

Maritime security

Operations in extreme littoral areas

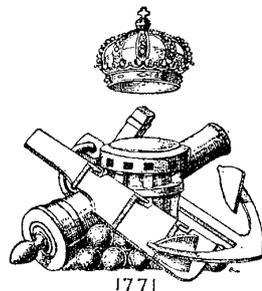
Symposium 6th of May 2002 in Stockholm, Sweden

arranged by

Royal Swedish Society of Naval Sciences

and

Royal Swedish Academy of War Sciences



The symposium was arranged as a part of the celebrations of the Centennial of the Coast Artillery.

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ISBN 91-631-2687-7

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Royal Swedish Society of Naval Sciences and Royal Swedish Academy of War Sciences

Foreword

Our challenges of today are not the risks of great land-, air- or sea battles as in the past. Instead we have to face smaller trouble spots with or without elements of hot fighting. These demands of crisis management can appear everywhere round the world. We have to adapt to the new situation and in co-operation with other countries build our military capabilities to fit into the new regional and global security order.

The Swedish geographical situation at the Baltic Sea has made it natural for us during long time to concentrate on the demands in that type of surroundings. Continuous presence and flexible action capability above, on, under and from the sea constitute the prerequisites for preventing international crises in our vicinity.

The symposium therefore focused on the needs and means for Maritime Security capability in littoral and extreme littoral areas and how the Swedish Armed Forces are preparing to meet these new challenges.

Herman Fältström

The Secretary of the Academy

Royal Swedish Society of Naval Sciences

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Programme

0900 – 0910

Opening

The president of the Royal Swedish Academy of War Sciences, Major General (ret) Jörn Beckmann, Swedish Army.

The president of the Royal Swedish Society of Naval Sciences Rear Admiral Göran Larsbrink, Swedish Navy.

0910 – 0930

Opening remarks

Speaker: Lieutenant General (ret) Lars G. Persson, Swedish Navy

0930 – 1010

International operations

Speaker: Brigadier General Michael Ennis, United States Marine Corps.

1010 – 1030

Dynamics of European security

Speaker: Dr. Hans Christian Hagman, Ministry of Defence.

1030 – 1050

Terrorist threats in extreme littorals

Speaker: Commodore (ret) Emil Svensson, Swedish Navy

1050 – 1110

Specific military needs in the extreme littorals

Speaker: Vice Admiral (ret) Frank Rosenius, Swedish Navy

1110 – 1215

Changes in the strategic situation and maritime needs

Panel debate

Dr. Hans-Christian Hagman, Commodore (ret) Emil Svensson, Vice Admiral (ret) Frank Rosenius, Rear Admiral (ret) Claes Tornberg, Mr. Hans Zettermark, and Lieutenant Colonel Bo Fallander.

Moderator: Mr. Anders Hellner, The Swedish Institute for International Affairs.

1215 – 1330

Lunch

- 1330 – 1410** **Network Centric Defence, possible concepts for the future**
Speaker: Lieutenant General Johan Kihl, Swedish Army.
- 1410 – 1440** **Technological possibilities in network centric warfare**
Speaker: Mr. Svante Bergh, Marketing Director and Vice President Ericsson Microwave Systems AB.
- 1440 – 1510** **Challenges and possibilities**
Speaker: Lieutenant General Bengt Arne Johansson, Swedish Navy
- 1510 – 1530** **Coffee break**
- 1530 – 1600** **The Swedish Navy**
A concept for extreme littoral operations today and in the Future
Speaker: Rear Admiral Jörgen Ericsson, Swedish Navy.
Building capability for extreme littoral waters
Speaker: Colonel Bengt Andersson, Swedish Navy.
- 1600 – 1650** **Panel debate**
Rear Admiral Jörgen Ericsson, Commodore Håkan Neckman, Colonel Bengt Andersson, Colonel Stefan Gustafsson, Captain (N) Odd Werin and Commander Lennart Bengtsson.
Moderator: Mr. Anders Hellner, The Swedish Institute for International Affairs.
- 1650** **Closing the symposium**
Speaker: Lieutenant General (ret) Lars G. Persson

Opening remarks

by Lieutenant General (ret) Lars G. Persson, Swedish Navy

The dramatic changes in European security situation have forced many countries to re-evaluate their goals and means for their armed forces. The changes have been rapid and the consequences hard to anticipate. This is very much valid for Sweden.

Even though we sometimes think that this is something unique for this decade it is, however, not the first time we have seen dramatic changes of this kind. The history never repeats but it is a good idea to look back and see what was handled correct last time and which was not. We have seen those dramatic changes in the beginning and in the end of the 20th century, we have seen them during the 1920^{-ies} and 1930^{-ies}. It is not the first time we have expected a long time of peace in Europe, it has happened before. It is not the first time we want to rely on multinational organisations for defence of the peace.

To develop a new strategy for the military defence is not done overnight. It includes more problems than just to develop an overriding idea.

Such a change demands generation of ideas, debate and rethinking. Ever since the end of the 18th century the two academies hosting this seminar, The Swedish Society of Naval Sciences and The Royal Academy of War Sciences, have played a substantial role. Here bold ideas have been confronted with more conservative ones, forceful spirit ahead tested against solid experience, the belief that everything is new against a historic perspective. Always without being tied to what the government or the AF headquarters is about to decide upon. Only with one goal: to support the creation of the best possible defence of our fatherland.

The topic for the seminar is “Maritime security and operations in extreme littoral areas”. Even though it is performed in honour of the Coast Artillery/Amphibious Corps centenary, it should deal with overall maritime problems.

Sweden has during several hundred years but especially during the last 50 years developed an operational capacity for this type of naval warfare that outside Sweden, to my knowledge, only have been found in Finland. It is therefore important to find out how this capacity maybe after changes, can be used for common European efforts in service of peace.

The 18th century

The development of the Swedish capability in extreme littoral areas has a long history. Until the first half of the 18th century the naval units operated completely separate from the army. The strategic idea during the 17th century was extremely offensive. The army was fighting mostly on the other side of the Baltic. The tasks for the navy were to defend the sea-lanes and make sure that the army was not cut off from the homeland. During the end of the 17th century the Baltic was by all practical means a Swedish sea. Russia had no access to it at all.

The navy consisted of big ships with large draught, hard to manoeuvre in the archipelago and the tactic was to fight in big, tight formations, unsuitable for combat close to the coastline and inside the archipelago. The available means to prevent hostile navies in these areas and to protect the naval bases were coastal fortresses and mobile army artillery.

During the first decades of the 18th century this was changed drastically. Sweden lost almost all of the occupied territories; Russia was on offensive and threatened both the Finnish part of Sweden and the mainland. Again the defence against invasion became an urgent need. It was necessary to find

means to defend the Finnish archipelago. After a Russian design a light navy for combat in the archipelago was developed.

It was designed to support the main fleet and carry out amphibious tasks. It should facilitate rapid redeployment of army units, primarily artillery, in the archipelago in order to prevent the enemy access to narrow straits. It should supervise the archipelago, protect the flank of the army when operating close to the coast and develop close co-operation with the ground forces.

This was a brain new idea with a lot of problems in the beginning. Not very much with the ships, they very soon found a proper design, but how to organise and tactically. For a period it was called the Army's Fleet.

Obviously it was the first very clear example of naval warfare in extreme littoral areas and as an idea very clearly related to the amphibious units of today. Quarrels soon arose whether it should be a part of the navy or of the army and how the economic resources should be distributed between the two navies. Do you recognise the problem?

So the change of strategy forced upon Sweden in the middle of the 18th century brought forward also a new naval operational idea and new tactics.

The 19th century

After the catastrophic war with Russia in the beginning of the century Sweden lost Finland to Russia. Again Sweden suddenly faced a new situation.

The peace agreement in Vienna 1815 settled the order in Europe after the chaotic napoleon wars. Sweden was pushed back to the borders of today but got supremacy in the union with Norway. The country was poor and worn out from all the wars and like many other European countries longed for a long time of peace at home and in Europe. It became true for us but certainly not for Europe.

Sweden could not afford a strong defence and didn't dare to trust border fortresses and a navy as a forward main protection line for the country. The loss of Sveaborg became another turning point from a strategic point of view. Again we had to find a new strategy.

The defence preparations had to be designed for defence of the country inside the country itself. All intentions to go to war to reconquer former territories were out of question. The strategy had to be formed accordingly.

Regular but demobilised officers, soldiers and sailors formed both the army and the navy. The readiness was reasonably high but the armed forces were weak and with low sustainability and insufficient to meet an enemy close to the borders or the coastline.

Once again we learned from Russia and their successful strategy during the napoleon wars. We introduced the strategic idea, later on called the strategy of central defence. No decisive battles close to the borders should be tried. Instead we wanted to carry out a strategic defensive and try to wear out the enemy with a number of minor battles when the circumstances were favourable to us. Later on, inside the country decisive counterattacks should be launched, hopefully with allied support. As a consequence of this the Navy got low priority.

During the European wars Sweden was neutral. Our weak defence led up to a situation when we not could defend the neutrality. Fårösund became a new naval base, not for Sweden but for England and France.

In the end of the century the consciousness grew that our defence was too weak. The army was upgraded and the conscript system was introduced. The economic resources were not sufficient to develop the navy the way that was needed, even though the necessity was recognised more than

before. It was realised that its ability to operate must be promoted by a better base system, especially in the northernmost Baltic.

The 20th century

The coastal fortresses were developed and new ones were built, but up to the First World War they were only intended for defence of the naval bases and some coastal cities. After the First World War the belief arose once more that another great European war was unthinkable. The League of Nations should guarantee the peace. Sweden demobilised, the coastal fortresses were conserved, and the navy was kept at a minimum. The Swedish government hoped this would set an example for the rest of Europe. Nobody followed.

Less than ten years later we had to realise that the NF was not a guarantee for peace. We had to start a vigorous effort to rebuild the armed forces.

The high value of the archipelagos for the defence of Sweden and the risk for hostile use of them was now fully realised. A systematic build up of the coastal defence started. Units of types we so far hadn't seen were created designed for this special purpose. The naval ships became more suited for tasks close to the coastline even though our capacity with cruisers, destroyers and frigates also was increased. The army still planned mainly for delaying operations even if these should start more close to the borders.

The Second World War started and ended before we were sufficiently prepared to successfully meet a major aggression. The expected ability to adjust our armed forces to changes in the world situation had proved to be insufficient. We were lucky to be able to stay outside the war anyway, due to successful but not very heroic diplomacy.

After the Second World War the Armed Forces were not demobilised again. We continued to reinforce them to the prize of huge economic sacrifices. Now the capacity for combat in extreme littoral areas was brought to its full extension. The coastal defence forces were successively created along the entire coastline and were able to meet an aggressor with a variety of different units and weapons, over, on and under the surface near the coastline and especially in the archipelagos. The ships in the navy were still more adjusted for tasks close to the coast. That was valid for mine warfare units, surface attack ships as well as submarines.

The tactics and weaponry of the Air Force was designed for air defence close to the borders and for attacks against enemy ships. In summery we got a very strong defence against amphibious operations became very high.

Because of that the operational idea could be adjusted. Now we intended to meet an invasion already during the landing phase. The army units as well should launch decisive attacks already at the landing areas.

I pretend that during the second half of the 20th century we had a coastal defence system, almost unique in the world. Only Finland and Norway had something almost similar.

The 21st century

In the very beginning of the new millennium Sweden changed strategy overnight. Sweden seems to have a habit to change strategy right in the beginning of each century.

The mayor part of the Armed Forces was scrapped. Of the naval forces of the 1900th only remains a reduced but capable fleet and only one but capable amphibious brigade. The strong territorial forces are no more to be found. The command structure is completely changed and reduced. The AF must now be able to perform tasks within a European community as well as for defence of the country by

our own. We should also, like during the late 1920th be able to reinforce them is the situation deteriorates once more.

The world has never been and is not a calm place. As I have tried to remind you, crises can appear suddenly, unexpected and for unexpected reasons. We have seen it also during the very last year. The Baltic area has never been an exception, rather the opposite. Today there are reasons to believe that the threat is of many more different types than before, from criminality and terrorism to military conflicts. Military operations once again tend to be of expeditionary type, where use of the sea is necessary. The need to maintain marine security is obvious.

Many nations maintain naval capabilities but few beside Sweden for use in extreme littoral areas.

I therefore hope this seminar will discuss:

- * Is there a need within the European community for our competence in littoral areas?
- * If so, for what?
- * How can we use and maybe adjust our organisation and tactics to solve that task?
- * How can we prepare ourselves for extending our naval capacity if necessary?

We have not always been successful in adjusting our strategy to the needs in the history. Sometimes we have been too poor, sometimes too naive to carry out proper changes

I do hope we will have better success this time and hope this seminar will be helpful in this respect.

International operations

by Brigadier General Michael Ennis, USMC

The importance of the littoral regions of the world cannot be underemphasized. 149 of the existing 192 countries in the world today have coastlines which add up to approximately 220,000 miles of coastline world-wide. 75% of the world's population lives within 50 miles of a coastline, as do 80% of the world's capital cities. 92% of the major trading centers in the world are coastal. The largest boom in population today occurs in littoral regions – as does the biggest rise in disease. As population increases, so too will the demand for resources such as water, food, and fuel. Congestion breeds discontent and the potential for conflict will increase.

