submarine force. An inherently dangerous and challenging profession, the submarine force has gradually developed numerous solutions to address various challenges to prevent non-combat attrition among crews. Life and duty in the "Dragon Palace," both an internal joke and the overarching embodiment of PLAN submarine culture, reveals a professional community focused on secrecy, safety, and expertise that is working to enhance its human performance.

## Introduction

Submarines are technologically designed to overcome the challenges of operating in an underwater environment. However, submarines also require a corresponding "design" for their human crews to effectively operate them under these harsh and difficult conditions. Like in other navies, People's Liberation Army Navy (PLAN) submariners constitute a unique warfare community forged by the special challenges they face under the waves. Understanding that community—how it functions, its strengths and weaknesses—is vital to assessing the operational performance of PLAN submarines in war and peace.

This report examines the human elements of the PLAN submarine force. It explores life and duty aboard PLAN submarines, the unique service culture that has developed over generations of submariners, the role and impact of political ideological education, and elements unique to the nuclear submarine force. Collectively, these form a submarine service culture built from shared experience, the inherent patterns and challenges of submarine work, the idiosyncrasies of China's political system, and the various interactions between personnel aboard each boat.

The report comprises five main parts. Part one examines key features of duty aboard PLAN submarines. Part two discusses the physical and mental stresses Chinese submariners currently face and efforts by the PLAN to alleviate them. Part three covers "Dragon Palace Culture"—the cultural practices unique to the PLAN submarine force. Part four analyzes the impact of ideological and political imperatives on life aboard PLAN submarines. The report concludes with a discussion of the particular features of life aboard PLAN nuclear submarines.

## Duty Aboard Submarines

The systematic organization of ship duty is critical for the regular functions of all aspects of a warship, including combat readiness, training, management, communication, equipment maintenance, and innumerable other details that help ensure good order aboard ships. A balance of strict adherence to regulations and adaptation to complex situations by the officers and noncommissioned officers (NCOs) charged with managing the crew forms an important element of the operational atmosphere aboard PLAN submarines, which can directly impact a crew's effectiveness at sea.

In the PLAN, these are outlined in the *Chinese People's Liberation Army Regulations for Naval Vessels* (《中国人民解放军海军舰艇条令（试行）》), which manage everything from watch

shifts to etiquette.<sup>1</sup> While specific details are unavailable, PLAN submariners are required to abide by these and other regulations in the performance of their duties.<sup>2</sup> Regulations specific to submarine crews also include *Rules for Submarine Daily Duty* (《潜艇日常勤务规则》), and many other rules and regulations specific to equipment operation and maintenance.<sup>3</sup>

PLAN submarines are divided into numbered compartments, with the forward-most compartment labeled 1<sup>st</sup> compartment. Duty in each compartment is overseen by a “compartment chief” (舱室长), a position unique to the submarine service. According to the *Handbook for Officers and Enlisted of the Chinese PLA Navy*, compartment chiefs are “responsible for organizing duties and maintaining order within the compartment, and leading personnel during surface and underwater navigation, during dives and ascents, and during the course of work duties in machinery use and damage control.”<sup>4</sup> They hold compartment meetings with crewmembers during evaluations to provide feedback for improvements and play a leading role in supervision and rectifying training and performance problems among crew members.<sup>5</sup> Compartment chiefs are authorized to seal a compartment in damage control events.<sup>6</sup> The command compartment’s compartment chief is tasked with communicating the commander’s orders to all other compartments.<sup>7</sup> This position can be held by enlisted or NCOs that qualify. Many appear to be “electrician’s mates” (电工兵).

### *Combat Readiness of Submarines at Dock*

Submarines preparing for operational deployments are assigned “combat deployment readiness levels” (战斗出航准备等级). Unlike the seven levels of readiness for surface ships, conventionally powered submarines maintain three levels of combat deployment readiness. For boats in readiness level one, the highest level of readiness, crew members are not allowed to leave the boat. Personnel going ashore are strictly controlled at levels two and three. Nuclear submarine crew readiness levels are likely established according to separate regulations that are not publicized.<sup>8</sup> Many reports state

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<sup>1</sup> The Central Military Commission recently released the latest revised version of these regulations in July 2021. These regulations have been updated four times since 1973, with the previous version released in 2002. “Newly Revised Regulations on Chinese Naval Vessels Come into Force,” *China Military Online*, 12 August 2021, [http://eng.chinamil.com.cn/BILINGUAL/News\\_209203/10074998.html](http://eng.chinamil.com.cn/BILINGUAL/News_209203/10074998.html).

<sup>2</sup> 杜景臣 [Du Jingchen], 中国海军军人手册 [*Handbook for Officers and Enlisted of the Chinese PLA Navy*] (Beijing: Haichao Press, 2012), p. 169.

<sup>3</sup> 中国海军启封已封存的潜艇加强战备训练 [“Chinese Navy Strengthens Combat Readiness Training for Formerly Mothballed Submarine”], 人民海军 [*People’s Navy*], 22 June 2004, <http://news.sohu.com/2004/06/22/07/news220660798.shtml>.

<sup>4</sup> Du, *Handbook for Officers and Enlisted of the Chinese PLA Navy*, p. 167.

<sup>5</sup> 阎勇政 [Lü Yongzheng] and 武振平 [Wu Zhenping], 训一次评一遍, 打一仗进一步 – 某潜艇支队边训练边总结不让问题过夜 [“Train Once and Evaluate Again, Advance Further with Every Battle – A Submarine Flotilla Won’t Let a Problem Persist Into the Next Day by Summarizing While Training”], 人民海军 [*People’s Navy*], 9 May 2012, p. 1; 刘凯 [Liu Kai], 于海涛 [Yu Haitao], 吴晋豫 [Wu Jinyu], and 于航 [Yu Hang], 练出能打胜仗的本领来 – 北海舰队某潜艇基地以十八大精神为指导加强军事训练见闻 [“To Develop the Ability to Win Wars, A Submarine Base of the North Sea Fleet Takes the Spirit of the 18<sup>th</sup> National Congress of the Communist Party of China as a Guide to Strengthen Military Training”], 人民海军 [*People’s Navy*], 18 December 2012, p. 2.

<sup>6</sup> 苑琳 [Yuan Lin], 张刚 [Zhang Gang], and 王庆厚 [Wang Qinghou], 月黑风高, 海疆将士夜砺刀. 警报骤, “深海蛟龙”夜突击 [“The Moon is Dark and the Wind is Strong, Soldiers of the Ocean Frontier Sharpen their Knives at Night. The Sirens Alarm and the ‘Deep Sea Dragon’ Assaults at Night”], 人民海军 [*People’s Navy*], 8 March 2013, p. 3.

<sup>7</sup> 李纯 [Li Chun], 厉害了, 我的潜艇艇长! [“Great Job, My Submarine Captain!”], 中新网 [*China News*], 8 April 2018, <https://www.chinanews.com.cn/m/mil/2018/04-08/8485314.shtml>.

<sup>8</sup> Du, *Handbook for Officers and Enlisted of the Chinese PLA Navy*, p. 179.

that conventionally-powered submarine units are able to complete pre-deployment preparations within several hours, with top units ready to sail within three hours.<sup>9</sup> The speed with which submarines can depart and reach deeper waters is likely tied to their combat deployment readiness level as determined by unit leadership.

As long-distance patrols—i.e., “combat readiness missions”—became more frequent and urgent, units are under growing pressure to decrease preparation time. One 2016 report on a South Sea Fleet submarine flotilla stated that submarines often receive mission orders in the middle of the night and must be ready to sail before daybreak. This compressed time to prepare creates pressure for units to fully stock each boat with necessary supplies and food to sustain the crew on long-distance deployments. Past practice of making purchases and loading based on mission orders delivered ahead of time was far too slow and unrealistic. The flotilla now uses cold storage on the dock maintained year-round and rotated every half month so that boats can stock up and sail quickly. These pre-cleaned, cut, and categorized stocks of provisions are now measured and sorted to save time in loading and space onboard submarines.<sup>10</sup> Crew personnel maintain “combat readiness kits” (战备包) containing bedding, toiletries, and fresh clothes, that are kept in a dedicated room of crew barracks to facilitate immediate boarding and deployment.<sup>11</sup>

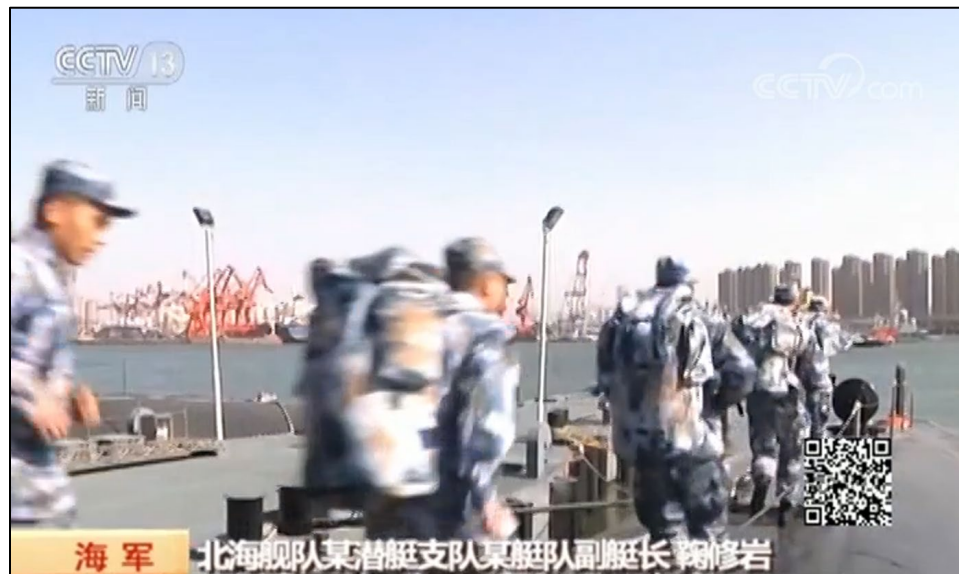


Figure 1: A crew of a Northern Theater Command Navy submarine flotilla rushes aboard their submarine in a combat readiness drill during the 2018 Lunar New Year, carrying their combat readiness kits.<sup>12</sup>

<sup>9</sup> Several sources state the fastest units are able to complete combat deployment preparation within half the time required by regulations. 怕死莫当潜艇兵 [“Don’t Be a Submariner if You Are Afraid to Die”], 中国青年报 [China Youth Daily], 2 January 2015, <http://news.sina.com.cn/o/2015-01-02/043931352759.shtml>; 闫嘉琪 [Yan Jiaqi], 记者观察: 创造世界奇迹的 372 潜艇官兵如何“共跳刀尖上的集体舞” [“Reporter’s Observation: How Did Submarine 372’s Officers and Enlisted Create the World Miracle of ‘The Group Dancing on the Tip of the Spear’”], 人民网-军事频道 [People.cn – Military Channel], 4 May 2016, <http://military.people.com.cn/n1/2016/0504/c1011-28324002.html>.

