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NAVAL ARMS CONTROL IN THE MEDITERRANEAN: MILITARY ASPECTS

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Summary table of naval arms control hypotheses			
Proposed Measure	**Pros**	**Cons**	**Feasibility in the Mediterranean**
General	reduce threat to SLOCs detente may change	limit defense of sea lines verification may be difficult unilateral reductions better limit unilateral options	selective
Asymmetrical measures	address unequal needs	complicate calculus	Examples: * land-attack for anti-ship *
Regional Accords	politically manageable militarily more relevant	circumvention by outsiders	multilateral, best way to bring regional powers to any negotiation
Structural Arms Control			
Tonnage limits	easy verification could start A/C in M.East	less relevant parameter	NATO freeze for non-NATO ceilings
SLBM	make SS "fair game"	US and Russian already in START	install PALs move SSBN out of Mediterranean
Cruise - Nuclear	preempt Russian option	foreclose strategic option	include ex-Soviet range < 600km
Cruise - Conventional	prevent surprise attack	verification difficult	NATO freeze for non-NATO ban (include ALCM?)
Destroy Tactical Nukes	prevent post-Soviet chaos reduce future threat to carriers	foreclose marginal options	abolish NCND policy

Summary table of naval arms control hypotheses

Proposed Measure	Pros	Cons	Feasibility in the Mediterranean
Attack Submarines	reduce threat to SLOC environmental protection	reduce land-attack options reduce sea-control	offer freeze and ceilings multilateral verification deployment transparency
Anti-submarine warfare	stabilize SSBN	difficult verification offensive SS use easier	ban nuclear ASW only
Restrict Foreign Bases	increase pre-positioning easy verification	political role impeded	only if threat to SLOCs eliminated
Bases for UN use	reduce costs increase political role	reduce unilateral options	commit to Security Council
Anti-ship PGMs	reduce threats to ships and navies	reduce unilateral options difficult verification	ceilings leading to ban ban on trade
Operational Measures (CSBMs)			
General	less constraining easily rescindable good experience exists	can not prevent violations slippery slope to reductions	should be pursued selectively
Exclusion zones	reduce offensive potential	zones of peace unworkable weak precedents, expensive	unlikely to find useful options
Maneuvers Limitations	limit provocative behavior	difficult to define, verify hamper training reveal employment options	safety zones around ships designated firing zones

Summary table of naval arms control hypotheses			
Proposed Measure	**Pros**	**Cons**	**Feasibility in the Mediterranean**
Maneuvers Notification	limit surprise good precedents in Europe	difficult to define, verify limit flexibility	flexible scheme: tonnage/days ratio voluntary "courtesy" notification
Maneuvers Observation	reduce suspicion knowledge to small states	difficult to do for big navies hamper fast crisis response	multilateral, good for smaller states
Information exchange procurement operations	reduce action-reaction race reduce suspicion	may limit flexibility may be too intrusive	procurement publicity regional peacetime cool-lines
Naval Communication	limit overreactions		naval crisis prevention center
Doctrine - R. of Engag.	prevent overreactions build political goodwill		naval NFU harmonization of Rules of Engag.
Bilateral INCSEA	good precedents to copy	could create confusion	useful before multilateral
Multilateral INCSEA	politically more feasible	mechanism more complex	highly auspicable
Self-destruct devices	reduce accidental launches inexpensive	may harm positive control	auspicable for dangerous systems (nuclear and missiles)
PALs	reduce danger of both accidents and proliferation	expensive politically low priority today	install
Environment protection (from nuc. propulsion)	reduce danger of radiation	peacetime nuisance	redeploy nuclear vessels

NAVAL ARMS CONTROL IN THE MEDITERRANEAN: MILITARY ASPECTS

by Marco Carnovale

1. Introduction

After the successful completion of the INF, CFE and START treaties, naval weapons are the only ones not to be the object of arms control negotiations. The reason for this is that the West, and principally the United States, has been adamantly opposed to even consider negotiating naval arms. The main general argument for this position is that naval weapons do not justify *ad hoc* negotiations because of their inability to conquer and hold territory makes them unsuitable for aggressive purposes and therefore innocuous. This is a rather simplistic generalization: naval forces can be instrumental in the conquest of territory, and in any case the conquest of territory is not the only type of military offense to guard against. This was shown, for instance, by the action of naval forces at Pearl Harbour. Subsequently, naval forces have been indispensable in the conquest of the territory, as in Cyprus and in the Falkland. Fear of damage, rather than of territorial conquest, seemed to be the traditional motive behind Soviet interest in naval arms control.

In addition, naval forces can be a threat to maritime trade. As the Cold War drew to an end, the Mediterranean and Middle East region witnessed an escalation of dangers to merchant marines. Naval forces, on the other hand, have been used to protect maritime trade. To engage in an abstract debate about whether naval forces are inherently offensive or defensive, stabilizing or destabilizing, is probably a sterile exercise. They can be both offensive or defensive, stabilizing or destabilizing, as can most other weapons, depending on many factors such as political circumstances, the structure of combined arms operations, the regional correlation of forces in a given geographical area, etc.

This paper will address the military aspects of naval arms control in the Mediterranean sea in order to assess whether or not it might be in the interest of the West to engage in naval negotiations in this region. After the fall of the Soviet Union, and the disappearance of ex-Soviet naval forces from the Mediterranean, are there reasons to pursue naval arms control? The answer that emerges from this paper is a cautious yes. While the traditional threat from the Eskadra is no longer there, it may be the right time to take advantage of lower tensions and strong Western negotiating leverage to push through agreements that may come in useful in future times of tension.

A. Historical background

The historical experience in naval arms control is one of mixed results. The Washington treaty of 1922 and the 1930 and 1936 London naval treaties, over all, were a failure in that they prevented neither an expensive naval arms race nor the development of a destabilizing mix of naval forces that were instrumental in the unleashing and waging of World War II. In the Mediterranean, the crude quantitative limitations failed to provide any contribution to stability—but then, neither were they expected to. In the interwar period, perhaps only the

Treaty of Montreux has served the useful purpose of regulating the acrimonious question of access to the Turkish straits, but it can be considered naval arms control only in the broader sense.[1]

In the post-war era as a whole, the Soviet Union was the most active proponent of naval arms control initiatives. It put forward numerous proposals in the pre-Gorbachev era. Most of these centered in the European naval theaters, both in the North and in the Mediterranean. In 1963, after the deployment of US Polaris submarines in the Mediterranean, the USSR proposed the establishment of a nuclear free zone in the Middle East and in the Mediterranean. At the 24th Congress of the Communist Party in 1971, Brezhnev put forward a proposal to transform the Mediterranean in a "sea of peace", but only after the permanent members of the Security Council had cooperated in settling the Middle East conflict. Later he specified that the US and Soviet navies should be on equal footing. This initial proposals is indicative of the fact that the Soviets saw Mediterranean security as a part of their Middle East, and not European, security theater. In 1974, Brezhnev, in a speech to the Polish parliament, called for the withdrawal of Soviet and American nuclear-weapons-carrying vessels from the Mediterranean. This appeal was later repeated by Brezhnev himself and other Soviet leaders on several occasions.[2]

More recently, however, naval arms control initiatives have been successful in the realm of confidence-building measures (CSBMs). A series of Agreements for the Prevention of Incidents at Sea (INCSEA) has been concluded, and agreements with a naval content have been included in the process of the Conference on Security and Cooperation in Europe (CSCE). The relevance of these agreements for the Mediterranean is addressed below.