As a nation that depends on robust trade and political stability, we must be prepared to conduct operations of every kind in the littorals. We must be prepared to conduct a variety of operations to include humanitarian assistance and disaster relief. Operation Sea Angel in Bangladesh in the early 1990's is a good example of this kind of operation. Peacekeeping and peace enforcing operations, such as those being conducted today in Bosnia and Kosovo, will also be required. We will also face small-scale contingencies such as we have in Somalia, Grenada, and Panama. And obviously, we must be prepared to participate in major theater wars, like Desert Storm in 1991.

The threats we face will not be the same. While the traditional sovereign state conflicts will continue to exist, we face an increasing threat from non-state actors (terrorists), from transnational threats such as drugs and organized crime, and asymmetric threats to avoid our strengths and exploit our vulnerabilities. We must seek new and innovative ways to deal with these threats because no one strategy will adequately address all of them.

Conducting operations, regardless of type, offers unique challenges to military forces. First, there is the issue of extended distances. In addition to travelling a long distance by sea to arrive at the objective area, we may be faced with operating from a sea-base due to the lack of indigenous infrastructure ashore. Moreover, the coast itself is a broad spatial area that may need to be monitored for activity or occupied for stability. There are significant issues with tides, beach conditions and weather that need to be accounted for. And finally, there is the added dimension of complexity of conducting any kind of operation from the sea. Command, control and communications need to be established early and maintained throughout the operation to include the ship to shore movement. Intelligence, surveillance and reconnaissance are essential to the safety and success of the landing force. Manoeuvre will be restricted by built up areas, obstacles, and traffic ability, and highly dependent on the road infrastructure. Mines and mine countermeasures provide a unique dimension to these kinds of operations and are critical to their success. And finally, there are issues dealing with fires and targeting. Allow me to address each of these individually.

Command and Control

Situational awareness must be established early and maintained throughout the operation. Commanders must be able to communicate from ship, during transition ashore, and ashore, continuously and simultaneously. The speed of planning and decision-making is paramount. Access to information must be rapid and intuitive. Voice and data links need to be established down to the battalion level. Planners should have some kind of ship to ship on-line collaborative planning capability. And perhaps most importantly, the authority to take decisive action needs to be delegated to the lowest possible level in order to effectively engage fleeting targets of opportunity.

Intelligence, Surveillance & Reconnaissance

During the transit and ship to shore periods of the operation, there will be a heavy reliance on archived data and non-organic ISR collection assets. This will come from sources other than the task force and would include long-range assessments, or imagery or mobility studies to support the planning effort. Submarines and ship launched UAV's will become very important collection assets for the task force. In addition, there needs to be a seamless ISR network comprised of organic/tactical assets, theater or coalition assets, and overhead ISR systems. A virtual knowledge base comprised of coalition partners' databases will be essential to overcome the challenges of interoperability, common operating picture and situational awareness. Interoperability is achieved at the data level, not at the hardware or software level. And coalition interoperability is essential to success.

Maneuver

The enemy cannot adequately defend entire areas of the operation. Therefore, we have to be prepared to maneuver in all dimensions, through the water, air, and on land. The Swedish Navy's decision to transition from fixed coastal artillery sites to a more mobile defense is a good example of the difficulty of defending all coastal areas simultaneously. We must concentrate forces at critical points to achieve surprise, psychological shock, and momentum. We must defeat anti-access efforts to avoiding fixed defenses and breaching the beaches that offer the greatest potential for success.

Fires

We must have a robust at-sea fire support capability. This should ideally include complementary fires such as aviation, naval surface, and ground based artillery. Precision point fires need to be developed early. Systems need to be responsive and flexible to support manoeuvre, around the clock and in all weather.

Targeting

There is a large shift from mass to precision targeting in order to reduce collateral damage/casualties. The fleeting targets in Afghanistan has emphasized the importance of having a reactive targeting capability – UAV and ground-based laser designation of fleeting targets along with fused intelligence and overhead aircrafts to prosecute. Precise intelligence is required and rapid battle damage assessment is critical to ensure proper restrike.

Mine countermeasures (MCM)

One of the biggest challenges, if not the biggest, is the threat from mines. Nothing can shut down an amphibious operation more quickly, more effectively, and more cheaply – than mines. They are inexpensive to build, easy to disperse, - and very effective. A capability that has long been neglected in the US, MCM is essential to a successful operation in the littorals. This includes mines in very shallow water (10' to 40') and in the surf zone (0' to 10'). We are using mammals, humans, robots and mini-sub to build our capability – but we have a lot to learn from the Swedes in this area.

Summing up

I would like to wrap up this presentation with a list of capabilities we need to have in order to be players in the littoral regions. The first is submarines – not just to attack other subs and ships, but to conduct surveillance and enable reconnaissance. The next is a rapid ship to shore capability. We have our amphibious assault vehicles, landing craft and hovercraft – but your own Visby Class corvette is also an excellent capability. A credible MCM capability, as previously discussed is also extremely important, and the Swedish Navy is recognized worldwide as a leader in this area. We also

require a credible power projection capability that is independent of forward staging bases, over flight rights, and other politically dependent support – a capability that can come only from the sea. And finally, a maritime force carries with it the inherent capability to avoid a large footprint ashore, that can react quickly to developing situations, and has the flexibility to address any of the kinds of operations discussed earlier.

The Swedish Navy possesses many of the kinds of capabilities that are required to participate effectively and credibly in the littoral regions based on your long history of defending your own enormous coastline and archipelago. We look forward to partnering with you in future operations.

Dynamics of European security

by Doctor Hans-Christian Hagman, Swedish Ministry of Defence

One could argue that Europe is, and has always been, in a state of transformation. I believe European security, our Baltic Sea region and the capabilities we need will be affected by seven major developments. Interestingly they seem not to collide but rather complement each other.

Changed US geo-strategic priorities

Since the early 1990s the US has increasingly focused on Asian security. The past decade of US engagement in Europe has been characterised by a 70% decrease in the US military presence, crisis management in the Balkans, NATO enlargement and increasingly good relations between the US and Russia. With the events of 11 September and the Quadrennial Defence Review (the new Pentagon strategy), the new prime mission for the US armed forces is homeland defence.

We should not underestimate the impact this change has had, and will have, on US priorities and “nice-to-have” missions.

Further, the QDR concludes that “Europe is largely at peace” and there is optimism with regard to relations with Russia. Threats are found in “a broad arc of instability that stretches from the Middle East to Northeast Asia”. Terrorism, proliferation of weapons of mass destruction and potential global military competitors originate from this arc of instability. This is where the US must focus its resources and attention. At the same time, the QDR judges that the current US military presence in Europe is “inadequate for the new strategic environment.”

We should be prepared for structural changes in the US basing and deployment in Europe. We Europeans may increasingly have to take care of our own crisis management and security.

Also, US or US-dominated military campaigns, from the Gulf War to Kosovo and Afghanistan, have accentuated standoff capabilities instead of a Cold War defensive force posture à la the Fulda Gap. We do not know what impact this new emphasis may have on, for example, the defence of NATO Member States, including the new ones.

NATO's enlargement

The forthcoming NATO enlargement, which will be the fifth enlargement (1952, 1955, 1982, 1999 and 2004), will most likely include Estonia, Latvia and Lithuania. This means that a significant portion of the Baltic Sea will lie west of NATO members and NATO Member States will dominate the region.

It also means that after a clear declaration of intent by the US government to incorporate Estonia, Latvia and Lithuania into NATO, followed by formal Senate ratification, the Baltic states will enjoy a US security guarantee. From a military history point of view, Swedish security will be in an even better position than it is today.

Many questions remain open: Will the US defend the new NATO states using mainly stand-off capabilities or will there be Americans and other Allies on the front line ready to take the first blow? What happens if the challenge is non-conventional or is not seen as clear-cut in Western capitals?

How will one more NATO enlargement in the Baltic Sea area affect NATO's contingency planning and defence planning, i.e. the development of the Allies' military capabilities? How will this affect the pattern of military exercises and PfP co-operation? What will happen to NATO Sub regional HQ in Karup and will the multinational corps in Stettin become the next hub of regional NATO interoperability?

More developed NATO-Russian relations

NATO-Russian relations are developing well and I believe we will see more co-operation than has been the case in the past five years. It is, however, interesting to note that much depends on Russia and how well Russia masters NATO procedures. If Russia plays a pragmatic and constructive role, few NATO areas of co-operation are off-limits. After all, crisis management and partner co-operation represents the bulk of NATO political and military activity. From this perspective Russia could, in theory, have a major impact on NATO as a Western security structure. We do not know if Russia will seize this opportunity.

However, the major stumbling block lies within the Alliance. Few current NATO Member States consider it in their interest to have a genuinely close partnership with Russia as their status and the role they play would be challenged.

The bottom line is that we will probably see an evolutionary development.

A further transformation of NATO

NATO as an institution has undergone a dramatic transformation since 1990. The NACC, UN-NATO cooperation in the days of UNPROFOR, the multinational CJTF concept, EAPC, IFOR and SFOR, NATO-Russian relations, Operation Allied Force over Kosovo, DCI, KFOR and Article 5 from 12 September 2001 – NATO has been very busy indeed.

The collective security element is growing stronger and there seems to be increased flexibility when it comes to out-of-area and crisis management engagement.

NATO will probably have some two dozen states around the table in 2002. We shall see how this affects NATO decision-making and homogeneity. Consensus will call for more footwork, more pre-cooking and more intricate sub-alliances at NATO Headquarters and across capitals.

What will happen to the EAPC and the PfP when a majority of the EAPC members are partners? What can be done to develop pragmatic, constructive and close EU-NATO co-operative processes?

A more developed EU-US relation

The EU and the US trade for one billion dollars a year and the US is the Union's most important trading partner. Whatever the political bumps in the road, the EU and the US are in this together.

The interesting question is how far the two will go when it comes to co-operation in the field of conflict prevention and military and civilian crisis management. If co-ordinated, the combined political, economic and military means of the EU and US could be quite effective and potent. Perhaps the EU may become a more relevant partner to the US than the European pillar of NATO.

The technology gap is a major challenge here. In real terms the US has spent three times as much as all the EU states together for the past 20 years. That adds up to a significant gap. It is not just technology. New assets and technical solutions tend to lead to new ways of doing things. Tactics, doctrine and training (of both soldiers and units) are changing.

I am concerned that in ten years, even if the US and Europe can co-operate in political and economic affairs, and want to co-operate in the military field, it may not be that easy. It should be noted that interoperability works both ways. It is as important for the Europeans to be interoperable with the US as it is for the US to be interoperable with the Europeans.

Let me turn to a more regional context. All countries engaged in Baltic Sea security, including the US, must be able to communicate and work together – whatever the state of national capabilities or levels of net-centric warfare development. I believe the most important day-to-day partners will

remain the Nordic and Baltic Sea states, and in crisis management the UK has become a valued partner. High-tech is a fine thing – but we must guarantee regional interoperability.

EU enlargement

More than NATO enlargements, EU enlargement in the Baltic Sea area will, perhaps dramatically, change the way we view and produce regional security. The Baltic Sea will become an EU lake. External Schengen boundaries in the Baltic Sea will be limited to a tiny area around Kaliningrad and St Petersburg. Kaliningrad, from both a NATO and EU perspective, remains an issue to deal with in dialogue and co-operation with Moscow.

In the Baltic, the free flow of goods, capital and people will transform the region and one neighbour's problem will automatically become a regional challenge. There will be common concerns in areas ranging from smuggling and combating terrorism to the transfer of energy (electricity and gas), information technology security, environmental disasters and the spread of disease.

The flooding of the river Oder, a devastating storm, an outbreak of foot-and-mouth disease or an epidemic caused by multi-resistant viruses will demand immediate and intimate regional co-operation.

From a more traditional military perspective, the co-ordination of Schengen border patrols, air and surface surveillance, search and rescue, environmental aspects and military support to civil society may well become common tasks. Although much will be co-ordinated from Brussels, there is room for regional solutions. We may note that co-operation between the Benelux countries is far more developed than European security and defence co-operation in general.

The eight EU Member States around the Baltic Sea will together have some 140 patrol and coastal combatants (including corvettes), 15 frigates, some 30 submarines and a fair amphibious capability. This is quite an armada for a lake. I believe we will see a lot of co-ordination.

The EU's evolution towards common security and defence

In many European states this is a highly controversial issue. However, in practice the EU has moved beyond the narrow spectrum of Petersberg tasks. After all, the Petersberg tasks were formulated in the wake of Vukovar and Dubrovnik, not 11 September. The 2004 Intergovernmental Conference could act as a further catalyst.

We are seeing momentum and it is moving towards common security. If I may paraphrase Sweden's Minister for Foreign Affairs: EU co-operation is founded on common values and solidarity. It is therefore difficult to imagine Sweden declaring itself neutral in the event of an attack on a Member State or an EU candidate.

One could argue that there is an implicit collective aura developing. An armed attack against one or more members may be considered an attack against them all.