<sup>10</sup> 周演成 [Zhou Yancheng], 某潜艇支队探索精细化军需保障方法 [“A Submarine Flotilla Explores Refined Military Supply Support Methods”], 解放军报 [PLA Daily], 11 August 2016, p. 5.

<sup>11</sup> 节日练兵 快出快打 潜艇部队战备拉动演练 [“Training During the Holiday to Deploy and Fight Quickly. A Combat Readiness Drill of a Submarine Unit”], CCTV-13, 17 February 2018, <https://tv.cctv.com/2018/02/17/VIDEYdxtvMDeQECpsW0DZ6i2180217.shtml>.

<sup>12</sup> Ibid.

## *The Silent Service*

As might be expected, PLAN submariners are a secretive and careful warfare community. Apart from general adherence to national and military regulations on secrecy, PLAN ships and submarines must restrict any wireless communications before departure and carry out concealment measures when entering or leaving port.<sup>13</sup> According to a 2013 report, many personnel from the 1<sup>st</sup> Submarine Base in Qingdao reportedly refrained from using smart phones to reduce any external interaction while ashore; however, it is unclear if that remains the case.<sup>14</sup>

Secrecy is maintained ahead of missions, with crews reportedly unaware of sudden deployments in many instances. Some receive notice a mere few hours before departure.<sup>15</sup> This has resulted in many accounts of personnel unable to get married or fulfill familial duties due to their disappearance with no notice given to their spouses or families.<sup>16</sup> Many reports describe this strict culture of secrecy using the phrase “don’t ask where I am, I won’t tell you” (不要问我在哪里, 问我也不会告诉你).<sup>17</sup> One account from 2010 describes strict secrecy rules in preparation for deployment. Boat commanders received orders face-to-face and kept their preparatory work closely guarded. Supplies were purchased from numerous vendors and communications equipment was tightly managed with a single point of contact answering calls. Departure plans were announced pier-side and the commander addressed the crew only once they were at sea, having left port quietly.<sup>18</sup>

The commanding officer of each boat is entrusted with the highest level of secrecy. Boat captains possess a classified container where they keep sensitive intelligence, strike plans, command codes, and other items for their eyes only. Described as “kept close by at all times, like a baby” (像宝贝一样, 不离身边), it is an unassuming black, leather suitcase. It also contains a collection of their personal notes and materials from their experience in exercises, training, and tactics, and other various assumptions about the mission or adversary.<sup>19</sup> It is unclear if political commissars have a similar practice or access to a different set of secret materials.

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<sup>13</sup> Du, *Handbook for Officers and Enlisted of the Chinese PLA Navy*, p. 291.

<sup>14</sup> 张科进 [Zhang Kejin] and 钱晓虎 [Qian Xiaohu], 中国核潜艇官兵为保密不用智能手机 工作瞒家人 [“Chinese Nuclear Submarine Officers and Enlisted Do Not Use Smartphones to Protect Secrecy and Hide Their Work from Family”], 中国新闻网 [China News Network], 30 October 2013, <https://www.chinanews.com.cn/mil/2013/10-30/5439894.shtml>.

<sup>15</sup> 潜艇兵的别样生活 [“The Different Life of a Submariner”], 科技日报 [Science Daily], 20 December 2014, <http://finance.china.com.cn/roll/20141220/2861693.shtml>.

<sup>16</sup> Zhang and Qian, “Chinese Nuclear Submarine Officers and Enlisted Do Not Use Smartphones to Protect Secrecy and Hide Their Work from Family”; 海军南海舰队某潜艇支队 372 潜艇官兵群体 [“A Group of Officers and Soldiers of the Navy’s South Sea Fleet’s Submarine Flotilla Submarine 372”], 中国海洋报 [China Ocean News], 1 June 2015, [https://www.mnr.gov.cn/zthd/hyr/2015hyr/2015hyr\\_hyrw/201808/t20180802\\_2157994.html](https://www.mnr.gov.cn/zthd/hyr/2015hyr/2015hyr_hyrw/201808/t20180802_2157994.html).

<sup>17</sup> 杨宸琇 [Yang Chenxiu], 29 年潜艇老兵揭秘百米深海下的“吃喝住行睡” [“A 29-year Submarine Veteran Reveals the Secrets of ‘Eating, Drinking, Living, Walking, and Sleeping’ At 100-meters Under the Sea”], 央广网 [China National Radio], 27 July 2017, [http://www.xinhuanet.com/politics/2017-07/27/c\\_1121385921.htm](http://www.xinhuanet.com/politics/2017-07/27/c_1121385921.htm).

<sup>18</sup> 吴寒月 [Wu Hanyue] and 曹结余 [Cao Jieyu], 走向深蓝的坚强保证 – 东海舰队某潜艇支队用主题主线引领远航中思想政治工作纪实 [“A Strong Guarantee for Going into the Deep Blue – A Record of a Submarine Flotilla of the East Sea Fleet Using the Main Line to Lead Ideological and Political Work During a Long-Distance Voyage”], 人民海军 [People’s Navy], 9 January 2012, p. 3.

<sup>19</sup> 揭秘中国海军核潜艇部队 [“Revealing the Chinese Navy’s Nuclear Submarine Force”], 人民网-人民电视 [People – People’s Television], 22 November 2013, <http://tv.people.com.cn/n/2013/1121/c14644-23614881.html>, (10:30).



### *Prioritizing Repair, Maintenance, and Safety*

In peace or war, submarines and the environment in which they operate are complex and dangerous. Even trivial mishaps can threaten the safety of the boat and its crew. This puts a premium on having highly professional boat captains and crews that can tackle issues before they form.<sup>20</sup> The recognition among PLAN submariners that proper maintenance and operation of the boat is every member's responsibility is embodied in the refrain "a hundred men wielding one gun" (百人同操一杆枪).<sup>21</sup>

This compulsive attitude towards repair, maintenance, and safety is reflected throughout the submarine force. As one sailor wrote, "there is no tolerance for any mistakes in each battle station. There are no trivial matters in a submarine. A once in a thousand mistake is a one hundred percent irreversible accident!"<sup>22</sup> Heavy emphasis is placed on the basics and details of regular duties, the fostering of procedural systems, as well as openness in addressing safety concerns, regardless of rank. Personnel must not conceal problems out of embarrassment or to protect others.<sup>23</sup>

A rigorous maintenance and inspection regimen prevents accidents and ensures the good operating status of equipment. Submarine maintenance patterns include significant time allotted to daily inspections of machinery, between 45-90 minutes, far more than the minimum requirement of 30 minutes for machinery on surface ships.<sup>24</sup> While navigating on the surface, submarines will often conduct maintenance of machinery related to underwater operations. The reverse is true when operating underwater.<sup>25</sup> Additionally, cleanliness is important for all PLAN ships, especially submarines. Submarine crews are required to clean their respective compartments prior to leaving the boat, such as wiping down surfaces, tidying up compartments, and ventilating spaces. Crew must also remove any water collecting at the bottom of the compartment.<sup>26</sup>

### **Crew Endurance—Physical and Mental Costs**

PLAN submarines are deploying more frequently on long-distance missions.<sup>27</sup> These extended periods underwater take a heavy toll on submarine crews. Crews must not only master the technical aspects of their duties, but also work together effectively under challenging conditions underwater, cut off from the world, where night and day are indistinguishable. As the *PLAN Handbook for Officers and Enlisted* states, "bitter hard work is nothing ... loneliness is the greatest enemy for a submariner."<sup>28</sup> As deployments grow in duration and range, the conditions on board constitute important limiting factors in crew endurance and effectiveness. This section will examine the

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<sup>20</sup> 付本国 [Fu Benguo], 让黄金救援 72 小时更有效 ["Make the Golden 72 Hours in Rescue More Effective"], 人民海军 [People's Navy], 5 July 2016, p. 4.

<sup>21</sup> "龙宫"文化: 深海中的一首铿锵战歌 ["'Dragon Palace' Culture: A Resounding Battle Song in the Deep Sea"], 当代海军 [Navy Today], no. 5 (2022), p. 50.

<sup>22</sup> 在严格履行职责中强化执行力 – 一兵一事求安全 ["Strengthen Execution in the Strict Performance of Duties – Every Soldier and Task Seeks Out Safety"], 人民海军 [People's Navy], 1 August 2012, p. 3.

<sup>23</sup> Ibid., p. 3.

<sup>24</sup> Du, *Handbook for Officers and Enlisted of the Chinese PLA Navy*, p. 184.

<sup>25</sup> Ibid., p. 188.

<sup>26</sup> Ibid., p. 200.

<sup>27</sup> 南海舰队潜艇部队远海训练常态化 安全风险前所未有 ["Submarine Units of the South Sea Fleet Normalize Far Seas Training With Unprecedented Security Risks"], 中国军网 [China Military Online], 14 July 2014, <http://military.people.com.cn/n/2014/0714/c1011-25277670.html>.

<sup>28</sup> Du, *Handbook for Officers and Enlisted of the Chinese PLA Navy*, p. 601.

negative impacts of submarine work on crew members, including physical and mental health, morale, and crew interaction, as well as efforts by the PLAN to address these problems.

Work aboard PLAN submarines can cost personnel their health. PLAN medical studies have documented various ailments suffered by Chinese submariners. A survey of 502 personnel that had deployed for over 30 days between 2002 and 2010 found that 20.9 percent experienced ulcerative stomatitis (mouth ulcers), of which psychological stress factors were the primary cause in the early and later periods of deployment. This resulted in poor sleep and diet, treatable with multivitamins and stress reduction measures.<sup>29</sup> One 2015 study of 500 submarine medical cases that occurred during deployments over the course of one year found that 26.4 percent of sick personnel believed their diseases could not be resolved during the mission, and 47.6 percent had to seek medical treatment again because their problems did not improve or worsened.<sup>30</sup> In 2018, researchers from several PLAN institutes and hospitals conducting surveys at a submarine base found that submariners as a profession were prone to lower back pain due to restrictive workspaces, long hours in fixed or contorted positions, and the constant vibration to which they are subjected. Results showed a 33.81 percent occurrence of lower back pain in commissioned officers and enlisted personnel.<sup>31</sup> Such pain not only impacts work performance and life on boats, but also follows personnel into civilian life.