B. The terms of the current debate

Soviet proposals in the naval sphere were very forceful in the late eighties, perhaps because this was the only area in which the West and the US were clearly superior and thus could make concessions that could counterbalance the asymmetrical cuts that the Soviets had to incur as a result of their superiority in all other weapon system categories. Repeated calls for naval disarmament in the Mediterranean were put forward in speeches at Murmansk in 1987 and, as for the Mediterranean, in Belgrade in March 1988. Former Chief of the General Staff, and later personal advisor for security affairs to Gorbachev (and failed putschist), Marshal Sergej Akhromeyev, gave a testimony to the US House Armed Services Committee in July 1989 in which he stated that the Soviets feared the US wanted to restrain land forces in order to pursue naval superiority and then dictate its policy to the USSR. He explicitly threatened to interrupt all superpowers arms control if they did not include naval weapons.[3]

All of these, and other, proposals met with resolute Western, and especially US, opposition, for many reasons.[4] First, the US has argued that NATO's dependence on freedom of

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[1] This and other legal aspects of naval arms control are dealt in the chapter by Natalino Ronzitti in this project.

[2] This and other Soviet proposals are discussed in Zoppo, Ciro: *Naval Arms Control in the Mediterranean* (Los Angeles: California Seminar on Arms Control and Foreign Policy, 1975) p.12-13.

[3] Testimony to the House Armed Services Committee of the US Congress, 21 July 1989.

[4] Ironically, it was the US that in 1817 promoted the first naval arms control treaty ever signed (and still in force) to limit British naval forces in the North American Great Lakes!

navigation, because the allies are separated by an ocean, requires that its naval forces not be restrained by arms control. While the original premise is undisputable, the conclusion drawn from it is a *non sequitur*, as one could argue that precisely because of this dependence on sea-lines NATO needs to reduce naval threats to navigation through arms control.

Second, there is a general presumption that naval verification problems are either too intrusive or too difficult to implement. This paper will show how this is true in some, but not all, possible negotiating scenarios.

Third, it has been widely argued that naval weapons must be considered in their broader military context. But that is true for land and air forces as well, as none exists in a vacuum. Moreover, precisely because the context has now been moving (and all in the West agree to want it to accelerate further, both in Europe and especially in the Middle East) one should at least argue why naval should not follow suit.

Fourth, some argue that naval reductions are taking place anyway, for budgetary and other reasons, and there is no need to have complicated negotiations. But precisely for this reason this is precisely a good time to establish an arms control regime that could come in handy should the international situation deteriorate in the future.

Finally, the US argues that the end of the East-West cold war, but the permanence of military threats from several widely separated regions of the world, require more naval power, that is flexible and can be redeployed as fit; does not need political negotiations with host countries; and is best suited for reinforcement after the US reduces its military presence in Europe, assuming there might be a future need for heavy reinforcement.[5] This view was also reflected in Defense Department document leaked to the press in March 1992, which sought to portray the US as the only power with global responsibility and power projection requirements. The problem here is that such a unilateral approach is probably inconsistent with the need for international political cooperation with stabilizing powers for new world order; and with the need to discourage proliferations of various kinds precisely in those regions where this naval power should be applied.

After the collapse of the Soviet Union the issue of naval arms control has moved to the back-burner, but under changing political circumstances may resurface in the future. Uncertainty regarding the political control of the ex-Soviet naval assets makes it imperative to address the issue in a constructive way now that conditions are optimal and before they may again worsen in the future. The West can not simply continue to refuse discussing naval arms control; it needs to argue why it may or may not agree to specific measures, and why. The penalties for not doing so may be a combination of political ill will, various kinds of proliferations, and possibly military risks deriving especially from uncontrolled management of naval forces belonging to the former Soviet Union.

C. Regional Negotiations?

[5] Eberle, James: "Global Security and Naval Arms Control", in *Survival*, Vol. XXXII, No. 4 July-August 1990, p.329.

An additional difficulty about naval arms control concerns the geographical scope of possible talks. Geographical limitations have been useful in certain types of arms control (e.g. in the CFE) because it has made it possible to include countries from outside the area. On the other hand, it has created problems, such as Soviet elusion and the possibility of future build-ups outside of the treaty area. Geographical limitation has not even been considered in other types of arms control agreements such as START, which were inherently global in character.

One author has argued against regional accords because such agreements could be disrupted by countries from outside the region concerned.[6] Other opponents of regional agreements argue that because of the mobility and flexibility of naval systems, negotiations would have to be global to be feasible. Moreover, as shown by Soviet Union in CFE, treaty-covered systems can be moved out of regional treaty areas in time to make a regional treaty less effective. Yet, that did not deter the US or NATO from engaging in regional arms control in Europe. The specificity of naval flexibility is also arguable: multi-role capabilities are today a common feature of many land and especially aircraft systems.

Another advantage of regional negotiations is that they are politically more manageable, especially for smaller powers, because it makes it easier to address specific problems which may be irrelevant for other regions of the world. In the Mediterranean, regional naval negotiations would be better conducted on a multilateral level because it would be easier to bring together otherwise politically unreconcilable countries.Regional agreements would also be militarily more relevant, particularly for smaller powers, because they would address specific reciprocal security problems.

This paper purports to address this question by highlighting whether sufficient military rationales exist to make regional naval arms control options in the Mediterranean desirable and, if so, feasible. To make the analysis of various options more comparable, I will evaluate the missions, negotiability and verifiability of possible alternatives in turn.

D. Off-setting asymmetrical reductions

Already in the UN Expert Study on naval arms control of 1984 it was acknowledged that the goal of arms control should not be equal cuts but equal security. Therefore, naval agreements in the Mediterranean would have to consider different geographical situations.[7] Hence the necessity to consider unequal measures for the various participants. These may consist of unequal cuts of similar weapon-systems, or of off-setting reductions of dissimilar systems.

One example that has been debated in the past was to eliminate attack submarines of the former USSR in exchange for the elimination of US nuclear systems capable of reaching the territory of the Commonwealth of Independent States (CIS). The US unilateral declaration of denuclearizing its fleet (SSBNs excepted) and the current absence of ex-Soviet submarines from the mediterranean go some way in this direction in a unilateral way. UK and France are the only two other powers with these kinds of systems today and, as discussed below, there may well be some merit in suggesting their accession to the current *de-facto* US-CIS regime.

The principle of asymmetrical obligations may be used in other cases as well. For example, major naval powers in the Mediterranean may offer to reduce their land attack capabilities in

[6] Holst, Johan J.: "Changing Northern European Views on Northern Security and Arms Control", *Naval War College Review*, Spring 1990, p.100.

[7] United Nations Document A/40/535, paragraph 285.

exchange for coastal powers reducing their anti-ship capabilities. Any such negotiations is likely to be premature until naval arms control reaches a firmer ground, however

2. Possible categories of structural arms control

E. Tonnage limitations

This type of naval arms control was already tried before World War II, but was circumvented by Germany. A similar quantitative approach was adopted in the SALT/START process, when throw-weight was one of the parameters used to establish arms limitations.[8] With modern technologies, naval tonnage limitations could be circumvented again, perhaps even more easily than in the thirties: the size of ships is less and less important with respect to other considerations such as advanced weaponry.

With the fall of the USSR, it is hard to conceive of tonnage ratios that could make strategic sense between the US fleet and any other except, possibly, that of Russia. All other major fleets are of NATO members and their navies are far smaller. If anything, budget cuts and inter-allied debate on burden-sharing would make many countries less than eager on being allocated a larger share of responsibility.

On the other hand, the principle of tonnage limitations could be usefully applied among non-NATO Mediterranean navies particularly in North Africa and in the Middle East. Most of these are of comparable magnitudes and comparable technological levels. Such an agreement would be easily verifiable and would provide a useful starting point for further arms control measures in the regions. Because it is less controversial and less sensitive for domestic establishments, this kind of rudimentary naval arms control could be a workable starting point for regional arms control measures in the Middle East.

On a sea-wide basis, NATO Mediterranean countries could offer a freeze in total deployed tonnage in exchange for a ceiling on the part of non-NATO riparian states. Such an agreement would also have to address the issue of non-naval threats to NATO SLOCS, e.g. those coming from shore-based systems, and particularly from missiles. NATO navies could offer to reduce their land-attack capabilities in exchange for non-NATO countries limiting their land-based anti-ship capabilities.