After all, we have been living with the Amsterdam Treaty for five years and there Section 17 states that "The common foreign and security policy shall include all questions relating to the security of the Union, including the progressive framing of a common defence policy, which might lead to a common defence, should the European Council so decide." When we look back in five years time, I believe we will be surprised by the speed of developments.

In conclusion: capabilities development

In tomorrow's world, the Swedish armed forces must be flexible enough to manage a wide spectrum of tasks ranging from defence against armed attack to maintaining territorial integrity, international

crisis management, and supporting civil society in times of crisis. The threat of an invasion does not appear conceivable within the next ten years, provided we possess a basic defence capability.

Looking towards the future, I would argue that the challenge lies not so much in what platforms you have, but how interoperable and flexible they and their operators are – technically, doctrinally and intellectually.

If co-operation is the name of the game, a unique high-tech platform that is so technically advanced that it cannot communicate or operate in concert with our neighbours is about as useful as the coastal artillery guns from 1902 that my grandfather commanded. When we are spending taxpayers' hard-earned money, we had better make sure that we get capabilities that are relevant and represent value for money.

Terrorist threats in extreme littorals

by Commodore (ret) Emil Svensson, Swedish Navy

There is no doubt that the security situation in the world has changed. Some people regard the ruthless attack on the 11th of September last year, as a turning point. I believe that the turning point occurred earlier. The change started, in my opinion, with the collapse of the Soviet Union, when one of the two dominant blocks suddenly disappeared. That cleared the way for a number of different political, ethnical and religious movements to bring a lot of unsolved problems to the surface. Instead of countries, smaller groups were willing to use violence in order to fulfil their political goals. Sometimes they were clandestinely supported by countries, sometimes not. Sometimes in conjunction with common criminal activity, sometimes not.

The collapse of the Soviet Union left the US as the one and only superpower with an overwhelmingly military power. Logically, this has decreased the risk of big land-, air- or sea-battles. Instead, we have to face smaller, local trouble spots, with or without elements of hot fighting. These trouble spots can appear everywhere around the globe. The challenge we face today is not, as in the past, the use of deterrence, but how to co-operate, how to design our foreign, security and defence policies in association and conjunction with others and how to build our military capabilities. They must fit into a regional and global pattern of peace-support and peace building by preventive action, but also, when crisis management calls for it, be prepared for resolute action and the use of force.

I will now take just one piece of this big jig saw puzzle and limit myself to one of the possible future demands for the naval forces in extreme littorals - the threat from terrorists.

At first I think I have to define the term “extreme littorals”. I recently read a definition in an Australian paper. It defined littorals as “Those areas on land that are subject to influence by units operating at or from the sea; and those areas at sea subject to influence by forces operating on or from the land”. Considering the increasing weapon ranges this definition implies that almost every place can be defined as a “littoral” What I mean by “extreme littoral” is an area more like an inland sea than an ocean. This sea is surrounded by more than one country and characterised by very shallow waters with harsh hydrographical conditions. Typical areas are then the Gulf, the Adriatic, the Baltic Sea and some areas in the Far East.

From a maritime point of view these areas are characterised by:

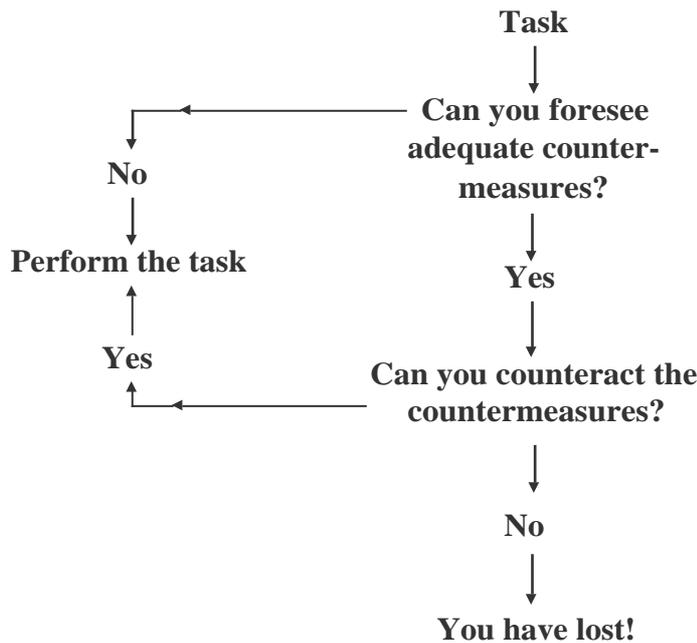
- * lot of sea-lanes and heavy sea traffic, including ferryboats,
- * fishing areas with many fishing vessels,
- * short distances between harbours, and
- * perhaps a lot of pleasure-boats.

From a military point of view there are some important differences compared to “blue water” conditions, namely:

- * extremely hard conditions for sonar’s and other equipment for underwater detection,
- * mostly good conditions for bottom mines and other underwater activities,
- * great opportunity for small crafts to hide behind or amongst fishing vessels or merchant ships,
- * very short fore warning on incoming missiles.

Secondly. When I talk about terrorists I mean just those groups who are enemies to the world order. It is organisations like Al Qaida I am talking about – not about suicide-bombers in Jerusalem.

Thirdly I will take the opportunity to remind you of the “first clause in the military book of rules.”



The final loop is the most important. Due to that, in the following I won't mention the simplest methods. It is obvious that for instance a smuggler doesn't have to find a hiding-place in a car if there are no customs officers at the border. In the same way the terrorists will of course choose the simplest way to obtain their goals.

I will now try to answer some questions about a possible connection between terrorists and extreme littorals.

The first question is if a terrorist group can benefit by using extreme littorals?

In order to answer that question I would have to try to put myself in a terrorist's shoes (however unpleasant!) In the guise of such a creature I would hate everything connected to the present world order – especially the democratic countries. My overall goal would be to bring the developed world to the brink of ruin. I am firmly convinced that I have the right answer to all political and religious questions and I am definitely willing to use violence in order to achieve my goals. By some reasons I am against free trade. Remember World Trade Centre

In order to succeed I need intelligent subordinates and I have experienced that it is evidently not difficult to recruit volunteers and they are not just extremely poor and disillusioned persons. On the contrary, my experience in connection with the events on the 11th of September indicates an impressive planning ability and a willingness to train before taking action.

By that I mean (and now I do not talk as a disguised terrorist) that the really dangerous terrorists are able to make decisions after mature consideration, in order to succeed. We are not dealing with a group of blockheads. Instead they are capable of finding out our weaknesses and to use them to their advantage.

Terrorists need to use tactics associated with guerrilla warfare. We will never see a terrorist group handling an aircraft carrier. Nor a F16 fighter, a nuclear submarine, a cruiser or regiments of battle tanks. Such means are reserved for countries. The terrorists are generally reduced to use firearms, explosives and smaller crafts or vehicles in sneaky attacks against highly valued but poorly defended targets.

That does not exclude that the terrorists wish to be in possession of nuclear, biological or chemical weapons. From a terrorists point of view those kinds of weapons are just more effective.

In the maritime area there is one important target for terrorists – the shipping. The world trade is extremely dependent on shipping. Ships carry about 98% of the world's intercontinental trade. The industry of today is built on the concept of getting supplies "just in time". Sailors are also, by tradition, liberty-lovers. They have always revolted against all attempts to regulate the freedom of the seas. In contrast to an air pilot, the captain of a ship can go almost wherever he wants. There are no security controls in the harbours like those in airports. No x-ray machines reveal hidden nail scissors in the luggage when passengers enter a ferry. The point I would like to make is that shipping is generally a promising target for a terrorist organisation. A blow against the sea born trade will also be a deadly threat against the life-blood of the democratic societies and western lifestyle. If the action against the World Trade Centre was aimed at showing the vulnerability of the US, successful blows against the trade will definitely be a lethal threat to the developed world as we know it today.

In fact, pirates, without the same goals as terrorists, have already taken advantage of the shipping as a weak point. There is, on average, one act of piracy every day in the world.

One act of piracy every day has obviously no impact on the world economy. What then is needed for a terrorist in order to be successful and to be able to create a threat against the free trade and perhaps bring the stock markets to a free fall? The answer is to create "uncertainty" and lack of confidence in the authorities' ability to give protection. The losses of buildings by earthquakes, fires or flooding have no impact on the world economy except for the insurance companies. But – two buildings collapsing due to a deliberate and spectacular act of aggression, like last September, and the result is a creepy feeling that you can't defend yourself, which in turn leads to a vibration of horror through the societies around the world.

If you are an intelligent and determined terrorist you can benefit from that and carry out an attack against the sea trade that is both surprising and violent. A prime target could be the oil-business, for example a couple of tankers sunk in the strait of Hormuz, attacks on some ships in Rotterdam or another harbour or a spectacular explosion onboard a tanker in the Stockholm archipelago. There are lots of targets available and it isn't hard to imagine the effects on the world's economic life if people realise that the government cannot guarantee the energy supply.

But is it possible for terrorist groups to succeed in such attacks?

The answer is definitely yes, if you chose the right area for the attack. This brings us back to the extreme littorals. In exactly the same way as guerrilla warfare groups take shelter in caves and mountains or in crowded cities, they can use the special conditions in extreme littorals I outlined before. The limited water-depth makes it possible to use bottom lying sea mines. The short distances render it possible to use small crafts on the surface, but also – to be preferred if the defender can detect everything on the surface – small underwater vehicles and midget-submarines. The underwater conditions in extreme littorals are for maritime terrorists like rain forests or caves for the land based guerrilla groups. You need a lot of special equipment and knowledge to find and to counteract them.

The final question is of course if it is possible for a terrorist group to procure and to handle underwater equipment?

I am sorry to say that the answer is again yes. Mines, for example, are often produced with demands for easy handling. There are a lot of suppliers around the world (a 40% increase since 1986) and there are a lot of stores. If you have the money there is no problem to obtain mines.

Obtaining diving gears isn't a problem at all.

It is of course a bit more complicated to obtain midget-submarines or Swimmer Delivery Vehicles (SDV: s). However, the "special forces" around the world use that sort of equipment so there is a large stock of vehicles. To manufacture them is no problem. There are a lot of unemployed technicians round the world. I have heard that some technicians helped a drug dealer to build a midget-submarine in the jungle of Colombia. You don't need big shipyards. In fact, we manufactured our Swedish midget-submarine "Spiggen" in a shed just outside Stockholm.

But, even if you have mines or midget-submarines you need some sort of limited support. All types of weapons and vehicles need maintenance. Every soldier must be properly trained.

Let me then emphasise one thing. Special forces often are surrounded by great secrecy. The members are highly motivated. As an example a Spetznaz soldier in the former Soviet Union was convinced that Americans were more like beasts than people. It was an act of honour to fight against these animals or to support anybody willing to join the fight.

Knowing this I will answer my last question with a rhetorical question. Do you believe that there are no governments or organisations in the world that are willing to support terrorist groups with the generally same political or religious opinions as the government, knowing that the support is limited, clandestine and fully deniable?

In summary

- * In the maritime area there is a weak point, our dependence on shipping as a lifeline for our modern society.
- * The vulnerability of merchant ships to underwater threats.
- * The possibilities for terrorist organisations to use underwater means in extreme littorals. Fundamentally there is no big step from caves in the mountains to under water vehicles.
- * The difficulty in using equipment adapted to "blue water" conditions in extreme littorals.

My last question is. Do we want to take the nice way or the wise way? If we choose the nice way we can bury our heads in the sand and pretend that the threat is not realistic. And of course everything depends on figures of probability. On the other hand even a terrorist organisation wants to win. Nobody will create an organisation in order to sustain heavy losses. I have mentioned just one way for a terrorist organisation to cause damage and in this respect – to win. The probability that such a scenario would become a reality can only real terrorists decide upon, but obviously we couldn't foresee the attack on the World Trade Centre.

I don't think it will be either expensive or difficult for the world society to adapt to the new demands and to create possibilities to counteract underwater threats against shipping even in extreme littorals. However, there is a possibility that someone believes that it is not so glorious to protect merchant ships against mines and midget-submarines. Perhaps some navies in the world will take the nice way.

Recall that many armed forces took the same nice way before the Second World War. They were stuck in old thinking and couldn't adapt to the new situation when Germany developed tanks and air close support. In a parade, I do agree that for instance a lancer on the horseback is more worth seeing than an ugly anti-tank gun, but in a real fight the result can only be disastrous.

I can only come to the conclusion that the developed world cannot afford to take the nice way. Instead we have to regard terrorism in extreme littorals as a realistic threat and act accordingly. Otherwise we haven't learned a thing from history.

Specific military need in the extreme littorals

by Vice Admiral (ret) Frank Rosenius, Swedish Navy

We have heard the challenges facing crises management and other situations in the littorals. The security situation in our part of the world has also been commented on. In my intervention here today I will focus on two aspects of this new situations facing nations with the ambition to handle defence matters in the littorals in general and for Sweden in specific. And those areas are the specific operational needs when dealing with conflicts lower than war in the littorals - or with European terminology Petersberg tasks - and the requirements for Sweden today and tomorrow.