Medical care to address these health issues is far from ideal. According to one person from the 1<sup>st</sup> Submarine Base, medical support is still plagued by problems aboard submarines on long distance deployments. Medical equipment is not managed well, there are not enough personnel trained in its use, and it is not maintained or stored properly. These issues are linked to excessive training burdens while underway, limited time for personnel to manage the equipment, and a lack of responsibility by crew members.<sup>32</sup>

Crew diets aboard submarines have been a problem for a long time. Since submarines prohibit open flame cooking, canned food appears to have been the staple for many years on long-distance deployments. One 2014 report states the poor taste of canned food eventually drove some sailors to become anorexic.<sup>33</sup> A 2009-2012 study by the Naval Medical Research Institute Ship Surgeon Training Center found significant increases in the occurrence of fatty liver disease in at least one submarine unit, with increasing rates for younger sailors each year. This was due to high rates of

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<sup>29</sup> 陈建超 [Chen Jianchao], 刘坦 [Liu Tan], and 曹杰 [Cao Jie], 潜艇长航期间口腔溃疡情况相关因素分析 [“Incidence of Ulcerative Stomatitis Among the Submarine Crew During Prolonged Deployment and Analysis of Related Factors”], 海军医学杂志 [Journal of Navy Medicine], No. 3 (2012), pp. 148-149.

<sup>30</sup> Skin diseases were most frequent, including eczema, folliculitis, and foot ulcers. Physical ailments included seasickness, noise-induced deafness, and radiation injuries. 胡超群 [Hu Chaoqun], 吕奕鹏 [Lü Yipeng], 徐振清 [Xu Zhenqing], 薛晨 [Xue Chen], 刘源 [Liu Yuan], and 张鹭鹭 [Zhang Lulu], 某方向潜艇部队官兵海上执行任务期间卫生服务需求和利用调查分析 [“Investigation and Analysis of Health Service Requirements and Utilization of Officers and Soldiers of a Submarine Unit During Missions at Sea in Certain Direction”], 东南国防医药 [Military Medical Journal of Southeast China], No. 2 (2018), pp. 218-220.

<sup>31</sup> 费奥 [Fei Ao], 徐建洪 [Xu Jianhong], 宋修林 [Song Xiulin], 王丽华 [Wang Lihua], 邹文 [Zou Wen], and 甘维军 [Gan Weijun], 潜艇官兵下腰疼诱发因素分析 [“Analysis of Risk Factors for Lower Back Pain in the Commissioned and Enlisted Onboard Submarine”], 海军医学杂志 [Journal of Navy Medicine], No. 3 (2018), pp. 193-195.

<sup>32</sup> 时斌 [Shi Bin], 李新利 [Li Xinli], 孙华强 [Sun Huaqiang], 李清果 [Li Qingguo], and 孟祥雨 [Meng Xiangyu], 潜艇长航卫生装备使用与管理的几点体会 [“Experiences in the Use and Management of Medical Equipment Aboard Submarines on Long Voyages”], 海军医学杂志 [Journal of Navy Medicine], No. 6 (2018), pp. 500-501.

<sup>33</sup> “Submarine Units of the South Sea Fleet Normalize Far Seas Training With Unprecedented Security Risks.”



overweight sailors (43 percent), caused by poor diets and inadequate exercise. The authors made urgent calls for leaders to solve this issue.<sup>34</sup>

The diets of Chinese submariners began to improve following a period of urgent development begun by the Naval Medical Research Institute in the late 2000s. After experiencing the dining situation aboard one submarine at sea in February 2009, an unnamed PLAN senior leader issued a directive to solve the food problem for forces on prolonged deployment. By September 2010, submarines began testing new “long-distance deployment provisions” that gave crews more fresh vegetables and various other room-temperature or frozen-packed food selections with improved taste and nutrition and were designed for tight packing aboard boats. Manuals were drawn up to provide specific guidance to crews when faced with provisioning challenges on deployment.<sup>35</sup> Submarine-specific general provisions are now used on boats, and when fresh food runs out or electricity conservation is enacted, submarine crews reportedly begin eating standard field rations, such as the navy’s KT-07 nutritional supplement rations. To make up for these conditions, submariners can usually expect a feast to welcome them when returning to shore.<sup>36</sup>



Figure 2: To support personnel covering the night watch, five meals are prepared per day during this submarine’s participation in “regular combat drills at sea” in 2020.<sup>37</sup>

<sup>34</sup> 邹丽 [Zou Li], 常学宏 [Chang Xuehong], and 罗泰来 [Luo Tailai], 某部艇员脂肪肝患病情况调查分析 [“Investigation and Analysis on the Prevalence of Fatty Liver Among Crew Members of a Certain Unit”], 海军医学杂志 [Journal of Navy Medicine], No. 3 (2014), pp. 234-235.

<sup>35</sup> Submarine-specific manuals included “Guidelines for Navy Submarine Provisioning On Deployment” and “100 General Knowledge Questions for Navy Submarine Provision Support on Deployment.” There are likely more updated versions of these as practices have improved. 中国海军配新型远航食品 适合潜艇官兵食用 [“The Chinese Navy Allocates New-Types of Long-Voyage Food That is More Suited to Submariners”], 科技日报 [Science and Technology Daily], 6 November 2012, <https://www.chinanews.com.cn/mil/2012/11-06/4304149.shtml>.

<sup>36</sup> 好奇! 全军伙食标准最高兵种之一的潜艇兵们都吃些啥? [“Curious! Having One of the Highest Food Standards in the Military, what do Submariners Eat?”], 中国军视网 [js7tv.cn], 11 July 2019, [https://m.thepaper.cn/baijiahao\\_3894304](https://m.thepaper.cn/baijiahao_3894304).

<sup>37</sup> 在潜艇上烧饭吃饭是什么体验? [“What is it Like to Cook and Eat on a Submarine?”], 央视网 [CCTV], 10 September 2020, <https://v.cctv.com/2020/09/10/VIDEvsvYJxpWgHrm9I5yrKVR200910.shtml>.

Air quality has a direct effect on living conditions for crews and impacts the quality of their work and their interactions with others. As researchers from the 32<sup>nd</sup> Submarine Flotilla hospital and the PLAN Medical Research Institute noted in 2014, crew members working and living in a submarine's poor microclimate are prone to boredom, fatigue, lethargy, and discomfort, which impacts their psychological state, cognitive abilities, and emotional wellbeing. These problems are further exacerbated by harmful gases, magnetic fields, noise, vibrations, and many other barriers to restful sleep and comfort.<sup>38</sup> A 2021 study by the Naval Special Medicine Center in Shanghai studied the air quality aboard three types of submarines deployed for over seven days, observing high levels of airborne microbial concentrations in many compartments (exceeding restrictions in some sample locations), which presented health risks to crews. Logically, compartments with the highest number of personnel, such as the command compartment, enlisted and officer quarters, and the mess experienced the highest levels. The study recommended various actions to clean compartment air when surfacing is not an available option. In a fully enclosed environment, the study notes, long-term exposure to low doses of microbial metabolites and mycotoxins can induce psychiatric problems, in addition to other physical diseases.<sup>39</sup> Diesel submarines can access fresh air when surfacing to recharge their batteries; however, during longer duration submerged operations by air-independent-powered submarines or nuclear-powered submarines boat crews must be capable of tackling problems in air quality on board.

Noise is not just an issue for submarine stealth, but also impacts crew effectiveness. For example, despite increasing emphasis on noise control and the application of vibration isolation devices and sound damping protective equipment in compartments, more reportedly needs to be done to reduce crew exposure. As one report states, submarine equipment noise can likely reach between 90 and 130 decibels, exceeding the PLA's standard GJB50A-2011 *Admissible Limits of Noise in Military Operations*, which limits exposure to 85 dBA noise levels to no more than eight hours and 100 dBA noise levels to just under a half hour.<sup>40</sup> Mitigating this noise in a closed environment appears to be a challenge. The report's authors note in particular that medium and low frequency noise is still an "urgent problem" impacting crew members' communication and state of mind.<sup>41</sup>

Tests and surveys reveal that long voyages can be detrimental to crew vision, affecting visual contrast sensitivity. This can impact their ability to recognize targets and "identify rudders" (方向舵辨认). Medical examinations conducted by the 1<sup>st</sup> Submarine Base in Qingdao revealed a clear drop in visual acuity after seven days. Crew members surveyed for the study believed the primary causes were lighting and the lack of a normal day cycle. Crews reported visual acuity issues each year over the course of service. Analysis attributed this to poor lighting causing visual strain and close quarters, causing a problem in the ciliary muscles that regulate changes in eye lens curvature. Crews requested more lighting in compartments and lighting modes that could provide an indication of day or night,

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<sup>38</sup> 李征斌 [Li Zhengbin] and 王海涛 [Wang Haitao], 潜艇艇员心理健康状况调查及干预措施研究概述 ["Survey on Mental Health Status of Submariners and Research on Intervention Measures"], 海军医学杂志 [Journal of Navy Medicine], No. 1 (2015), pp. 71-73.

<sup>39</sup> 张建平 [Zhang Jianping], 陈双红 [Chen Shuanghong], 任小孟 [Ren Xiaomeng], and 周宏元 [Zhou Hongyuan], 航行期间潜艇舱室空气微生物浓度检测与分析 ["Detection of Analysis of the Airborne Microbial Concentration in Submarine Cabins During Deployment"], 海军医学杂志 [Journal of Navy Medicine], No. 6 (2021), pp. 684-687.

<sup>40</sup> 杨理华 [Yang Lihua], 张骁 [Zhang Xiao], 张翔鹏 [Zhang Xiangpeng], 刘丽滨 [Liu Libin], and 杨军 [Yang Jun], 潜艇舱室环境噪声危害及治理进展研究 ["Research on Environmental Noise Hazards and Control Progress in Submarine Cabins"], 舰船科学技术 [Ship Science and Technology], No. 12 (2022), p. 1-2.

<sup>41</sup> Ibid., p. 1-2.

as well as better lighting conditions in their living quarters, such as individual bunk lighting and softer lighting colors.<sup>42</sup> Rapid decline in vision and restfulness among crew members can constitute an important limit on crew endurance and effectiveness, as well as test the limits of morale as individuals sense a decline in some of their critical faculties.