F. Naval "strategic" nuclear weapons

Missions American, French and British SLBMs have been thought of as "strategic" non-naval mission oriented systems (though it seems that the Soviets/Russians target their SLBMs also against US naval forces). Otherwise, one could argue (as the Russians do) that restrictions on SSBN logically call for restrictions on other naval forces as well.[9] But this would not be logic: there is no reason to reduce the number of potential "targets" just because one reduces the offensive capabilities against them.

Negotiability Because of the character of their mission, there is virtually none outside of

[8] I am indebted to Johan Holst for this comparison.

[9] Admiral Gorshkov according to Petersen and Robinson cited in Tangredi, Sam J.: "Naval Strategy and Arms Control" in *The Washington Quarterly*, Vol. 14, No. 3, Summer 1991, p.202.

the bilateral START process. This is even more true today that Bush's plan removes the problem of the co-location of SLBM and other weapons such as nuclear SLCM. SLBMs however remain relevant to non-structural agreements, particularly concerning negative control procedures—see below. French and British SLBMs are likely to join the START process if they are to become objects of arms control negotiations at all.

However, France and Britain may join the US and Russia in an agreement to keep the Mediterranean SSBN-free. This would have some value as a bargaining chip to offer other non-nuclear states in exchange for limitations in other kinds of armaments, and it would remove any inhibitions against attack-submarines, one of the most threatening systems for Mediterranean SLOCs that it would be advisable to control through negotiated agreements—see below.

Verifiability It is by all accounts adequate in the START process. It would not be different from that of SSN as far as the platform is concerned, and therefore it would not be possible to establish separate detection systems for the two types of submarines, though it is definitely possible to distinguish between, for example, the sonar signatures of the two types. This would allow for an adequate verification potential.

G. Sea-launched Cruise Missiles

Missions Aside from SLBM, naval nuclear weapons include the so-called "tactical" weapons, though many, such as the SLCMs, are actually strategic from a European point of view, and have little to do with the naval correlation of forces. Their strategic character derives from their missions, which was to strike deep into enemy territory. This capability made it possible for SLCMs to be designated as "strategic reserve" by the US itself. The role of SLCMs for deterrence increased after the INF treaty and NATO reductions of TNF in the late eighties: they are pin-point accurate land-attack weapons capable of reaching targets in a way that, after the INF treaty, few other systems in Europe could.

Their withdrawal according to the Bush plan of 1991 makes the subject less urgent from the point of view of arms control (though it does not completely resolve the issue as these systems will not be destroyed).

The Soviets (and today the CIS) also have a lot of SLCM below the 600 km range, which they refused to include in the Declaration of Policy Concerning Nuclear SLCMs in START. These SLCM could do "strategic" missions against European targets from Mediterranean waters or even from the Black sea[10]. The new SS-N-21 are particularly concerning, and it remains to be seen whether they will also eliminate as a response to US initiative.

A future redeployment of a nuclear version of the SLCM is likely to happen only under politically and/or militarily tense circumstances. For this reason, it would be advisable to ensure that if such a redeployment takes place it should happen under the safest and most secure circumstances possible. In this respect, it would be advisable to install use control devices on SLCMs now (see section on this measure below). In addition, it would be highly auspicable that such devices be installed, in cases where they are not, on all naval nuclear systems of the ex-Soviet Union. This would provide additional security in light of the current uncertainty with respect to the chain of command and political control over parts of the ex-Soviet navy.

SLCM also have a conventional missions. The ex-USSR has nuclear anti-ship SLCM but no conventional land-attack version at present, though it soon may. US has plans for about 100

[10] US Department of Defense, *Naval Arms Control Report to Congress*, February 1991, p.11.

subs and 100 surface ships with conventional SLCM (both land-attack and anti-ship), and their conventional mission was evident during the Gulf war of 1991 against Iraq.

It is more likely that rudimentary versions of conventional SLCMs will spread to other countries. In the Mediterranean, this would pose a problem for Southern European and insular states.

Negotiability For the nuclear version, the point is mute after the Bush plan, though these weapons are not to be destroyed. However, there will remain the conventional version. After the INF treaty, NATO countries have *de facto* renounced land-based cruise missiles. NATO could propose to freeze (with a later build-down option) its conventional SLCM in exchange for a renunciation of land-based conventional cruise missiles regionwide.

If such an offer were made, non-NATO Mediterranean countries would be likely to request a ban of all cruise missiles capable of reaching their territory from the Mediterranean, including the air-launched variant, in exchange for their foregoing this category of weapons for the future. A ban on all cruise missiles would not be achievable in the immediate future, but possessors of such systems may offer to start pulling them out of the Mediterranean after all countries of the region had agreed to give up new acquisitions of their own.

Verifiability The unilateral US moves on nuclear SLCMs requires no verification regime, but should that be desired in the future (it may be requested by the Russians or other inheritors of Soviet naval systems in case of negotiated agreements), it will not be a problem to tell whether warhead is nuclear or conventional,[11] but little additional verification will be possible without unacceptable intrusiveness. In addition, there could even be problem to detect the presence or absence of nuclear weapons aboard nuclear-propelled vessels.

There would be serious problems of verification with respect to many other issues that might come up in the future, such as range, deployed numbers, non-deployed inventory, covert production, dual-capable launchers.[12]

Conventional cruise missiles, wherever based, would be even more difficult to verify. This seems to be a major obstacle toward their inclusion in a limitation treaty.

H. Other tactical naval nuclear weapons

Missions Remaining naval nuclear weapons can be of two broad categories: land-attack and ship-to-ship. In the first case, they would be marginal for attack against another nuclear power, and, as the Gulf war of 1991 demonstrated, irrelevant against non-nuclear powers. As for the second type of mission, the US Navy had already begun the process of denuclearization in 1987, with the plan to withdraw ship- and submarine-launched ASW missiles (SUBROC, ASROC) and anti-air (Terrier); according to this plan, the US navy was already withdrawing over 1,000 weapons.

The Bush plan of 1991 calls for the withdrawal of airborne weapons as well, and thus makes the issue of tactical naval weapons a secondary one for the time being, though these weapons will not be completely eliminated and may be redeployed aboard in the future (perhaps without public announcement). The same could be true of the Russian navy.

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[11] An experiment to this effect was carried out in the Crimea in 1989 by the USSR Academy of Sciences and the US Natural Resources Defense Council. It measured radiation emitted by nuclear anti-ship cruise missiles with passive sensors. See NRDC "News Release", 12 July 1989.

[12] This is well explained in *Report to Congress*, op. cit., p.12

Negotiability Until Bush's speech, the US argued that "tactical" nuclear weapons enhance stability:[13] they can not be the target of a first strike (as they are dispersed on over 200 vessels); and can not perform a first strike of their own (as there are insufficient numbers to accomplish a preemptive attack). This argument, by which naval tactical nuclear weapons are defined according to what they are *not* able to do, is a *non sequitur*.

Bush's plan apparently changed the US outlook on this matter. Perhaps it would be the easier today than in the past to ban their deployment in a binding agreement with challenge inspections provisions. This would require the US Navy to officially abolish its Neither-confirm-nor-deny (NCND) policy. It would therefore entail no actual limitation in the foreseeable future, but would insure against future surreptitious redeployments by possible inheritors of the ex-Soviet navy. It would also make it easier to monitor environmental worries and rebut threat-inflationary concerns.