When operating in the littorals with military forces there are some common basis for demands and operational modes irrespective of where in the world you are deploying your forces. The Baltic is one of these areas and I would put Sweden and our armed forces in the forefront having developed special skills to handle the challenges in the littorals also when it comes to crises management.

With this as my background I find five areas of special importance when we look at the very specific military needs in the littorals both seen with domestic eyes and seen with a multi-national eye - and they are surveillance, underwater operations, stealth, controlling the coastline and interoperability.

We have to realise that in a conflict in the littorals there are a number of vessels moving around, some have legitimate reasons to be there like fishing boats. Others have not. Third parties to the conflict are another factor that must be dealt with. Merchant traffic will most certainly continue in the area. The ever-present coastline means that vessels move in and out of areas hard to control. A similar challenge faces the air-surveillance. The demand on surveillance is therefore manifold. It must be ever present and it must be able to detect small objects also moving in and out of harbours and bays. A special need is to identify targets, not only to type but in most cases also by name, nationality and what they carry onboard. This means that the ordinary techniques for surveillance like radar always must be backed up with surface and airborne units that can observe a target at close range. And they must be operating 24 hours a day. This is not always considered until facing the situation. If not well co-ordinated we give those causing the crisis an unnecessary advantage. And on top of that we will most likely be unable to observe the requirements of international law.

As complement to an effective surveillance you must also have the ability to route all legitimate traffic out of harms way. This requires procedures that are internationally recognised. It also stresses the need for patrolling vessels both to pilot the traffic, but what may be more important, also to protect the vessels from attack. If not they will not follow given instructions and the result might be chaotic for those trying to handle the crises.

As we all know, terms of surprise lays normally with the aggressor. To be able to operate without the opponent knowing what kind of information you possess is vital in all types of operations, also in crises management. Since the environment in the littorals is so challenging deception and stealth pays off extremely well. This makes the demand on the surveillance-systems even greater. Another angel of this is the need for stealth also for those with the mandate to handle peacekeeping or peace-enforcement. I would say that this is an absolute requisite for a successful crisis management. This means that there is an urgent need for clandestine surveillance with submarines and stealth surface-vessels whenever you operate also in the littorals. In Sweden we have come far in deploying submarines with air independent propulsion and highly stealthy surface vessels.

The extreme scene for stealth-operations is of course below surface. We have heard the potential when terrorist and others use this medium. We have to deal with a wide range of underwater threats like mines, mini-submarines and divers. Countering this in shallow waters needs a special skill that

only comes out of long experience. And most sensors need to be designed specific for this kind of missions. For instance, you must be able to detect small submarines that operate close to the bottom and use the bottom- topography to avoid detection. Sea mines are especially hard to find when used to hinder the use of inshore shipping-routes. There are a lot of debris on the bottom that take time to classify which makes mine hunting a time-consuming business. For both ASW and mine hunting you need special designed sonar's with higher frequencies than used in blue-water operations. This is because the water condition in the Baltic, as well as most shallow waters, is so different compared to the oceans. Also, not to forget, you must have skilled personal used to this environment. And that takes years to achieve. In Sweden we have come a long way managing this, starting in the early 80-ties when we first noticed extensive underwater intrusions in our territorial waters. As a result I would suggest that Sweden takes the lead in this field within an international force for crisis management.

Operating in the littorals is operating close to the coast. Even without the most sophisticated weapon-systems in the hands of the opposing forces your own safety requires good control of the coastlines. Everything from anti-ship missiles to fast attack-crafts must be dealt with. As a complement to high-tech surveillance-systems there is a need for special forces able to act in the coastline both on shore and nearby waters. A special challenge is to be able to control areas with an archipelago like Finland and Sweden. The Swedish amphibious force is an example of a much-needed capability when conducting Petersburg tasks in the extreme littorals.

In the littorals short distances is the norm. This means that most threats will emerge rather fast - i.e. the reaction time will be very short. And the classification-procedures must handle it in an environment where it is not that easy to distinguish friend from foe. As said earlier high-tech systems with a high degree of built in analyse-functions is a must. But even with that you must have long experiences working in this environment since the false-alarm rates tend to be very high.

With the most important ground-rules just mentioned as a prerequisite for a successful handling of Petersburg tasks in the littorals, the next step is to be able to work together. That means joint and combined operations. And we talk about operations where some participating nations are not members of NATO. I think we all have experiences of how difficult joint operations are and some have from combined operations. The key word here is interoperability. Easy to define, hard to achieve and a must for any multi-national armed force. The extra touch that comes out of operating in the littorals only adds a higher degree of challenges. Since we normally will have to deal with all three services - army-, navy- and airforce - in a rather confined area, participating nations must be prepared to act in a joint and combined environment in a very flexible way. We have come a far way in interoperability through ongoing missions in the Balkans. But shortcomings when it comes to combined operations are also recognised. This limits participation and hinders effective use of all available forces. The soon to be larger EU force for crises management has here a formidable task to achieve especially for the "none Nato countries". And it must be done in a short period of time to make it a credible force.

In my view EU should task a group of nations with special knowledge in combined operations and the littoral environment to come up with "EU procedures in crises management in the littorals". Sweden should take the initiative to form such a group together with for instance UK. We know how to operate in the extreme littorals and we have advanced systems specially designed for shallow waters. And in the near future we will possess the latest state of the art equipment when we implement the ideas of RMA. In this area should also Rules of Engagement be looked into. Although most ROE will be mission-oriented, I can foresee that operating in the extreme littorals also might effect the application of ROE.

So far I have discussed the military needs when operating in the littorals with a specific view on military capabilities. I will here end with some reflections on the evolution in our security situation in the Baltic area and how this might affect Sweden in the foreseeable future.

Some of the more frequently mentioned statements in the ongoing debate seems to be if NATO invites the Baltic states as members, this means Sweden can take shelter behind the NATO defence-perimeter and more or less gradually reduce its defence to some minor border-units. I will argue that this is unrealistic and unwise and not in Europe's interest.

Before I go into discussing this issue, let me state that I firmly believe that if and when the Baltic states join NATO it improves the security situation significantly in our region. But it does so only if neighbouring states continue to see the security environment as a whole and not as something that only is a business for NATO.

First I would like to look at the situation seen from a NATO perspective. In my view the reasons for NATO including the Baltic States are more political than military. But of course there is an important military dimension as well. For NATO to handle this equation, I would be surprised if NATO does not count on a continued rather strong Swedish military defence, and also Finnish for that matter. Not as part of their defence system since we are non-allied, but as part of a very important stabilising factor in the Baltic area, which we have been for centuries. Furthermore I would say that the specific military situation in this region when the Baltic states join NATO must be evaluated over some years before any far-reaching conclusions can be made concerning our national defence.

Seen from an EU perspective I am sure that there is a continued strong demand for Swedish contribution to EU led Petersberg tasks irrespective what happens in Northern Europe. And that most certainly includes both capabilities to handle crisis management in littoral areas and to be able to do it with a high readiness. This means maritime-, ground- and air-units with their special skills to operate in the environments, which I covered earlier. Another factor is our ability to be part of and influence the security situation in Europe. Without force contribution in level with our national resources I think our voice in this respect will be weak. Furthermore I think there is a moral aspect of this as well. If Sweden as a non-allied nation substantially reduces our defence referring to NATO and that as a consequence reduces our ability to take part in crises management in Europe and adjacent areas, I would argue that we no longer live up to our tradition and responsibility for the security in Europe. As we all know Europe is far from having political stability in all areas.

Last I will comment on our national military capability. As a nation not allied to any military alliance for the foreseeable future, Sweden must possess a credible defence force which can stand on its own. This means a defence-structure that can handle all threats that can emerge effecting our own independence. Since we are part of the littorals much of the needs discussed earlier also apply for Sweden. If we focus on threats less than invasion, like nearby crises, terrorism and advanced crime, we need to counter threats especially coming from directions where we border the sea. This means capabilities to counter threats from air, surface and subsurface as well as the coastline. Since the challenge can vary from just trying to avoid detection to that the aggressor forces its way into our country our response must be in kind. This means we must be able to counteract on a level so our actions do not cause unnecessary damage. International law set some strict rules what can be done and what cannot be done.

If we look at the Baltic States as members of NATO I would argue that it would take a long time before we see a credible defence established. I also think we have to see if NATO chapter 5 will be applied, including all the safety guarantees and deterrence which normally are parts of a NATO membership. So even for that reason I think it is now premature to even think of any radical changes in our defence policy.

To sum it up in a few words. My conclusion is that Sweden still needs a credible defence that can act on a broad scale of contingencies. And this should be a long-term defence policy. The reason for this a clear national need as well as our commitment to a security architecture that can handle crises in our near areas, in Europe as a whole and also world wide. We should also continue to be a leading nation when it comes to handle operations in the littorals. We have achieved this by hard work and dedicated national assets and our partners in EU as well as NATO expect us to continue. Our military capability will be also in the future be asked for when it comes to crises management.

Network Centric Defence, possible concepts for the future.

by Lieutenant General Johan Kihl, Swedish Army

The Swedish Armed Forces face many challenges in the years ahead as it seeks to fully implement the Network Centric concept as well as new Engagement components of Sweden's Forces. During the 10-year period of "strategic opportunity" forecast by the Government in the spring 1999 security policy review, the focus of the Swedish Armed Forces leadership will be on investing in those new capabilities required for the completion of Sweden's Transformation. As these investments are made, the Swedish Armed Forces must manage the transformation of doctrine, organisation, leadership, personnel, training, materiel, and facilities. Yet those responsible for protecting Sweden and its vital interests around the world cannot afford to let down the nation's guard during this period of potential vulnerability. This last point presents a special challenge for the nation's military planners and for the Swedish Armed Forces at all levels of command.

There will be a requirement for continuous analysis and assessment by the Swedish Armed Forces throughout this transitional period. In addition to the ongoing requirement to re-evaluate the changing security environment and the need to balance the major components of the three services. Sweden's military leaders will need to create a process for the conduct of joint experimentation and training by the Swedish Armed Forces to test the ideas of the Network Centric Operational Concept against practice. Only through such a well-designed and rigorously adhered to process can the invaluable lessons of actual field experience or simulations be fed back into the development of doctrine, organisation, leadership, personnel, training, materiel, and facilities. This is critical to obtain balanced, NCW-based armed forces.

Doctrine

New doctrine must be developed to clearly describe how the Swedish Armed Forces intends to fight or conduct other kinds of operations at the operational and tactical levels. Within the overall transformation process, doctrine is focused mainly in the realm of ideas concerning operations, tactics, and sometimes, procedures.

In developing new doctrine for the implementation of NCW, an important step will be to draft a joint top-level or "capstone" doctrinal manual describing the Operational Concept to conduct joint NCW operations by the Swedish Armed Forces. Supporting documents may be used to describe how the units of a particular service—the Swedish Army, Swedish Navy, or Swedish Air Force—will conduct their respective portions of NCW operations. Further, they may be needed for a particular type of unit within a service. For example, the Army's armoured or infantry units will likely need new doctrinal manuals focused on the tactical level of NCW operations. Supporting joint doctrinal manuals may be needed for functional areas such as intelligence, logistics, personnel, training, communications, information operations, special operations, and so on.

Organisation

The new capabilities required by the Swedish Armed Forces for NCW operations in the future require a careful re-examination of the organisation of the Swedish Armed Forces. Ultimately, a thorough analysis of the requirements of NCW operations and new doctrines to be developed for the execution of these operations may lead to a reorganisation of the Swedish Armed Forces or the restructuring of certain specific Swedish Armed Forces organisations.

In particular, it appears that small unit operations will be extremely important for many future operations. This is not to say that all Swedish Armed Forces units should be small; to the contrary,

larger units, to be formed by aggregating these smaller units, will be required for the defence of Sweden and probably also for certain kinds of co-operative operations within the Nordic-Baltic region and the European theatre. On the other hand, small units manned by highly trained, well-equipped personnel and capable of autonomous or semi-autonomous operations over extended periods of time are likely to be needed to cope with many of the newly emerging threats, especially when operations are mounted at great distances from Sweden. Such small units could be used as the building blocks of larger, more powerful units depending on the situation.

Leadership, Personnel, and Training

The leadership of the Swedish Armed Forces at all levels must learn about the NCW and how to contribute to its successful adoption by the forces. The NCW must be emphasised in officer training and education programs, beginning with new officers receiving their initial training and continuing throughout their professional military education. At the unit level, commanders should be encouraged to include a discussion of Sweden's NCW in their ongoing officer professional development training. Officers will need to be tactically and technically proficient, as well as innovative, when leading units of all sizes while conducting NCW operations. Finally, the participation of Swedish officers in international military operations in partnership with the military forces of the European Union, the North Atlantic Treaty Organisation (NATO), or the United Nations will provide valuable experience in preparing them for the Swedish Armed Forces missions of the future.

Selective recruitment and long-term retention of key personnel, including those with technical skills needed for various aspects of operations, will take on increasing importance during the transformation of the Swedish Armed Forces.