Stress, depression, anxiety, and numerous other psychological issues are perennial challenges for PLAN submarine crews during long-distance deployments. Survey results from at least the past two decades attribute these problems to the inherent risks of their profession, the working environment, and the heavy requirements on personnel during patrols and training.<sup>43</sup> Medical departments in units use psychological screening and intervention measures to root out problems in crew personnel. Personnel from the 12<sup>th</sup> Submarine Flotilla's hospital wrote in late 2010 that most grassroots unit hospitals were employing psychological testing systems based on Eysenck Personality Inventory to understand the character and temperament of personnel and using the results to reduce attrition rates among crews.<sup>44</sup>

Crew morale and well-being reportedly fluctuates during deployment. The midway period through a combat readiness patrol is a point where many crewmembers hit a “burnout period” (倦怠期), when crew can experience fluctuating attitudes.<sup>45</sup> To strengthen the ability of crews to handle such problems at sea, officers from headquarters political departments and the political officers and military doctors aboard boats receive some training and are given materials to assist in psychological counseling and interventions.<sup>46</sup>

The lack of sleep due to disturbance of the circadian rhythm is a major contributor. Some individual accounts state there are times when they simply do not sleep at all.<sup>47</sup> Overall, studies found that sleep quality among deployed submariners declined throughout their deployment and persisted afterwards. Occurrence of depression and anxiety similarly worsened during prolonged deployment.<sup>48</sup> Using the Minnesota Multiphasic Personality Inventory, the Automatic Thoughts Questionnaire, and other surveys, one cross-PLA study found the greatest factors impacting submarine crew mental health

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<sup>42</sup> 孙华强 [Sun Huaqiang], 蒋定文 [Jiang Dingwen], 时粉周 [Shi Fenzhou], 李新利 [Li Xinli], 王海军 [Wang Haijun], 陈伟 [Chen Wei], 张建国 [Zhang Jianguo], 逢淑裔 [Pang Shuyi], and 沈先荣 [Shen Xianrong], 潜艇航行对艇员视力的影响 [“Influence of Submarine Navigation on Crew's Eyesight”], 海军医学杂志 [Journal of Navy Medicine], No. 3 (2013), pp. 173-174.

<sup>43</sup> 陈国民 [Chen Guomin], 茆丁 [Mao Ding], and 王丽君 [Wang Lijun], 潜艇艇员焦虑和抑郁状况调查及分析 [“Survey and Analysis on the Anxiety and Depression in Submariners”], 海军医学杂志 [Journal of Navy Medicine], No. 3 (2012), p. 181.

<sup>44</sup> 王建国 [Wang Jianguo], 刘坦 [Liu Tan], 祝杰 [Zhu Jie], and 曹杰 [Cao Jie], 潜艇官兵心理健康状况的影响因素及对策 [“Influencing Factors and Countermeasures of Mental Health for Submarine Officers and Enlisted”], 海军医学杂志 [Journal of Navy Medicine], No. 2 (2011), pp. 85-87.

<sup>45</sup> 郑洪胜 [Zheng Hongsheng] and 张元烁 [Zhang Yuanshuo], “龙宫”文化, 激励官兵勇闯大洋 [“‘Dragon Palace’ Culture Inspires Officers and Enlisted to Brave the Oceans”], 当代海军 [Navy Today], No. 5 (2022), p. 51; “Revealing the Chinese Navy's Nuclear Submarine Force,” (19:30).

<sup>46</sup> Wu and Cao, “A Strong Guarantee for Going into the Deep Blue,” p. 3.

<sup>47</sup> 潜艇兵的别样生活 [“The Different Life of a Submariner”], 科技日报 [Science Daily], 20 December 2014, <http://finance.china.com.cn/roll/20141220/2861693.shtml>.

<sup>48</sup> 胡东洋 [Hu Dongyang], 彭丽君 [Peng Lijun], 毛琳玲 [Mao Linling], 王帅 [Wang Shuai], 杜伟 [Du Wei], 刘丽 [Liu Li], and 钱海蓉 [Qian Hairong], 潜艇艇员长航任务中心理与睡眠状况调查及其相关性分析 [“Investigation and Correlation Analysis of Mental and Sleep Status of Submariners During Prolonged Deployment at Sea”], 海军医学杂志 [Journal of Navy Medicine], No. 3, 2019, pp. 213-217.

were automatic negative thoughts and negative perceptions, sleep quality, severe seasickness, and familial burdens.<sup>49</sup>

Some studies cite personality issues resulting from long deployments. For example, one study authored by experts at the 12<sup>th</sup> Submarine Flotilla hospital found that some submarine crew members, younger personnel in particular, had personalities prone to being introverted, self-centric, and even suspicious of others, requiring intervention before potential breakdowns.<sup>50</sup> The study's authors recommended strengthening their organization's ability to provide psychological help to submarine personnel and intervene when necessary.<sup>51</sup>

Despite such anticipated improvements, psychological issues among crews have not improved in recent years. A July 2021 report on a Southern Theater Navy submarine flotilla found that younger officers and enlisted crew members still faced persistent psychological problems. Part of this is attributed to increased deployments for greater duration and higher training intensity. Another purported cause is the lack of resilience of younger personnel when facing challenges. The report argued that while they may be quite eager to impress, they are often unprepared for the realities of submarine work and the pressures involved. As one flotilla staff member put it, "sometimes the reason for the occurrence of psychological issues in young personnel is that they are not psychologically hardened enough."<sup>52</sup> In addition to assigning political officers and senior NCOs to counsel younger personnel, some of the proposed solutions include improving individual sailors' psychological self-awareness and ability to self-regulate, recognizing that not every solution can be externalized. Another reported solution was to reduce the stigmas associated with visiting the flotilla's psychological counseling center.<sup>53</sup>

Compared to the crews aboard conventionally-powered submarines, the submerged operations of nuclear boats when on "standby" (待机) for prolonged periods of time can be even more difficult for crews to endure. As the former political commissar of the 1<sup>st</sup> Submarine Base explained in 2013, despite the adoption of modern approaches to personnel support, including successes in psychological counseling support, it is still generally very difficult to overcome the fundamental challenges of work on board submarines for long periods of time. In the end, nuclear submariners must rely on "a special conviction, consciousness, and quality" to endure hardship, be able to fight, and be patient.<sup>54</sup> The political commissar's remarks suggest that a separate and intensive screening process must be in place to ensure that personnel entering the nuclear force possess these special qualities.

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<sup>49</sup> 鹏丽 [Peng Li], 谢洪波 [Xie Hongbo], 徐津 [Xu Jin], and 沈兴华 [Shen Xinghua], 潜艇艇员心理健康状况及其影响因素分析 ["Mental Health Status of Submariners and Its Influencing Factors"], 海军医学杂志 [*Journal of Navy Medicine*], No. 4 (2019), pp. 289-292.

<sup>50</sup> Wang, Liu, Zhu, and Cao, "Influencing Factors and Countermeasures of Mental Health for Submarine Officers and Enlisted," p. 87.

<sup>51</sup> *Ibid.*, p. 88.

<sup>52</sup> 郑洪胜 [Zheng Hongsheng], 走出阴影, 鼓足勇气再出发 – 来自南部战区海军某潜艇支队聚焦官兵心理健康问题的报告 ["Stepping Out of the Shadows and Summoning the Courage to Set Off Again – A Report Focusing on the Mental Health of Officers and Sailors from a Submarine Flotilla in the Southern Theater Command Navy"], 人民海军 [*People's Navy*], 27 July 2021, p. 4.

<sup>53</sup> *Ibid.*, p. 4.

<sup>54</sup> "Revealing the Chinese Navy's Nuclear Submarine Force," (18:52).

Often, many health problems are not resolved once crews are relieved and leave the boat. Crews may be transferring onto or from “motherships” (母船), likely referencing submarine support vessels, which causes many sleep, exercise, and dietary problems to persist. PLAN studies have explored various interventions onboard to alleviate these issues and sustain crew health and endurance. These include providing support for exercise, psychological recovery, hyperbaric oxygen therapy, dietary health, and sleep recovery.<sup>55</sup>

Due to the toll submarine life takes on crew members, the PLAN implements “specialized service rehabilitation” (特勤疗养) for all submarine force personnel to restore them to physical and mental standards before returning them to their posts.<sup>56</sup> Organized by the medical departments of respective units in accordance with the *Implementation Rules for Naval Rehabilitation Work* (《海军疗养工作实施细则》), each crew has an annual rehabilitation plan aligned with its deployment and training schedules that will determine the number of personnel up for rehabilitation and where it will be conducted.<sup>57</sup> This is done in small groups at various PLA-run sanitarium facilities, often for half a month, where staff and experts will assist in physical therapy, sleep therapy, psychological counseling, and many other services. It is often referred to as a “rest stop” (加油站) for personnel, especially those returning from deployment and training activities, and it is institutionally required.<sup>58</sup> In certain cases, rehabilitation is conducted so personnel can re-deploy.<sup>59</sup> PLAN personnel serving in

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<sup>55</sup> 孙永军 [Sun Yongjun] and 孙滢 [Sun Ying], 艇员长航换乘期间体能恢复干预措施的探讨 [“Discussion on Intervention Measures for Physical Recovery of Crew Members During Transfer After Long Voyages”], 海军医学杂志 [Journal of Navy Medicine], No. 3 (2018), pp. 207-208; 徐海亮 [Xu Hailiang], 潜艇艇员长航换乘期间体能恢复干预对策探究 [“Discussion on Intervention Countermeasures for Physical Recovery of Submarine Crew During Transfer After Long Voyages”], 体育风尚 [Sport & Style], No. 1 (2020), pp. 248, 250.

<sup>56</sup> This work is PLA-wide. The *PLA Internal Affairs Regulations* stipulates that “leaders at all levels shall attach importance to rehabilitation work for military personnel and strictly implement their rehabilitation plans.” Some professions, such as aviators, submariners, and divers are specified for increased assessment and training support for physical and mental health. See: 《中国人民解放军内务条令（试行）》全文发布 [“Full Text of the Chinese People’s Liberation Army Internal Affairs Regulations (Trial) Promulgated”], 中华人民共和国中央军事委员会命令 – 军令 (2018) 58 号令 [Chinese People’s Republic of China Central Military Commission Order – Military Order (2018) No. 58], 第 246 条 [Article 246]; 李涛 [Li Tao], 70 名潜艇艇员完成疗养 – 东海舰队某潜艇支队开展疗养不漏一人 [“70 Submariners complete Rehabilitation – A Submarine Flotilla of the East Sea Fleet Carried Out Rehabilitation Without Missing a Single Person”], 人民海军 [People’s Navy], 16 November 2015, p. 2; The PLAN also requires rehabilitation for personnel completing a continuous long-distance deployment of three or more months, such as those completing anti-piracy escort deployments. See: 周小舟 [Zhou Xiaozhou], 侯瑞 [Hou Rui], and 王元元 [Wang Yuanyuan], 为官兵高擎健康保护伞 – 东海舰队推动“四位一体”卫生服务工作纪实 [“Hold the Umbrella of Health Protection Up High for the Troops – A Record of the East Sea Fleet’s Promotion of ‘Four-in-One’ Health Services”], 人民海军 [People’s Navy], 23 June 2015, pp. 1, 3.

<sup>57</sup> 童涛 [Tong Tao] and 唐泽民 [Tang Zemin], 海军 5 年完成 3 万人次专项疗养 [“The Navy Has Completed 30,000 Special Rehabilitation Cases in Five Years”], 人民海军 [People’s Navy], 12 August 2013, p. 1.

<sup>58</sup> Li, “70 Submariners complete Rehabilitation – A Submarine Flotilla of the East Sea Fleet Carried Out Rehabilitation Without Missing a Single Person,” p. 2.

