Naval Mine Warfare Vision

Where we are

The globalized economy that has evolved since the end of the Cold War has resulted in an unprecedented interdependence amongst all nations. The number and types of military threats to NATO have grown along with the global economy.

NATO’s Cold War focus rested on the Warsaw Pact; in the new millennium, however, we must prepare for regional conflicts and asymmetric threats, smaller joint operations, as well as major joint operations. The transportation of goods as well as combat power via the sea is crucial for both commercial and military concerns.

Since the end of the Cold War the challenges facing the NMW community have changed and our capacity has reduced significantly. Advances in technology have masked this reduction. Sonars have improved and autonomous underwater vehicles have been introduced. However there has been a reduction in the number of robust MCM exercises and the focus on unit level training outside of exercises. Mine stocks have significantly decreased and some NATO nations no longer even maintain this capability. Focused intelligence gathering in support of NMW missions has been curtailed. Consequently, the community’s war fighting mentality has been diminished.

With our reliance on the sea for both commercial and military mobility, the Sea Lines of Communication are the Achilles heel of NATO Defence and commerce. NATO’s traditional and proven mine countermeasures assets are approaching the end of their life cycle and our minelaying capability has reduced considerably (delivering platforms and stock). They were equipped with one primary mission in mind - to keep the approaches to NATO seaports free of mines. That meant that MCM forces would operate close to home. But globalization has invalidated this model. Therefore a clear NATO NMW vision is needed.

Where we want to be

In the conduct of a maritime campaign, without Naval Mine Warfare, all regions of the maritime domain are at risk. This domain includes homeland waters, Sea Lines of Communication (SLOCs), approaches to harbours and access to land, chokepoints such as the Strait of Hormuz, and expeditionary operating areas. Capable MCM forces would allow the maritime component commander to regain sea control and support amphibious operations just as laying his own minefields would allow the commander to shape the maritime geometry to his advantage.

The NATO Naval Mine Warfare mission is as follows:

NATO NMW forces are to ensure the safe use of the seas and approaches to ports against sea mines and/or maritime IED for military and commercial purposes in peacetime, crisis and war.

While these tasks themselves, do not demand a change in the traditional conduct of Naval Mine Warfare, the environment that defines the 21st century does. We must fulfil our role in enabling joint operations on a global scale, and that means that we have to adapt our fundamental concept of operations.

The following elements are fundamental to this adaptation:

- Effective cooperation yields more than the sum of its parts;
- Quantity and quality deliver flexibility;
- Sustainability requires innovation;
- Investment in human capital is essential.

Effective cooperation yields more than the sum of its parts

Naval Mine Warfare operations are a combination of effort that requires more than the technical ability to work together. It is imperative that we acquire a better understanding of each other’s cultures, tactics, techniques and procedures. We must also be aware of our comparative strengths and weaknesses in that field. We cannot rely upon our adversary to present a mine warfare problem for which there is a one-step solution. While one MCM technique may be effective for some portion of the mine threat, a variety of capabilities may be required to address the whole of the threat; the best combination depends on many different parameters. It is impractical to expect any one nation to have all these MCM capabilities. In order to counter the mine threat and make use of sea mines for NATO’s own strategic operational or tactical purposes there must be cooperation between multinational, joint and combined forces as well as maritime industry, research and educational institutions.

Quantity and quality deliver flexibility

During the Cold War, MCM was restricted to home water operations. But these days, we need to be operating on a global level. And that means we have to deal with a host of new issues, long transit times, additional threats to personnel operating abroad and what are sometimes seen as excessive timelines for mission completion. All these factors mean we have to reassess the way in which MCM is performed, and rethink the systems we are employing.

We currently have shortfalls in force protection and self-protective measures, and lack covert capabilities, equipment and technology to counter drifting, buried and intelligent mines.

To prepare for a major mining campaign, the current NATO mine stocks also need to be maintained and modernized. Within NATO, mine laying depends on national policies and plans, and relies on provision of mine stocks from NATO member countries. We must also have good intelligence that would provide environmental and threat assessment as well as the proper integration of new sensors or other technologies.

Unpredictable events worldwide in challenging environments could require a rapid delivery of sustained naval mine warfare capability. This does not automatically imply the acquisition of more platforms and systems; rather, it means we need smarter employment of forces, logistics, maintenance, manning and equipping of ships.