The abolishment of the NCND policy, of course, would not bar future nuclear re-deployments. But it would require the distinction between nuclear-carrying or -capable vessels and others, The former would have to be declared and/or marked with special flags or other observables. Recognition of nuclear capability is an accepted principle in land for air forces, and there is no obvious reason why this should not be the case for naval forces. Nuclear designated ships could suffer from greater specified restrictions in some cases. On the other hand, they might also enjoy special immunities and privileges.[14]

Verifiability It is easy to detect the presence or absence of nuclear weapons on board vessels, though it would be more difficult to find out what kind of weapons: the radiation from nuclear propulsion engines would complicate matters a bit. It might be more difficult to keep track of numerous routine replenishment, including those at sea. An agreement to designate nuclear-capable vessels might need several inspectors on board each vessel to be verified, either permanently or on a random basis.[15] In any case, the importance of verifiability would depends on one's view on whether these weapons are militarily useful: if they are, and incentives to cheat are thus greater, verifiability is important. If not, there would be few, if any, incentives to cheat and thus the verification of small violations would be less important.[16]

I. Attack submarines

[13] *Report to Congress*, p.8.

[14] Prawitz, Jan: "Applications of CBMs to a Naval Nuclear Environment", in Uited Nations Department for Disarmament Affairs, *Naval Confidence-building Measures*, (New York: United Nations, 1990), p.122.

[15] Lin, Herbert: "Verification of Nuclear Weapons at Sea", in Fieldhouse, Richard (Ed.): *Security at Sea*, (New York: Oxford Univesity Press, 1990), p.108.

[16] Lin, op. cit. p.111.

Missions This is a very versatile system. In order to assess the feasibility of arms control measures, one must distinguish according to its various armaments and relevant missions: surveillance and reconnaissance, strike warfare (land-attack), mine warfare, naval blockades, ASW, escort to battle-groups, delivery/recovery of special operations troops, coastal and barrier defense. Reductions agreements would affect all of these missions indiscriminately.

The nuclear land-attack role of attack submarines was important for NATO as a means of extended deterrence, but Bush's plan takes this mission away. For NATO, SLOC protection, sea-control mission is now the main raison d'etre for attack submarines. The conventional anti-ship/ASW mission however is not favorable to NATO, which has the most valuable assets at sea. In the Mediterranean it is not easy to deal with the submarine threat to high-value vessels and SLOC, as ASW suffers from serious problems because of the characteristics of the water.

Negotiability It is interesting to note that a proposal for a complete ban on submarines came at the Washington conference of 1922 and was put forward by US and the UK even though at the time they had more submarines than others. Today, a problem with equal ceilings of SSNs would be that the Russians have many SS which they could use to bypass, while the US has no SS. Therefore, an agreement would have to include SSs in an overall ceiling. Alternatively, they could be excluded from a regional treaty and would gradually fade away as they are incrementally decommissioned. The current trend toward major reductions in the former Soviet navy may facilitate a *da facto* agreement to this effect. Until recently, the Soviets were less eager to reduce their submarines than any other naval weapon, perhaps because it is their best maritime asset, and perhaps because their threat to NATO SLOCs was one of the few truly impressive conventional military capabilities left to them. Russia could be more amenable now that have less of a stake in maintaining a submarine presence in the Mediterranean.

The dissolution of the Soviet Union, and the consequent concern by Russia about the Ukraine taking over part of its fleet, may provide an opportunity to tackle an otherwise difficult issue. It may be auspicable to formalize the withdrawal of the ex-Soviet submarines from the Mediterranean in an agreement, and NATO powers could offer some quantitative limitations in exchange. This would also serve the purpose of facilitating the inclusion into an agreement of submarines from other riparian states.

One scholar has proposed to reduce conventionally-armed submarines to ceilings sufficient for defense but not for offense.[17] One problem here would be to define such a threshold. Another might be that some countries will fear their qualitative inferiority and will probably insist on a complete ban, though they could probably be temporarily persuaded into a partial agreement. Ceilings would allow major powers to retain a capability for SLOC protection, while at the same time moderate increases of non-NATO submarine fleets.

Verifiability The Mediterranean is a rather advantageous milieu for attack submarines. Physical conditions (the water is warm, salty and shallow) make them difficult to detect. However, in case of an agreement on submarine reductions, their numbers would be easy to verify at the stage of production, or as they enter or exit the Mediterranean, but not as easily afterward. It would be easier to detect diesel submarines because they must emerge, but even this would not be easy for countries non endowed with satellite and/or advanced sonar intelligence.

Mediterranean naval powers could agree upon a multilateral verification arrangement, whereby entry and exit to and from the sea and intended mission would be notified by non-riparian

[17] Lacy, Jim: *Regional Approaches to Naval Arms Control*, paper presented to the IAI-Rand Corporation conference, Rome, September 1990, p.10.

states. In exchange, coastal states would commit themselves to a strictly non-offensive mission of coastal and SLOC defense.

J. Anti-submarine capabilities

Missions It has been argued that ASW should be reduced because, just as strategic defenses against ICBMs, it is destabilizing against the SSBN deterrent.[18] The counter-argument is that ASW is meant especially against SSNs, which threaten SLOCs. Moreover, a first strike against SSBN is practically impossible to realize; therefore, overall, ASW is stabilizing because contributes to reduce threat of surprise attack against SLOC by attack submarines. Some tried to differentiate between anti-SSN and anti-SSBN, but in vain. also, Soviet SSBN bastion approach made differentiation moot: today, ASW against Russia is mostly an anti-SSN mission.[19]

As for other powers in the Mediterranean, submarines may perform both offensive and defensive roles. However, as noted above, they constitute the major offensive threat to SLOCs, while their defensive role might more easily be picked up by surface and land-based systems.

Negotiability Nuclear ASW is being withdrawn by the US. There are no other nuclear ASW in the Mediterranean. Therefore, NATO could offer a formal ban on nuclear ASW as a part of the submarine ceiling offer outlined above.

It would be more difficult to envisage negotiations for non-nuclear ASW, which would require extremely intrusive verification procedures and probably could not be made reasonably reliable. In any case, if one accepts the premise that attack submarines are mainly an offensive system, there would be, as a principle, less need to limit ASW.

Verifiability A satisfactory scheme could be devised for nuclear ASW and for on-board or trailed detection systems, but it would be more difficult for submerged sonar buoys. One could conceivably set up a mechanism to keep track of transmission cables but this would make the system hostage to anybody who knew in a crisis.

K. Naval Basing

Missions Only the US has permanent naval bases on foreign land in the Mediterranean. The Soviets no longer did after their ejection from Valona and Egypt; today, the Russian navy might only find a support facility at Tartus, in Syria, and even that is far from certain. In the spring of 1992, NATO created a new permanent naval force for the Mediterranean, until now only don on an *ad-hoc* basis. This will be based in Naples and consist initially of six vessels (frigates and destroyers) from Greece, Italy and Turkey. The US and the UK would exercise jointly with the force on a regular basis, while German and Dutch less frequently. This force will require some foreign (and possibly permanent) basing on the part of the countries involved.[20]

This new NATO flotilla demonstrates that today naval basing has acquired an eminently political role. It also, of course, has a military role, as shown during various unilateral and multinational operations during the eighties and particularly during the Gulf War. Non-NATO Mediterranean countries have a tendency to see the permanent presence as an intrusion by foreign

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[18] See chapters 5-8 in Tsipis, Kosta, Anne Cahn and Bernard Feld: *The Future of the Sea-based Deterrent*, (Cambridge, MA: MIT Press, 1973).

[19] Tangredi, op. cit., p.203

[20] *International Herald Tribune*, 10 April 1992, p.2.

powers

In the long run, one option would be to restrict this in the way it has been restricted in the Northern flank, with no permanent US bases but only depots of matériel and plans for wartime or crisis-time redeployment.

Another possibility would be to put foreign bases in the Mediterranean at the disposal of the United Nations whenever required by the Security Council. This would not constitute any obligation either for the host country or for the forces that are routinely based in such bases, but may facilitate their employment for peace-keeping and other UN-mandated missions should the countries concerned agree to do so.