<sup>59</sup> 刘金凤 [Liu Jinfeng], 逢锦科 [Pang Jinke], 张天南 [Zhang Tian’nan], and 李玉银 [Li Yuyin], 疗养员们为什么总是像“候鸟”一样, 春夏飞来, 秋冬飞走 ■ 济南军区青岛第二疗养院更新理念打造可持续发展疗养基地 让军人疗养告别“候鸟现象” [“Why are Convalescents Always Like ‘Migratory Birds’ Flying in During Spring and Summer and Flying Away in Autumn and Winter. The Qingdao No. 2 Sanatorium of the Jinan Military Region Has Updated its Concepts to Create a Recuperation Base for Sustaining Development, so that Soldiers Can Recuperate and Bid Farewell to the ‘Migratory Bird Phenomenon’”], 解放军报 [PLA Daily], 24 August 2011, p. 2.

other non-submarine units have in the past expressed jealousy over submariner access to rehabilitation opportunities.<sup>60</sup>

The implementation of rehabilitation was inconsistent for many years. Many personnel would go years without fulfilling their required time in rehabilitation because they had to use personal vacation time or it conflicted with deployments.<sup>61</sup> Cultural barriers also stood in the way. As submarine No. 369's political commissar explained in 2015, there were certain stigmas surrounding rehabilitation. Various leaders saw it as vacation for officers. To rectify this issue, in 2015 the fleets made it part of unit leaders' jobs to take the lead by committing to rehabilitation themselves.<sup>62</sup>

The PLAN has worked to further institutionalize, expand, and mandate rehabilitation, and orient it towards providing greater support for front-line units. The Central Military Commission Logistics Support Department's Health Bureau revised its policies in 2021, issuing the *Provisional Regulations on Military Rehabilitation and Health Promotion Work* (《军队疗养工作暂行规定》), which expanded services for combat readiness and rehabilitation for front-line operational units. It also made annual rehabilitation requirements for units more rigid and made special-case rehabilitation (专项疗养) available for all PLA personnel. It stipulates those within the specialized service rehabilitation category, including submariners, should go in for rehabilitation once a year for a period of thirty days. It states that specialized service rehabilitation will not consume personnel leave days, making personnel far more willing to fulfill the full period of rehabilitation.<sup>63</sup>

Chinese medicine can be found in units across the entire PLA and can play a certain role in PLAN unit sustainment while on deployment. However, until recently, Chinese traditional medicine was not present on board PLAN submarines, since there were no designated positions to administer it. PLAN leadership has reportedly begun allowing some traditional medicine practices on submarines and started training batches of personnel to serve secondary roles in Chinese medicine health support.<sup>64</sup> In late 2017, the first batch of submarine personnel serving concurrent medical support posts were certified. These crew members, who included sonar and radar specialists, received training in emergency medical treatment as well as more holistic healthcare and medicine for peacetime force sustainment, including traditional therapies in *tui na*, cupping, *gua sha*, and others.<sup>65</sup>

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<sup>60</sup> 高治 [Gao Zhi] and 李丁 [Li Ding], 基层功臣的“荣耀之旅” [“The ‘Glorious Journey’ of the Grassroots Heroes”], 人民海军 [People's Navy], 31 August 2010, p. 2.

<sup>61</sup> Li, “70 Submariners complete Rehabilitation – A Submarine Flotilla of the East Sea Fleet Carried Out Rehabilitation Without Missing a Single Person,” p. 2.

<sup>62</sup> Zhou, Hou, and Wang, “Hold the Umbrella of Health Protection Up High for the Troops,” p. 3.

<sup>63</sup> 曹保文 [Cao Baowen], 陈小菁 [Chen Xiaojing], 孙兴维 [Sun Xingwei], and 周娜 [Zhou Na], 关于《军队疗养工作暂行规定》有关政策, 你想知道的都在这里! [“Here is Everything You Want to Know About the Relevant Policies of the ‘Temporary Provisions on Military Rehabilitation Work’!”], 解放军报 [PLA Daily], 25 August 2021, <https://new.qq.com/rain/a/20210825A0531G00>.

<sup>64</sup> 干正 [Gan Ding], 李伟红 [Li Weihong], and 顾伟 [Gu Wei], 潜艇兼职中医卫生兵培训模式探索与实践 [“Exploration and Practice in Training Modes for Concurrent Posts as Traditional Chinese Medicine Medics Aboard Submarines”], 海军医学杂志 [Journal of Navy Medicine], No. 2 (2020), p. 225.

<sup>65</sup> *Tui Na* is a therapeutic form of massage that involves physical kneading, rolling, pressing, and rubbing various areas between the joints. *Gua Sha* is a practice using a tool to scrape the skin to promote blood flow and restoration. 海军首批 50 名海军兼职卫生兵上岗 均来自一线部队 [“The Navy's First Batch of 50 Troops Serving Concurrently as Medics Are All From Frontline Units”], 当代海军 [Navy Today], 23 November 2017, <http://news.sina.com.cn/c/nd/2017-11-23/doc-ifypacti7391877.shtml>.



The PLAN is incorporating human factors engineering in the design of submarine work environments to reduce fatigue and improve efficiency among crews. In mid-June 2021, the PLA Naval Medical Center's Office of Human Factors Engineering and High-tech Weapon Protection Research established a large-scale submarine environment simulator, the only of its kind in the PLA for researching human performance on long-distance deployments. The simulator features integrated consoles, bunks, and bulkheads, as well as air flow, noise, lighting, and humidity consistent with submarines in active service in the PLAN for a high-fidelity environment to measure the biological, psychological, cognitive, and performance parameters of submarine personnel. The center's inaugural test under the "Distant Ocean Ship Environment Simulation Cognitive Science Project" had 12 personnel work in the fully-enclosed space for 25 days, then complete a set of scientific experiments before exiting the compartment. During their period in the simulator, a series of visual psychophysical experiments and emotional tests were conducted, samples of blood, saliva, and urine taken, and sleep data monitored.<sup>66</sup>

PLAN researchers now routinely use the simulator for experiments and testing. By August 2022, the simulator had completed a 30-day test on 15 subjects titled "large-scale human experiment on the regulation and control of biorhythm disorders among crew members in the naval submarine environment simulator." It was reportedly the first time dynamic, multi-mode LED lighting, imperceptible sleep monitoring, and other technologies had been used to measure lighting impact on biological clocks, the secretion of melatonin, and the impact of interventions on adverse sleep and appetite symptoms. Subjects strictly adhered to daily work and rest shifts aboard submarines, completing simulated tasks in submarine operations. Interventions resulted in a 15 percent reduction in sleep disorder incidence, a 10 percent reduction in error rates of crew operations, and an increase in concentration. Sleep quality and work efficiency improved significantly. The Naval Medical Center seeks to incorporate the beneficial results of such testing into the broader submarine force as quickly as possible by carrying out early application tests aboard real submarines.<sup>67</sup> This simulator capability provides important infrastructure for the subsequent efforts to optimize human performance aboard PLAN submarines.

### **"Dragon Palace Culture"**

PLAN submariners have long jokingly referred to their boats as the "dragon palace" (龙宫), in reference to the palace of the dragon king at the bottom of the Eastern Sea in Chinese mythology. "Dragon palace culture" is a term that encompasses various activities outside of work and training that submariners perform to relieve the stress, boredom, and other negative effects of prolonged deployments. Built up over generations of submariners, it involves activities such as publishing bulletins, producing broadcasts, holding performances, and conducting various physical competitions while underway. When space is available, group activities are held for storytelling, sharing riddles, and poetry reading. Crews hold physical competitions such as arm wrestling, pull ups, or pushups and other games like ping pong or darts, with winners awarded simple but prized gifts such as apples.

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<sup>66</sup> 喜讯 – 中心新建“潜艇环境模拟舱”载人模拟试验圆满完成! ["Good News – The Center's Newly-Built 'Submarine Environment Simulator' Manned Simulation Experiment is Successfully Completed!"], 海军特色医学中心 [PLA Naval Medical Center], 28 July 2021, <http://www.455hospital.cn/notice/news/2c90e4827a5be8eb017af6b81bb11975.html>.

<sup>67</sup> 汪天玄 [Wang Tianxuan], 王泽锋 [Wang Zefeng], and 郭兴羽 [Wu Xingyu], 模拟潜艇内部环境, 调控干预艇员睡眠质量, 15 名参试人员连续封舱 31 昼夜……请看海军军医大学特色医学中心的一项特殊试验 – 运用照光技术调节艇员生物钟 ["15 Test Subjects Were Sealed Off for 31 Days and Nights to Simulate the Internal Environment of a Submarine and Regulate and Intervene in Crew Sleep Quality ..... Check Out the Special Test of the Naval Military Medical University Special Medicine Center – Using Lighting Technology to Adjust Crew Biological Clocks"], 人民海军 [People's Navy], 10 August 2022, p. 1.

These activities are meant to raise spirits, boost morale, and foster a fighting spirit.<sup>68</sup> In this light, it is an important solution to many of the negative aspects of deployment listed in the previous section.

Each submarine creates its own version of *The Undersea Great Wall Daily* (《水下长城报》), a newspaper edited by the boat's deputy political commissar featuring articles written by crew members.<sup>69</sup> The various columns are short, but reflect the stories, feelings, and experiences of sailors on deployment. The newspaper publishes positive messages to encourage fellow crewmates and exhort them to fulfill their duties and complete the mission. The *Undersea Great Wall Daily* is used by boat leadership to pass messages to the crew, such as orders to prepare for typhoons or to enact power conservation measures for prolonged submerged operations, including shutting down air conditioning and cooking ovens. It is also used to share stories from training and deliver messages from higher echelon guidance to promote a sense of duty and honor among sailors.<sup>70</sup>

Sailor birthdays are a time of celebration aboard Chinese submarines, where an individual will be announced to the crew, sung happy birthday over the boat's broadcast from the radio room, and given a bowl of "long-life" noodles by the commander and a card signed by the crew.<sup>71</sup> Some recent birthday celebrations opt for cake instead.<sup>72</sup> While crews look forward to celebrations, the consumption of alcohol is prohibited aboard submarines, unlike some permitted alcohol consumption aboard PLAN surface ships in the past.<sup>73</sup>

Much like in other navies, PLAN submariners observe numerous rituals. Some are political and others are professional. There are plenty of occasions on board for crew to pledge allegiance to the Communist Party and their nation. While doing so promotes commitment to service and sacrifice, it also reminds crew members not to betray the homeland and never abandon the military. Such rituals are a part of political education but can be held at key points in the voyage. For example, rituals are held when a boat leaves PRC territorial waters and when it crosses the equator.<sup>74</sup>

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<sup>68</sup> Du, *Handbook for Officers and Enlisted of the Chinese PLA Navy*, p. 601; Yang, "A 29-year Submarine Veteran Reveals the Secrets of 'Eating, Drinking, Living, Walking, and Sleeping' At 100-meters Under the Sea."