The linchpins of progress from vision to experimentation to reality are training and education because they are the keys to intellectual change. Without intellectual change, there is no real change in doctrine, organisations, or leaders. To effect enduring changes to Sweden's military capabilities, the experimentation and implementation process must include the development of a wide range of realistic scenarios and imaginative conflict simulations to explore the full scope of future operations. An intensive exploration of alternative tactics to conduct operations can assist the Swedish Armed Force's leaders in choosing those that can most effectively combine new doctrine and technologies.

Materiel and Facilities

Because of the changing nature of the threats to Sweden and the increasing pace of technological change, there are implications for the entire acquisition process by which new weapons systems and other materiel are developed and acquired for the Swedish Armed Forces. For example, it will be necessary for Sweden to move to a spiral-based acquisition process to reduce the time required for new systems to be developed, tested, procured, and fielded with the Forces. Commercial off-the-shelf (COTS) acquisition should be used wherever possible to reduce the costs of development, acquisition, and support. New logistics doctrine will probably be required to enhance the deployment of and sustain the capabilities of Swedish Armed Forces units and to allow them to partner more effectively with European Union or NATO forces in the future.

It is anticipated that Swedish Armed Forces will need to acquire facilities that are more mobile and deployable to support operations outside of Sweden. The development of partnerships with the military forces of other nations may afford the Swedish Armed Forces the opportunity to use training facilities in those nations.

- * For NCW, technology matters a lot:
 - Sweden has significant advantages

- Swedish industry is a key participant
- * Network Centric Forces Strategy and Operational Concept matter more:
 - Development and acceptance of concepts are critical
 - Operational Concept will drive requirements for the future
 - New thinking and new ideas are important
- * Network Centric mindset people matter most:
 - Best and brightest - recruitment and retention crucial
 - Commitment of Swedish Armed Forces leadership at all levels is essential
 - Well-trained, motivated personnel will determine success
- * The Swedish Armed Forces can bring a lot to its partnerships with the military forces of other nations:
 - Quality people
 - Quality technology
 - Unique experience
- * The Transformation is ongoing in Sweden and elsewhere:
 - Sweden has the momentum
 - The Swedish Armed Forces can lead in selected areas
- * Swedish industry can enhance economic competitiveness

Conclusions

Sweden and the Swedish Armed Forces have made a strong commitment to transformation based on the ongoing Revolution in Military Affairs over the past 3 years. Last year confirmed by the Parliament Decision based on the Government bill. Considerable planning progress has already been made in the enhancement of the Swedish Armed Forces capabilities in two of the three main components of the RMA: NCW and Decision Superiority.

A few conclusions may be offered at this early stage of efforts to develop a Vision and Operational Concept for Dynamic Engagement and to begin the transition of the Swedish Armed Forces to a force fully capable of operations in the projected future security environment. Sweden is on the international leading edge of NCW development. As a nation, Sweden has the resources, technology, and skilled people that are necessary conditions for a successful Transformation. To succeed in implementing the NCW, Swedish Armed Forces personnel at every level, as well as Sweden's political leadership, must achieve a deep and sustained transformation in thinking about training, organising, equipping, and operating Swedish forces in the future. It is within Sweden's reach to do just that and to be among the very first to field a truly NCW-based military with powerful capabilities.

Technological possibilities in network centric warfare.

by Mr. Svante Bergh, Ericsson Microwave Systems AB

During the period 2001–2010, substantial expansion of the civilian infrastructure for information transfer will occur. Networks for 3G mobile telephony will be constructed and commissioned, and coverage of fibre-optic networks will increase. This will lead to greater bandwidth and higher data transfer speeds. The traffic will be packet-conveyed and thereby utilise the capacity of the networks much more efficiently than before. The technology also entails that the networks that we are accustomed to perceiving as separate for, for example, fixed telephony or mobile networks, will be combined into a common base network. In this way, a common service layer is established on which all of the various networks' services can now be jointly utilised. Services that can only be utilised by one transmission method will no longer be developed. There will be substantial development of new services on the service layer. There is, and will continue to be, a large number of large and small parties with new ideas for multiple services. Subsequently, military services will also appear. The dialog regarding these services will be very important in coming years.

Network traffic will make use of Internet technology and will travel via an IP layer that utilises the common basic network. To conserve bandwidth, the networks will feature automation that transmits only such packets that contain information.

The armed forces will probably use an Intranet, which partially leases capacity on civilian networks, but also reinforces it with military resources.

Considerations will likely be made as to whether or not the armed forces shall operate their networks themselves or if they can be advantageously operated, either in part or in full, through co-operation with one or more civilian operators.

In urban areas, both coverage and capacity will often be sufficient on the civilian networks, while in rural areas, in which military forces will even operate in the future, coverage and capacity must be reinforced.

The same applies when Swedish units take part in international missions, where the national infrastructure is generally insufficient and the security low.

The armed forces will probably develop their own fixed networks with fibre optics. Additionally, various mobile-reinforcing resources will likely be acquired. These can be base stations for 3G networks and later for 4G. They can also be WLAN's (wireless local area networks) with ranges of approximately 400 meters or Bluetooth networks with ranges of approximately 10 meters. Wall's can be used at a staff site or within a smaller unit. Bluetooth is very local and is primarily useful on ships or similar. Even individual soldiers can set up miniature networks with appropriate sensors to achieve improved combat effect. Prioritised transmission sequences, such as sensor/rifleman chains, are assigned "labels" that give the packets the highest priority at each server, switchboard or similar device, thus minimising time delays. This will be made possible with IPV 6 (Internet Protocol Version 6—today's standard is IPV 4), which will be deployed during the forthcoming years.

The network permits assets to be tracked by attaching a chip to them. The chip can be read by a Bluetooth transmitter and made available on the net. This makes it possible to keep track on all service and supply units and also to pinpoint their position. This gives a potential for enhancing the logistics efficiency in a high degree.

After 2010, 4G technology will begin to be utilised with even greater bandwidth and capacity to communicate data volumes.

The purpose of networks is to attain interactive effects from the systems one connects. Through their contributions becoming available as services on the network, information can be added and provide areas of coverage and effects that are many times larger than that of the individual systems.

Today, network centric warfare is an advantage. Tomorrow, it will probably be a necessity. Most items of interest pertaining to network centric warfare come from the commercial sphere. The technology can therefore be purchased by anyone who can afford it, and moreover, everything is becoming less expensive. Even third-world military forces can significantly improve their combat power by purchasing and integrating: PCs, GPS receivers, cellular phones, digital camcorders, wireless microphones, small radar stations, laser spotlights and services from space. Those who make use of this equipment can improve their powers of observation. Network centric warfare can make the battlefield visible to all, and thus reduce the importance of the large platforms that typified the 1990s.

Services

One of the most important characteristics of the network is the capability to provide information or effects from various systems in the form of services. These services can then be combined with other services — military or civilian — into multiple services. Networks can therefore not be described as linking together systems of systems.

Network centric warfare is the utilisation of the systems on the network in the form of services that are combined into multiple services.

This requires the use of a common standard. This is most easily achieved by utilising the civilian IP standard.

With network centric warfare, an information service can be utilised by all role holders who have authorisation to utilise it. Depending on the role, the role holder can later quickly assemble new multiple services for the purposes that suit him. This provides very large and untried synergetic opportunities.

An example can be a radar system, a Giraffe, that normally provides a radar image that is fully comprehensible to radar operators. An untrained person attains little benefit from this radar image.

As a service, one can choose, for example, to transfer the target echo alone. This service can be combined with another service on the network—in this case, a map image. Through a third service, one can automatically obtain the position of the radar image, and also scale the target echo and map so that they are suitable for graphic representation. We now have a target echo represented to scale on a map image as a service on the network. It has created a new combined service—the local air picture. This combined service can be utilised and understood by many. In turn, it can be integrated with other services into another multiple service.

At the same time, a service from the network can be fed back to an older product and thus reinforce its functionality. This principle is important in that it permits a mixture of new and older technologies in the same networks. One can thus replace the products in the network successively and first when their contribution to the network's total effect begins to be excessively low. With this principle, armed force can consist of a mixture of legacy and new systems. This also entails that all systems that we now procure for the armed forces should be encapsulated so that they can be used on the network right from the start.

One can also create combined services of new and old services. Benefits will arise that were not previously perceived as possible. New service layers will be developed that can be considered and developed apart from the communications layer. This will make it possible for many parties to

develop services. It will be important to clarify which military services that users want at an early stage.

Situation reports and security services are definitely important such services. Precedence to prioritised messages can be granted. (“It will be like riding first class on the Internet, where today, everyone rides in economy class. If it works it works.”) One can assign a classification to messages that cause them to undergo extra encryption or to be subject to requirements for especially stringent authentication. The possibilities that will arise with services are numerous even in this respect.

Another important service is positioning. It is said that 80% of messages on military networks are of the type: “I am here; where are you?” Automatic positioning is thus a major advance. A service can be constructed on which all systems indicate changes to their positions when they exceed a specific minimum value.

Collecting information – Sensor Development

A network-based defence is dependent on being able to operate around the clock and independent of weather conditions. If this ability is lacking, the opponent will naturally take advantage of this weakness. In all essential respects, microwave technology has this ability and can, when complemented with optronic and other sensors, collect the needed information.

No single sensor can manage all target types but rather a wide spectrum of sensors must interact. Such interaction can be facilitated by making the information accessible as services on the network and can thereafter be integrated with special fusion services.

Masked targets, targets in forests and targets with stealth technology represent special problems. CARABAS, a new type of VHF radar (long-wave) with the ability to detect manufactured objects with the aid of contours, is designed for this purpose. It detects manufactured objects of the size of motor vehicles or artillery pieces. Through a technology called “change detection”, echoes can be subtracted between two over-flights. In this way, one can derive the differences, which thus correspond to the changes that have occurred since the previous over-flight. These now represent a number of suspected target echoes. This information is not sufficient for action but rather detailed information and identification of the suspected targets are needed using a vehicle equipped with complementing technology before active counter measures can be initiated.

This radar type also has promising capabilities for the detection of flying stealth targets, and can then be directed upwards to participate in anti-aircraft defence.

Phased array antennas represent a very attractive development. They consist of several transmitter/receiver modules that electrically interact. They can be made adaptive to the situation and used for, among other things: active and passive data entry, control of weapons, interference and communications. The technique provides multiple-function capabilities and is very cost-effective. Communications utilise substantial bandwidth and are thus difficult to disrupt. The technology also has considerable civilian attraction for broadband communications.

Development of phase-controlled antennas and phased array antennas provides new opportunities to detect, localise, track and evaluate targets of interest. One can concentrate the beam on the target, and through holographic, neurological analysis, for example, identifies targets with high reliability. This can be complemented with the utilisation of other ESM (Electronic Support Measures) data.

Detection, tracking functionality as well as energy management will be able to be improved with this technology. One can also automatically and adaptively adjust transmissions, search patterns and energy management for several interacting sensors to produce synergy effects for surveillance capabilities.

Antenna development entails that more and increasingly complex functions can be integrated in the same antenna. This means that active, long-range interference can simultaneously be carried out against several interfering objects with respect to time, space, frequency and power output.

Stealth targets often have small signatures within one wavelength range. At the same time, the targets can be warm or have large silhouettes that make them visible on other frequencies. For this reason, network-operating sensors will be of great importance for detecting and identifying this type of target.

Passive sensors will be of considerable interest in that they do not produce revealing radiation. They also are very well suited for networks, when more than one sensor is needed to triangulate a position. Passive technology is well suited for ESM, i.e. for studying typical properties of transmitting radar. In this way, the analysis can both identify the radar type, which reveals its platform type and the individual radar unit in question.

Bistatic radar provides intriguing possibilities. Here, a relatively low-tech transmitter is positioned at a site. This serves one or more very advanced receiver units, which then become passive and that can be situated at other sites.

Special attention will be directed to detecting ground targets at long range. This requires elevated platforms such as aerostats, aircraft or UAVs. One can foresee development within SAR (Synthetic Aperture Radar), GMTI (Ground Moving Target Indicator) and processing. CARABAS is, by the way, a SAR radar system.

Challenges and possibilities

by Lieutenant General B-A Johansson, Swedish Navy

There are many challenges for the Swedish Armed Forces to fulfil the wishes of our politicians, especially within the international field. In the short run I'm quite convinced that we can solve the problem but that is because we still have a kind of storage of trained officers and conscripts that volunteer.

Earlier we had about 14.000 active officers about 18.000 reserve officers and we trained about 30.000 conscripts yearly. Less than 100 officers were on duty in international units and not more than 1.500 men were required for international service every year. The requirement from 2004 is more than 300 officers continuously and more than 3.000 soldiers on duty or alert every year for international missions. That have to be solved with approximately 11.000 active officers, 7.000 reserve officers and 17.000 conscripts yearly trained.

To be able to fulfil these requirements, and even more as our politicians are talking about, we need better political support. Not necessarily more money but change of policies and laws.

If we start with our security policy I think that we have to change from our old aim to put the defence of our territory as the primary task of the armed forces. I would express this new policy as: "Defend the Peace first and Swedish territory than!"

