

A Study on the Pre-job Training Pattern upon the Command talents of Underwater Unmanned Equipment in the Background of Informationization

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Abstract. Based on the current development status of underwater operation equipment in the background of informationization, this paper analyzes the training needs of underwater operation command talents, and studies the countermeasures for the pre-job training on the command talents of underwater unmanned equipment on account of the problems in the relevant command training, which has positive guiding significance for the quality education and ability training on the command talents of underwater unmanned equipment.

1 Application and Development Status of Underwater Unmanned Equipment

With unmanned ground vehicles, aircrafts and ships showing increasingly high operational effectiveness on the battlefield, the significance of underwater unmanned equipment in future naval battles is increasingly recognized by military experts. At present, various types of underwater unmanned equipment developed relying on UUV have integrated the advanced technologies like submersibles, sensors, intelligent machines, low-power propulsion devices and underwater intelligent weapons, and gradually applied in the combat missions such as submarine warfare, anti-submarine warfare, mine warfare, marine environmental reconnaissance and so on. The US Navy has taken the underwater unmanned equipment as the sea-power multiplier to obtain the sea supremacy and underwater advantages, and included it the key research programs. It is considered to be effective as cruise missiles and is regarded as a future new concept weapon in the United States. The underwater unmanned equipment is listed as a major project both in the *National Defense Technology Program 1996* and in the *US Navy Technology 2000-2035*.

China's underwater unmanned equipment is developed mainly along with the development of the anti-mine operation application. At present, the relevant detection and identification equipment like ROV and AUV has been put into use successively. The underwater unmanned equipment can perform the detection, identification and blasting of underwater targets according to preset procedure.

With the development and breakthrough of the key technologies of underwater unmanned equipment, the use of underwater unmanned equipment in the military field is expanding, but the operational use of unmanned equipment cannot be separated from the command and control of talents. With the continuous increase of the types and use expanding of unmanned equipment, the demand for command talents of unmanned equipment continues to increase. At present, the pre-job command training is still in the operational command training pattern of traditional equipment. There is lack of the training means of command talents for new operational forces, thus the equipment's operational ability cannot be fully improved. In this paper, a study is carried out on the account of the training pattern of operational command talents of underwater unmanned equipment, focusing on the discussion about the establishment of scientific and rational talent training

objectives, training systems, training methods, etc., in order to promote the rapid improvement of the operational ability of underwater unmanned equipment.

2 Problems in the Professional Training on the Command talents of Underwater Unmanned Equipment

2.1 The talent training standards and the development pace of the equipment do not match with each other

The talent training standards is a concentrated reflection of the ideas, theories and systems of talent training. Perfect talent training standards can build a scientific platform and create a good environment for the rapid growth of high-quality joint operations talents. At present, the talent training standards revised by colleges and universities have the following features: firstly, highlighting the command characteristics, and focusing on strengthening the training of operational command, organizational training and leadership management ability in strict accordance with the requirements of command talents training, to lay a solid foundation for job-taking and long-term development; secondly, highlighting practical characteristics, organizing students to carry out equipment practical exercises, post-practice, and participate in the practical links such as military exercises and drills of actual use of weapons to strengthen the training of the post ability of the talents; and thirdly, highlighting the professional characteristics. Through the study of equipment and its operational use, departmental training and management, the trainees will be able to lay a solid foundation in professional theory and master the basic skills of command, meeting the job requirements for a department director.

The Navy is a service that is mainly based on warships and operates in maritime areas. The level of education of our naval officers is still far from that of the developed countries. In particular, the main body and backbone of the officers mostly grow up along with the edification of the mechanized operation theory. Most of them come from various majors such as academic education and pre-job education, with the lack of a solid systematic informationized operation theory, so the overall operation commanding quality and ability is relatively low. Under such a reality, if the standards for training talents cannot keep pace with the development of equipment, and has a lack of forward-looking, it will inevitably result in that the training goals are macro and less specific; the implementation of standards is still copying the traditional education and teaching pattern; the trained talents will have the mindset, old-fashioned and self-restraint operation concept and pattern, resisting to the use of new equipment. Therefore, a long adaptation and transformation process is needed to meet the operational needs of new equipment.