<sup>69</sup> Zheng and Zhang, "'Dragon Palace' Culture Inspires Officers and Enlisted to Brave the Oceans," p. 51.

<sup>70</sup> Ibid., p. 52.

<sup>71</sup> For an example of a young directly-recruited NCO's birthday celebration, see: 高毅 [Gao Yi], 海底生日 Party ["Birthday Party at the Sea Bottom"], 人民海军 [People's Navy], 20 July 2010, p. 2.

<sup>72</sup> Zheng and Zhang, "'Dragon Palace' Culture Inspires Officers and Enlisted to Brave the Oceans," p. 51.

<sup>73</sup> Du, *Handbook for Officers and Enlisted of the Chinese PLA Navy*, p. 198.

In September 2017, the Central Military Commission released its strictest rules prohibiting alcohol use for the whole military, which also likely impacted submarine crew access to alcohol while at their home stations. See 卢晓琳 [Lu Xiaolin], 调查: 最严禁酒令实施月余 基层部队执行得如何 ["Survey: The Strictest Prohibition on Alcohol Has Been Enacted for Over a Month, How are Grassroots Units Enforcing it?"], 人民日报 [People's Daily], 13 November 2017, [http://m.news.cn/mil/2017-11/13/c\\_129738804.htm](http://m.news.cn/mil/2017-11/13/c_129738804.htm).

<sup>74</sup> Wu and Cao, "A Strong Guarantee for Going into the Deep Blue," p. 3.



Figure 3: A seaman (private first class) receives the mark of a submariner by his captain.<sup>75</sup>

Professionally, every submariner yearns to experience their “growing up ceremony” (潜艇兵成长礼) at some point during long-distance submerged voyages. It is recognition by the commanding officer of that person’s qualification for important missions. The ceremony is conducted only when a submarine reaches maximum dive depth. Recognized personnel will kiss a buttered hammer and drink sea water drawn from the depths, which is kept within a vial. Some may deploy several times before getting the chance to “grow up,” and receive the mark of a real submariner.<sup>76</sup> In certain cases, embarked flotilla leadership will be present, further marking the ceremony’s importance for sailors.<sup>77</sup> The boat commander will also present a signed honorary credential to the recipients.<sup>78</sup>

### **Ideological and Political Education—An Imposed Culture**

The Party controls the gun, especially the most lethal weapons in the PLA arsenal. The impact of politics on PLAN submarine personnel cannot be overstated. The ideological and political education initiatives generated from senior levels of the Chinese Communist Party form an imposed culture on PLA forces at all levels. This appears to be particularly true for the PLAN submarine force. Submarine units can and do have their own cultures, but these unique features can be targeted and co-opted by political officers to ensure units are aligned ideologically with Party values and control. Thus, many of the cultural elements in the submarine service will often entail strong political or ideological components.

“Ideological and political education” (思想政治教育), sometimes simply referred to as political education, is a longstanding and important tool to implement Communist Party control and ensure

<sup>75</sup> 丁斐煜 [Ding Feiyu], 大洋深处奔涌铁血情怀 – 东部战区海军某潜艇支队创新活动方式活跃海上文化生活的做法 [“Iron Blood Passion Rushes in the Depths of the Ocean – How A Submarine Flotilla of the Eastern Theater Command Navy Innovates Its Approach to Activities and Enlivens At Sea Cultural Activities”], 人民海军 [People’s Navy], 22 October 2020, p. 4.

<sup>76</sup> Ibid., p. 4.

<sup>77</sup> Wu and Cao, “A Strong Guarantee for Going into the Deep Blue,” p. 3.

<sup>78</sup> 海军着力提升政治工作对备战打仗贡献率 [“The Navy Strives to Increase the Contribution of Political Work to War Preparation”], 央视军事报道 [CCTV Military Report], 14 December 2020, <https://new.qq.com/rain/a/20201214A0GYB100>.

discipline. Among its purposes is to “ensure the PLA will always be under the absolute leadership of the Party,” “ensure the effective fulfillment of the PLA’s historical missions in the new century and new stage,” “cultivate high-quality new revolutionary soldiers with ideals, morality, culture, and discipline,” and “guide officers and soldiers to always be politically steadfast and morally pure.”<sup>79</sup> Overall guidance for PLA-wide political education is formulated at the Central Military Commission’s Political Work Department, called the General Political Department before 2015. The then General Political Department promulgated its first *Outline of Ideological and Political Education* (思想政治教育大纲) in 2009. It provided guidance and standards for implementing political education at all levels down to grassroots units.<sup>80</sup> This section does not delve into the ideological content of political education but focuses on its implementation by and effects on the submarine force, which can have severe impacts on crew efficiency, discipline, and morale.

Prior to the introduction of the 2009 *Outline*, political education was extremely problematic. As the South Sea Fleet’s 32<sup>nd</sup> Submarine Flotilla reported in 2010, for years there were chronic “contradictions between work and political study” (工学矛盾) that went unresolved. Multiple levels of the organization would assign overlapping political education requirements, and senior and grassroots levels were being taught using the same content and methods, leading to widespread complaints. There were not enough political officers and they were territorial in their teaching functions. Moreover, the actual effectiveness of political education was difficult to measure and quantify.<sup>81</sup>

Relying on the guidance and standards contained in the 2009 *Outline*, the 32<sup>nd</sup> Submarine Flotilla (Sanya, Hainan) began enacting measures to fix these issues. In August 2010, it held an event attended by the flotilla’s political officers to examine how the Kilo-class submarine No. 374 conducted political education during its deployment in the South China Sea. Some of the reported standards adopted included deconflicting various requirements and giving grassroots units more autonomy to implement their own education plans. Tailored education plans were conducted at different organizational levels, taking into consideration the particular circumstances of different missions and individuals. The types of personnel authorized to provide instruction were expanded to include military officers (i.e., non-political officers) and NCOs. This had the benefit of adding vivid experiences from personnel the sailors trusted and respected, yielding a more fruitful educational outcome. Inspections and evaluations of political education also incorporated more tangible performance elements.<sup>82</sup>

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<sup>79</sup> Chapter 1, Article 3, 中国人民解放军思想政治教育大纲 [Chinese People’s Liberation Army Outline of Ideological and Political Education], 人大宣教网 [National People’s Congress Propaganda and Education Network], <http://www.npcxj.com/index.php/Mobile/Lew/info/type1/buweiguizhangjiwenjian/id/1853.html>, (accessed 2 July 2023).

<sup>80</sup> This first outline was implemented as a trial in January 2007, and was revised and officially promulgated in November 2009. 《中国人民解放军思想政治教育大纲（试行）》全文 [“Full Text of Chinese People’s Liberation Army Outline of Ideological and Political Education (Trial)”], 解放军报 [PLA Daily], 23 January 2007, <http://news.cctv.com/china/20070123/100953.shtml>; 新修订《中国人民解放军思想政治教育大纲》发布 [“New Revised Chinese People’s Liberation Army Outline of Ideological and Political Education Released”], 新华社 [Xinhua], 18 November 2009, [http://www.gov.cn/jrzq/2009-11/18/content\\_1467717.htm](http://www.gov.cn/jrzq/2009-11/18/content_1467717.htm).

<sup>81</sup> 高毅 [Gao Yi] and 唐忠平 [Tang Zhongping], “规范，让政治教育可圈可点 – 南海舰队某潜艇支队依据新《大纲》破解教育难题 [“‘Norms,’ Making Political Education Remarkable – A Submarine Flotilla of the South Sea Fleet Solves Educational Problems According to the New ‘Outline’]”, 人民海军 [People’s Navy], 17 August 2010, p. 1.

<sup>82</sup> Political education began targeting four levels: leading officers at or above regiment grade, battalion-grade or lower officers and intermediate-level NCOs, junior grade NCOs, and conscripts. Ibid., p. 1.



The story of the 32<sup>nd</sup> Submarine Flotilla suggests the heavy costs of poorly-executed political education and the low levels of unit trust towards political officers. The fact that political education was implemented the same way across the whole flotilla—from leadership to grassroots units—implies it was ineffective, consumed significant time, and was resented by all subject to it. Moreover, the territoriality of political officers indicated they had few other functions. On a confined boat where all are expected to achieve a level of professional skill, recurrent uninflected political education was a weak link in the chain.

More recent reports suggest some broad improvements or strengthening in the implementation of political education. Major updates in political education took place after the Military-wide Conference on Ideological and Political Education Work was held in early December 2020, updating concepts, content, teaching methods, educators, and work mechanisms.<sup>83</sup> In early 2021, the PLA released a new version of the *Military Political Work Regulations*. It forms the basis for PLA political work, outlining political officer responsibilities and duties, of which implementing political education of the force is a core function.<sup>84</sup> This emphasis was reflected in then-PLAN Commander ADM Shen Jinlong's remarks on seven core missions at the Sixth Plenary Meeting of the 12<sup>th</sup> PLAN Party Committee, the first of which focuses on political education.<sup>85</sup> The end result was claimed advances in aligning political education more closely with the missions submarines are conducting. As one Southern Theater Navy submarine flotilla commander stated in the summer of 2022 “while on standby at sea, we formulate precision educational packages based on different phases of the mission, our location at sea, the different enemy situation we are presented with, and the dynamic changes in personnel's thoughts. This ensures that education and the mission always resonate on the same frequency and continue to inspire personnel to be brave and tenacious and have the martial courage to fight and win.”<sup>86</sup>

Despite efforts to improve political work, there are still many challenges inherent to the role of political officers and political work aboard submarines. In some cases, the lack of submarine experience is likely harmful to their standing on the boat. For example, one Southern Theater Navy nuclear submarine crew's new political commissar parachuted into the position in July 2020 with zero time serving aboard submarines, having previously served on large surface ships. He admits to not even knowing how to board the boat and having to learn about submarines from scratch. By his

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<sup>83</sup> 李学勇 [Li Xueyong] and 李宣良 [Li Xuanliang], 习近平会见全军思想政治工作会议代表 [“Xi Jinping Meets Delegates from the Military-Wide Conference on Ideological and Political Education Work”], 新华网 [Xinhua], 4 December 2020, <http://cpc.people.com.cn/n1/2020/1204/c64094-31956103.html>.