As I understand many of the politicians are thinking in this direction, but they don't think that the general public is in favour of such a change yet. But I think and hope that it will come in a near future. You could also express it as: "Defend the Peace wherever it is threatened and Swedish territory when there is a real threat."

The Parliament and the Government have already given us a tool what the officers concern. With the new role that make it mandatory for officers to serve in international duties. But there are several more tools needed.

First we have to create forces that are equally equipped and trained for international as well as national use. That means the same equipment, training and readiness for peace enforcement abroad and "armed combat" against an aggressor attacking Swedish territory.

This will cost more but can, in my opinion, be switched against fewer forces for national defence.

Today we are not allowed to train a conscript for other use than he is assigned to in the national defence when he starts his training. The only change we have seen so far is that it is from this year mandatory for him to take part in exercises abroad but not missions.

That means we cannot train a selected battalion for international missions during its basic training. We have to get both officers and conscripts to sign up for the selected battalion and train the battalion after the conscripts have done their basic training. We need the possibility to train in a selected unit from the beginning of the basic training. Then we can get a real good cohesion within the unit. The officers and the conscript will then know whom they will work together with in the upcoming mission.

This needs a change of the law of conscript.

I think the changes that have be done concerning active officers will be enough if it will be followed up with better allowances and especially better support to his or her family at home.

Reserve officers can serve voluntary today and I think it can be enough. But if it's not enough some kind of rules for temporary service abroad will be needed.

On the conscript side I don't think it will be possible to get any other solution than a voluntary sign up. The armed forces have several times put up a concept of about 1500 "short term active soldiers". They should be hired for serving within the armed forces, after there basic training, for up to 2-3 years and during that period also sign up for 1 to 2 missions or readiness for missions. The Government has not allowed this concept. There is a fear that such a concept should be a way to undermine the whole conscript system and make a change to an unwanted professional soldier system.

I think it will be necessary to get a solution of short time contracted soldier in the future if the armed forces shall be able to fulfil the political ambitions with participating in defending the peace outside our country.

Of course I'm also convinced that our amphibious units will participate together with and in co-operation with other amphibious forces in littoral waters where amphibious capabilities are required. There are many areas where our special training in our big archipelagos will be needed.

We know that we are on the road for more involvement in crisis abroad. I think we will be able to solve these tasks but we need some more tools from our politicians.

The Swedish Navy

A concept for extreme littoral operations today and in the future.

by Rear Admiral Jörgen Ericsson, Swedish Navy

Introduction

The coastal areas of the world are densely populated; a majority of the world's inhabitants live in such areas. To assist nations and people in need, the sea and its lines of communications provides the most sustainable opportunity for access to goods and necessities of life and welfare. Trade, and as a consequence, prosperity, stability and freedom are directly dependent on such an access and of the freedom to use it. Altogether this puts a premium on capability for littoral operations. That such a capability is increasingly important today imply military planning all over the world.

Definitions

Today, littoral areas are defined as coastal areas extending to most parts of the world's continental shelf and far into the continents. To be useful for further discussions regarding specific military littoral capability this definition has to be more precise. One way is to let the above definition be valid for littoral areas in general and use a more specific definition "extreme littoral areas" for extremely shallow, confined and congested coastal areas, like the Swedish maritime vicinity.

This definition includes areas within direct control from the shore or the sea as well as small open seas, archipelagos, river deltas and straits. Using this definition, areas, like the Baltic Sea, are extreme littoral areas.

Extreme Littoral Warfare

To traditional blue water naval forces, the characteristics of modern littoral warfare are similar to what guerrilla warfare is to ground forces: multifaceted threats generating great difficulties to attain a decisive battle. To fight adversaries like terrorist organisations, or to deal with the broad spectra of threats where it is not sure whom to fight, makes the situation even harder to handle. In addition, new technologies produce difficulties to use traditional large blue water- and amphibious resources in littoral areas, especially in extreme littoral areas. High-speed cruise missiles and underwater systems optimised for shallow waters produce various threats, making it difficult for large platforms to operate close to the shore. Extreme littoral areas produce the most difficult threats and are, in addition to that, also the easiest to influence if the defender lack some of the capabilities needed, something we experienced during our ASW-operations in the 80ies.

To handle crises, threats and conflicts in today's world is not only a question of strikes and battle. Conflicts of today and the future put a premium on sustainable presence, on the ability to control or deter control. Modern conflict handling also requires strong links to civilian resources and ability to use diplomacy. Consequently, a littoral area of operation demands a mixture of specific forces, tailor-made to combat particular and multifaceted threats using real time information shared between military and civilian resources in close connection to political decision makers.

Operations in the littorals put special demands on coalitions to create sustainable, flexible and regionally appropriate combat presence across the operational spectrum – from humanitarian aid to armed conflicts. A joint approach on operational level, and combined tactical forces will be crucial as well as co-ordination and real time awareness. Together, these requirements give priority to highly flexible, interoperable, technologically advanced forces with an ability to co-operate. The

architecture of such task forces have to allow sustained, all dimensional control; on the ground, at sea and in the air. Given that air superiority is established, task forces for littoral warfare will need a wide range of robust “close combat” units to use on the ground and at sea as well as on open coasts, in archipelagos, and confined maritime areas.

Today, international Extreme Littoral Operations is a question of knowledge of the demands set by regional and local environments and of opportunities to use the force that the situation in the present area requires. Expeditionary resources, such as aircraft carriers, large blue water ships and long-range air assets are segments of such a task force in large-scale operations. Their role is to take and maintain full dimensional control over the whole area of interest. To be able to be present and to cover the whole range of possible tasks in extreme littoral areas, whether in the centre of the area of operations or more to the flank, resources used must be able to hold a close, sustainable all dimensional control. It could be a difficult and dangerous task, but also the most important, especially in low conflict scenarios and peace support operations.

Units have to be especially developed for such tasks and environments. They have to be mobile, lethal, light and stealthy. Appropriate logistic functions must be especially developed to suit the forces, the mission and the area. Command and control have to be decentralised and characterised by distributed functionality. Clearly, quality precedes quantity, but quantity must be appropriate to fulfil the needs of a full dimensional tactical concept possible to use joint or combined, in co-operation with other assets in the operational and multinational system. All this puts a premium on flexibility and requires specific capabilities and experience, skills that our Swedish Navy already has and continuously develops.

Security and defence policy

The Post Cold War Era and the international military effort in its wake, which not only includes peacekeeping operations, but the whole spectrum from military diplomacy to the armed handling of crises, has altered the Swedish security- and defence policy. During the last decade we have changed focus from solely defence of Swedish water-, air- and land territory to an increasing international commitment for peace and stability. The change is in agreement with our conscience, our values, and our national interests. It should be possible to settle conflicts. They should not escalate. Consequently, Sweden, peace and stability in Europe and its vicinity, is today best defended through pro-active work outside of our borders. In a more Naval context, we must be willing and able to act within Europe and, in the future maybe even globally, to protect the value of our surrounding seas and their shared use.

As for most nations our prime concern is to promote Swedish national interests. It is obvious that Sweden, as a small and trade-dependent nation on the border between the traditional occidental world and an Eastern continent that is still quite unstable, has great vested interests to move in the direction where the security arrangement holds Europe together. By promoting these objectives, we can also actively work to prevent a, for Sweden disastrous, re-nationalisation of Europe's security. To deal with this situation for small states like Sweden, co-operative capability is more important than ever.

Our surrounding seas – our maritime vicinity - are of great importance to all nations around them. They provide unique opportunities for creating a sustainable stability, which is the foundation for a continuously positive development in our part of the world. In all realistic security solutions regarding Northern Europe, Sweden, and the Swedish navy, has a specific responsibility for such stability, especially regarding the Baltic Sea.

So, our prime concerns must be regional. To make today's positive situation deterrent to any influence from the wide range of threats able to disturb or overthrow the current positive

development, Sweden has a responsibility to provide tools to uphold regional influence. If we do not fulfil the requirements set by this responsibility, we invite others to fill the gap, creating a move of power with instability and a wide range of risks as a consequence.

The Swedish Navy and its mission

How shall the Swedish navy meet the new demands, the altered security and defence policy, the increased importance of international engagement combined with ability to adapt to a future situation where Sweden itself may be threatened by an aggressor and, finally, the demands put forward by modern warfare in extreme littoral areas? What kind of resources shall we provide to the international community? What are our own specific needs?

The development of the navy's capabilities and force-structure has to be founded on the national needs, including sharing responsibility for peace and stability in Europe and its vicinity, and those of the environment surrounding our country. Considering that and a small country's scarce resources we shall not strive for "Blue Water Capacity". There are many first-rate Blue Navies in the world and Sweden has either the need or the competence to compete with those. Thus, I argue, that the Swedish Navy shall continue to develop the unique capabilities needed in extreme littoral areas.

The Swedish Navy has since decades developed a capability for missions and tasks in shallow and congested areas. Our units are, compared with most Naval units in the world, of outstanding quality. They can, due to the quality of personnel and systems, with confidence, be used both for international operations in a European or a more global context, fulfilling the requirements set by defending Sweden by proactive work outside our borders, and, even more important, to create stability in our close area. Using those resources, our surrounding seas provide a great opportunity to build a protecting shield against instability, using it both as an area for enhancing co-operation and communication as well as, when needed an area for military initiatives to protect our nation and our interests.

Few nations have better opportunities to develop such a capability than we. And, this capability must be co-operative, fully interoperable with the international community and other nations focusing this area of needs.

The tactical concepts for maritime security in extreme littoral areas require that our resources be integrated in a system of systems in real-time co-ordination. Commanders must be able to lead integrated tactical task units, consisting of surface, submarine, mine countermeasure, helicopter and amphibious units. They must be able to co-ordinate supporting units from other services as integrated parts of the task unit or combined with it. This need of system-of-systems integrated into a tactical concept became obvious during the ASW-operations during the 80ies, and it still is valid and will be so far into the future.

Huge quantities of information have to be managed, which focuses on information systems that have the capability to select information valid for the specific mission. Looking at the new opportunities provided by new information technology, partly already available in our units, the limit for efficiency pretty much is set by how constrained you want your subordinates to be. To provide real time valuable information and let them take initiatives and act within a clear commanders intent and rules of engagement, focusing on the objectives of the operation, will really create more for less. Our command and control systems, as well as our leadership tradition already today provide such opportunities – We have to explore and develop those opportunities!

In the light of this, the change of our armed forces towards interoperability for joint or combined international operations is, and must be, the most prioritised aim when it comes to force planning and training. Creating multinational capable units within the futuristic but for the Navy already currently possible ideas of Networking is an effective way of using our scarce resources. Therefor,

the long term aims and objectives of the transformation of the Swedish armed forces are most important to fulfil.

At the same time we need a certain level of readiness, demands that differ the Navy from other services in the Swedish armed forces. Our units are involved in “real operations”, that are sea surveillance, intelligence tasks, protection of our territorial integrity and international operations (for instance MCM-operations in the territorial waters of the Baltic States). So, the traditional problem of balancing development and readiness is, as for other navies, also valid for us.

The Navy should take the lead in the long-term process developing a Network Centric Capability in the Armed Forces. Our systems already today provide opportunities for a certain degree of networking. On this foundation of modern systems and skills, the Navy of today is underway developing a concept of operation that fit into this new focus, using our present systems and continuously adding new ones.

To create a reliable operational capability, it is not enough nor possible just to focus on single units like those listed in the Planning and Review Process. Even if they are the most important assets of today’s development, building their capability is just one important step towards operational and tactical concepts. Our concept must, and does, include all six cornerstones of our Naval Forces.

C4I, Surface, Mine countermeasure and Marine units, Submarines and Naval helicopters and ability to co-operate closely with air assets and land forces. The development must include all necessary units, and focus on a concept for flexible operational use – on demand and just in time. All assets have their specific roles and capabilities in this concept, capabilities that of course also can be used separately and autonomous to fulfil the needs from the national perspective as well as the international one.

Our AIP submarines, trained for tasks in extremely shallow and difficult areas, provide a world unique and very useful capability. They have a broad ability for hidden operations as forward intelligence, ASW operations, Special Operations and, of course, as a deterrence of armed aggression. They are at present and in the future an integrated part of our operational extreme littoral system, but can also be used in the more traditional way as independent operational or strategic resources.

The corvette fleet, with the Visby corvette as a world-class state-of-the-art concept, provides a multi-role capability suited for all missions in extreme littoral areas. The corvette’s skill to operate close to the shore, in archipelagos and other congested maritime areas is unique as well as their capability to co-operate both with marine-units and, in an international context, with blue water resources. The corvette fleet’s capability of all-dimensional war fighting will be further developed as soon as the first Visby corvette gets operational.

The mine hunting component has world class standard, a standard clearly displayed during the mine clearance operations in the territorial waters of the Baltic States. Their unique capability of mine hunting in extreme littoral waters is asked for internationally and of great importance for our own maritime security. We will continue to improve the mine clearing concept by further development of unmanned mine clearance systems.

The amphibious force, our marines, present a unique and world-class standard of operations in archipelagos and other congested areas such as river deltas harbours, straits and lakes. Their ability to stay in the area and use both land and the sea for sustainable control, close in protection, fire control, human intelligence and humanitarian aid provide a unique and important capability covering the whole spectra of possible operations. Underwater warfare capability will be prioritised regarding training in the Marines as well as exercises using all systems integrated to control an area of operation within the extreme littoral concept.