Negotiability The negotiability of any base agreement is at the moment rather low. In the past, the Soviets always had weak arguments, as is was clear that their main aim (the Sixth fleet's pull-out) would have the primarily political consequence of yet further de-coupling the US from NATO Europe, with limited military consequences for the Soviets' security.

Today, the US naval presence is seen by most allies as one of the last remaining outposts of the US military commitment to European security, and it is unlikely that NATO countries will push for any reduction. This is the case, for example, of the Sixth Fleet's political role in Italy.

As for the possible use of naval bases for UN purposes, that is indeed an auspicable target to aim for, but it will likely take the shape of voluntary *ad hoc* operations rather than of a formalized treaty. The danger of such a treaty would be that the UN may again be unfriendly to the West in the future as it was sometimes in the past. On the other hand, such a turn for the worse would likely be a long term trend and any commitment could be withdrawn in time. Moreover, the US is a member of the UN Security Council and could thus prevent any unwanted use of its Mediterranean bases through it power of veto.

Verifiability It is obviously easy to verify whether a naval base is operational and hosts foreign ships. Surreptitious storage facilities could be used to pre-position spare parts and weapons. However, this would hardly constitute a fatal flaw for this kind of agreement.

L. Anti-ship PGM

Missions These systems are highly destabilizing because they put premium on hasty action by ship commanders (as was the case with both the Stark and Iranian Airbus incidents.) They are now widespread, will be even more so in the future. In particular, in the Third World, and in the Mediterranean, there is an on-going proliferation of missile armed patrol boats: there was only 1 country in the world that possessed these systems in 1960; by 1965, there were 7; in 1970, there were 17; by 1974, the total had risen to 31; today, more than 60 countries operate missile-armed boats, and the number is probably bound to increase further.[21]

Negotiability It is difficult to envisage negotiations on PGMs in the near term, at a time when Western nations are aggressively pursuing the development of PGMs. It will hardly be more so after the de-nuclearization of the US fleet, which will place even more emphasis on PGMs. Yet, major naval powers have more to lose than minor powers from a proliferation of PGMs. In the long run, major navies could benefit from a ban on anti-ship PGM. In the Mediterranean, this ban should probably include shore-based anti-ship missiles such as *Silk-worms*.

in any case, any such negotiations would probably have to take into account air-launched PGMs, both land and carrier-based. NATO navies could offer a ban on land-attack and anti-ship

[21] *Third World Navies*, p.

PGMs. This would address the Western navies main concerns while at the same time offering other riparian states a reduction in NATO's land attack options.

Verifiability Any arrangement to verify PGM limitations would be intuitively difficult, as these systems are small and not detectable by remote sensing devices. A total ban, a rather distant prospect, would be easier to verify—for example if all possession and testing of guided missiles were proscribed from the Mediterranean. More partial measures would be more complex to verify.

Technology and systems export controls will be difficult to enforce in an airtight manner, and many countries have shown an outstanding ability to assimilate the relevant technologies quickly and efficiently. These systems are expensive but they are still cost effective against high-value targets such as major surface ships.

3. Operational arms control (CSBMs)

Unlike for structural arms control, the purpose of Confidence and Security-Building Measures (CSBMs) is not to reduce incentives to go to war, but to avoid accidental war arising from unwanted or unauthorized provocation or misperceptions. CSBMs do not restrict purposeful access by a state to its military instrument. Some have proposed that CSBMs should also aim at avoiding escalation from conventional to nuclear war.[22] This proposition however would lead one into the dangerous field of damage limitation and preparation for limited war, and therefore should be rejected.

In the naval sphere, most experts and practitioners see CSBMs as a precursor to structural arms control. For this reason, opponents of naval arms control fear them as leading to the slippery slope which would eventually bring about structural arms control as well. For the same reason, proponents of naval arms control push them as the path of least resistance towards reductions, as a necessary first step toward more challenging goals. Both sides agree, however, that CSBMs could not be the finish line of naval arms control, but only a new beginning. This preconception may or may not be true, but it is certainly a problem inasmuch as it hardens the position of the skeptics.

Also, CSBMs are seen as easier to conclude because they are less politically controversial and require neither force reductions (and consequent unpalatable—for navies—budget cuts) nor even ceilings, though they might require constraints on the principle of freedom of the seas. Such constraints would have to be evaluated against possible benefits. So far, naval CSBMs have been formally excluded from the Vienna CSBM negotiations because they were not included in Madrid mandate from which such negotiations originated. Whether they may be addressed at future stages of the CSCE arms control process remains to be seen, pending the general restructuring of that process after the collapse of the Eastern European bloc and the USSR.

What follows are criteria which could be applied to evaluate possible naval CSBMs. In any case, one should keep in mind that it is objectively difficult to measure "confidence", and in any case such measures could never be absolute.[23] Positive effects of useful CSBMs should: i)

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[22] Radoslav Deyanov, "The Role of Security Objectives of Confidence-building Measures at Sea" in UN Disarmament Department, op. cit., p.17.

[23] Norwegian Defense Research Establishment: *Confidence-building at Sea*, (Oslo, 1988), p.22-27.

reduce capability to use naval forces for political pressure; ii) help avoid incidents; iii) limit the probability of incidents escalating into crises; iv) improve the crisis-management use of naval forces; v) reduce the possibility of surprise attack; and finally, vi) obtain positive political spin-off.

Negative side-effects, which contribute to making possible CSBMs counterproductive, include: i) reduction of unilateral ability for effective use of naval forces; ii) limitation of national crisis management capability; iii) complicate preparation for defense during a crisis; iv) influence correlation of forces asymmetrically; v) negative political effects.

M. The Mediterranean and Existing CSBMs at Sea

In assessing possible CSBM proposals, it is useful to start from an evaluation of what agreements have already been concluded and how new ones could improve on them. Several agreements with a confidence-building potential for naval forces have in fact already been concluded, and most do bear directly on the situation in the Mediterranean. Many did in fact originate from incidents between the superpowers' fleets in the Mediterranean or the Black Sea. Perhaps the most accepted worldwide is the "International Regulations for Preventing Incidents at Sea", usually referred to as the "Rules of the Road" agreement, which is designed to regulate maritime traffic and avoid collisions at sea. It has undoubtedly provided for an effective instrument for the prevention of unwanted confrontation.

The US-USSR Agreement for the Prevention of Incidents at Sea (hereinafter INCSEA), signed in 1972, goes further than the "Rules of the Road" in that it specifically forbids provocative or dangerous activities such as attack simulations. Allegedly, the agreement originated from the filming by the US Navy of close contact episodes with the Soviet Eskadra in the Mediterranean. The US-Soviet agreement has been imitated by the UK (in 1986); Germany (in 1988); France, Italy, Norway and Canada (in 1989). As of 1991, Turkey, the Netherlands and Spain were negotiating their own INCSEA agreements, but the future of these negotiations is unclear following the disappearance of the USSR. These agreements have a direct bearing on the Mediterranean, because all the major navies which are present in that sea are parties to them.

The US-Soviet Ballistic Missile Launch Notification Agreement requires at least a 24 hours advance notice for SLBM tests. Information must be passed through the Nuclear Risk Reduction Center which was established in 1987. This agreement is not directly related to the Mediterranean, which is not a usual patrolling area for SSBNs.

The US-Soviet agreement on the Prevention of Dangerous Military Activities was signed in Moscow in 1989, and it applies also to naval forces.[24] It establishes procedures to deal with the entry of each party's forces in the territorial waters or air-space of other. As in the case of the INCSEA, it was prompted by several incidents, the most publicized of which was perhaps that involving several near collisions in the Black Sea in 1988 when US ships entered Soviet territorial waters. It prohibits the harmful or dangerous use of lasers, electronic interference in command and control, disruptive use of illumination, etc. It provides for direct communication procedures among ships and aircraft in case of problems arising in its implementation.