<sup>84</sup> 开创新时代军队政治工作新局面 – 中央军委政治工作部领导就新修订的《军队政治工作条例》答记者问 [“Launch a New Situation for Military Political Work in the New Era – Leaders of the Political Work Department of the Central Military Commission Answer Reporters' Questions on the New Revised *Regulations on Military Political Work*”], 新华网 [Xinhua], 19 February 2021, [http://www.xinhuanet.com/politics/zywj/2021-02/19/c\\_1127115880.htm](http://www.xinhuanet.com/politics/zywj/2021-02/19/c_1127115880.htm);

<sup>85</sup> 郑祖 [Zheng Zu], 王智涛 [Wang Zhitao], and 牛涛 [Niu Tao], 海军党委十二届六次全体 (扩大) 会议在京召开 – 深入贯彻落实习近平强军思想在新的起点上开创海军建设新局面 – 党委书记秦生祥工作报告党委副书记沈金龙讲话 [“The Sixth Plenary (Enlarged) Meeting of the 12<sup>th</sup> Navy Party Committee Held in Beijing – Thoroughly Implement Xi Jinping's Thought on Strengthening the Military and Create a New Situation in Naval Construction from a New Starting Point – A Work Report by Secretary of the Party Committee Qin Shengxiang and Speech by Vice Chairman of the Party Committee Shen Jinlong”], 人民海军 [People's Navy], 6 January 2021, p. 1.

<sup>86</sup> 推动新时代思想政治教育体系构建走深走实 海军某潜艇支队: 教育与任务同频共振 提升练兵备战质效 [“Promote the Construction of the Ideological and Political Education System in the New Era to Be Deeper and Real: Education and the Mission Resonate on the Same Frequency, Improving the Effectiveness of Training and Combat Readiness”], 央视网-军事报道 [CCTV – Military Report], 14 June 2022, <https://tv.cctv.cn/2022/06/14/VIDEgSjldedphvK3nMTguM13220614.shtml>.

second year on board, his evaluations were stellar, suggesting there is little professional submarine expertise expected of political officers. They run the Party Committee and can intervene in the affairs of managing the crew, but do not necessarily give direct orders in the boat's operation.<sup>87</sup> Such practices may impact trust as political commissars are one of two commanding officers in charge of each boat and, in principle, are expected to be competent enough to lead its crew.

This concern appears to be reflected in a Summer 2022 report from one Northern Theater Navy submarine flotilla. Admitting that “a few” (read: likely many) political officers were weak and would serve few real operational functions in wartime, the flotilla has made efforts to address doubts about the roles of political officers and improve the effectiveness of political education on the crew. The flotilla instituted more formalized plans (likely instructions) for personnel implementing “political work,” with ideological and political education a core function. Referred to as the “Three Plans” and outlined in the boat's *Political Work Plan* (《政治工作部署表》), specific duty guidance was provided for the “political command officers” (政治干部指挥部署), the “political officer on duty” (政工更部署), and other key members that can implement “political work in each compartment” (舱室政治工作骨干部署). This ensured that political work (i.e., the core elements and values of political education) could reach every duty position in each compartment. In addition to training and courses designed for boat commanders and political commissars to better synch and align their thinking, subject matter experts directly assisted in training political officers in this flotilla.<sup>88</sup> These efforts reflect the ongoing struggle to reconcile the imposition of political work in the low fault tolerant environment aboard submarines.



Figure 4: A lieutenant commander holds a political education session for a group of private first class and junior grade NCOs in a feature on a Southern Theater Command Navy submarine flotilla.<sup>89</sup>

<sup>87</sup> 刘育雄 [Liu Yuxiong], 深海生命线就是火线 [“The Lifeline in the Deep Sea is the Firing Line”], 当代海军 [Navy Today], No. 7 (2020), pp. 16-18.

<sup>88</sup> According to article 14 of the Political Work Regulations of the Chinese People's Liberation Army, the first task of political work is ideological and political education, a core task of political officers.

<sup>89</sup> “Promote the Construction of the Ideological and Political Education System in the New Era to Be Deeper and Real.”



While operating underwater, PLAN submarines are disconnected from the “Political Work Network” (政工网), a PLA-wide system used to implement ideological and political education.<sup>90</sup> Since political education is a requirement for all, political officers must prepare materials ahead of deployments so that crews can meet their commitments, sometimes issuing small booklets kept in sailors’ pockets.<sup>91</sup>

Starting in 2015, submarines had dedicated local networks installed and crews were issued tablets with 8-inch screens enabling easier political education, as well as added benefits to crew cultural activities and entertainment. Crews could access the “Dragon Palace” political work network, where they could read the boat’s newsletters, listen to music, play games, study, or watch approved films. Crews watch blockbuster films, classic communist films, variety shows, and political education content produced by submarine base/floatilla political work departments. The latest content is uploaded to onboard servers when boats are moored at base. Those missing class due to watch duty can simply make up their educational requirements using the tablets. There is also content to help sailors conduct psychological self-treatment and soothing music programs to promote sleep.<sup>92</sup> This practice has made political officers’ jobs easier and crews happier, helping to alleviate the numerous burdens of submarine life.<sup>93</sup>

Greater use of online resources on boats or at base has the added benefit of improving communication and education with younger sailors. PLA sources often describe sailors born in the 90s as difficult to manage the old-fashioned way. Having grown up on the internet, this group is prone to introversion and is difficult to read, but also eager to speak out. Use of the political work network has purportedly made it easier for these sailors to express themselves and absorb content in political education.<sup>94</sup>

Time at base features its own patterns of life and provides opportunities for cultural activities, political education, and a recharging of the force. Submarine bases and flotillas, like individual boats, have a “Dragon Palace Local Network” used by personnel for various cultural and morale activities

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<sup>90</sup> 黄明 [Huang Ming], 全军政工网开通一年 页面日均访问量近百万页次 [“The Military’s Political Work Network Has Been Online for One Year With an Average Daily Page Visit of Nearly One Million Pages”], 新华社 [Xinhua], 11 December 2006, [http://www.gov.cn/jrzq/2006-12/11/content\\_466776.htm](http://www.gov.cn/jrzq/2006-12/11/content_466776.htm).

<sup>91</sup> 阎勇政 [Lü Yongzheng] and 王维 [Wang Wei], 学党史 明党史 报党史 – 某潜艇支队开展党史学习教育活动有声有色 [“Learn Party History, Understand Party History, and Report on Party History – A Submarine Flotilla’s Study of Party History and Educational Activities Were in Full Swing”], 人民海军 [People’s Navy], 28 April 2011, p. 1.

<sup>92</sup> 解放军潜艇兵配平板电脑 可打游戏看电影 [“The People’s Liberation Army Allocates Tablets to Submariners Enabling Them to Play Games and Watch Movies”], 解放军报 [PLA Daily], 30 December 2015, <https://mil.sina.cn/zgjq/2015-01-02/detail-icesifvy2514489.d.html>; 张淼 [Zhang Miao] and 于海涛 [Yu Haitao], 艇行深海不迷航 – 某潜艇基地创新训练中政治工作纪实 [“Submarines Do Not Get Lost on Their Travels Through the Deep Sea – A Record of Innovation of Political Work During Training by a Submarine Base”], 人民海军 [People’s Navy], 26 July 2016, p. 2; 李涛 [Li Tao], 代宗锋 [Dai Zongfeng], and 王凌硕 [Wang Lingshuo], 深海潜航, 络的触角伸出水面 – 海军某部借助网络技术创新思想政治工作纪实 [“Navigating the Deep Seas, Tentacles of the Web Emerged from the Water – A Record of a Navy Department Using Network Technology to Innovate Political Ideological Work”], 解放军报 [PLA Daily], 30 December 2016, p. 11; Ding, “Iron Blood Passion Rushes in the Depths of the Ocean,” p. 4.

<sup>93</sup> Ibid.

<sup>94</sup> 张勇 [Zhang Yong], 李轩 [Li Xuan], and 苑琳 [Yuan Lin], 开对【药方子】走出【新路子】-某潜艇支队紧跟形势特点发挥团组织功能作用纪实 [“Writing ‘Prescriptions’ and Going ‘A New Path’ – A Record of a Submarine Flotilla Closely Following the Characteristics of the Situation and Playing the Role of the Regiment Organization”], 人民海军 [People’s Navy], 18 July 2017, p. 3.

themed on traditions and history of the submarine force.<sup>95</sup> “Dragon palace lecture hall” meetings and various other classes and guided discussions are held by base leaders to provide political education in preparation for upcoming deployments.<sup>96</sup>

One means of political education in the submarine force is to give current servicemen a glimpse of the challenges their forebearers faced and overcame. For example, in the summer of 2012, Boat No. 330 of the East Sea Fleet’s 22<sup>nd</sup> Submarine Flotilla welcomed back retired servicemen to speak with the current crews. One of the retired submariners had joined the unit in 1969 and was on the first submarine to go beyond the first island chain. The stated purpose of such events is to remind the current force of their more humble roots and the great contributions made with the modest capabilities of past platforms, so that they will recognize what is expected of them in future naval combat with the more modern equipment currently available. As the then-captain of Boat No. 330 explained, “the older generation of submariners made extraordinary achievements in their ordinary posts when weapons and equipment were not advanced. What should we do now that we have new weapons and new equipment in hand in the new era?”<sup>97</sup>

### **Nuclear Submarine Spirit – “Devotion”**

The nuclear submarine force holds a unique position of prestige within the PLA. The collective experience and achievements of China’s first nuclear submarine unit, the North Sea Fleet’s 1<sup>st</sup> Submarine Base in Qingdao, are upheld as a model of the PLAN’s ingenuity, perseverance, and pioneering spirit. Despite limits on available expertise and access to critical technologies, the long period of testing, development, and experimentation conducted by this first unit brought to fruition Mao Zedong’s promise of creating a nuclear submarine force and with it, China’s sea-based second-strike capability. Organized in July 1969, the nuclear force’s first crew, the 11<sup>th</sup> Submarine Crew (11艇员队), was awarded the honored title of “undersea vanguard boat” (水下先锋艇) in 1994 by the Central Military Commission.<sup>98</sup> The contributions of this unit and the nuclear submarine force writ large were recognized by the phrase “Long March Spirit” (长征精神), a reference to the PLA’s arduous year-long journey from Jiangxi to Yan’an (1934-1935) while under attack by Chiang Kai-shek’s Nationalist forces. For the nuclear submarine force, the Long March Spirit serves as a badge

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<sup>95</sup> 隋一范 [Sui Yifan] and 王辰玮 [Wang Chenwei], 指尖点沙绘兵心 – 讲述某潜艇基地文化骨干王得宇创作的故事 [“Writing a Soldier’s Heart in the Sand with Your Fingertip – Telling the Story of Wang Deyu, Cultural Backbone of a Submarine Base’s Culture”], 人民海军 [People’s Navy], 9 August 2022, p. 4.

<sup>96</sup> 张淼 [Zhang Miao] and 于海涛 [Yu Haitao], 创新形式学深悟透 结合任务融合贯通 – 某潜艇基地 “军营微党课” 使学习有声有色 [“A Deep Understanding of Innovative Formalism Combined with Task Integration – A Submarine Base’s ‘Micro Party Class on Base’ Makes Learning Vivid”], 人民海军 [People’s Navy], 3 August 2016, p. 1.