Standardization might be cost effective but it can also be disadvantageous in dangerous circumstances, so it needs to be balanced. Assets are limited, so it is imperative that personnel and capabilities survive. As our systems become more complicated, we must ensure that the training keeps up with the technology. Single-specialism operators must be trained so they are capable of working with multiple systems.
Sustainability requires Innovation

NATO’s aging mine countermeasures platforms are fast approaching the end of their service lives and our mine stocks are already dwindling. Because of the impact that a mine threat can have on the use of the sea, we must maintain our capability to counter a mine threat or to deliver a mine threat to a potential adversary. The world’s current inventory of mines already takes advantage of the underwater environment in a manner that outmatches existing capability, and advances in mine technology outpace those in mine countermeasures.

Because of this capability deficit, “sustainability” of our forces requires more than it implies. To sustain our forces, we must improve them, and to do so, we must innovate. Innovation means new MCM technologies such as robotics, autonomous and remote systems, energy-saving propulsion, computer-aided detection and classification. It also means modernization of mines using (network) sensors and a continuous improvement of mine laying techniques. These technologies make up only part of the solution. Innovation in the development of tailored operating concepts would make for a more effective use of scarce personnel and equipment.

Investment in human capital is essential

A modern naval mine warfare capability requires highly educated and trained personnel. We must strive to motivate the best-trained personnel to stay within the naval mine warfare community. A lifelong career in the navy is not as common as it used to be. Use of naval reserves and mobility of labour will have to be taken into account. Only by investing in human capital can we ensure that our personnel remain naval mine warfare professionals.

Moving Forward:

This Naval Mine Warfare vision provides insight and understanding of the importance of NMW as a vital enabler of NATO’s strategic concept and Allied Maritime Strategy. It has described the role of naval mine warfare up to 2030, ensuring the safe use of the seas against sea mines and Under Water IEDs. It also describes what needs to be done up to 2030 to reach this naval mine warfare vision:

By 2030 NATO Naval Mine Warfare will provide a robust and flexible capability that is durable, affordable, sufficiently manned, trained and ready to deploy anywhere in the world at a moment’s notice.

To mitigate the risk to shipping up to 2030, we must work out an implementation plan which would take the above-mentioned fundamental elements into account. At the same time, we must exercise and evaluate our present MCM and minelaying capabilities in the best way possible to maintain a credible MCM force.

The importance of Naval Mine Warfare in the conduct of joint operations has been demonstrated. But taking the steps required to achieve the desired end state, as articulated in the vision, requires leadership at all levels of the military, national, and Allied organization. Each of these plays an important role in establishing the conditions that will allow the NMW community to realize its vision.

The reasons to keep NATO’s NMW capability are clear enough. However we must also be able to keep pace with technology’s rapid advances and invest in innovation of our NMW systems.
This includes active systems that counter mines, and passive systems that enable operations in a mined area such as degaussing, shock mounting, acoustically silent, etc. We require forces that can meet the current mine threat, and are designed to respond to new threats as they evolve. We should develop agile systems that do not limit our ability to adopt new technologies over the years. Our minelaying capability needs to be energized in number of platforms capable of minelaying and sufficient stock of sea mines.

NATO NMW Forces must have the capacity of using sea mines for area denial and sea control.

Naval Mine Warfare needs a support organization that accounts for sustained rapidly deployable assets, and considers the need for interoperability among NATO and coalition forces. This implies in-place infrastructure for maintenance, supplies, acoustic and magnetic ranging, and ordnance to include mine storage with its special requirements. Sophisticated synthetic trainers, classroom education, and up-to-date doctrine (including tactics, techniques, and procedures) are essential to building required skills for the operation of new and existing systems. Opportunities for sailors to train with these systems at sea in increasingly challenging environments and against representative threats are essential to developing expertise. Realistic and increasingly complex exercises must be developed to provide a venue for such training and assessment of NMW staffs and units. This assessment would extend to system performance as well.

Such exercises would build proficiency internally for NMW organizations, and they would also give Mine Warfare Task Force commanders the opportunity to effectively communicate the risk from mines and the remaining risk after MCM. They also help the Joint Force Maritime Component Commander to assess the effect of mine laying on sea denial and sea control.

Advances in doctrine, organization, training, material, logistics, finance, and infrastructure are important. However, they are all dependent upon the personnel that implement the procedures and make them work. Fundamental to the Alliance’s capability is the presence of well-trained and focused sailors, aware of their role in the overall mission. It is their professionalism and proficiency that will decide the success of our mission.

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