The Stockholm agreement of 1986, as confirmed by the Paris agreement of 1990, also covers naval activity, but only if it is "functionally related" to other military activities on land. Specifically, it requires notification 42 days in advance of amphibious landings in excess of 3,000

[24] See the text in Fieldhouse, Richard (Ed.) *Security at Sea* op. cit.

men, and the invitation of observers for those over 5,000.

N. Geographic Constraints (Exclusion zones)

There are enormous asymmetries of power and interests among Mediterranean states. Proposal for the constraint of naval activities are based on the assumption that either the military presence interferes with civilian activity (such as fishing, etc.) or the mere military presence is source of tension. This assumption is far from clear. There are no obvious cases of military activities that impair civilian activities in a way that could be avoided only by preventing naval forces from accessing a certain area at certain times.

If taken to its logical extreme (banning of fleets from certain areas, or creation of the so-called "zones of peace"), such measures would conflict with each state's right to free navigation. Another problem could arise if navies of non-riparian states were prevented from entering semi-enclosed seas: this would interfere with riparian states' right to enter into alliances with other states and host the forces of the latter; such proposals would therefore hardly be acceptable. [25]

More limited options would entail the establishment of partial exclusion zones for certain types of naval armaments only. For example, hypotheses about several types of nuclear-related exclusion zones have been floated in the past. These have included, among others, Nuclear Weapon Free Zones (NWFZ), Anti Submarine Warfare free zones, and secure bastions for naval strategic nuclear assets (mainly SSBN). In previous paragraphs I have discussed the merits of banning nuclear ASW from the Mediterranean.

Three regional precedents in this respect provide for rather weak examples. In the Tlatelolco Treaty, denuclearization includes large ocean regions in the Atlantic and in the Pacific, but this provision is partly ineffective because of reservations by the nuclear powers for areas beyond the 12-mile territorial waters limit. The Antarctic treaty also prohibits the stationing of nuclear forces in adjacent waters, but this is a strategically and politically irrelevant provision. Finally, the Rarotonga treaty provides for large denuclearized ocean areas, but does not limit access to high seas by nuclear armed or propelled vessels.

One way to make exclusion zones in the Mediterranean more negotiable might be to allow for a "surge clause" to be applied in case of crises deriving from hostile action against one of the contracting parties. There would be difficult issues to decide, however, including questions such as 1) how long a surge could last; 2) how often it should be allowed to happen; 3) who would have the authority to determine whether or not the "surge clause" were triggered by a given event; 4) what could be allowed to happen if the surge clause were triggered by a state which were not party to the treaty.

Exclusion-zones have been considered for weapons other than nuclear, e.g. for submarines with land-attack SLCM. It has been suggested that in order not to be provocative these weapon-systems and their platforms should be kept farther from the coast of potential target countries than their range. Such a measure would be difficult to negotiate in the Mediterranean because quite a few states (both riparian and not) now have long-range weapons (notably guided missiles) on board their ships, even light vessels. Thus, keeping them farther away from other parties to a range-based treaty could easily block off the whole Mediterranean. Alternatively, it has been suggested that the depth of exclusion zones cold be linked to the 200-mile EEZ band: in the

[25] For a further discussion of multilateral limitations to fleet mobility and of zones of peace, see chapter by Natalino Ronzitti in this study.

Mediterranean, the effect would be equivalent to a total ban and the creation of a zone of peace.

Verifiability The degree of verifiability of Mediterranean naval exclusion-zones would depend on the control of entry into the sea through its access straits. This would be easy for surface ships, but less so for submarines (which however must navigate on the surface and show their flag if the UNCLOS were to apply). In practice, verification of entry would be most relevant for the US (and perhaps in the future the successors to the Soviet Union) which may hold by far the greatest share of non-riparian naval forces. A problem might be that it is precisely those two countries which possess the advanced sensor technology which is necessary to closely monitor submarines underwater.

In case of agreements proscribing specific weapons categories (such as nuclear weapons) one could envisage reciprocal observation at port facilities or aboard replenishment ships.[26] This would allow parties to the agreement to check on what armament is loaded on what ships and then see whether ships or specific armaments proscribed in the Mediterranean enter the area. This system, to be effective, would be dauntingly complex, and probably not very cost-effective compared to the significance of the violations it could detect.

Alternatively, one could envisage the emplacement of a system of radio transponders aboard individual proscribed weapon systems to transmit their location at given intervals. The owner of the weapon could be allowed to switch them off in case of crisis to keep the location secret, but would be held accountable if it switched it off unjustifiably in peacetime. If it did, other parties would know the owner party was preparing for something unusual, a fact that in itself would sound alarm for all those monitoring the transponders' signals. Evidently, this would be a complex and expensive system.[27]

O. Limitations of maneuvers

A variation on the above could be to limit naval maneuvers *per se*, as a distinct activity compared to others, such as transfers, permanent stationing or actual force employment. This could help distinguish peaceful training operations from offensive or provocative ones. However, to make this distinction could be difficult in practice. In addition, it could pose a problem if one state wanted to use naval power for actual operations, and not for exercises.

In principle, an agreement to limit maneuvers should not affect such operations, but the state concerned would have to declare that a particular naval activity was not a maneuver, and thus imply that it was about to use naval power; this may not be feasible, because it would eliminate the surprise factor for the target of the operation itself. Also, these limitations would constrain the US more than any other power because it does more large exercises away from home ports. All other Mediterranean naval powers do fewer and smaller exercises, and they are considerably closer to home. This measure would likely be feasible only if all movements of naval vessels were considered as maneuvers and were therefore subjected to limitations of some kind.

With these caveats, limits on maneuvers would have to specify the number of participating units which would constitute a "maneuver". This number could not be too low or it would be too cumbersome to manage the agreement and might actually make it irrelevant because it would confuse noise with signal. Also it would be unacceptably bothersome because it would impede

[26] Prins, Gwyn: "The United Nations and Naval Power in the post-Cold War World", in United Nations Disarmament Department, op. cit., p.226.

[27] ref.

even the smallest crisis-time preparation, lest wrong escalatory signals are sent to the other side. On the other hand, the numerical limit must not be too high as to be meaningless. Considering that 10 ships usually form a battle group, that figure could perhaps be used as a basis for negotiations.

Again there would be a special problem for submarines, whose maneuvering could be detected only by the US and perhaps by Russia (in the Black sea, less easily in the Mediterranean), and only to some extent by France and UK, but probably not everywhere in potential maneuvering areas in the Mediterranean.

Maneuvers could be limited according to several parameters besides the number of units involved. For example, categories of participating units could be given a different weight in the calculation of limit thresholds. Another parameter could be the number of participating states, though in the Mediterranean this would only apply to NATO. The length of maneuvers could be considered, and a total threshold of ship-days, which could take into consideration the relative weight of each unit category. Also the frequency of exercises could be limited, with either a given maximum number of exercises in a given time period, or a fixed minimum interval between exercises. The surface area covered by a given exercise could be restricted, so as to prevent massive deployments which could be seen as preparations for offensive action.

Alternatively, an agreement could restrict certain specified activities which could be of an unnecessarily provocative character from certain specified areas. For example, the US could limit areas of carrier patrol away from striking range of Russia. The Russians (or the Ukrainians, as the case may be) may reciprocate by limiting deployment of land-based naval aviation from potential naval targets such as ports. Similarly, the Arabs could keep their navies at given distances from Israel, and vice versa, though this agreement would be militarily much less significant.

Another possibility would be to establish safety-zones around ships, at least as big as range of potential striking weapons of the other side. This can not be practical in the Mediterranean because the range of even shorter range weapons would easily cover the whole sea. But even a partial measure could be useful, keeping naval vessels apart even if within striking distance, particularly among the smaller navies.

An agreement could be envisaged to establish live ammunition firing zones, with aim of avoiding dangers to civilian activities; this, too, would not be militarily very significant, however, and could encounter political opposition from the locals of designated firing-zones.