<sup>97</sup> In stark contrast with current operations, the prolonged deployment beyond the first island chain required over two years of preparations and involved technical institute personnel living on board with the crew to repair equipment. 李斌博 [Li Binbo] and 刘亚迅 [Liu Yaxun], 穿越 36 年时空对话 – 330 潜艇开展教育活动目击记 [“A Dialogue Spanning 36 Years – Witnessing Submarine 330 Conducting Educational Activities”], 人民海军 [People’s Navy], 6 June 2012, p. 4.

<sup>98</sup> The 11<sup>th</sup> Submarine Crew has been recognized for numerous achievements over its years of service, e.g., conducting 25 major combat readiness training exercise missions, carrying out 883 experiments, and safely navigating 210,000 nautical miles. The unit is known for having set the record for the longest submarine deployment and longest duration submerged in the PLAN submarine force. 水下先锋艇 [“Undersea Vanguard Boat”], 中国军网 [China Military Online], 20 April 2016, [http://www.81.cn/2016hjc1qzn/2016-04/20/content\\_7014705.htm](http://www.81.cn/2016hjc1qzn/2016-04/20/content_7014705.htm).

of honor and evokes the core values of absolute loyalty to the Communist Party and devotion to the nation.<sup>99</sup>

The “Long March Spirit” has received renewed attention in the Xi Jinping era.<sup>100</sup> In November 2013, Xi issued a directive to recognize the deeds and work of the 1<sup>st</sup> Submarine Base, leading to the successor crew being honored again in May 2014 with the same title of “undersea vanguard boat.” This kicked off an educational program to study the “nuclear submarine spirit” (核潜艇精神), elevating the unit and the nuclear submarine force’s prestige even further.<sup>101</sup> According to one 2015 report, this is “the precious spiritual wealth formed in the practice of creating and developing China’s sea-based nuclear deterrent and nuclear counterattack forces, collectively demonstrating the courage, valor, and pride of the officers and sailors of the navy’s nuclear submarine force when holding fast their sacred mission and bravely venturing into the deep ocean.”<sup>102</sup> The PLAN Party Committee’s purpose in launching this initiative was to instill in the rest of the navy “the firm belief in obeying the Party’s command, the hardened ability to win wars, a heroic and tenacious fighting style, and a devoted spirit of willingness to sacrifice.”<sup>103</sup>

Willingness to sacrifice in the nuclear submarine spirit means one is not afraid to die, as reflected in the popular refrain “do not become a nuclear submariner if you’re afraid to die.”<sup>104</sup> While overcoming the fear of death is certainly a challenge for all PLAN combat units, it holds a special meaning for the nuclear submarine force. Official accounts in 2013 describe an open secret that nuclear submarine personnel leave behind “suicide notes” (遗书) or final farewell notes to their families before leaving on long-distance deployment, suggesting the perceived dangers of serving aboard PLAN nuclear-powered submarines.<sup>105</sup> Similarly, there is an unwritten rule regarding the order of personnel entering the reactor compartment for “emergency repairs” (抢险). Those with the

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<sup>99</sup> 张伯硕 [Zhang Boshuo], 传承长征精神 推进 “水下长征” [“Inherit the Long March Spirit and Promote the ‘Undersea Long March’”], 人民海军 [People’s Navy], 17 October 2016, p. 3.

<sup>100</sup> Ibid.

<sup>101</sup> 陈万军 [Chen Wanjun] and 李宣良 [Li Xuanliang], 习近平：学习宣传海军某潜艇基地官兵身上“四种精神” [“Xi Jinping: Learn and Promote the ‘Four Types of Spirit’ that a Navy Submarine Base’s Officers and Enlisted Uphold”], 新华网 [Xinhua], 20 November 2013, [http://www.xinhuanet.com/politics/2013-11/20/c\\_118225955.htm](http://www.xinhuanet.com/politics/2013-11/20/c_118225955.htm); 张庆洲 [Zhang Qingzhou], 我国第一艘核潜艇退役始末 [“The Whole Story of China’s Decommissioning of the First Nuclear Submarine”], 光明日报 [Guangming Daily], 8 January 2014, [https://epaper.gmw.cn/gmrb/html/2014-01/08/nw.D110000gmrb\\_20140108\\_6-11.htm](https://epaper.gmw.cn/gmrb/html/2014-01/08/nw.D110000gmrb_20140108_6-11.htm).

<sup>102</sup> 刘文平 [Liu Wenping] and 于航 [Yu Hang], 大国重剑 出鞘惊天 – 学习发扬人民海军优良传统精神之 “核潜艇精神” [“Unsheathing a Great Power’s Sword to Scare the Heavens – Learning and Carrying Forward the Fine Tradition of the ‘Nuclear Submarine Spirit’ in the People’s Navy”], 人民海军 [People’s Navy], 6 May 2015, p. 4.

<sup>103</sup> 李因兴 [Li Yinxing] and 李唐 [Li Tang], 海军各级兴起学习核潜艇精神热潮 推进转型建设 [“Learning the Nuclear Submarine Spirit Surges Throughout the Navy, Promoting its Transformation”], 解放军报 [PLA Daily], 11 February 2014, <https://www.chinanews.com.cn/mil/2014/02-11/5820807.shtml>.

<sup>104</sup> Liu and Yu, “Unsheathing a Great Power’s Sword to Scare the Heavens,” p. 4.

<sup>105</sup> 田之章 [Tian Zhizhang], 寂寞长航 奉献无悔 [“Devotion and No Regrets on a Lonely and Long Voyage”], 人民海军 [People’s Navy], 6 November 2013, p. 1; 丁玉宝 [Ding Yubao], 蔡年迟 [Cai Nianchi], 肖德伦 [Xiao Delun], 邓冉子 [Deng Ranzhi], 米晋国 [Mi Jinguo], and 刘凯 [Liu Kai], 英雄无悔 – 北海舰队某潜艇基地官兵弘扬舍生忘死奉献精神 的报告 [“A Hero Without Regrets – A Report on Carrying Forward the Spirit of Selfless Sacrifice by the Officers and Enlisted of a North Sea Fleet Submarine Base”], 人民海军 [People’s Navy], 27 September 2013, p. 1.

highest position in the required profession enter first, followed by those who are married and have children, those who are married without children, and lastly the younger sailors.<sup>106</sup>

Reactor safety and a willingness to sacrifice oneself to prevent catastrophe are inherent to nuclear submarine culture. In the early 2010s, the PLAN claimed it had over 40 years without nuclear accidents.<sup>107</sup> One submarine captain attributed this record to having established a complete nuclear safety program early on in the force's development, as well as the force's attitude toward nuclear safety. This engrained "nuclear safety culture" (核安全文化) has been achieved through education, training, and practices to ensure all personnel possess thorough technical proficiency.<sup>108</sup> Both on base and aboard submarines, leadership strives to create an atmosphere focused on nuclear safety, with numerous specific regulations and systems in place and proactive technical monitoring and diagnostics teams working to ensure reactor safety.<sup>109</sup> For SSBN crews, nuclear safety is considered a duty of political importance for all crew members, owing to the boat's independent combat operations and importance for national security.<sup>110</sup>

Despite their stated record, there have been accidents and deaths along the way. For example, submarine crews at the 1st Submarine Base regularly commemorate the sacrifice of Meng Zhaoxu (孟昭旭), a "deputy chief engineer" (副机电长) that perished from radiation sickness in an incident in a boat's reactor compartment while on combat readiness patrol in 1998. Despite pleas from comrades, Meng exposed himself beyond the regulated time to protect his crew members and quickly fix the problem. Meng's statue sits on the grounds of the 1st Submarine Base as a reminder of his devotion.<sup>111</sup> Such selfless devotion is seen as a core component of the nuclear submarine spirit.

## Conclusion

Understanding the human components of the PLAN submarine force can benefit a broader assessment of the force's effectiveness. Submarine performance is not just measured in its technical parameters, but also in how crews operate over time. Many factors impact performance, including work and living conditions, crew endurance, written and un-written rules for various tasks, and organizational and individual cultures. This report has explored these elements by examining PLA writings and illustrating life and duty in the PLAN submarine force through their own portrayal. Many of the hallmarks of a professional submarine force culture are present aboard PLAN submarines, especially surrounding secrecy, safety, and expertise. Whether it is procedures for equipment maintenance or nuclear reactor safety, the force appears to demonstrate a high level of professionalism and a desire to uphold the highest standards across the fleet.

As new platforms replace older generations of submarines, the PLAN is assigning more important missions and tasks to the submarine force. Once largely confined to the near seas, PLAN submarines

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<sup>106</sup> Ding, Cai, Xiao, Deng, Mi, and Liu, "A Hero Without Regrets," p. 1.

<sup>107</sup> Liu and Yu, "Unsheathing a Great Power's Sword to Scare the Heavens," p. 4.

<sup>108</sup> "Revealing the Chinese Navy's Nuclear Submarine Force," (22:10).

<sup>109</sup> 郑良振 [Zheng Liangzhen], 薛玉峰 [Xue Yufeng], and 于航 [Yu Hang], 核盾牌上的“安全密码” [“The ‘Code to Safety’ on the Nuclear Shield”], 人民海军 [People's Navy], 6 July 2012, p. 1.

<sup>110</sup> 米晋国 [Mi Jinguo], 丁玉宝 [Ding Yubao], and 蔡年迟 [Cai Nianchi], 用生命践行使命的水下先锋 [“Undersea Vanguard's Fulfill Their Mission with Their Lives”], 人民海军 [People's Navy], 23 September 2013, p. 1.

<sup>111</sup> Liu and Yu, "Unsheathing a Great Power's Sword to Scare the Heavens," p. 4; 蓝力 [Lan Li] and 张森 [Zhang Sen], 一场仪式一次洗礼 – 某潜艇基地运用仪式教育铸魂育人纪实 [“One Ceremony is a Baptism – A Record of a Submarine Base Using Rituals to Cultivate Souls and Education Personnel”], 人民海军 [People's Navy], 6 November 2017, p. 3.

are increasingly deployed on long-distance combat readiness and training missions. Prolonged deployments have revealed to PLAN leadership that conditions on submarines directly affect crew endurance and thus the combat performance of the force. Numerous studies on crew physical and mental health demonstrate the tough conditions imposed on crews and the various solutions the submarine force has developed. While the force has advanced technologically, many problems related to human performance remain unresolved, potentially impacting crew effectiveness, especially during long deployments. With new scientific approaches focusing on human factor engineering, the PLAN will likely make incremental improvements to crew endurance and performance.

A unique “Dragon Palace” service culture built up over generations is often touted as a means of boosting morale in the force, but there are few means of verifying its effectiveness. This service culture exists alongside, and is sometimes co-opted by, an imposed political culture that seeks to instill discipline and Communist Party control. In recent years, the PLAN has implemented some improvements to make political education more palatable for crews. Altogether, PLAN submariners are imbued with a distinct service culture replete with pride, selflessness, and quiet service to the country.

## **About the Author**

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