Naval Helicopters and Military Patrol Aircraft will continuously develop their skill to be integrated in naval task units, solving ASW-missions, sea surveillance, providing target information to surface combatants for over the horizon engagement and to work closely with the corvettes in Peace Support Operations.

Summing up

During this address I may have displayed a certain pride in our Navy – and rightfully so! The Swedish Navy has over the decades emphasised quality before quantity, nurtured and improved our systems, techniques and skills to operate in extreme littoral areas. In short we have a decent navy as of today. But we cannot sit back and be pleased with that.

I, and other speakers, have pointed out the need of a Maritime Security Concept, the broad spectrum of threats in extreme littoral waters and what is needed to meet and handle those – and - the possibilities and dangers created by new techniques. In addition to this, our strive towards Network Centric Warfare and the transformation of the Swedish Armed Forces calls for further development.

In a short-term perspective we shall continue to improve and develop the naval assets of today. At present we must set focus on increased endurance, increased interoperability, to improve our air defence capability by a medium range air defence system, to create flexibility in system solutions to be able to meet future demands and, finally, improve the command, control and communications network within the navy and, not the least, between the navy and the other services.

We shall also continue to develop our concept of operation, the focus set on Extreme Littoral Operations. By developing in this direction, we will be able to cover the whole range of missions within the needs, set forth by our national interests, to protect and defend our Maritime Security, in a national context or as a tool for an active security policy using our navy in a more international context. This is today the best – and the only realistic - way to fulfil the maritime requirements set by the main tasks and operational capabilities defined and given by the government.

But by doing this, within the framework of the Armed Forces transition, we have to focus on the missions and the demands set forth by them rather than the design and number of single units. In the long term we have to be prepared to question the systems, ships and units, of today – to be able to create systems, ships and units needed for tomorrow.

The world changes, the technical development is rapid and must be utilised to create new abilities and new systems, but, some things never change – the need, set by demands out of geography and available technology, to control our maritime vicinity and protect our national interests will stay the same.

With this roughly outlined development, in a short as well as in a long term perspective, towards a navy that can fight flexible, joint, combined, multinational, and independent using tailor-made taskforces with the latest technology and that can show a sustainable presence with an adapted signal effect, both in the near vicinity and internationally, a key card will have been placed in the future armed force's ability to contribute to peace and stability. The naval forces will be on site when needed, in the near vicinity or around the coast of Europe in Extreme Littoral Areas, wherever it best suits our security policy.

I would very much like to conclude my address by running a short video which will give you an example how to deploy and operate Swedish naval assets of today in a PSO displaying the Maritime Security Concept in extreme littoral waters.

Building capability for extreme littoral waters.

by Colonel Bengt Andersson, Swedish Navy

Introduction

I will continue where Admiral Ericsson ended and talk about the Marine side of the house. How do we transform the Swedish Marines from the old times of defence against a major invasion to a modern versatile unit prepared to undertake any task in extreme littoral waters or Murky Waters as I as a marine prefer to call it? I consider Extreme Littoral Waters to be a rather strange term and prefer the more colourful “Murky Waters”.

The base for building the capability, within the naval task unit, rests on the four tasks of the Swedish armed forces.

The first task is to be able to defend the country – combat.

That means that there is a demand for war fighting units, i.e. shooters.

The second task, to secure Territorial Integrity calls for the capacity to survey and control an area combined with the capability of interception on different levels. Of course this task also, in the end, calls for shooters.

The third task: Participation in international operations, implicates that the units will have to be able to work in all levels of a conflict or in a disaster area, that is, from human relief to combat.

The fourth task: Support to the civilian society in times of great distress indicates that you have to be able to interact with civilian authorities and civilian organisations.

I will discuss, from a conceptual point of view, the demands you have to consider, when you are building Marine Capability for extreme littoral waters.

Combat

I will start with combat, the base for our existence.

To be able to operate in the archipelago or other congested areas such as river deltas, harbours, straits and lakes, you need to be able to work

- * from the water against units on the water,
- * from the water against units on land,
- * from land against units on the water and finally
- * from land against units on land.

The complex mix of land and water creates a list of demands.

You need mobility and manoeuvrability .One can be said that you need to be amphibious within the maritime zone. You have to be able to move, and manoeuvre in the water and on land. Combat mobility, primarily on keel, but also on wheels /or tracks and /or with helicopters are asked for. Even though. I think it is necessary to have a certain amount of land mobility, I do not consider it necessary to have a large amount of land vehicles. I think that the idea of light infantry could be applied here.

In order to be able to control an area you need to be able to survey it. I think that small units with small footprints are of extreme importance in this area. Our ability to stay in the area and use both land and the sea for sustainable control, close in protection, fire control, and human intelligence

provide a world unique capability that we already have, but it has to be further developed. In our concept it is able to use the boats as nodes in the NCW and RMA concept. If all boats and units have the actual situation on their screens, they can be used in a flexible way. This means that we need to further develop command and control-system with high capacity, able to be interoperable with other units.

I would like to stress the fact that I think it is of paramount importance to have marines on the ground – you have to be there.

Another thing to consider is the balance between fire power and lightness/ manoeuvrability.

Again, I think that the possibility to, by developing NCW and using it right, you might be able to bring many small units to effect in the same area at exactly the time of your choice. I do not think that the light marine units have to have the heavy fire support units as organic assets. I think the important thing is that we can control heavy fire from all other units: that is artillery, missiles, CAS, NGF and others.

In order to control an area you have to be able to stay in the area and be self sustained for a long time. You have to create a picture of the area and the activities within it. That calls for a robust service support organisation.

Territorial integrity

I will now turn to the task of territorial integrity. Again you have to have the capability to survey and control the Murky Waters area. You have to be able to have surveillance on, beneath and below the surface. To secure the integrity you also have to be able to intercept. This means that our marine units have to be able to use different levels of force. One part of this task is what we call STC (Sea Traffic Control). That is to be able to hold a close sustainable all dimensional control of an area using different systems ranging from electronic underwater surveillance systems to human intelligence and of course to be able use weapons for hard kill. You also have to be able to board and search ships without putting your own units in harms way. Again – you need marines in the area.

International operations

From my point of view international operations range from human relief operations in murky waters (or in rivers and other areas) to PSO where peace enforcement and maybe (NEO EO) is the most extreme.

Let us begin with peace enforcement. To be able to participate in a peace enforcement operation, the amphibious forces must have the capability to use force in a controlled and flexible way and on different levels. The old strategic term “flexible response” might be proper. In this area again I consider “manpower” to be of great importance. You need to have marines ashore, in order to act and respond on the right level. Having marines ashore, in small units gives you an opportunity to call for support and control support in an exact manner, which will prevent collateral damage. A clear commander intent and robust rules of engagement, delegated to low levels creates ground for fast response. As mentioned earlier, our command and control systems, as well as our leadership tradition already today provide such opportunities.

One problem in international operations is force protection. You have to be visible and you have to be seen by the parties, and you have to protect your forces. The answers to the problem are that you have great personnel firepower, and a known capability to call for support.

The other side of international operations is human relief. This connects to the last tasks of the Swedish Armed Forces.

Support to the civilian society in times of great distress

This could be anything from medical aid to protection. I think that our marine and our navy units are well suited to support the civilian society in times of Great distress. The base for that opinion is again, manpower command and control and transport equipment. The demands listed earlier about to sustain and support the unit with its own resources automatically gives the marine units good capability to support the civilian society.

Conclusions

A greater participation in international crisis management gives that the Swedish Security policy will be linked into a world of broad international co-operation. Future Units have to be able to act national as well as in the international arena, co-ordinated with multinational units. This indicates that the marine units need to be even more interoperable in the future.

Possible Areas of Conflicts in the Future might implicate that also marine units organised for murky water operations must have organic strategic sea lift capacity. It is also necessary for part of the units to be strategic airlift transportable (but not with organic assets – of course).

The geographical location of Areas of conflict might, and will probably, raise demands on capability to operate in other climate zones than the Swedish.

The genuine uncertainty about the democratic process in our region and in Europe together with the fact that Sweden is a country with a long coastline and a large littoral zone creates a need for a navy, able to operate in the littorals. Those units have to be able to meet both old and new threats.

International tasks, in the future, demand a flexible use of marine units. Marine units have to be organised in order to be used, both as small task units and as composite units. They have, of course, to be able to operate in conjunction with other national units as well as in a combined structure. The future Swedish marine units have to be able to command attached units from other branches, services and from other countries.

The tendency in the world seems to be that the difference in technical capability between different actors is increasing. This also increases the probability of asymmetric warfare. This means that the marine units have to be able to meet different technical levels.

The possibilities to “see” the whole area of action under all conditions and in near real time will increase the importance of “command-and control-warfare” even more. That means that marine units have to be able to collect, understand and give information in near real time. They have to be able to send information as pictures, text and voice.

Future operations will include a large amount of information warfare. This indicates that expeditionary marine units must be able to influence the enemy or the other parts, and also to protect themselves from influences.

Future weapons and weapon-platforms must be used more flexible than today, in order to increase mobility and thereby decrease time between detection and action. Further on, all marine units have to be able to be a part in all areas of RMA.

Finally As mentioned earlier, the Swedish navy is compared to most naval units in the world, of outstanding quality. They can with great skill and confidence be used both for international operations or to create stability in our vicinity.

The Swedish Marine Units today, presents a unique and world-class standard in the part of the Murky Waters where Water meets land.

We will continue to develop the Swedish Amphibious Forces as a part of the Swedish Navy.

Closing the symposium

by Lieutenant General (ret) Lars G. Persson, Swedish Navy.

I have got the honour to close the seminar, but just a few words before I do that:

In the beginning I put a few questions hoping they should be discussed and maybe answered today. Some of the questions have been, others remain to be further discussed. I am sure that for you like me new topics to discuss have been born and that is fine. My hope is that the important question how the naval forces should be used in the service of peace will be an ongoing topic to be discussed within the two academies.

I thank all of you for your attendance and co-operation at this symposium. A special thanks to Brigadier General Michael Ennis, USMC, for coming all the way from USA to participate in the seminar and the celebrations according to the centennial of the Coastal Artillery/Amphibious Corps. We appreciate that very much, especially since you wanted to come in spite of a very short notice.

Finally I am grateful to the Royal Society of Naval Sciences and the Royal Academy of War Sciences for organising this seminar.

Biographical notes

Andersson, Bengt

Colonel Bengt Andersson was born 1955. After graduation from the Royal Naval Academy 1978 he spent his early career in Karlskrona in different positions within the heavy mobile artillery units. He has been assigned to different positions in the Swedish Armed Forces Headquarters and in the Naval Staff. He has been much involved in the work of organising today's Swedish Amphibious Corps. He is a graduate of the US Marine Corps Command and Staff College. He is a fellow and vice president of the Royal Swedish Society of Naval Sciences and a fellow of the Royal Swedish Academy of War Sciences.

Bengtsson, Lennart

Commander Lennart Bengtsson, is deputy chief of staff at Military District South. He graduated from the Royal Naval Academy 1979. He graduated from the National Defence College in 1996. He has been commanding officer for a mine hunting diving squadron, chief of intelligence at Naval Command West, teacher in political science and strategy at the Defence Academy in Copenhagen and commanding officer for a mine hunting flotilla. He is a fellow of the Royal Swedish Society of Naval Sciences.

Bergh, Svante

Mr. Svante Bergh is since 1996 Vice President Strategic Marketing, at Ericsson Microwave Systems AB. After his graduation from the Royal Swedish Army Academy 1965 he served in anti aircraft units in different positions and has been Chief of Plans and Policy in the Army Staff. He has graduated from the Swedish National Defence College, the US Staff College and Danish War College. He has served as Commanding Officer of the anti aircraft regiment in Gothenburg and of the infantry brigade in Borås. Before giving up his military career he was promoted to major general and served as Chief of Staff at the Central Military District, military adviser at the Ministry of Defence and Chief of International Operations at the Swedish Armed Forces Headquarter. Mr Bergh is a fellow of the Royal Academy of War Sciences.

Ennis, Michael

Brigadier general Michael Ennis, USMC, who is a native of Minnesota, currently serves as the Commandant's Director of Marine Corps Intelligence. Brigadier General Ennis graduated from Concordia College (Moorhead, MN) with BA degrees in French and International Relations, and from Georgetown University with an MA degree in National Security Studies. He spent eight years as an infantry officer before becoming a Russian Foreign Area Officer, which led to a career in intelligence. His Russian language assignments include tours as a Presidential translator on the Washington-Moscow Hotline in the early Reagan years, as a liaison to the Soviet Forces in occupied East Germany, as an Intermediate Nuclear Force Treaty inspector for the On-Sight Inspection Agency, and as the assistant Naval Attaché in Moscow. Prior to his selection to Brigadier General in March 2000, he served as the G-2 of III Marine Expeditionary Force in Okinawa, and as the Commanding Officer of the Joint Intelligence Centre in Hawaii.