At this stage and in the future, the focus of improvement of the naval operation ability should be on operational strategy, operational command, and joint operational command. While carrying out the construction of weapons and equipment, we should improve the education and training mechanism of operation command talents, the standardization training or the operational command system of education; popularize the knowledge of underwater operation and specialized skills among various types of commanding officers in the direction of underwater operations to enhance their understanding of the effects of underwater operation and train them how to use different equipment to plan operations, thereby improving the officers' quality and ability to compete in operation command, so that they can solve the problem of matching between operation command and new operation forces in underwater operation construction and establish the construction of tactical ability training for the new-type underwater operation forces, making the force can

effectively develop and play the maximum comprehensive performance of new equipment to meet the needs of modern operations.

2.2 Talent training resources mismatching with mission needs

President Xi Jinping pointed out: "To rule the army, rule institutions first; To strengthen the army, strong institutions required." He further stressed: "Strengthening the military and rejuvenating the state depends on talents, and the foundation of talents is education." Our military has always attached importance to the main channel role of institution education in terms of talent training. Through years of construction, a three-level institution training system combining primary, middle and high levels has gradually formed. By taking the measures such as improving the level of institution education and training; strengthening the intensive training of incumbents and relying on local quality education resources to implement army-strengthening plans, the institution education has effectively played an important role in solving the problem of shortage of military talents. To this end, it is necessary to make full use of the training role of institutions in order to strengthen the talent commanding ability.

At present, the institution education system can still not meet the needs of the quality training on the command talents of underwater unmanned equipment, which is mainly reflected in the following aspects:

1. The talent training and management is backward, and the pattern of traditional semi-mechanized era is still continuing. The methods of operation command, training organization and leadership management ability are outdated;
2. The teaching content is single, and the operation command teaching continues the content of the equipment structure and its use in operation, with the shortcomings of slow content update and less initiatives or passion of talents;
3. The methods and means are not innovative enough, and the class teaching is still dominated by trainers, followed by trainees in the unattractive case-based or MOOC teaching mode. In this case, the knowledge and ability of the trainees cannot meet the mission requirements.
4. Due to the scarcity of the teaching resources, it is difficult for institutions to obtain the first-hand information about new-type underwater unmanned equipment. The lack of necessary simulation training equipment so the mastery upon the equipment lags far behind the troops and factories.

2.3 Talent utilization mechanism does not match job needs

The ultimate goal of talent training is to utilize talents. There are still no clear criteria for selection of specific methods and criteria to meet specific job needs. No strict and stable training system, training institutions and training patterns are available in terms of the training mechanism for the command talents of unmanned underwater equipment. The ability of the talents in the corresponding positions is difficult to meet the needs of such positions while the talents who have received formal training cannot obtain the suitable positions, which seriously damages the enthusiasm and creativity of the commanders. Besides, the initiative and enthusiasm of the relevant functional departments are not fully played in terms of talent training and guarantee.

3 Establishment of Measures for Pre-job Training on the Command talents of Underwater Unmanned Equipment

3.1 Scientifically establish the talent training goals by focusing on future naval battles

The 2015 national defense white paper "China's Military Strategy" clearly states that the Navy gradually realizes the transition from the offshore defense to the combination of offshore defense and open-sea protection, improving the abilities in strategic deterrence and counterattack, maritime maneuver operation, maritime joint operation, comprehensive defensive operation and comprehensive supporting operation.

The improvement of operation ability is inseparable from the support of technology. As the underwater unmanned equipment is a new type of operation platform following surface ships, submarines and air arm, and is an indispensable combat force for our navy to go towards the deep water. The pre-job training on the commanding officers of underwater unmanned equipment should, based on the operational missions and tasks, enable the trainees master the tactical application principles and methods of underwater unmanned equipment; and have the commanding abilities of plan development, command and control, emergency response and tactical coordination upon the underwater unmanned equipment. The pre-job training on the staff officers of underwater unmanned equipment should enable the trainees to complete preparation, organization and implementation as well as effectiveness evaluation of operational program according to the tactical technical characteristics of the equipment. For the trainees of other positions, the pre-job training should enable them to understand the tactical application principles and methods of the underwater unmanned platform as the supporting device, which can play an expansion role for the shaping of their professional quality. The pre-job training on the command talents of underwater unmanned equipment should be an important part of the training on the officers before they take their jobs in order to improve their ability in the individual positions, promote the rapid formation of equipment operation capacity with the combination the progress of information construction, accelerate the integration of the unmanned operation platforms and other operation platforms, so that a versatile and efficient system of maritime operation forces is formed.