P. Notification of maneuvers

Following the pattern of the Stockholm agreements of 1986, numerical thresholds could be agreed beyond which states or groups of states would be required to notify naval maneuvers. Many of the issues discussed in the previous section with respect to limits on maneuvers would apply also in the case of notification requirements. Briefly, an agreement would need to establish thresholds in terms of ships and aircraft involved; submarines would be difficult to verify; if thresholds were too small they would result in a flood of meaningless notifications.

In order to be workable, an agreement on notification could leave a small margin of flexibility in case unforeseen circumstances force last-minute changes in the composition and structure of the maneuver. Because of the difficulty in identifying whether ships that may be physically far apart are in fact participating in the same maneuver, several small maneuvers conducted simultaneously by the same state or its allies would have to be counted as one.

A notification regime would have to include provisions for the timing of exercises; thus it would need to define when an "exercise" starts and when it ends, and how long before that moment

it would have to be notified. That time span must not be too wide to interfere with operational planning, but not too short as to be meaningless. A basis for negotiation could be the CSCE 42 days rule. Several INCSEA agreements provide 3-5 days for specific activities which may pose a special danger to shipping or aircraft.

It could perhaps be possible to devise moving thresholds in terms of ships and advance days: the more ships participate, the earlier notification. In this case, it would be necessary to establish a maximum number of notifications allowed in order to prevent phantom notifications from flooding the system and making it useless. This would be particularly true in the case of a multilateral agreement in the Mediterranean with many states involved.

As a variant on traditional schemes of notification, one could envisage a system of "courtesy" notifications, whereby states conducting maneuvers in a given area would routinely notify their activities to other states in the region. This might contribute to assuage the concern of some littoral states without infringing at all on the principle of freedom of the seas.[28] A problem with this option would be, however, that it might be broken precisely when it would be most needed, i.e. in case of offensive preparation by one party. Or a party might choose not to notify an exercise in order to prompt (and thus test) the reaction of others. However, if the voluntary notification regime were widely accepted and became routine, a state could break away from only at a political cost, and would therefore likely not do so but in grave circumstances.

Any of these notification regimes would dampen the ability by those states to use naval forces promptly for the purpose of exercising political pressure.

Q. Observation of maneuvers

Closely linked to notification is the idea of maneuver observation. An agreement on observation of exercises at sea would probably be less useful than on land, because there already is a lot of observation that can be and is done at sea on a unilateral basis. Mutual shadowing at sea continues to be routine between the US and Russia. Satellite information can reveal much about ship movements. On-board observers would not be very useful unless they were give detailed information on command and control procedures for the naval group concerned.

These conditions however do not apply to other states in the Mediterranean, which have more limited capabilities for unilateral observation through national technical means. For them, an agreement on observation of maneuvers would entail utilizing the services of third parties, such as, perhaps, commercial satellite photography. This they may not be able to afford. Alternatively, an international organization such as the UN (or the CSCE) could provide the service on a multilateral basis.

R. Exchange of information

Exchange of information that should help each party to better understand what others do and thus avoid misperceptions and overreaction. In this case, problems can be very different depending on what kind of information is to be exchanged. At a general level, even the US favors exchanges of information on such matters as procurement plans and increased military-to-military contacts. These could prevent the dangers of threat inflation, be it a voluntary one or not.

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[28] Grove, Eric: "Confidence and security-building and Law of the Sea Disputes", in United Nations Disarmament Depatment, op. cit., p.141.

In addition, publicity about procurement plans may deter plans by a country to acquire weapons systems on the international market surreptitiously. The potential embarrassment of actual procurement actions that were to be concluded outside of such an agreement might deter both sellers and buyers from dubious dealings in the international arms markets.

A possible instrument for the routine exchange of information on naval operations could be what has sometimes been referred to as "cool lines" (as opposed to "hotlines" which are employed for emergencies). These could be developed in a variety of ways. While existing military-to-military contacts could be expanded, the most efficient way to handle routine exchanges of naval information would be a regional information clearing house, where all parties to the agreement would convey all information that could then be redirected to all others.

S. Communication

At the ship-to-ship level, there already exist an accepted form of communication in the international agreements on radio signals. These are probably sufficient, though they could work even better in combination with other CSBMs, such as the standardization of rules of engagement and the designation of firing-exercise areas.

At the regional level, the creation of a naval crisis prevention center could also be envisaged; a small international staff should monitor all naval activities in the Mediterranean and signal alarm every time that a potentially ambiguous or dangerous situation may develop. This, too, would likely be better done in combination with other CSBMs so that it would have specific bench-marks against which to measure the development of potential dangerous situations.

T. Doctrine and Strategies

Again, similarities can be drawn with the process which was usefully followed for land forces in Europe in the CSCE context. Naval strategies could be discussed to eliminate their potentially provocative aspects. However, it is difficult to think of an equivalent of land principles as "sufficiency" or "non-offensive defense" for world-wide protection of interests by blue-water navies.[29] On the other hand, more limited measures of defensive sufficiency for regional navies could be devised around the idea of coastal and SLOC protection, to be opposed to offensive power projection.

One way to begin tackling the problem could be to proceed to a partial standardization of Rules of Engagement, or at least the criteria around which they are formulated. These are now classified and are known to be different from country to country, even within NATO. Their harmonization could help avoid misperceptions about what each side would be about to do under unusual circumstances or in a crisis.

This would have to follow an exchange of information on existing rules (as discussed in the previous section) and could not be done fully because this would imply the revelation to a potential enemy of vital tactics which must of course remain strictly secret. But it probably could be done at a fairly general level, though in that case the challenge would be to make these principles vague enough to be acceptable but not too vague as to be meaningless.

For example, there could be a declaration of No-First Use of naval nuclear weapons or of nuclear weapons against targets at sea. This could be acceptable to the US because it is going in

[29] Macintosh, James "Extending CBM to the Maritime Environment", ibid., p. 188.

that direction in any case, particularly after the Bush naval denuclearization plan, and it could create a positive political climate for other measures that may otherwise be less acceptable for the Southern rim countries.

U. Additional Incidents At Sea Agreements

Previous paragraphs have outlined the merits of current bilateral INCSEA agreements. More could no doubt be concluded, particularly among countries rom the Southern rim of the Mediterranean, and existing ones could provide a solid legislative base to build upon. However, with more and more agreements being concluded, a multilateral option seems to be worth serious consideration in a multipolar naval environment such as the Mediterranean.

In the late eighties Sweden proposed to multilateralize the INCSEA agreement between the then Soviet Union and various Western powers. The USSR, however, showed a preference for multiple bilateral agreements in Europe rather than multilateralization of existing ones.[30] The US too, opposes a multilateral INCSEA, both because it would require discussion of sensitive operations in a multilateral forum; and because it would compromise atmosphere of intimacy and even informality that was developed on a bilateral basis over the years.

The Swedish idea, however, has undoubtedly several advantages: first of all, it would make it easier for more parties to accede, especially those who would not otherwise sign bilateral treaty with certain individual states (such as Israel) for political reasons. Second, it would avoid confusion if more agreement are concluded which do not include the successor states to Russia; the current star-like structure perpetuates the Cold-War paradigm and is increasingly inadequate in the Mediterranean where threats are multidirectional and recognized as such. Finally, a multilateral INCSEA could more easily be integrated with disengagement provisions in case of incidents actually taking place.

V. Locks on Nuclear Weapons

Another useful measure that has been discussed in the past, would be to minimize danger of accidental (unauthorized or involuntary) nuclear use. Measure to this effect were usually considered to involve a cost in terms of a trade-off between safety on the one hand and readiness and reliability on the other. With the end of the Cold War, this cost can be considered to be lower than in the past.

The Soviet position with respect to use control mechanisms on board submarines always seemed to be more forthcoming. One Soviet source stated to this writer in 1989 that Soviet submarines do have negative control mechanisms similar to US PALs, i.e. electronic locks whose release require codes which are physically held separately from the possessors of the weapon.[31] The US, as is well known, does not have such devices on its naval weapons. France is, unsurprisingly, very secretive, while the UK seems to have an arrangement similar to that of the US.