Ericsson, Jörgen

Rear Admiral Jörgen Ericsson graduated from The Royal Naval Academy 1975, passed the National War College (staff course) 1988-90, US Naval Command College (NCC 1994-95), Swedish National Defence College (the Senior Management) 1998, Swedish National Defence College (the Senior Executive Course) 2000. He has served on destroyers, torpedo boats, and missile crafts 1975-88, Commanding Officer of 31.corvette squadron 1996, Head of Planning's & Budget department HQ 1997-99, Commanding Officer of 3.Surface Warfare Flotilla 1999-2001. He has been aide-de champ to His Majesty the King 1993-2001. He is a fellow of the Royal Swedish Society of Naval Sciences and of the Royal Swedish Academy of War Sciences.

Fahlander, Bo

Lieutenant Colonel Bo Fahlander, is head of analysis section at the Intelligence Directorate Swedish Armed Forces Headquarters. He graduated from the Royal Naval Academy 1974. His first five years in service were spent in different positions at the mine warfare units in the Coastal Artillery. He graduated from the National Defence College 1986. He has been teacher in tactics, operations and strategy at the National Defence College.

Gustafsson, Stefan

Colonel Stefan Gustafsson is currently Head of Operations in the Naval Command. He started his military career as a Coast Artillery officer in 1980. After ten years at different positions in ASW operations in coast artillery mine barrage units, minelayers and patrol boats as well as mobile artillery units he joined the National Defence College in 1990. After graduating in 1992, he held positions in Plans and Policy Department at the Armed Forces Headquarters (as well as an assignment as a research fellow of the Swedish Institute of Foreign Affairs during 1993) until 1997, when he was assigned as amphibious battalion-commander and deputy brigade commander at 1st Amphibious Regiment in Waxholm. In 1999 he became Deputy Head of the Strategy and Force Planning

Department at the Armed Forces Headquarters, a position he left for joining the US Naval Command College, Newport, RI. He is a fellow of the Royal Swedish Society of Naval Science and The Royal Swedish Academy of War Science. He is also deputy chairman of the Naval warfare department in the Royal Swedish Academy of War Sciences.

Hagman, Hans-Christian

Dr. Hans-Christian Hagman (PhD) is a Senior Adviser at the Secretariat of Strategic Planning in the Swedish Ministry of Defence. Previously he has worked for the IISS, the Swedish Armed Forces Headquarters, UNPROFOR, the Swedish Institute of International Affairs and The Swedish Military Research Establishment. He is a reserve officer (Major), has academic degrees in history, national security studies and has a Ph.D. in war studies. He has had also published some thirty articles - mostly on European security policy. He is a fellow of the Royal Swedish Society of Naval Sciences.

Hellner, Anders

Mr Anders Hellner is the Programme Director of the Swedish Institute of International Affairs in Stockholm. He frequently comments on foreign Affairs in radio, television and in the press. He is also presently anchoring Global Axess, a cultural and political program in TV 8. Mr Hellner's areas of speciality are the United States, The Mediterranean, The Middle East and the Arab world. After studies in the US and Uppsala he was a foreign correspondent in Rome, Italy for Swedish and Finnish newspapers. He has been the Director of the European Institute of International Affairs, the head of Foreign News and Foreign Affairs at the Swedish Television where he also anchored the long running program "Document from abroad". Anders Hellner was also the Chief Editor and News-anchor of TV 3 in London. He has published many articles and essays especially about Italian, Middle Eastern and US affairs.

Johansson, Bengt-Arne

Lieutenant General Bengt-Arne Johansson graduated from the Naval Academy 1969, passed the Swedish War College Staff Course 1978-1980, US Marine Corps Command and Staff College 1981-82, Swedish Defence Course 1992 and 1995, NATO Defence College Senior Course 1997. He was promoted to lieutenant colonel 1983, colonel 1991, brigadier 1994 major general 1997 and lieutenant general 2000. In his early career he was instructor and company commander at Gotland's Coast Artillery Regiment 1969-78, staff officer Eastern Military District 80-81, teacher in strategy Swedish Defence College 82-84, teacher in tactics Coast Artillery Combat School 1984-86, staff officer Naval Staff 1986-87, Chief of Staff to the Coast Artillery Inspector 1987-89, Head of operational section 1 (G 3) Defence Staff 1989-91, Commanding Officer of 4th Coast Artillery Brigade 1991-94, Deputy Chief of Naval Staff 1994-97, Deputy Chief of Joint Operations Staff 1997-2000 and since July 2000 Director General Training and Management Directorate at the Swedish Headquarters. He is member of Royal Academy of General Training and Management Directorate. He is also a fellow of the Royal Swedish Society of Naval Sciences and of the Royal Swedish Academy of War Sciences.

Kihl, Johan

Lieutenant General Johan Kihl graduated from the Army Academy 1969, passed the War College 1978-80, studied at Harvard University in USA 1987-88. He was promoted Lieutenant Colonel 1985, Colonel 1990, Brigadier 1996, Major General 1998 and Lieutenant General 2000. He has served in the British Army on the Rhine 1974, served in the Swedish UN battalion in Cyprus 1984, as brigade commander at the Livgrenadjär Regiment in Örebro 1988-90, staff officer 90-92, Commanding Officer of the Norrland Dragoon Regiment Arvidsjaur 1992-96. He has been Head of Long-term Planning Department at the Swedish Armed Forces Headquarters 1996-98, in 1998 Deputy Director General of Joint Forces Directorate at Swedish Armed Forces Headquarters and since July 2000 Head of Strategic Plans and Policy Directorate. He is a fellow of the Royal Swedish Academy of War Sciences.

Neckman, Håkan

Commodore Håkan Neckman graduated from the Naval Academy in 1971. In his early career he served in different naval ships, primarily destroyers. In 1974 he entered flight training in the Air Force Training School for fixed wing training and then the Navy Flying School for learning helicopter flying. After gaining his pilot wings he served as a pilot at the 1st Helicopter Squadron in Berga, south of Stockholm. In 1976 he became a pilot instructor. From 1979 through 1983 he served as the Head of Flight operations, 1st Helicopter Squadron, Berga. He graduated from the National Defence College in 1985 followed by a two-year posting at the Defence Materiel Administration. He has been Commanding Officer of a Fast Patrol Boat squadron. In 1993 he was promoted Captain (N) and assumed the appointment of Head of Surveillance Division, Defence Materiel Administration. In 1997 he was appointed as the program manager, responsible for organising the new joint Helicopter organisation. In 1998 he was promoted Commodore and appointed as the Commanding Officer of the Swedish Armed Forces Helicopter Wing. He is a fellow of the Royal Swedish Society of Naval Sciences.

Persson, Lars G.

Lieutenant General (ret) Lars G. Persson, graduated from the Royal Naval Academy in 1960. He was promoted Brigadier 1983, Major General 1987 and Lieutenant General 1996. He has been Commanding Officer of a Coast Artillery Brigade 1980-82, Commanding Officer of a Naval Command 1982-1983, Chief Operations Swedish Armed Forces Headquarters 1983-87, Deputy Chief of Naval Staff 1987-94, Chief International Operations 1994-96, Commanding General of the Northern Joint Military Command 1996-98. After leaving active service in 1998 General Persson is appointed at the Ministry of Defence as Swedish adviser to the Commander of Latvian National Armed Forces. He is a fellow of Royal Swedish Society of Naval Sciences and the Royal Swedish Academy of War Sciences.

Rosenius, Frank

Vice Admiral (ret) Frank Rosenius was Deputy Supreme Commander of the Swedish Armed Forces Head Quarter 1998 – 2000. He graduated from the Royal Naval Academy 1962 and spent most of his early years in submarines including command of RSwN Submarine Sea Serpent 1969-70. He graduated from the Swedish National Defence College 1974 and US Naval War College 1981. He has been Commanding Officer of the 4th Surface Flotilla 1985-88, Assistant Chief of Defence Staff (Operations) 1989-92, Deputy Head of Department of International and Security Affairs in Ministry of Defence 1993-94, C-in-C Swedish Fleet 1994-98. He is a fellow of the Royal Swedish Society of Naval Sciences and the Royal Swedish Academy of War Sciences.

Svensson, Emil

Commodore (ret) Emil Svensson was born 1940. He joined the Navy 1959 and was trained to be an Anti Submarine Officer. During the 1980-s he was to a large extent involved in the Swedish attempts to counteract the under water intrusions in Swedish territorial waters, both in the frontline as squadron commander and as an analyst in the staff organisation. During 1992-95 he was security policy advisor to the Swedish Prime Minister and was head of the Swedish delegation in the "submarine talks" with Russia. From 1995 until retirement he worked in FMV as head of Underwater Weapons Directorate. He is a fellow of the Royal Swedish Society of Naval Sciences and the Royal Swedish Academy of War Sciences. He is also president of the Naval warfare department in the Royal Swedish Academy of War Sciences.

Tornberg, Claes

Rear Admiral Claes Tornberg was Commandant of the National Defence College from 1990 to 1998. During his presidency he developed and managed the changes from a military college to an academic institute, a university for military affairs. Before being appointed President and Commandant he was Commander-in-Chief of the Swedish Fleet. During this period he transformed the fleet from a peacetime unit into a deployed fleet. Claes Tornberg has also been head of plans and policy department in the Naval Staff. He graduated from the Royal Swedish Naval Academy in 1958. He sailed in torpedo boats and destroyers for eleven years. After graduating from the Swedish Armed Forces Staff and War College and from the Naval War College in US he held staff appointments in regional and joint staffs and he was also Commanding Officer of torpedo boat squadron. After his retirement he is a consultant for senior management programmes. He is also vice chairman for Kockums AB and the HDW group representative in Sweden. He is also president of the Swedish Maritime League and chairman of the board for Kristineberg Marine Research Station. He is a member of the "group of experts" at the Institute for International Humanitarian Law in San Remo. Claes Tornberg is an honorary member of the Royal Swedish Society of Naval Sciences and was the chairman of the Academy 1991 - 1999. He is also a member of the Royal Swedish Academy of Military Sciences and member of the council at the Swedish Institute for Foreign Affairs..

Werin, Odd

Captain (N) Odd Werin, is Commanding Officer of a Surface Warfare Flotilla. He graduated from the Royal Naval Academy 1981. He graduated from the National Defence College 1994 with speciality in communications warfare. He has served in surface flotillas and been commanding officer for a corvette squadron. He has been assigned to different positions such as Plans and Policy at the Swedish Naval Staff and at the NATO staff in Mons, Belgium. He is a fellow of the Royal Swedish Society of Naval Sciences.

Zettermark, Hans

Mr Hans Zettermark is a senior analyst and teacher with the Department of Security and Strategy at the National Defence College. He has also analysed European and National Security Policy at the National Defence Research Establishment. Zettermark holds an M.A. in military history from Stockholm University and a B.B.A. from Uppsala University. He is a major in the Navy reserve and honour graduate of the US Army Psychological Operations Officers Course. His military positions include battery commander in the Coast Artillery and press information officer at the Armed Forces Headquarters.



The Royal Swedish Society of Naval Sciences

The Royal Swedish Society of Naval Sciences is a Royal Academy, with His Majesty the King as protector. The academy, a non-state organisation, was established in 1771 and has as its aim to follow and proactively work for the development of naval science and seafaring in general.

As one of the world's oldest naval science academies, the Royal Swedish Society of Naval Sciences is active through the follow up of development within its five areas of activity, the area being:

- Strategy and the use of fighting forces
- Personnel, training and organisation
- Arms technology
- Construction of arms carriers
- Human technology and maintenance service.

The Royal Swedish Society of Naval Sciences has more than 400 honorary members, ordinary members and corresponding members. Business is carried out during seven ordinary meetings every business year, which is finished with the Annual Grand Meeting.

The Royal Swedish Society of Naval Sciences publishes a journal, "Tidskrift i Sjöväsendet" (Naval Affairs), in which the members' introductory addresses and other essays in the area are published. The Society has a comprehensive library in Karlskrona. The Society encourages initiatives in its field e.g., through essay competitions with different forms of reward.



The Royal Swedish Academy of War Sciences

The Royal Swedish Academy of War Sciences is a royal academy, with His Majesty the King as protector. The academy, a non-state organisation, was established 1796 and is promoting sciences of importance to Sweden's defence and security.

The Academy is divided into six departments, each one representing different disciplines of the total defence. Every department has its own board responsible for its own meetings, symposia, excursions etc. The departments and their areas of competence are:

- Land warfare
- Naval warfare
- Air warfare
- Military technology
- Other sciences of importance to total national defence
- National security

Each year the departments conduct an annual study within a subject of current interest. These studies give one or more fellows chance to take a closer look at the subject and the studies are a good source for those who want to follow the development of the Swedish total defence.

A few times a year the Academy arranges seminars, sometimes even in cooperation with other academies, authorities or organizations. In October each year the Academy arranges an all day symposium, commonly called "autumn symposium".

Six times a year The Royal Swedish Academy of War Sciences Proceedings and Journal is published. The publication is the Academy's "face to the world" and its instrument in the military debate. These annual studies, lectures and seminars are published in the Proceedings.