3.2 Accelerate the construction of a talent training system by focusing on job needs

To accelerate the rapid formation of underwater unmanned operation forces, we should give play to the main role of military institutions in military vocational education and conduct in-depth research in institutions to scientifically establish the ability and quality goal patterns of various talents related to the underwater unmanned platform based on the principles of mastering the goal positioning, highlighting the characteristic advantages, and closely following the job needs; develop the talent training program as well as relevant curriculum standards and outlines according to the pattern of "majors set up based on job needs, goals are refined according to majors, curricula are set as per goals, contents are closely associated with curricula, abilities form through learning and drilling, and positions are supported by abilities". In the process of formulating the talent training system, change the operational command ideas and focus on the improvement of the technology and knowledge level, aiming at the pre-job training of the command talents of unmanned equipment and the long-term development of the military professions on the basis of completing the military and political education of the commanding officers. Cultivate the trainees with the abilities of operation commanding, training organization, management and education, as well as planning and coordination so that they are qualified to serve as department directors, business leaders, and command staff.

3.3 Develop and improve talent training methods by focusing on the enhancement of talents ability

Regarding the control mode, the underwater unmanned equipment is different from the air and surface unmanned equipment. In the course of operations, only after the equipment floats up, personal participation and control in the circuit is required on the aspects of online planning of information, emergency fault handling, and collection and record of route points. The operation of the equipment requires the command talents have good operational planning ability, online emergency response ability and equipment operation guarantee ability.

The training on the command talents of underwater unmanned equipment can highlight the changes of new theories, new equipment, new tactics and new training methods, as well as command process training, operational strategy improvement, and analysis of maneuver and drill cases relying on the existing teaching resources and the development frontiers of foreign military theory; strengthen the training of the trinity military professional teaching mode, and achieve the teaching mode optimization relying on the network teaching, virtual experiment (real operation), electronic teaching materials, virtual software, deduction system, online question bank, remote assessment system and other teaching support conditions, based on the theory teaching; incorporate high-tech knowledge and new equipment into the teaching and training system; enhance the trainees' planning and disposal ability by using the simulation test questions; develop the training simulation software, increase the proportion of simulation training time, and standardize training content, to make the trainees drilled in simulation and real operations. Based on the existing information equipment, organize the command talents to have the simulation exercises, to make the simulation training is more like the actual combat, improving the organizational command and coordination ability of the command talents and the actual operation ability of the forces.

3.4 comprehensively improve the quality of talents training by focusing on the fulfillment of missions

The underwater unmanned equipment is an indispensable strategic part for the Navy to go towards the deep water. The operational command ability of the equipment command talents is a reliable guarantee for the operational ability of the equipment. Facing the situation of the new military revolution in the world, the new mission of proceeding with the military revolution with Chinese characteristics, and the new requirement of winning the information war in the future, the command talents of underwater unmanned equipment must have a good comprehensive quality and a reasonable knowledge structure; must understand the scientific and technological knowledge and military theory related to high-tech operations; must know technology and tactics as well as command and good management at the same time. And also, they should have a sound knowledge structure, innovative ability, familiarity with engineering and technical skills on the basis of good political quality and excellent military quality. The talent training should attach more importance to the innovation, development, openness, intelligence and utilization on the basis of a comprehensive, complex and full-range type of talent training, focusing on future-oriented operations and enhancing development potential.

4 Conclusion

The continuous and in-depth development of underwater unmanned equipment will inevitably lead to the transformation of the naval operation patterns. How the talent training pattern will adapt to the development of equipment technology and the improvement of traction equipment operation

ability are serious issues along with the strategic transformation of the Navy. This paper briefly analyzes the training needs of the command talents of underwater unmanned equipment in the background of informationization and discusses the training pattern, basic requirements and training system of new-type equipment, which has positive significance for promotion of the generation of unmanned equipment operation ability in the background of informatization.

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