Unlike all land-based US nuclear weapons in Europe, naval weapons (except for *land-based* naval ASW warheads in Europe, now being withdrawn) *can* be fired without any outside

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[30] Granovsky, Andrei: "Necessity to Include Naval Armaments in Disarmament Negotiations", ibid., p.80.

[31] Interview of General Chervov with the author, Moscow, May 1989.

authorization or intervention, whether or not they receive the proper authorization to do so. Naval officers are of course under strict instructions not to proceed with any nuclear launch without authorization under *any* circumstances, even if all communication between a particular vessel and either the NCA or other superior commanders were disrupted. The US Navy has resisted the idea of installing either physical or informational controls on its nuclear weapons with a variety of arguments, the main of which can be summarized as follows.[32]

The first argument against use-control devices in that sailors have traditionally detested "rudder orders from the beach", and PALs would be just that, as the actions of the personnel at sea would be subject to veto from authorities ashore. This is admittedly a psychological argument which has (strictly speaking) no logic whatsoever to it.

Second, physical control is unnecessary because the highly *selected navy personnel* would in no case act without proper authority, and in any case, naval *procedural* controls ensue that no one in a naval vessel could execute an unauthorized launch. Yet, it is difficult to understand why, if Navy commanders are reliable enough to guarantee that they would wait for authorization messages to arrive before launching their forces, it should be unreasonable to wait for enabling codes.[33]

Third, use controls would constitute a complex mechanism which may fail in an emergency, and could therefore *impair the reliability* of naval weapons: electronic equipment will fail more often than people. Yet, modern naval weapon systems already rely on a panoply of gadgetry which is much more complex than electronic locks: the added "complexity" which the latter would add at the margin would be negligible. In any case, the malfunctions of a small percentage of the locks would hardly compromise the missions of a force several thousand of weapons strong.

Fourth, naval commanders would be less prone to hasty action because, thanks to their low vulnerability, in an emergency they would *not be under the same time pressure* as their Army or Air Force peers would likely be, especially if located near the battle area. By the same token, however, they could afford to wait the few extra minutes which might be necessary for an EAM lengthened by enabling codes to be copied.

The final, and most powerful argument for the lack of use control devices in the Navy, is that *the danger of host-country take-over, which was the most important rationale for installing PALs in Europe, does not exist for most Navy weapons*—except for ASW warheads based on land

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[32] The material regarding the Navy arguments against physical control of its nuclear weapons has been drawn from interviews as well as from Ball, Desmond: "Nuclear War at Sea", op. cit., pp.10 and 28; Lawrence Meyer in *Washington Post Magazine*, 30 September 1984, pp.7ff; and Stein and Feaver: *Assuring Control of Nuclear Weapons: ...*, op. cit., pp.70ff.

[33] Admittedly, the EAM would be lengthened somewhat if enabling codes were added to authorization codes; this would mean a somewhat longer processing time for VLF or ELF transmission to the SSBNs, but the amount of extra time needed would be measured in very few minutes at most: most likely an insignificant loss considering the fact that the SSBN would be highly invulnerable and not under time pressure to act. In any case, this argument does not apply to weapons on surface vessels, which do not rely on VLF/ELF communication, and transmission of enabling codes in addition to authorization codes would cost essentially no time loss. See Carter, Ashton B.: "Communications Technologies and Vulnerabilities" in Carter, Steinbruner and Zraket (eds.): *Managing Nuclear Operations*, (Washington, D.C.: Brookings Institution, 1987), p.223.

in Europe, which *are* equipped with PALs. If indeed the main purpose of use control devices was to insure against the dangers of potentially unstable allied political leaders or overly entrepreneurial allied military commanders, then there is no need for such devices on Navy weapons, which would be extremely difficult to seize for allied forces—and virtually impossible, of course, for terrorists or psychotics.

W. Post-launch control devices

In additions to electronic locks, or as an alternative to them, self-destruct mechanisms could be installed on non-recallable weapons (such as missiles). Their purpose would be to prevent accidental launches from producing unwanted damage. They have usually been thought of as a tool for nuclear weapons, but they could be applied to selected conventionally armed systems as well.

These would be a variant of the PALs currently installed on US nuclear weapons in Europe. A radio receiver could be installed on board the weapons system, and it would be connected to a device that would disarm or self-destruct the weapon. Such devices would be similar to those which have always been in operation on space rockets. To prevent accidental or adversarial activation of the self-destruct device, another signal might be used to turn-off the radio receiver itself. This would prevent an enemy from aborting properly authorized launches.[34]

Such devices could provide some additional decision time to redress the problem of an accidental launch. In a situation like the accidental downing of the Iranian airbus by the US Navy, it might have provided a few additional and potentially decisive seconds for the US crew to avoid the consequences of their action, or perhaps for the Iranian pilot to comply with the identification requests.

X. Measures to protect the environment

Nuclear weapons and nuclear propulsors pose a security problem even if no war or accidental launch takes place; that is the nuclear risk, as one author put it, of nuclear reactors travelling at speeds of up to 30 knots.[35] That there have not been major accidents yet does not mean that the risk is not there.

The environmental dangers of nuclear contamination from nuclear propulsion must be addressed, of course, through improvements in reactor design, and the record to date seems to be largely satisfactory for Western submarines, though far less so for those of the former Soviet Union. However, the only way to foreclose the possibility of a maritime Chernobyl would be to give up nuclear propulsion.

While this would be more properly done globally, it is possible that a meaningful agreement could be negotiated regionally on semi-enclosed sea like the Mediterranean. This sea is intensely utilized by civilian traffic and surrounded by densely populated regions; therefore, the consequences of an accident would be potential greater.

Admiral Eberle has suggested that major powers switch to a fleet of diesel submarines

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[34] University of Pennsylvania Professor Sherman Frankel, *The Economist*, 15 february 1992, p.85. See also "Post-launch Control Systems", paper presented by the same author to the conference on "Nuclear Weapons....." Pärnu, Estonia, 22-26 April 1992.

[35] Eberle, Jim, op. cit., p.330.

only. This would largely eliminate the environmental problem, while at the same time confine submarines to a role of eminently defensive coastal defense.

A less extreme option could be to keep nuclear propelled submarines and their bases (the danger for nuclear propelled surface ships is lower) out of heavily populated areas during peacetime. Such restrictions could be waived upon advance notice by the submarines' commander in a crisis.

4. Conclusions

Naval arms control has traditionally suffered from a sort of presumption of guilt which is not justified. Several measures could contribute to the stabilization of the Mediterranean maritime milieu, and should be addressed on their own merits.

Naval arms control is perhaps less urgent today between the major navies, and particularly between the US and the ex-Soviet navy, in light of the improved political climate and of the pull-out of the former Soviet Eskadra from the Mediterranean. However, this may just be the right time to produce binding agreements that might turn out to be useful in the future, should the successors to the Soviet Union become again more powerful and/or less friendly. In particular, the West may now have a one-time opportunity to ensure that ex-Soviet nuclear weapons do not contribute to proliferation in the Mediterranean.

In addition, the increased capabilities of naval forces belonging to countries of the Mediterranean Southern shores, and of the Middle Eastern region in general, make it auspicable that a regional agreement be reached to prevent these capabilities from contributing to create a less stable military environment in the future. This paper has discussed how selected measures of naval arms control would contribute to a safer maritime environment in the Mediterranean. In particular, this paper has argued that multilateral measures would in most cases be more desirable tha bilateral ones, for political as well as military reasons.

One final consideration is in order: Several of the measures discussed here have profound political and legal implications. Therefore, their military value should be assessed in the broader political and legal contexts in which any relevant negotiations would take place; these non-military aspects are dealt with in the two following chapters of this volume.